

# The genus *Erysimum* (Brassicaceae) in Italy, part III: Key to the species and description of the new species *E. apenninum*, *E. etruscum*, *E. pignattii*

S. Peccenini\* & A. Polatschek\*\*

## Abstract

In part 3 of the treatment of Italian *Erysimum* three more species are described on the basis of morphological, caryological and chorological investigations: *E. apenninum*, *E. etruscum*, *E. pignattii*. *E. etnense*, formerly treated as synonym of *E. bonannianum* is now considered a distinct species. For each species: ecological data, flowering time, chromosome numbers and distribution are provided. A key is given for all Italian species.

**Key Words:** Flora of Italy, *Erysimum*, *E. apenninum*, *E. etruscum*, *E. pignattii*, *E. etnense*; chromosome numbers, new taxa.

## Riassunto

Nella terza parte del lavoro sugli *Erysimum* italiani, in base a ricerche morfologiche, cariologiche e corologiche, vengono descritte le seguenti specie: *E. apenninum*, *E. etruscum*, *E. pignattii*. *E. etnense*, prima considerato sinonimo di *E. bonannianum*, viene trattato come specie distinta. Per ogni specie vengono date informazioni sull'ecologia, la fenologia, la distribuzione e vengono elencati i conteggi cromosomici. Viene fornita una chiave di tutte le specie italiane.

## 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), in the second part (PECCENINI & POLATSCHEK 2014) four new species and two new subspecies have been described. The third and last part gives the acceptance of *Erysimum etnense* as a species distinct from *E. bonannianum*, the descriptions of 3 new species: *Erysimum apenninum*, *E. etruscum* und *E. pignattii* and a key to all Italian species.

## Materials and methods

The study is based on field investigations and herbarium material deposited in ANC, APP, B, BM, BP, BRNM, BRNU, CAME, CAT, CLU, E, FI, G, GE, GJO, GOET, GZU, H, HAL, IBF, K, LD, LG, LI, M, MSNM, NAP, NEU, PAL, PERU, PESA, PI, PR, PRC, RO, ROV, SIENA, TS, TUB, UTV, VER, W, WU and the private collections of A. Croce (Napoli, Italy), M. Fischer (Wien, Austria), R. Karl (Köflach, Austria), and on living

\* Simonetta Peccenini, DISTAV–Università di Genova, Corso Dogali 1/M, I 16136 Genova, Italy.

\*\* Adolf Polatschek († 4. 11. 2015), Naturhistorisches Museum Wien, Austria.

plants cultivated in Alpengarten Belvedere in Wien (ABW) and in Orto Botanico Hanbury in Genoa. The citations of the specimens have been completed with the provinces (in brackets), the herbaria are given with their acronyms following THIERS 2015.

The materials used for the original chromosome countings (counted by A. P.) are indicated with ✱ in the lists of seen specimens. Techniques used have been described in PECCENINI (2012). Based on the seen collections and the author's field observations for each species, distribution maps have been drawn.

Among the most important characters for the systematic of *Erysimum* must be considered: the chromosome number and ploidy level, the life form, the branching, the branching of the inflorescence, the petal and sepal size, the stylus length, 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 characters has been described in part II (PECCENINI & POLATSCHKE 2014).

### Results and discussion

Extensive research made it possible to distinguish *E. etnense* JORDAN from *E. bonannianum* which had been considered synonymous (POLATSCHKE 1974, 1982, PECCENINI 2012). Both species have the same chromosome number  $2n = 24$  and similar indumentum. *E. etnense* presents petals deep yellow, 14–18 mm long, ripe siliqua nearly spreading of leafy stems, while *E. bonannianum* presents petals light yellow, 18–23 mm long, ripe siliqua nearly appressed to the almost leafless stems. The text of *E. bonannianum* in part I (PECCENINI 2012) has to be corrected as follows:

***Erysimum bonannianum* C. PRESL**, Fl. Sicul. 1: 78 (1826) – (Fig. 1a, c).

Distribution: Endemic to the high mountains of Sicily, from Rocca Busambra to the Madonie Mountains (Fig. 2).

Ecology: uncultivated land and stony mountain pastures on limestone and dolomite. Growing between 500 m and 2000 m. Flowering from (end of March) April to June (early July).

$2n = 24^*$  Sicilia, Pizzo Carbonara (PA), W. Greuter 8890 [W 1974-19539!ap];

$2n = 24^*$  Sicilia, Monte San Salvatore bei Palermo, sem. ex Hortus Bot. Palermo, cult. ABW 1979/1980. A. Polatschek [W 1983-0001122!ap];

$2n = 24^*$  Sicilia, Madonie, Abstieg vom Monte Mufara, E-Hang, 1700–180 m, 10.7.1984, F. Krendl 301 [W 1986-0001848!ap];

$2n = 24^*$  Sicilia, Madonie-Mountains, sem. ex Hortus Bot. Palermo, cult. ABW 1973/1975, A. Polatschek [W 1975-0017591!ap];

$2n = 24^*$  Sicilia, Madonie, sem. ex Contrada Quacella, 3 km S Portella Colla an der Straße Piano-Zucchi-Polizzi, 1230 m; leg. Teppner; cult. ABW 1974/1975; A. Polatschek [W 1975-0017558!ap];

$2n = 24^*$  Sicilia, Madonie, oberhalb Polizzi, 1200 m, 19.5.1981, H. Malicky [W 1982-0009631!ap];

$2n = 24^*$  Sicilia, Palermo, Madonie, Santuario Madonna dell'Alto, sem. ex Hortus Bot. Neuchatel (sub. *E. sylvestre*), cult. ABW2004/2005, 2005, A. Polatschek [W 2006-0022938!ap];



Fig. 1: Habitus and flower details of a) *Erysimum bonnanianum* and b) *E. etnense*, c) comparison of flowers.



Wrong chromosome countings belonging to this species:

2n = 22 and 2n = 24 Sicilia, Madonie, O. B. Palermo [NEU!ap] (FAVARGER & GOODHUE 1977) sub *Erysimum* gr. *grandiflorum-sylvestre*;

2n = 16 Madonie, 10.6.1977, M.S. Salvatore, F.M. Raimondo, A. Ferrarella [PAL!ap] (FERRARELLA 1978).

**Specimina visa selecta:** **Sicilia:** M. Cammarata, Piana dei Belieri (AG), 19.6.1843, s. coll. [PAL]; – S. Giovanni Gemini, Monte Cammarata (AG), 1300–1500 m, 20.5.1979, D. Davis & S. Sutton [E]; – S. Stefano di Quisquina (AG), 08.6.1985, D. Ottonello, S. Romano [PAL]; – Busambra Piano della Tramontana (PA), 22.4.1829, A. Todaro [PAL]; – Madonie, a Milocca e Monticelli (PA), 4.1867, A. Todaro [PAL]; – Battaglia (PA), 1000 m, 06.5.1965, B.K. Boom [LI]; – Ficuzza (PA), s. coll. [PAL]; – Busambra (PA), A. Todaro, Flora Sicula [B, BP, HAL, PAL, W, WU]; – Madonie, Castelbuono, sopra Rifugio Crispi (PA), 01.5.1992, L. Bernardo & G. Cesca [CLU]; – Cefalù (ca. 40 km S), W Monte Mufarà (PA), 1500 m, 28.5.1979, D. Davis & S. Sutton [E]; – Madonie, Collesano Montea spro (PA), 6.1843, A. Todaro [PAL]; – In elatioribus Nebrodum, Colma Grande (PA), 1700–1800 m, 14.6.1855, E. & A. Huet du Pavillon, Plantae Siculae [BP, FI, G, GOET, H, W]; – Madonie, ca. 2, 3–3 km SW von Castelbuono, Contrada di Milocco (PA), 940–1240 m, 10.5.1991, E. Hörandl & F. Hadacek [W]; – Madonie, Cozzo Luminario (ca. 4 km SSW Castelbuono), Kamm Croce dei Monticelli - Pizzo Carbonara (PA), 1500–1600 m, 11.5.1991, E. Hörandl & F. Hadacek [W]; – Mad. Hor., in elatioribus Nebrodum (PA), 5.6.1840, M. Lojacono-Pojero, Plantae Siculae rariores [BP, G, H, PR, W, WU]; – Madonie, Lungo la strada fra Porticella Colla e Piano Battaglia (PA), 1500 m, 27.5.1996, L. Bernardo, N. Passalacqua [CLU]; – Madonie, M. Quacella-W-Hange, N Polizzi Generosa (PA), 1300–1400 m, 29.4.1978, G. & W. Sauer [LI, TUB]; – Madonie, M. Salvatore (PA), 1900 m, 17–24.7.1906, U. Martelli, E. Barsali [PI]; – Madonie (reg. mont.) (PA), 05.6.1911, H. Ross, Herbarium Siculum [B, BP, BRNM, G, GOET, M, WU]; – Monte Busambra (PA), 1828, Gussone [G]; – in summis culminibus Madoniarum, Monte S. Salvatore (PA), 1910 et 1975 m, 15–22.7.1873, P.G. Strobl, Flora Nebrodensis [BP, G, LI, W, WU]; – Nebrodes, Monte Scalone (PA), s. coll. [W]; – Madonie, Piano Zucchi - Piano Battaglia (PA), 1400 m, 18.4.1965, H. Merxmüller & W. Wiedmann [M]; – Madonie, Pizzo Antenna Grande, SW-Hang (PA), 1800–1980 m, 11.6.1983, M. Erben [M]; – in summis jugis montium Madoniarum, praesertim in “Pizzo Antenna” (PA), 1700–1930 m, 21.7.1874, P.G. Strobl, Flora Nebrodensis [IBF, BP, BRNM, G, PRC]; – Madonie, Serre della Carbonara (PA), 6.1878, M. Lojacono-Pojero, Plantae Siculae rariores [BP, G, HAL, PR, WU]; – Sicani: M. Rose (PA), 1000–1200 m, 01.6.1990, F.M. Raimondo & al., III Iter OPTIMA [PAL].

***Erysimum etnense* JORD.,** DIAGN. ESP. NOUV.: 161 (1864) – (Fig. 1 b, c).

Distribution: Endemic to M. Etna (W-Sicilia) (Fig. 2).

Ecology: dry and stony places, old lava flows, edges of roads, sparse woods, on volcanic soil. Growing between 600 m (Zafferana) and 2000 m (Rif. Sapienza).

Flowering from April to June.

2n = 24 Sicilia, Prov. Catania, N-Rand von Nicolosi, 1000 m, 17.5.1971, A. Polatschek [W 1976-0001737] (POLATSCHEK 1974);

2n = 24 Sicilia, Ätna, an der Straße zum Rif. Sapienza oberhalb Nicolosi, 1300 m, 17.5.1971, A. Polatschek [W 1976-0001738] (POLATSCHEK 1974);

2n = 24\* Sicilia, Ätna, nahe dem Rif. Sapienza oberhalb Nicolosi, 1900 m, 17.5.1971, A. Polatschek [W 1976-0001739] (POLATSCHEK 1974);

2n = 24\* Sicilia, Etna, S-Seite, 1300 m, 12.6.1982, H. Malicky [W 1982-0009402];

2n = 24\* Sicilia, Etna, E, Rif. Piana Provenzana, Observatorium (CT), 1850 m, 5.6.2000, E. Vitek 2000-076 [W 2001-0005322].

2n = 24\* Sicilia, Etna, Umgebung der Seilbahnstation beim Rif. Sapienza (CT), 1900–2000 m, 14.5.1969, F. Krendl [W 1974-0007454];

Wrong chromosome countings belonging to this species:

2n = 22 Etna, Rif. Sapienza, 1880 m, E. Senaud [NEU!ap] (FAVARGER 1972) sub *E. suffruticosum*;

2n = 22 Etna, 2500 m, E. Senaud [NEU!ap] (FAVARGER 1972) sub *E. suffruticosum*].

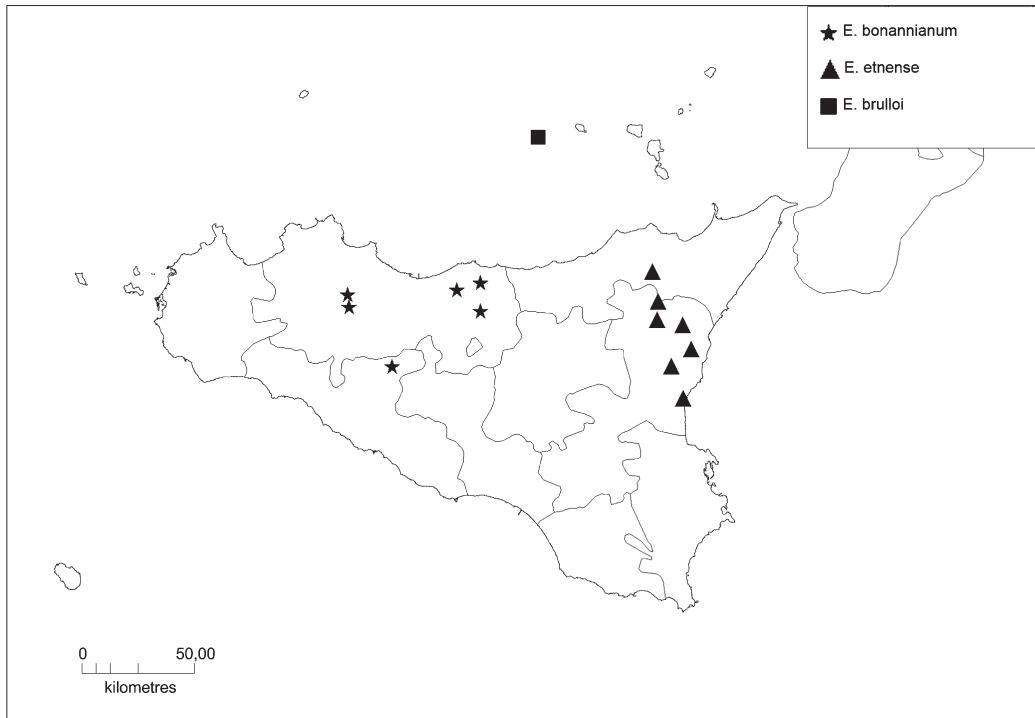


Fig. 2: Distribution map of *Erysimum bonannianum*, *E. etnense* and, as addition to part I, *E. brulloi* (elaborated by C. Turcato).

**Specimina visa selecta:** **Sicilia:**– Aetna-Gebiet, bei Randazzo (CT), 750 m, 27.4.1961, G. Joscht [LI]; – Bosco Maletto, falde dell’ Etna (CT), 1100 m, 25.5.1996, L. Bernardo, N. Passalacqua, G. Spampinato [CLU]; – M. Sartorius (CT), 1600–1700 m, s. coll. [PAL]; – Etna versante S, Monte Sona, ca. 8–9 km NW Nicolosi (CT), 1200–1300 m, 17.5.1991, E. Hörandl & F. Hadacek [W]; – Nicolosi road to the telepherique (CT), 1200–1800 m, 01.6.1972, C.A. Stace & R. Cotton [BM]; – Nicolosi, Monti Rossi (CT), 06.5.1921, H. Zerny [W]; – Sciarre di Mascalucia, Rifugio Citelli (CT), 7. 1949 Hamann [B]; – sopra Catania, lungo la via camionabile (CT), 1200 m, 23.5.1940, A. Fiori [FI]; – Etna E-Hang, Zafferana (CT), 650 m, 24.6.1961, D. Podlech [M]; – Floresta, an der Strasse Randazzo-Capo d’Orlando (ME), 1250 m, s. coll. [K]; – Valdemone (ME), Pitanda [PAL]; – Valdemone (ME), 1200 m, H. Ross, Flora Sicula [FI].

### *E. cheiri* (L.) CRANTZ

As announced in Part I (PECCENINI 2012: 103) the distribution of *E. cheiri* is presented here. The species can be found more or less all over Italy except the alpine areas (Fig. 3).

**Specimina visa selecta:** **Lombardia:** Cuggiono (MI), s. d., C. Stucchi [MSNM3740]; – Brescia (BS), s. d., s. coll. [TS948]; – Gargnano, loc. Le Posere, salendo in V. Vestino (BS), s. d., s. coll. [TS948]; – Tremosine, sentiero Pieve-Porto (BS), s. d., Tagliaferri [TS948];

**Veneto:** Venedig (VE), 4.5.1846, Kellner [GJO]; – Manerba (VR), 09.04.1968, L. Fessl [LI]; – Torri del Benaco (VR), 100–20 m, 06.1897, G. Rigo [M34892];

**Trentino-Alto Adige:** Arco (TN), 05.01.1900, R. Sarnthein [IBF]; – Pr. Tenno (Valle del Sarca) (TN), s. d., Porta [ROV1547]; – Castel Penede (TN), ca. 260 m, 25.04.2006, Claudio Raffaelli [ROV49531]; – Castel Penede, inselvatichito sulle mura (TN), 270 m, 30.05.1991, Filippo Prosser [ROV10179]; – Castello di

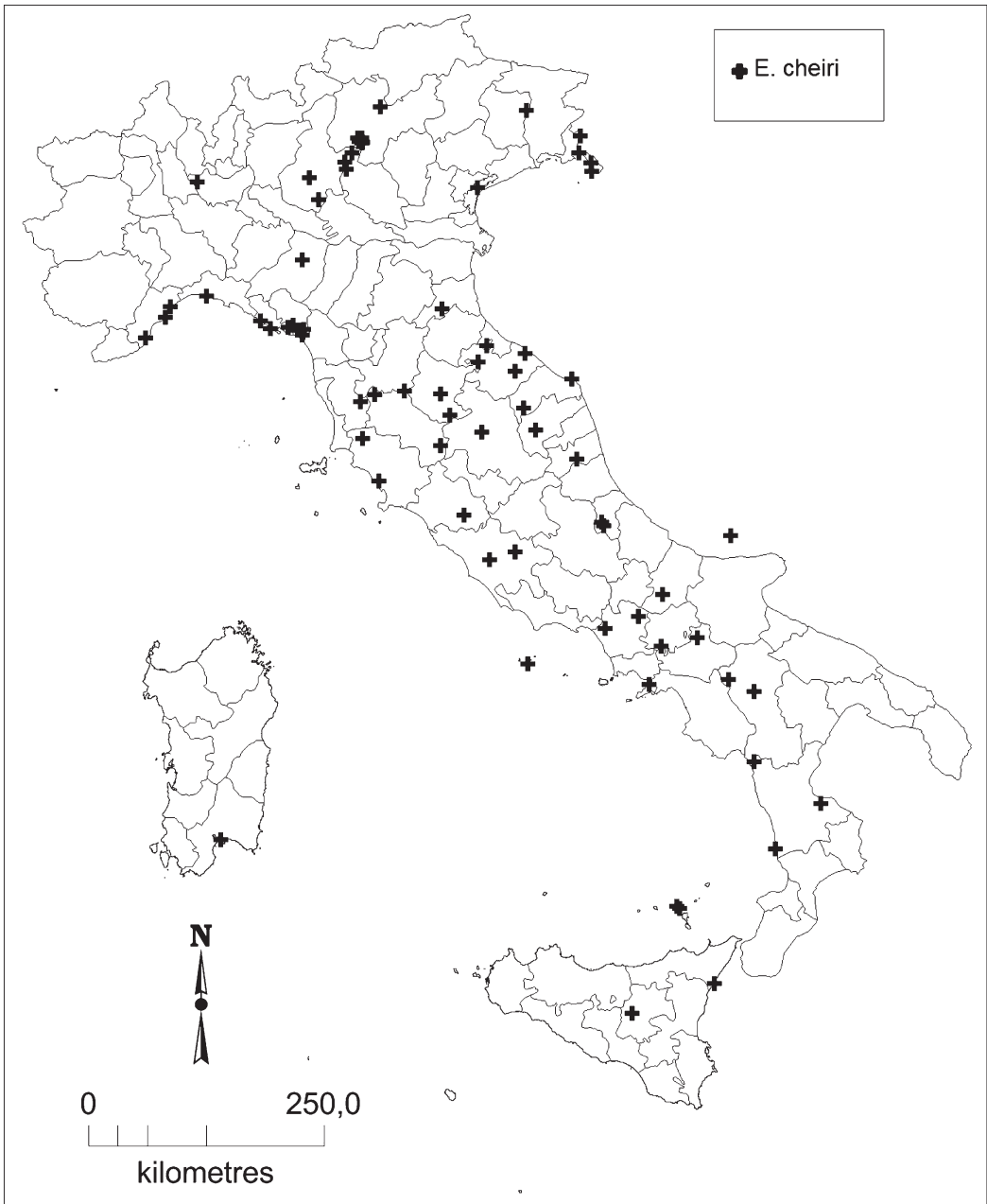


Fig. 3: Distribution map of *Erysimum cheiri* in Italy (elaborated by C. Turcato).

Arco all'interno delle mura (TN), 250 m, 02.03.1905, Maria Giulia Sottoriva [ROV15192]; – Subito a E del castello di S. Gottardo presso Mezzocorona (TN), 300 m, 16.02.1992, Filippo Prosser [ROV10180]; – Tra Torbole e Nago: nella Valle di S. Lucia, ai piedi della rupe del dosso di Castel Penede (TN), ca. 100 m,

03.05.2006, Alessio Bertolli, Filippo Prosser [ROV49056]; – Valletta appena ad E del Castello di Tenno (TN), 400 m, 02.05.2011, Filippo Prosser, Alessio Bertolli, Enrico Barbaro, Michele Poli [ROV58803]; – Riva (TN), s. d., Viehweider [WU];

**Friuli Venezia Giulia:** Trieste (TS), s. d., s. coll. [PRC]; – Gorizia (GO), s. d., s. coll. [TS]; – Pinzano al Tagliamento (PD), s. d., s. coll. [TS]; – Duino (zw.) und Miramare im den küstenFelsen (TS), 15.04.1968, A. Polatschek [W]; – Muggia (TS), 16.04.2003, M. Tommasini [W]; – Barcola (TS), 24.04.1906, K. Fritsch [GZU]; **Liguria:** Genova (GE), 22.04.1932, G. B. Lercaro [GE]; – Monterosso (SP), s. d., s. coll. [GE]; – Noli (SV), s. d., s. coll. [GE]; – Riomaggiore (SP), s. d., s. coll. [GE]; – Savona (SV), s. d., s. coll. [GE]; – Alassio (SV), 10 m, 19.04.1996, G. Galasso [MSNM34491]; – Sarzana (SP), s. d., s. coll. [PI]; – Levante (SP), 01.04.1925, R. Cucini [SIENA]; – Genova (GE), 1.4.1933, R. Cucini [SIENA];

**Toscana:** Sarteano (GR), 18.05.2006, S. Peccenini [GE]; – Cave “Gioia” (MS), 09.07.1966, A. Rauhala [H]; – Collelungo (1–2 km N) (GR), 27.05.1977, S. Snogerup [LD1613]; – Carrara (MS), s. d., s. coll. [PI]; – Fontia (MS), s. d., s. coll. [PI]; – Fosdinovo (MS), s. d., s. coll. [PI]; – Castelo di Moneta (MS), s. d., s. coll. [PI]; – Arezzo (AR), 05.10.1993, M. Lisci [SIENA]; – Castello di Massa (MS), 31.2.1979, D. Marchetti [SIENA]; – Cortona (AR), 16.06.1993, M. Lisci [SIENA]; – Massa Marittima (GR), 1993.05.26, M. Lisci [SIENA]; – San Gimignano (SI), 15.4.1877, A. Tassi [SIENA]; – Selvole (Radda in Chianti) (SI), 550 m, 17.5.1990, B. Giuffrida [SIENA]; – Volterra (PI), 14.06.1973, H. Zimprich [W];

**Emilia Romagna:** Faenza (RA), 01.04.1951, A. Golinelli [H]; – Ramiola (PR), 01.04.1957, A. Piazzoli [MSNM4935]; – Repubblica di San Marino, M. Titano, vers. Or. (San Marino), 600–740 m, 25.03.1912, R. Pampanini, G. De Gasperi [Ge, WU1668bis];

**Umbria:** Perugia (PG), 10.06.1998, G.M.N. Benucci [PERU];

**Marche:** Ancona (AN), 04.01.1900, Paolucci [ANC]; – Ancona (AN), 05.08.2014, Magnago [B 10 0249699]; – Camerino (MC), 15.05.1978, K. Hruska [CAME]; – Ascoli Piceno (AP), 153 m, 01.04.1910, L. Vaccari [GE, WU1668]; – Gruppo del M. Carpegna nel vers. N della rupe di Pietrarubbia. (PS), 700 m, s. d., A. Brilli-Cattarini [PESA]; – Dintorni di Pesaro mura castellane di Novilara (PS), 200 m, 07.04.1970, A. Brilli-Cattarini [PESA]; – Pietrarubbia.vers. N della rupe di (PS), 700 m, 12.05.1980, A. Brilli-Cattarini [PESA]; – Rocca di Fossombrone (PS), 250 m, 30.04.1967, A. Brilli-Cattarini [PESA]; – Rocca Pia, Dintorni di Ascoli Piceno (AP), 170 m, 30.04.1986, A. Brilli-Cattarini, L. Gubellini [PESA]; – Fabriano, su muri (pareti) (AN), 20.08.1949, B. Anzalone [RO Anzalone8814];

**Lazio:** Tivoli (RM), s. d., Bazzichelli [GOET]; – Forum Romanum (im) und am Palatin (RM), ca. 50 m, 06.04.1952, H. Merxmuller, W. Lippert [M9240]; – Isola di Ponza (Arcip. Ponziano) tra Bivio e le Forna (LT), 09.04.1969, B. Anzalone [RO Anzalone]; – Rive del Tevere entro Roma, Lungotev. Della Vittoria (RM), 04.06.1977, B. Anzalone [RO Anzalone]; – Roma Palatino parete acquad. (RM), 01.03.1951, B. Anzalone [RO Anzalone]; – Roma. Sommo del muro di Aureliano al collegio S. Leone Magno (RM), 01.05.1948, B. Anzalone [RO Anzalone]; – Caldera Lago di Vico Punta del Lago (VT), 19.05.1985, A. Scoppola [UTV];

**Abruzzo:** Pescosansonesco (PE), 525 m, 19.03.2006, F. Conti [APPE20548]; – Tocco del Casuario (PE), m, 1905, Vaccari [FI];

**Molise:** Castello Monforte, Campobasso (CB), 18.09.2009, Minissale P., Sciandrello S., Spampinato G. [CAT generale moderno 8311];

**Puglia:** Isole Tremiti, Isola S. Nicola (FG), 0–50 m, 01.04.1969, M. Fischer [Erb Fischer M.];

**Campania:** Sessa Aurunca (CE), 200 m, 08.04.2005, A. Croce [Erb Antonio Croce]; – Ariano al Castello (AV), 13.01.1905, s. coll. [NAP]; – Castellammare al Castello (NA), 20.01.1905, s. coll. [NAP]; – Montesarchio (BN), 17.01.1905, s. coll. [NAP]; – Piedimonte Matese (CE), 29.06.1905, s. coll. [GE];

**Basilicata:** Ospedali-S. Carlo (PZ), 09.04.1932, O. Gavioli [BRNU]; – Muro Lucano (PZ), 518 m, 04.06.2003, L. Bernardo [CLU];

**Calabria:** Amantea (CS), s. d., s. coll. [CLU]; – Rossano (CS), s. d., s. coll. [CLU]; – Tortora Marina (CS), s. d., s. coll. [GE];

**Sicilia:** Malfa, Salina (ME), 02.04.1970, Brullo S. [CAT generale moderno42386]; – Enna, Castello di Lombardia (EN), 800 ca. m, 15.04.1988, H. Forther [M1436]; – Taormina (ME), 22 5 1985, Raimondo [PAL]; – Castrogiovanni al Castello = Enna (EN), 1000 m, 14.6.2069, H. Ross [W];

**Sardegna:** Cagliari, S. Michele (CA), s. d., Moris [FI].

## New species

### *Erysimum apenninum* PECCENINI & POLATSCHEK, sp.n.

Specimens of this new species collected earlier have been named *Erysimum australe*, *E. cheiranthus*, *E. grandiflorum*, *E. helveticum*, *E. hieracifolium*, *E. hieracifolium* var. *sylvestre*, *E. lanceolatum*, *E. lanceolatum* var. *pumilum*, *E. majellense*, *E. pseudorhaeticum* and *E. sylvestre*.

**Description:** *Planta* perennis, in statu florendi 160–300 (–400) mm, in statu fructificationis (200–) 290–400 mm; stirps basaliter ramosa, 3–7 (–15) caules ferens, in basi ramos stoloniformiter elongatos cum raro rosulis sterilibus basi; **caules** lignosi cum residuis petiolorum modice comoso; caules angulosi, in diametro 1–2 mm, pilosa indumento typi 2; leviter foliatus, sine ramulis ex axillis foliorum; saepe etiam siccis anno praeterito adsunt; **folia** caulina lanceolata ad linearia, basalia leviter petiolata, raro remota denticulata, 10–81 mm longa, 1–4 (–7) mm lata, pilosa indumento typi 2+((3)); **synflorescentia** est racemus simplex, fructiferi leviter elongati; **flores** 3–10, valde odorati; tempus florendi (V–) VII (–VIII); pedicelli florum 1–2 mm, in statu fructificationis 3–5 mm longi, pilosi indumento 2+((3)); **sepala** ovato-lanceolata, 8–10 mm longa, 1, 2–1, 5 (–1, 8) mm lata, pilosi indumento 2+(3); **petala** flava, spathulata, 17–21 mm longa, 4–5 (–7, 5) mm lata, pilosi indumento ((2+3)); antherae glabrae; stylodium (1–) 1, 5–2 mm longum, pilosum indumento typi 2+3+(4), valde leviter; stigma capitatum; **siliquae** 32–65 mm longae, 0, 6–1 mm latae, tetragonae angulis minus pilosis, pilosae indumento typi 2; siliquarum angulus 1 = angulus 2 = 10–30°; semina ovata-oblonga, 1, 8–2, 5 mm longa; **numerus chromosomatum**: 2n = 18.

**Description:** Perennial plant, 160–300 (–400) mm in flower and (200–) 290–400 mm in fruit; stem branching at the base, with 3–7 (–15) branches, near the base in the shape of elongated stolons, rarely with sterile rosettes at the base; woody stems with few remains of petioles of dried leaves; lateral stems 1–2 mm thick, with 2-fid hairs; without additional side branches; frequently with dry remaining stems of the flowering period before; cauline leaves lanceolate to linear, basal slightly petiolate, whole or rarely with fine teeth, 10–81 mm long, 1–4 (–7) mm wide, with 2+((3))-fid hairs; synflorescence a simple raceme, slightly elongated in fruit; flowers 3–10, very fragrant; pedicels 1–2 mm in flower, 3–5 mm in fruit, with 2+((3))-fid hairs; sepals ovate-lanceolate, 8–10 mm long and 1.2–1.5 (–1.8) mm wide, with 2+(3)-fid hairs; petals spathulate, yellow, 17–21 mm long and 4–5 (–7, 5) mm wide, with ((2+3))-fid hairs; anthers glabrous; Style (1–) 1.5–2 mm with 2+3+(4)-fid hairs; stigma capitate; siliquae quadrangular, 32–65 mm long and 0, 6–1 mm wide, with 2-fid hairs; angle 1 = angle 2: 10–30°; seeds ovate-oblong, 1.8–2.5 mm long; chromosome number: 2n = 18.

**Flowering time:** Mai to July (August).

**Holotypus:** Italia: Abruzzo, S. Stefano di Sessanio (AQ) lungo le stradee fra le case e i muri del paese, su calcare, 1251 m, 18. 6. 2003, S. Peccenini [W 2005-0003706, isotypus GE].

**Eponymia:** Nomen deducit ab Apenninis, Italiae montibus, ubi species occurrit.

**Distribution and habitat:** Endemic of C and S Italy (Marche, Lazio, Abruzzo, Molise, Campania, Basilicata and Calabria), occurs on the hills and the mountains from M. Sibillini to Catena Costiera (CS) (Fig. 4) on: uncultivated grounds, clearings, garrigue,



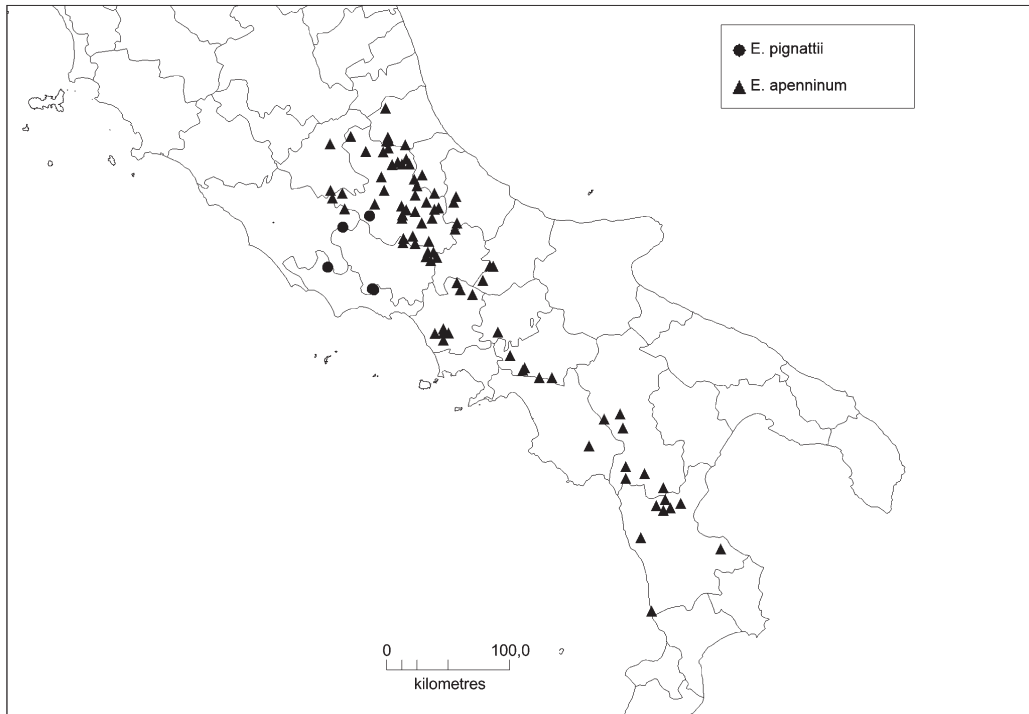


Fig. 4: Distribution map of *Erysimum apenninum* and *E. pignattii* (elaborated by C. Turcato).

scrub, arid grassland, stony and rocky slopes, screes, cliffs and altitudinal grasslands in all exposures on limestone and clayey-calcareous flysch from 500 m to 2260 m (Serra Dolcedorme, Pollino).

**Specimina visa:** **Marche**, M. Sibillini nel basso vers. SE del M. Vettoretto sopra la Fonte delle Cacere. (AP), 1450 m, 13.6.1990, A. Brilli-Cattarini, L. Gubellini & M. Rocchi [PESA];

**Lazio**, Parco d'Abruzzo, fra Forca d'Acero e Sora (SS 509) (FR), 1358 m, 1.6.2007, F. Lupino [GE], ★ 2n = 18; – Campoli Appennino, M. Serrone (FR), 1800–1980 m, 31.7.1997, F. Conti & F. Minuttillo [APP 33101]; – Picinisco, Valle Stracciaro (FR), 1200–1500 m, 25.5.1993, F. Conti [APP 24244]; – S. Biagio Saracinisco, Valle Venafrana (FR), 1600 m, 7.6.1989, F. Conti [APP 24232]; – Campoli Appennino, Vallone Lacerno (FR), 800 m, 31.7.1995, F. Conti [APP 24238]; – M. Terminillo (RI), 1000 m, 30.5.1977, F. Ehrendorfer [WU], ★ 2n = 18; – M. Terminillo (RI), 71953, H. Ernst [WU]; – M. Terminillo, Prato Cristoforo (RI), 1800 m, 11.6.2003, G. Gottschlich [W 2004-0000051], ★ 2n = 18; – M. Terminillo, salendo dalle nevi al Terminillette per la scogliera (RI), 1900–2100 m, 8.7.1894, A. Terracciano [FI]; – M. Terminillo, Sella di Leonessa (RI), 1860–1960 m, 14.7.1992, L. Bernardo [CLU 5544]; – M. Terminillo, Sella Leonessa gegen M. Terminillo N-Hang (RI), 1860–1950 m, 11.6.2003, G. Gottschlich 47620 [W 2004-0000055], ★ 2n = 18; – M. Terminillo, Strada da Pian di Rosce a Pian de' Valli (RI), 1600 m, 16.7.1992, L. Bernardo [CLU 5566]; – Terminillette (RI), 28.6.1970, E. Francini Corti [FI]; – Terminillette Vetta (RI), 2100–2200 m, 6.8.1912, A. Ginsberger [WU];

**Abruzzo**, Rocca Pia (ca. 1 km S), nahe Pettorano sul Gizio (S Sulmona) (AQ), 1100–1150 m, 7.6.1978, F. Krendl [W 1978-0016846]; – Sulmona NW, Acciano N (AQ), 800–900 m, 2.6.1978, F. Krendl 1601 [W 1978-0016840], ★ 2n = 18; – zwischen L'Aquila und Rocca di Cambio, bei S. Martino (AQ), 1200 m, 12.5.1972, G.H. Leute [W 1974-0023589]; – Majella, Campo di Giove NE gegen Fondo di Maiella (AQ), 1100–1300 m, 8.16.1976, F. Krendl 2603 [W 1978-0016839], ★ 2n = 18; – Gran Sasso, Campo Imperatore gegen Vado di Sole (AQ), 1560 m, 25.5.2002, G. Gottschlich [W 2003-0000620], ★ 2n = 18; – Parco d'Abruzzo, Civitella Alfedena (AQ), 1033 m, 2.6.2007, F. Lupino [GE], ★ 2n = 18; – Arischia, Colle delle

Macchie, pendici sud-occidentali (AQ), 1100 m, 19.5.2003, F. Conti [APP 9619]; – Castel del Monte, Coppi del Pacino (AQ), 1480 m, 21.6.2005, F. Conti & al. [APP 15264]; – Maiella, Fondo di Maiella Fonte dell'Orso-Fondo Femmina Morta (AQ), 2100 m, 23.6.2003, S. Peccenini [GE],  $\star 2n = 18$ ; – Gran Sasso, N von Castel del Monte sowie der Straße auf den Campo Imperatore (AQ), 1510 m, 42°22'41"N 13°43'34"E, 25.06.2011, C. Dobeš [W 2013-0004302]; – Italien, Abruzzo, Gran Sasso, NE der Prati di Tivo, am Bergrücken gegen di Cima Alta, 1670 m s.m., 42°30'11"N 13°35'0"E, 26.06.2011, C. Dobeš [W 2013-0004305]; – Ebene N des Monte Greco (W Castel di Sangro), ca. 0.3 km NE der Stazzo Anterotando der Foresta Demaniale Regionale, 1990 m, 41°48'44"N 14°0'59"E, 24.06.2011, Dobeš [W 2013-0004304]; – Maiella, Fondo di Maiella Fonte dell'Orso-Fondo Femmina Morta (AQ), 1800 m, 23.6.2003, S. Peccenini [GE],  $\star 2n = 18$ ; – Castelvechio Subequo, Forca Caruso (AQ), 1112 m, 14.7.2007, F. Conti [APP 27075]; – Fra Arischia e S. Nicola (AQ), 850 m, 20.6.2010, S. Peccenini [GE, W 2011-0005521],  $\star 2n = 18$ ; – Rocca Pia, 2–3 Km S, gegen die C.le Martinello (AQ), 1300–1450 m, 3.7.1979, F. Krendl 268 [W 1980-0000306],  $\star 2n = 18$ ; – Gola di S. Venanzio, fra Castelvechio e Raiano (AQ), 400–500 m, 15.5.1972, G.H. Leute 1492 [W 1974-0023590],  $\star 2n = 18$ ; – Alfedena, La Meta (AQ), 1800–2000 m, 27.7.1990, F. Conti [APP 24227]; – Scanno, La Plaiuccia (AQ), 950 m, 30.5.1996, F. Conti [APP 33086]; – Pescina, Lecceta di Colle Truscino (AQ), 700–1050 m, 7.10.1995, F. Conti [APP 24239]; – Barisciano, M. della Selva, cima Colle Sambuco (AQ), 1480–1513 m, 17.6.2004, S. Torcoletti & G. Santoni [APP 20157]; – Barisciano, M. della Selva, cresta est (AQ), 1300–1570 m, 16.6.2003, S. Torcoletti [APP 20158]; – Lecce nei Marsi, M. di Valle Caprara, Costa dell'Ortella, Gioia dei Marsi (AQ), 1800–1900 m, 15.6.1997, F. Conti & F. Minutillo [APP 33207]; – Ortona dei Marsi, M. Mezzana (AQ), 1350 m, s. d., sem. ex hb. Nantes, cult. in ABW 2008–2010, 2010, A. Polatschek [W 2011-0001650],  $\star 2n = 18$ ; – M. Morrone (AQ), 1876, G. Profeta [FI]; – M. Morrone (AQ), 1800 m, 25.6.2003, S. Peccenini [GE, W 2007-0013266]; – M. Morrone, vetta (AQ), 2061 m, 25.6.2003, S. Peccenini [GE, W 2007-0013281],  $\star 2n = 18$ ; – M. Pietre Fitte (NW Sulmona, N Acciano) (AQ), 800–900 m, 2.6.1978, F. Krendl [W],  $\star 2n = 18$ ; – Campo di Giove - Palena, M. Porrara, cresta (AQ), 1764 m, 20.6.2003, S. Peccenini [GE],  $\star 2n = 18$ ; – Campo di Giove - Palena, M. Porrara, presso la cima (AQ), 1943 m, 20.6.2003, S. Peccenini [GE]; – Campo di Giove - Palena, M. Porrara, sopra Quarto di S. Chiara (AQ), 2049 m, 20.6.2003, S. Peccenini [GE]; – Scanno, Montagna Grande (M. Argatone-La Terrata) (AQ), 1900–2200 m, 1.8.1996, F. Conti [APP 33016]; – Barisciano, M. Carpesco (AQ), 1300–1548 m, 9.6.2003, I. Londrillo, F. Conti, G. Gottschlich, F. Dunkel [APP 8566]; – Ofena, M. La Serra (AQ), 600–1014 m, 16.5.2003, F. Conti & D. Tinti [APP 9563]; – Ocre, M. Ocre, presso Fossa (AQ), 4.5.2005, F. Bartolucci & F. Conti [APP 34233]; – M. Ocre (Aquila - Rocca di Cambio) (AQ), 11.5.1972, G.H. Leute 1362 [W 1974-0023588],  $\star 2n = 18$ ; – Morrone, pend. E M. Le Mucchia (AQ), 1500 m, 25.6.2003, S. Peccenini [GE, W 2007-0013280]; – Morrone, vetta M. Le Mucchia (AQ), 1980 m, 25.6.2003, S. Peccenini [GE],  $\star 2n = 18$ ; – Ovindoli (AQ), 3.6.1929, A. Chiarugi [FI]; – Ovindoli (AQ), 1325 m, 14.6.2010, E. De Sanctis [APP 42036]; – Monti della Meta, Pescasseroli-Villetta Barrea, SW M. Mattone (AQ), 1025 m, 4.6.2008, R. Karl [W 2009-0007147],  $\star 2n = 18$ ; – Piana Grande, Valle Orfento (AQ), 1535–1602 m, 21.6.2003, S. Peccenini [W 2007-0013262],  $\star 2n = 18$ ; – Gran Sasso, Piano di Cinque Miglia (AQ), 18.7.1856, E. et A. Huet du Pavillon [M, W 0031941]; – Piano di Ovindoli (AQ), 1.6.1929, A. Chiarugi [FI]; – Maiella, Pietra Cernaia W M. Secine (AQ), 1625 m, 5.6.2008, R. Karl [W 2009-0007163],  $\star 2n = 18$ ; – presso S. Stefano di Sessanio (AQ), 1250 m, 29.6.2002, F. Conti & al. [APP 4029]; – 2 km da Raiano, il Castellon (AQ), 500 m, 28.5.1978, F. Krendl [W 1978-0016841],  $\star 2n = 18$ ; – Scanno SE, Rif. des M. Rotondo (AQ), 1620 m, 10.7.1979, F. Krendl 2103 [W 1980-0000299],  $\star 2n = 18$ ; – Gran Sasso, Rocca di Calascio (AQ), 1230 m, 1.7.2005, A. Di Turi [GE, W 2006-0009122],  $\star 2n = 18$ ; – zwischen Ovindoli und Celano, S. Potito (AQ), 1100 m, 12.5.1972, G.H. Leute 1394 [W 1974-0023592],  $\star 2n = 18$ ; – oberhalb Celano, S. Potito (AQ), 24.5.1970, H. Riedl [W 1974-0019659]; – tra San Potito e Ovindoli (AQ), 1200–1400 m, 9.6.1903, L. Vaccari [FI]; – Montereale, sopra Ville di Fano verso Colle di Frontina (AQ), 980 m, 10.7.2007, F. Conti, R. Soldati [APP 26924]; – strada da Gioia dei Marsi a Gioia Vecchio (N 83), 1 km prima di Gioia Vecchio (AQ), 1370 m, 4.7.2002, F. Conti & al. [APP 4072]; – Barisciano, tra Vallicella e il Monte della Selva (AQ), 1388 m, 30.5.2003, I. Londrillo, D. Tinti & A. Alessandrini [APP 8563]; – Barisciano, Valle Cupa, Piano Locce (AQ), 1278 m, 15.6.2003, S. Peccenini [GE]; – Anversa degli Abruzzi, Valle del Sagittario, Castrovalva - Colle S. Michele (AQ), 750–847 m, 17.5.1997, F. Conti & A. Manzi [APP 32769]; – Barisciano, Vallicella (AQ), 1300–1340 m, 4.6.2003, I. Londrillo [APP 8564]; – Castel del Monte, Vallone D'Angri (AQ), 1317 m, 14.6.2003, F. Conti & al. [APP 6746]; – Barisciano, Versante S-W di Valle Cupa (AQ), 1278 m, 15.6.2003, F. Conti & al. [APP 6749]; – Lama dei Peligni, dal Rifugio di Fonte Tari alla cresta, sopra la Valle di Fara San Martino (CH), 1540–2300 m, 22.7.1995, F. Conti [APP 11838]; – Valle di Fara San Martino, M. Milazzo (CH), 1790 m, 11.8.1998, F. Conti [APP 11566]; – Gran Sasso, colle sopra

Bussi sul Tirino in direzione di Collepietro (PE), 600 m, 15.9.1999, F. Conti [APP 17022]; – Pescosansonesco, Gran Sasso (PE), 530 m, 6.4.1997, F. Conti [APP 18617]; – Popoli, Forca di Penne 500 m N (PE), 910 m, 25.5.2002, G. Gottschlich 45668 [W 2003-0000622],  $\star 2n = 18$ ; – Maiella, Gamberale (PE), 1290 m, 2.6.2003, G. Gottschlich 47261 [W 2004-0000057],  $\star 2n = 18$ ; – M. Morrone (PE), 16.3.2124, G. Profeta [FI]; – M. Morrone (PE), 22.7.1856, E. et A. Huet du Pavillon [BP, G, GOET, K, M, W 0030740]; – Popoli - Goriano - Forca Caruso (PE), 970 m, 23.5.2002, G. Gottschlich [W 2003-0000619],  $\star 2n = 18$ ; – M.gne del Morrone, oberhalb Rif. gegen C.le delle Nocelle (PE), 1000–1200 m, 1.7.1979, F. Krendl 404 [W 1980-0000311],  $\star 2n = 18$ ; – M.gne del Morrone, oberhalb Rif. gegen C.le delle Nocelle (PE), 1300–1500 m, 1.7.1979, F. Krendl [W 1980-0000308],  $\star 2n = 18 + 2B$ ; – M.gne del Morrone, oberhalb Rif. gegen C.le delle Nocelle (PE), 1300–1500 m, 1.7.1979, F. Krendl [W 1980-0000310],  $\star 2n = 18$ ; – M.gne del Morrone, unterhalb C. le delle Nocelle (PE), 600–1213 m, 29.5.1978, F. Krendl [W],  $\star 2n = 18$ ; – M.gne del Morrone, W des Rif. unterhalb der Kote gegen Badia (PE), 1100–1350 m, 1.7.1979, F. Krendl [W 1980-0000309]; – Pietracamela-N Corno Grande, Cantone-Rio S. Giacomo (TE), 1055 m, 10.7.1979, R. Karl [W 2009-0007161]; – Isola del Gran Sasso, tra il Lago e il Castello di Pagliara (TE), 850 m, 18.5.1999, F. Conti [APP 17221]; – Gran Sasso, pendici N del M. Corvo (TE), 1600 m, 19.6.2010, S. Peccenini [GE, W 2011-0005523],  $\star 2n = 18$ ; – Gran Sasso, pendici N del M. Corvo (TE), 1900 m, 19.6.2010, S. Peccenini [GE, W 2011-0001525],  $\star 2n = 18$ ; – Gran Sasso, Prati di Tivo - La Madonnina (TE), 2070 m, 1.7.2005, A. Di Turi [GE, W 2006-0009124],  $\star 2n = 18$ ; – Gran Sasso, Prati di Tivo, am Bergrücken gegen Cima Alta (TE), 1670 m, 26.6.2011, C. Dobes [W]; – Gran Sasso, Sella fra M. Corvo e Pizzo Intermesoli, (TE), 1890 m, 18.6.2010, S. Peccenini [GE, W 2011-0015525],  $\star 2n = 18$ ; – Gran Sasso, Valle del Venacquaro, fra M. Corvo e Pizzo Intermesoli, (TE), 1400 m, 18.6.2010, S. Peccenini [GE, W 2011-0015526],  $\star 2n = 18$ ; – Gran Sasso, Valle del Venacquaro, fra M. Corvo e Pizzo Intermesoli, (TE), 1600 m, 18.6.2010, S. Peccenini [GE, W 2011-0015527],  $\star 2n = 18$ ;

**Molise**, Castel S. Vincenzo, S. Michele a Foce, presso l'Eremo (IS), 900 m, 22.5.1994, F. Conti [APP 24237]; – Pizzone, Valle di Mezzo (IS), 1100-1700 m, 9.7.1992, F. Conti [APP 24235]; – Massiccio del Matese, M. Gallinola (CB/CE), 1900 m, 11.7.1989, N. Passalacqua, S. Turrini [FI]; – Massiccio del Matese, M. Gallinola, an der strasse von der Sella di Perrone nach Campitello Matese (CB/CE), 1620 m, 2.6.2010, J. Rossa, A. Luckl & C. Dobes [W 2013-0004303];

**Campania**, M. Cervialto (AV), 1750 m, 20.6.1908, C. Lacaïta [GE]; – Prov. Avellino, Monte Raiamagra, 2,4 km Süd Lago di Laceno (AV), 1650–1700 m, 1986, B. Wallnöfer, cult. in ABW 1987/88, 1988, A. Polatschek [W 1988-0009507],  $\star 2n = 18$ ; – M. Picentini, M. Terminio Colle di Sasso (AV), 1450 m, 17.7.1979, B. Moraldo [NAP 1796]; – M. Picentini, M. Terminio & R. Falascosa (AV), 1.5.1971, B. Moraldo [NAP 1797]; – M. Vergine (AV), 1200 m, 16.6.1909, M. Guadagno [BRNU]; – M. Vergine (AV), 61904, 6.1904, M. Guadagno [GE]; – Montevergine (AV), 1200 m, 12.5.1962, G. Joscht [LI 3095]; – M. Picentini, R. Felascosa (AV), 28.7.1973, B. Moraldo [NAP 1798]; – M. Picentini, Rupi vetta M. Terminio (AV), 1500–1800 m, 30.6.1976, B. Moraldo [NAP 1787]; – M. Picentini, vetta M. Garofano (AV), 1550 m, 2.6.1975, B. Moraldo [NAP 1791]; – M. Taburno (BN), 1150–1200 m, s. d., G. Caputo [NAP 1782]; – M. Taburno Croce (BN), 1400 m, 4.6.1966, G. Caputo [NAP 1801]; – M. Taburno vers. S (BN), 800–1000 m, 27.9.1968, s. coll. [NAP 1800]; – Taburno Lungo strada (BN), 500–800 m, 5.5.1962, G. Caputo [NAP 1805]; – M. del Matese, Lago di Gallo, Umgebung des Staudammes (CE), 850 m, 31.5.2007, R. Karl [GE, W 2010-0005568]; – M. del Matese, M. Capello, Valle Agricola (CE), 1100 m, 31.5.2007, S. Peccenini [GE, W 2011-0005954],  $\star 2n = 18$ ; – M. del Matese, M. Capello, Valle Agricola (CE), 1207 m, 31.5.2007, S. Peccenini [GE, W 2011-0005949],  $\star 2n = 18$ ; – M. del Matese, M. Janara, vetta (CE), 1575 m, 30.5.2007, S. Peccenini [GE, W 2011-0005952],  $\star 2n = 18$ ; – M. del Matese, Masseria Revote (CE), 900 m, 30.5.2007, L. Bernardo [GE, W 2011-0005950]; – M. del Matese, S. Gregorio Matese (CE), 750 m, 29.5.2007, S. Peccenini [GE, W 2010-05290],  $\star 2n = 18$ ; – M. del Matese, S. Gregorio Matese sotto (CE), 700 m, 1.6.2007, S. Peccenini [GE, W 2010-0005921]; – M. del Matese, S. Gregorio Matese-Passo di Miralago (CE), 900 m, 1.6.2007, S. Peccenini [GE, W 2011-0005951]; – M. del Matese, Strada Prov 89 fra Fontegrega e Gallo Matese a 5 km dal bivio (CE), 800 m, 31.5.2007, S. Peccenini [GE, W 2010-0005919]; – M. del Matese, Valle Agricola (CE), 700 m, 31.5.2007, S. Peccenini [GE, W 2011-0005953],  $\star 2n = 18$ ; – M. Picentini, M. Accellica Est Calancone (SA), 2.6.1975, B. Moraldo [NAP 1793]; – M. Picentini, M. Accellica vetta (SA), 1400–1660 m, 8.7.1978, B. Moraldo [NAP 1790]; – Cilento, M. Cervati alla Madonna della Grotta (SA), 2.7.1988, R. Cerri [NAP 1663]; – Cilento, M. Cervati Grotta (SA), 28.7.1993, A. Santangelo [NAP 1662]; – Cilento meridionale, Cima del M. Cervati (SA), 1800 m, 18.6.1993, L. Bernardo [CLU 5564];

**Basilicata**, Latrònico, Monte Alpi (PT), 1740 m, 25.7.2002, L. Peruzzi et al. [CLU 5548]; – Autobahnausfahrt Lauria Sud (überweidete Trockenhänge), ca. 2, 5 km E der Lauria (PT), 800–850 m, 3.6.1979, G. Straka [W

1981-0013848], ★ 2n = 18; – Nazionale SS19, 4 km E Autobahnbrücke nahe Lauria S (PT), 800–850 m, 15.6.2008, G. Straka [W 2009-0007143], ★ 2n = 18; – Atena Lucana-Brienza (Statale 598) (PZ), 650 m, 3.6.2003, S. Peccenini [GE, W 2005-0003714], ★ 2n = 18; – M. Calvelluzzo (PZ), 1200–1500 m, 5.6.2003, S. Peccenini [GE, W 2005-0003713], ★ 2n = 18; – Marsico Nuovo, M. Calvelluzzo (PZ), 1676 m, 5.6.2003, F. Conti & D. Tinti [APP 5252]; – M. Volturino (PZ), 5.6.2003, L. Bernardo [GE, W 2005-0003707], ★ 2n = 18; – Abriola, Madonna di Monteforte (PZ), 1400 m, 9.6.1908, O. Gavioli [FI]; – Pollinello, presso la cima (versante S Massiccio del Pollino) (PZ), 1810 m, 11.8.1998, L. Bernardo [CLU 5561]; – Pollino - Serra Dolcedorme gegen die Serra Dolcedorme (PZ), 2200–2260 m, 27.6.1986, W. Burri et F. Krendl 1402 [W 1988-0004358], ★ 2n = 18; – Serra di Monteforte (PZ), 1000–1400 m, 28.6.1938, O. Gavioli [FI 26845]; – Sirino Papa (PZ), 1845 m, 15.6.2008, R. Karl [W 2009-0007142], ★ 2n = 18; – Sirino, Piano Battaglia (PZ), 10.6.1983, s. coll. [NAP 1804]; – versante N del M. Calvelluzzo (PZ), 1500 m, 5.6.2003, L. Gubellini [PESA]; –

**Calabria**, Pollino, Colle del Dragone (CS), 1725 m, 17.6.2008, R. Karl [W 2009-0007144]; – Le Serre (versante meridionale del Massiccio del Pollino, Frascineto) (CS), 1275 m, 25.6.1997, L. Bernardo, N.G. Passalacqua, M. Aversa, A. Beni [CLU 5557]; – Petrosa, Massiccio del Pollino, a Nord di Castrovillari (CS), 700–750 m, 4.6.1996, L. Bernardo, N.G. Passalacqua, M. Aversa, A. Beni [CLU 5556]; – Pollinello (versante meridionale del Massiccio del Pollino) (CS), 1800–1850 m, 1.6.1994, L. Bernardo [CLU 5554]; – Scariano (4 Km da Frascineto) (CS), 720 m, 20.6.1997, E. Vitek [W 1998-0005697]; – Settore orientale del Massiccio del Pollino, versante N M. Sellaro, presso il Bifurto (Cerchiara di Calabria) (CS), ca. 950 m, 15.6.1994, L. Bernardo [CLU 5560]; – Vallone Grande, sotto Timpone Pallone, versante S Massiccio del Pollino (CS), 1100–1200 m, 24.5.1997, L. Bernardo, M. Aversa, A. Beni & N.G. Passalacqua [CLU 5559]; – Versante E Serra delle Ciavole (versante calabro Massiccio del Pollino) (CS), 2100 m, s. d., s. coll. [CLU 5552]; – Massiccio del Pollino, ca. 12 Km NNW of Castrovillari; Serra del Prete, around the top (CS), 2000–2180 m, 18.6.1997, Partecipanti VIII Iter Mediterraneum [CLU 5553]; – western slope to V. del Malvento, Serra del Prete (CS), 1900–2000 m, 18.6.1997, E. Vitek [W 1998-0005692]; – Serra del Prete, lungo la cresta sud- ovest verso la cima, Massiccio del Pollino (CS), 2100–2160 m, 3.7.1991, L. Bernardo [CLU 5549]; – Dirupata di Morano (CS), 1300–1400 m, 11.6.1877, R. Huter, P. Porta & G. Rigo [BRIX, FI, WU 39222]; – Monte La Caccia (Belvedere Marittimo) lungo il sentiero di cresta che sale da Serra La Croce (CS), 1600–1650 m, 22.6.1993, L. Bernardo & N.G. Passalacqua [CLU 5558]; – M. Montea, cresta meridionale (S. Agata d'Esaro) (CS), 1550 m, 23.6.1993, L. Bernardo & N.G. Passalacqua [CLU 5562].

### ***Erysimum etruscum* PECCENINI & POLATSCHEK, sp.n.**

Earlier collected specimens of this new species were named *Cheiranthus alpinus*, *Erysimum australe*, *E. canescens*, *E. cheiranthoides*, *E. diffusum*, *E. grandiflorum*, *E. incanum*, *E. lanceolatum*, *E. majellense*, *E. pseudorhaeticum*.

**Descriptio:** **Planta** biennis, floriferi 320–750 mm, fructiferi 370–800 mm; caulibus 1–7; **caules** in basi tenuis foliis exsiccatis circumdati; caules 2–4 mm crassi, rotundati, pilosi pubescentia typi 2; caules leviter foliati; axillis inferioribus saepe fasciculos foliorum gerentes; **folia** caulina lanceolata ad linearia, infima petiolata, sequentia sessilia, integra vel 2–3 paribus dentium tenuissimorum, 18–77 mm longa, 0, 5–4 (–7) mm lata, pilosa pubescentia typi 2+(3); **synflorescentia** est racemus cum 1–6 paracladiis, cuius internodia per fructificationem valde se extendent; **flores** non odorati, fere 40; tempus florendi V–VI; florum pedicelli 3–5 mm, in fructu 4–6 mm longi, pilosi pubescentia typi 2; **sepala** anguste ovato-lanceolata, 8–9 mm longa, 1, 2–1, 5 mm lata, pilosa pubescentia typi 2+(3); **petala** flava, cuneata, 15–17 mm longa, 1–3 (–4) mm lata, glabra; antherae glabrae; **siliquae** 40–66 mm longae, 1 mm latae, in diametro tetragonae, pilosae pubescentia typi 2+(3); stylus (1–) 1, 5–2 mm longo, pilosum pubescentia typi 2+(3); stigma punctiforme ad leviter impressum; angulus 1 = angulus 2: 10–20°; semina ovato-oblonga, 1, 5 × 0, 6 mm, pallide-fusca; **numerus chromosomatum**: 2n = 14.

**Holotypus:** Italia, Lazio, Prov. Roma, zwischen Tivoli und Vicovaro, ruderaler Straßenrand, 13. 5. 2011, A. Polatschek [W 2012-0003345, isotypi W 2012-0003346, GE].



**Eponymia:** Nomen deducit ab Etruria, Italiae regione quam olim Etrusci colebant, ubi species occurrit.

**Description:** Biennial plant with 1–7 stems, 320–750 mm in flower and 370–800 mm in fruit; stem at the base covered with persistent dried leaves, rounded 2–4 mm thick, sparsely leafy, with  $\underline{2}$ -fid hairs; often with clusters of small leaves in the axils of the lower cauline leaves; cauline leaves lanceolate to linear, lower petiolate, subsequent sessile, smooth-edged or, with 2–3 couple of fine teeth, 18–77 mm long, 0.5–4 (–7) mm wide, with  $\underline{2}+((3))$ -fid hairs; inflorescence a raceme with 1–6 lateral branches, internodes in fruit very much elongating; flowers about 40, without fragrance; pedicels 3–5 mm in flower, 4–6 mm in fruit, with  $\underline{2}$ -fid hairs; sepals strictly ovate-lanceolate, 8–9 mm long and 1.2–1.5 mm wide with  $\underline{2}+((3))$ -fid hairs; petals cuneate, yellow, 15–17 mm long and 1–3 (–4) mm wide, glabrous; anthers glabrous; style (1–) 1.5–2 mm with  $\underline{2}+((3))$ -fid hairs; stigma punctiform to slightly sunk; siliquae quadrangular, 40–66 mm long and 1 mm wide with  $\underline{2}+((3))$ -fid hairs; angle 1 = angle 2: 10–20°; seeds ovate-oblong, light brown,  $1.5 \times 0.6$  mm; chromosome number:  $2n = 14$ .

Flowering time: May to June.

This species is a member of the *Erysimum diffusum*-group, in Italy consisting of *E. crassistylum* s. str. with  $2n = 14$  in S Italy, *E. crassistylum* subsp. *garganicum* with  $2n = 42$  in SE Italy and *E. crassistylum* subsp. *verresianum* with  $2n = 70$  in NW Italy.

**Distribution and habitat:** Endemic of C Italy (Toscana, Umbria and Lazio), occurs on the hills from surroundings of Florence (Parco Demidoff, Pratolino, Fiesole) to surroundings of Roma (Colli Albani) (Fig. 5) on: old walls, edges of roads, olive groves and vineyards, dry places stony, gravelly, rocky, garrigue, pastures on volcanic rocks, sandstone, limestone, clay schist, silica from 100 to 1200 m. Probably introduced at Assergi, near the station of the cable car.

**Specimina visa:** Toscana, au midi des Bains di Casciano, entre Pontedera et Siena (FI), 28.5.1871, E. Levier [FI]; – da Vaglia a M.te Senario, prope Florentiam (FI), 22.7.1893, S. Sommier [FI]; – Fonte all’Erta (FI), 5.1879, L. Micheletti [VER]; – lungo il Terzolle, Careggi, prope Florentiam (FI), 01.7.1905, S. Sommier [FI]; – Madonna del Sasso, Firenze (FI), 01.6.1928, A. Chiarugi [FI]; – Poggio dell’Incontro, prope Florentiam (FI), 30.10.1904, S. Sommier [FI]; – route de Quarto, Florence (FI), 10.6.1869, E. Levier [FI]; – S. Martino a Mensola, Florenz (FI), 5.1891, M. Spencer [M]; – tra Trespiano e Pratolino, près Florence (FI), 18.5.1871, E. Levier [FI]; – Valle di S. Marta, sotto la Concezione (FI), 19.7.1921, A. Chiarugi [FI]; – verso Santa Brigida, prope Florentiam (FI), 24.6.1902, S. Sommier [FI]; – Via di Ripiccioli, extra Firenze (FI), 23.5.1880, L. Micheletti [VER]; – S. Casciano dei Bagni (GR), 23.6.1886, E. Levier [FI]; – Chianti a Radda (SI), 6.1862, O. Beccari [FI]; – Ponte Nuovo, Val di Pesa, prope S. Caterano (SI), 5.1876, R. Ricci [FI]; – Stazione di Montamiata (SI), 3.7.1853, S. Sommier [FI]; – Val di Pesa (SI), 6.1876, R. Ricci [FI]; Bagno a Ripoli, südöstlich von Terzano (FI), 300–600 m, 4.6.1973, W. Burri & F. Krendl [W 1974-0013773], ★  $2n = 14$ ; – Fiesole (FI), 6.1919, R. Cucini [SIENA]; – Florenz, bei Fiesole (FI), 7.1900, A. Artzt [B, G, GZU, H, PRC]; – Fiesole (FI), 100 m, 13.6.1869, E. Levier [H]; – Florenz, bei Terme Fiesole (FI), 05.06.1969, F. Krendl [W 1974-0021336], ★  $2n = 14$ ; – Fiesole (FI), 22.6.1856, T. Caruel [FI, SIENA]; – an der Straße zwischen Fiesole und Compibbi (FI), 350 m, 24.–30.5.1980, R. Klaus & J. Mück 133 [W 1980-0015425], ★  $2n = 14$ ; – bei Fiesole (FI), 250 m, 30.8.1892, J. Freyn [BRNM]; – Firenze, presso Fiesole (FI), 02.06.1935, U. Losacco [FI]; – Fiesole E des Ortes (FI), 300 m, 25.5.1977, L. Hautzinger [GE, W 1977-0020132], ★  $2n = 14$ ; – Firenze, Fiesole, Rom. Theatrus (FI), 18.8.1955, W. Sauer [TUB]; – Fiesole - Compibbi (FI), 450 m, 24.–30.5.1980, R. Klaus & J. Mück 87 [GE, W 1980-0015438], ★  $2n = 14$ ; – Firenze, lungo il Mugnone (FI), 26.6.1869, L. Ajuti [FI]; – M. Ceceri, près Florence (FI), 14.10.1870, E. Levier [BP, FI, GZU]; – M. S. Michele (Chianti) (FI), 707 m, 21.6.1959, s. coll. [SIENA]; – Monte Morello prope Florentiam, salendo da Calenzano, (FI), 13.6.1845, S. Sommier [FI]; – Monte Senario (FI), 7.1897, E. Baroni [FI]; – Firenze, Mugnone (FI), 13.07.1922, A.

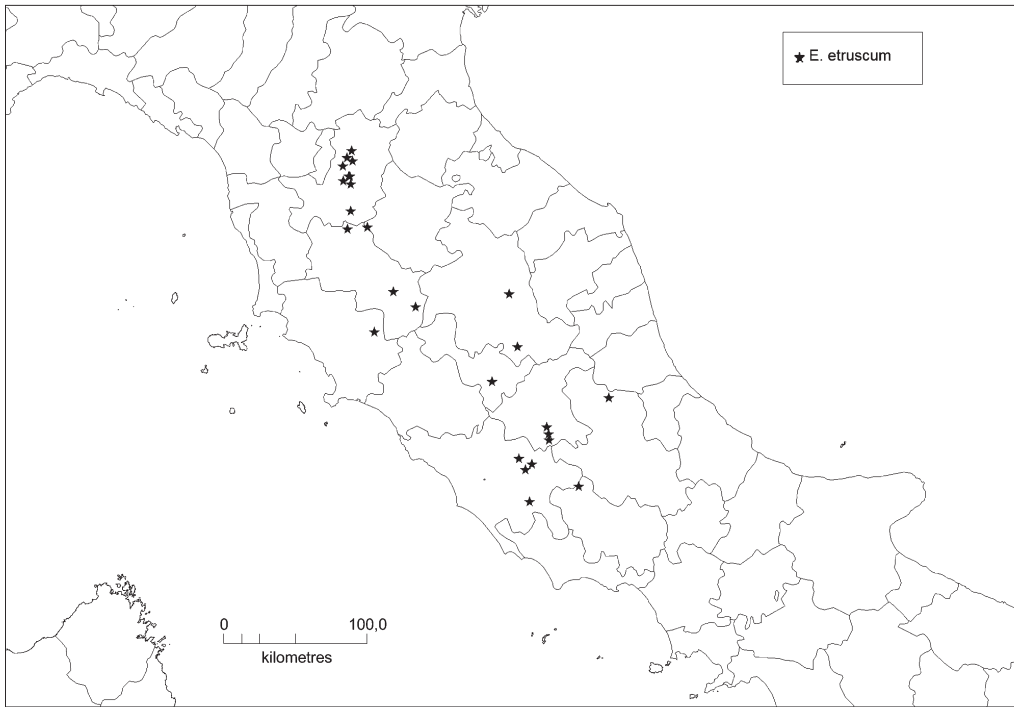


Fig. 5: Distribution map of *Erysimum etruscum* (elaborated by C. Turcato)

Chiarugi [FI]; – presso Pratolino (FI), s. d., s. coll. [FI]; – San Piero a Sieve (FI), 21.5.1970, H. Riedl [W 1980-0019656]; – Firenze, Valle delle Caldine (FI), 17.06.1946, s. coll. [FI]; – Sarteano (GR), 506 m, 18.05.2006, S. Peccenini [GE, W 2007-0013721], ★ 2n = 14; – Toscana, pend. NW M. Cetona, strada Sarteano-Radicofani (GR), 637 m, 18.5.2006, S. Peccenini, [GE, W] ★ 2n = 14; – Ricavo, Castellina in Chianti (SI), 22.7.1985, s. coll. [SIENA]; – Val d'Elsa, Castellina in Chianti (SI), 700 m, 25.5.1998, A. Polatschek [GE, W 1998-0007034], ★ 2n = 14; – Gaiole in Chianti, colt. in O. B. GE ex sem. O. B. Siena (SI), 640 m, 30.6.2012, S. Peccenini [GE, W 2012-0012647], ★ 2n = 14; – Pienza (SI), 4. 6.1993, M. Lisci [SIENA]; – Pienza unterhalb des Domes (SI), 600 m, 22.5.1998, A. Polatschek [GE, W 1998-000766], ★ 2n = 14;

**Umbria**, Assisi (PG), 500 m, 18.8.1977, J. Lambinon [LG]; – Assisi - Subasio (PG), 13. 8.1893, s. coll. [FI]; – Assisi - Subasio (PG), 820 m, 14.5.2011, A. Polatschek [W-2012-0003326], ★ n = 7; – Spoleto vom Aquaeduct (PG), 30.7.1844, M. Funk [M]; – Narni, Tre Ponti (TR), 120 m, 14.5.2011, A. Polatschek [W 2012-0003330], ★ 2n = 14; – Narni (TR), 29.7.1844, M. Funk [M]; – Provinz Terni, W-Rand von Narni, nahe der Abzweigung nach Tre Ponti, 120 m, 42°31'18" N, 12°30'43" E, 14. 5. 2011, R. Karl [Herbar Karl]; – Provinz Perugia, Assisi, an der Straße zum Monte Subásisio, 820 m, 43°03'45" N, 12°38'44" E, 14.5.2011, R. Karl [Herbar Karl];

**Lazio**, M. Lucretili a S. Polo (RM), 300 m, 27.05.2007, G. Salerno [GE, W]; – Rocca di Papa prope Osservatorio Astronomico (RM), 6.–7.1917, A. Béguinot [W 2010-0005923]; – Rocca di Papa (RM), Samen vom Orto Bot. Roma, cult. in ABW 1974–1977, 1977, A. Polatschek [W 1977-0013906], ★ 2n = 14; – Fl. Rom. Tivoli, s. d., Ragneval 44 [W 1889-0000877]; – Provinz Roma, Tivoli, E-Rand der Ortschaft, an der SS-5 (bei Straßenkilometer 34), 260 m, 41°57'20" n, 12°48'54" E, 13.5.2011, R. Karl [Herbar Karl]; – Roma (20 km ostw.), Casale Cesurni bei Bagni di Tivoli (RM), 13.4.1968, A. Neumann [W 1974-0023504], ★ 2n = 14; – M. Ripoli, südöstlich vom Tivoli (RM), ca. 300 m, 4.5.1973, F. Krendl & E. Krendl [W 1986-0001852], ★ 2n = 14; – Tivoli, Via delle Cascatelle (RM), 3.6.1927, K. Ronniger [W 1961-0029584]; – Tivoli, E-rand des Ortes, an der SS 5, (RM), 260 m, 13.5.2011, A. Polatschek [GE, W 2012-0003327], ★ 2n = 14; – Rom und Umgebung Subiaco (RM), 2.6.1982, K. Buttler & M. Erben [M]; – Presso Subiaco (RM),

408 m, 30.7.1893, G. Doria [Buttler & M. Erben [M], ★ 2n = 14; – Monti Simbruini, Trevi nel Lazio, 1, 5 km W (FR), 660 m, 13.5.2011, A. Polatschek [W 2012-0003340], ★ 2n = 14; **Abruzzo**, Gran Sasso: Assergi, nahe der Seilbahnstation, 1120 m; 7.6.2002, A. Polatschek [W 2002-0013505], ★ 2n = 14; – Assergi, nei pressi della Stazione della funivia (AQ), 1130 m, 20.6.2010, S. Peccenini [GE, W 2011-0005522]. GE]; – Monti Reatini: im Scura Tal, Valle Scura, Sigillo - Le Casette (RI), ca. 625–820 m, 11.8.1980, W. Burri & F. Krendl 1602 [GE, W 1981-0012498], ★ 2n = 14; – Monti Reatini, im Scura Tal, Valle Scura, W Sigillo bis zum Wasserfall (RI), 950–1200 m, 11.8.1980, W. Burri & F. Krendl [GE, W 1981-0012502], ★ 2n = 14; – Canetra (RI), 400 m, 1974, A. Polatschek [W 1976-0019087], ★ 2n = 14; – Canetra, 700 m NE (RI), 400 m, 1974, K.

### *Erysimum pignattii* PECCENINI & POLATSCHKEK, sp. n.

Earlier collected specimens of this new species were named *Erysimum australe*, *E. canescens* and *E. pseudorhaeticum*.

**Descriptio:** **Planta** perennis; **caules** in statu floreendi 390–720 (–860) mm, in statu fructificationis 680–760 mm alti; saepe a basi ramosus, in numero 1–4; caulis 2–4 mm crassus, pilosis pili typi 2; in basi exilis basibus foliorum defunctarum circumdatus; caules densius ad inflorescentiam foliati; ramulis ex axillis foliorum etiam inferioribus ortis; **folia** caulina lanceolata vel linearia, integra, 18–71 mm longa, 1–5 mm lata, pilosis pilis typi 2; racemus 0–4 ramulos gerens, fructifer valde elongates; **flores** fere 30, flavi, leviter odorati; pedicelli florum 3–4 mm, in statu fructificationis 6–10 mm longi, pilis pilosi typi 2; **sepala** 9–10 mm longa, anguste ovato-lanceolata, pilosa pubescentia typi 2+((3)); **petala** flava, spathulata, 16–19 mm longa, 4–5 mm lata, raro pilis pilosis typi 2+((3)); antherae glabrae; stylus 1, 5–2 mm longus, pilis pilosis typi 2; stigma capitatum vel leviter emarginatum; **siliquae** 37–50 mm longae, 0, 7–1 mm latae, tetragonae, angulis leviter glabrescentes, pilis pilosis typi 2; angulus 1 = angulus 2; 20–30°; semina anguste-ovata, 1,6–1,9 mm longa, 0, 6–0, 7 mm lata, fusca; **numerus chromosomatum** 2n = 28.

Holotypus: Lazio, Prov. Latina, Monti Lepini, an der Straße zwischen Norma und Doganella, 260 m, Kalk; Felsfluren, 41,35 N/ 12,58 E, 12. 5. 2011, A. Polatschek [W 2012-0003325, isotypi FI, PAL]; ★ 2n = 28.

Eponymia: Praeclaro Sandro Pignatti, Florae Italicae auctore, haec species dicata est.

Description: Perennial plant, stems 390–720 (–860) mm long in flower, 680–760 mm in fruit; stem 2–4 mm thick, often 1–4-branched from the base, with 2-fid hairs; stem slender at the base, enlarged by persistent withered leaves; stems most densely leafy near the inflorescence; lower cauline leaves with clusters of small leaves in the axils. Cauline leaves lanceolate or linear, entire, 18–71 mm long, 1–5 mm wide, with 2-fid hairs. Raceme with 0–4 branches, very elongated in fruit. Flowers ca. 30, yellow, slightly fragrant; pedicels 3–4 mm long in flower, 6–10 mm long in fruit, with 2-fid hairs; sepals 9–10 mm long, closely ovate-lanceolate, with 2+((3))-fid hairs; petals yellow, spathulate, 16–19 mm long, 4–5 mm wide, rarely with 2+((3))-fid hairs; hairless anthers. Style 1.5–2 mm long, with 2-fid hairs; capitate or slightly emarginate stigma. Siliquae in transverse section square, 37–50 mm long, 0.7–1 mm wide, with 2-fid hairs and slightly glabrescent angles. Angle 1 = angle 2: 20–30°. Seeds strictly ovate, brown, 2–3.5 mm long, 0.6–0.7 mm wide. Chromosome number 2n = 28.

Flowering time: Mai to June.

Different from all other species growing in Italy: the plants have at the same time 1–4 stems and racemes with 0–4 branches; stems densely leafy near up to the inflorescence with long fruiting pedicels, 6–10 mm.

**Distribution and habitat:** Endemic of C Italy (Lazio and Abruzzo), occurs on the M. Simbruini, M. Lepini and M. Ausoni (Fig. 4). Growing on: rocks and stony slopes, neither subruderal nor segetal, on limestone and argillaceous limestone from 260 to 900 m.

**Specimina visa:** **Abruzzo**, M. Simbruini, Capistrello an der Straße, Serra S Antonio (AQ) 890 m, 3.6.2008, R. Karl [W 2011-0005948], ★ 2n = 28; Capistrello, gegen Filetino, am Straßenrand (AQ), 750–900 m, 18.5.1977, L. Hautzinger 45 [W 1977-0020131], ★ 2n = 28.

**Lazio:** M. Affilani SE Subiaco, 1,2 km SE Arcinazzo Romano (LT) 720 m, 13.5.2011, R. Karl [Herbar Karl]; – ibidem, A. Polatschek [W 2012-0003333], ★ 2n = 28; – Norma, in montibus Sabinis (RM) 27.6.1893, G. Evers [GZU, W 1967-0017175]; – M. Lepini, an der Straße zw. Norma und Doganella (RM). 260 m, 12.5.2011, R. Karl [Herbar Karl]; – Lenola presso Fondi (LT) 9.1820, M. Tenore [W]; – zw. Lenola und Vallecorsa (LT) 12.5.2011, R. Karl [Herbar Karl], ★ 2n = 28; – ibidem, A. Polatschek [W 2012-0003344], ★ 2n = 28; – M. Ausoni, SS637 tra Vallecorsa e Lenola, incrocio presso Km 33 (M. Acquaro), 41.416817°N 13.417836°E (FR) 488 m, 04.06.2013, S. Peccenini [GE]; – ibidem, E. Banfi & G. Galasso [MSNM]; M. Ausoni, SS637 tra Vallecorsa e Lenola, tra i Km 31 e 32 (M. Acquaro), 41.421890°N 13.404238°E (FR) 440 m, 04.06.2013, S. Peccenini [GE]; – ibidem E. Banfi & G. Galasso [MSNM].

### Determination key for the Italian species of *Erysimum*

Following to the species name the reference to the description and other information in part I and II are given.

- |   |                                                                                                                                                                                                       |                                   |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 1 | Plants annual or biennial .....                                                                                                                                                                       | 2                                 |
| - | Plants perennial, herbaceous, or woody only at base .....                                                                                                                                             | 9                                 |
| 2 | Annual plants, without dry withered leaves at the base .....                                                                                                                                          | 3                                 |
| - | Biennial plants with dry withered leaves at the base and with clusters of small leaves<br>leaves at least in the upper axils .....                                                                    | 4                                 |
| 3 | Silique erecto-patent, 2–2.5 times long as the pedicel. Lower leaves with<br>(2)+3+4+[(5)]-fid hairs .....                                                                                            | <i>E. cheiranthoides</i> (I: 102) |
| - | Silique patent, 10–20 times long as the pedicel. Lower leaves with 2+3+[(4)]-fid<br>hairs .....                                                                                                       | <i>E. repandum</i> (I: 102)       |
| 4 | Style 1–2 mm long, continuously broadened into the silique; petals pubescent on the<br>back with 2+[(3)]-fid hairs; flowers without perfume; mature silique diverging at<br>nearly right angles ..... | <i>E. crassistylum</i> (II: 109)  |
|   | A Style < 2 mm .....                                                                                                                                                                                  | B                                 |
|   | A Style > 2 mm, seeds 1.6–2.1 mm long .....                                                                                                                                                           | ssp. <i>verresianum</i>           |
|   | B Style 0.5–1 mm long, seeds 1.4–1.5 mm long .....                                                                                                                                                    | ssp. <i>crassistylum</i>          |
|   | B Style 1–1.8 mm long, seeds 1.1–1.4 mm long .....                                                                                                                                                    | ssp. <i>garganicum</i>            |
| - | Style 1.2–3 mm long, other characters not as above .....                                                                                                                                              | 5                                 |
| 5 | Petals hairy on the back .....                                                                                                                                                                        | 6                                 |
| - | Petals glabrous on the back .....                                                                                                                                                                     | 7                                 |
| 6 | Basal leaves with 2-fid hairs; style very distinct than the silique, 1.3–1.7 mm long;<br>petals at first yellow, anthesis quickly bleached .....                                                      | <i>E. metlesicsii</i> (I: 99)     |
| - | Basal leaves with (2)+3+(4)-fid hairs; style progressively enlarged in the silique,<br>1.3–2 mm long; flowers yellow, strongly perfumed .....                                                         | <i>E. odoratum</i> (I: 97)        |



Table 1: *Erysimum*, overview on the distribution of the species in Italy.

|                          | endemic | N<br>Italy | C<br>Italy | S<br>Italy | Sicilia | Sardegna | distribution<br>map |
|--------------------------|---------|------------|------------|------------|---------|----------|---------------------|
| <i>cheiri</i>            |         | x          | x          | x          | x       | x        | III: 152            |
| <i>bonannianum</i>       | x       |            |            |            | x       |          | III: 151            |
| <i>etnense</i>           | x       |            |            |            | x       |          | III: 151            |
| <i>crassistylum</i>      |         |            |            |            |         |          |                     |
| ssp. <i>crassistylum</i> |         |            |            | x          |         |          | II: 109             |
| ssp. <i>garganicum</i>   | x       |            |            | x          |         |          | II: 109             |
| ssp. <i>verresianum</i>  | x       | x          |            |            |         |          | II: 109             |
| <i>etruscum</i>          | x       |            | x          |            |         |          | III: 160            |
| <i>metlesicsii</i>       | x       |            |            |            | x       |          | I: 99               |
| <i>maremmanum</i>        | x       |            | x          |            |         |          | II: 113             |
| <i>montis-argentarii</i> | x       |            | x          |            |         |          | II: 113             |
| <i>ligusticum</i>        | x       | x          | x          |            |         |          | II: 113             |
| <i>insubricum</i>        | x       | x          |            |            |         |          | II: 113             |
| <i>sylvestre</i>         |         | x          |            |            |         |          | I: 107              |
| <i>burnati</i>           |         | x          |            |            |         |          | I: 97               |
| <i>aurantiacum</i>       | x       | x          |            |            |         |          | I: 97               |
| <i>collisparsum</i>      |         | x          |            |            |         |          | I: 97               |
| <i>pseudorhaeticum</i>   | x       | x          | x          |            |         |          | I: 97               |
| <i>majellense</i>        | x       |            | x          |            |         |          | I: 107              |
| <i>rhaeticum</i>         |         | x          |            |            |         |          | I: 99               |
| <i>pignattii</i>         | x       |            | x          |            |         |          | III: 155            |
| <i>cheiranthoides</i>    |         | x          | x          |            |         |          | I: 102              |
| <i>repandum</i>          |         | x          | x          |            |         |          | I: 102              |
| <i>odoratum</i>          |         | x          |            |            |         |          | I: 97               |
| <i>virgatum</i>          |         | x          |            |            |         |          | I: 104              |
| <i>apenninum</i>         | x       |            | x          | x          |         |          | III: 155            |
| <i>jugicola</i>          |         | x          |            |            |         |          | I: 107              |
| <i>brulloi</i>           | x       |            |            |            | x       |          | III: 151            |

- 7 Basal leaves with hairs (2)+3+4+(5); style 1.2–2.2 mm, progressively enlarged in the siliqua; small flowers (petals 2–2.5 × 9–13 mm) weakly perfumed; ripe siliqua appressed to the stem ..... *E. virgatum* (I: 104)
- Basal leaves basal with hairs 2+[(3)]-fid ..... 8
- 8 Style 1.5–2 mm, seeds 1,5 × 0,6 mm, slightly leafy stems, siliqua appressed to the stem ..... *E. etruscum* (III: 158)
- Style 1.5–3 mm, very distinct than the siliqua; large flowers without perfume; siliqua nearly spreading ..... 21
- 9 Half-shrub, woody only at base ..... 10
- Plants herbaceous, rarely somewhat woody at base ..... 11
- 10 Petals from yellow-orange to brown-violet; flowers very perfumed; siliqua flattened 3–4 mm wide; stigma emarginate ..... *E. cheiri* (I: 101 + III: 151)
- Petals yellow; siliqua quadrangular 1–2 mm wide; stigma lobed-papillose ..... *E. brulloi* (I: 100 + III: 151)
- 11 Petals at the beginning of anthesis orange or yellow-orange; style 0.5–1 mm, progressively enlarged in the siliqua ..... *E. aurantiacum* (I: 97)
- Petals yellow ..... 12

Tab. 2: *Erysimum* in Italy: Chromosome base number x, ploidy level, chromosome number 2n, life form and informal group of relationship.

| species                  | x | ploidy level | 2n      | life form | group      |
|--------------------------|---|--------------|---------|-----------|------------|
| <i>cheiri</i>            | 6 | 2            | 12      | perennial |            |
| <i>bonannianum</i>       | 6 | 4            | 24      | perennial |            |
| <i>etnense</i>           | 6 | 4            | 24      | perennial |            |
| <i>crassistylum</i>      |   |              |         |           |            |
| ssp. <i>crassistylum</i> | 7 | 2            | 14      | biannual  | diffusum   |
| ssp. <i>garganicum</i>   | 7 | 6            | 42      | biannual  | diffusum   |
| ssp. <i>verresianum</i>  | 7 | 10           | 70      | biannual  | diffusum   |
| <i>etruscum</i>          | 7 | 2            | 14      | biannual  | diffusum   |
| <i>metlesicsii</i>       | 7 | 2            | 14      | biannual  |            |
| <i>maremmanum</i>        | 7 | 4            | 28      | biannual  | insubricum |
| <i>montis-argentarii</i> | 7 | 4            | 28+0-2B | biannual  | insubricum |
| <i>ligusticum</i>        | 7 | 6            | 42      | biannual  | insubricum |
| <i>insubricum</i>        | 7 | 6            | 42      | perennial | insubricum |
| <i>sylvestre</i>         | 7 | 2            | 14      | perennial | sylvestre  |
| <i>burnati</i>           | 7 | 2            | 14      | perennial | sylvestre  |
| <i>aurantiacum</i>       | 7 | 2            | 14      | perennial | sylvestre  |
| <i>collisparsum</i>      | 7 | 2            | 14      | perennial | sylvestre  |
| <i>pseudorhaeticum</i>   | 7 | 2            | 14      | perennial | sylvestre  |
| <i>majellense</i>        | 7 | 4            | 28      | perennial | sylvestre  |
| <i>rhaeticum</i>         | 7 | 8            | 56      | perennial | sylvestre  |
| <i>pignattii</i>         | 7 | 4            | 28      | perennial |            |
| <i>cheiranthoides</i>    | 8 | 2            | 16      | annual    |            |
| <i>repandum</i>          | 8 | 2            | 16      | annual    |            |
| <i>odoratum</i>          | 8 | 4            | 32      | biannual  | odoratum   |
| <i>virgatum</i>          | 8 | 6            | 48      | biannual  | odoratum   |
| <i>apenninum</i>         | 9 | 2            | 18      | perennial |            |
| <i>jugicola</i>          | 9 | 2            | 18      | perennial |            |
| <i>brulloi</i>           | ? | ?            | ?       | perennial |            |

- 12 Plants caespitose ..... 13
- Plants with isolated sprouts or at most with individual sterile rosettes that do not form a carpet, with clusters of small leaves at least in the upper axils ..... 18
- 13 Petals with hairs 2+[(3)]-fid outside, only lower leaves and rosettes leaves sometimes with petiole not much distinct, all other sessile; Style 0.8–1.5 mm, progressively enlarged in the siliqua ..... *E. sylvestre* (I: 107)
- Petals glabrous outside or with a few hairs on the middle nerve ..... 14
- 14 Petals glabrous outside ..... 15
- Petals with a few hairs on the outside middle nerve ..... 16
- 15 Rosette and basal leaves with very distinct petiole; style 1.8–3 mm, very distinct from the siliqua; stem angled, seeds > 2 mm long ..... *E. jugicola* (I: 107)
- Rosette and basal leaves sessile, stem almost cylindrical, seeds < 2 mm long ..... *E. burnati* (I: 97)
- 16 Petals with hairs (2) outside, style 1.5–3 mm, progressively enlarged in the siliqua; flowers strongly fragrant ..... *E. majellense* (I: 107)
- Petals with hairs ((2))+[(3)] outside, style 2–4 mm, very distinct from the siliqua; flowers slightly fragrant ..... 17

- 17 Petals deep yellow, 14–18 mm long ..... *E. etnense* (III: 150)  
 - Petals light yellow, 18–23 mm long ..... *E. bonannianum* (I: 99 + III: 148)
- 18 Style 0.5–1.5 mm long ..... *E. pseudorhaeticum* (I: 107)  
 - Style longer than 1.5 mm ..... 19
- 19 Style 1.5–2 mm long ..... 20  
 - Style longer than 2 mm ..... 24
- 20 Petals cuneate, glabrous or hairy outside, 4.2–5 × 16–20 mm; siliqua (50–) 57  
 (–66) mm long, style (1.9–) 2.2 (–2.5) mm long, no remains of previous inflorescences  
 ..... *E. rhaeticum* (I: 99)  
 - Petals spatulate, 4–5 × 14–16 mm, siliqua (51–) 54 (–59) mm long, style (2.3–)  
 2.5 (–2.6) mm long ..... *E. collisparsum* (I: 97)
- 21 Anthers hairy, siliqua longer than 50 mm, seeds 2 mm long ..... *E. insubricum* (II: 113)  
 - Anthers glabrous ..... 22
- 22 Plants 510–660 mm long, up to 830 mm at fruiting, with pedicels 4–6 (–7) mm  
 long and 10–12 mm when fruiting ..... *E. montis-argentarii* (II: 113)  
 - Plants shorter, with pedicels 1–4 mm long and 3–10 mm when fruiting ..... 23
- 23 Stems sparsely leafy, sepals 6–9 × 1.3–1.8 mm, angle 1 and 2: 20–30°  
 ..... *E. maremmanum* (II: 113)  
 - Stems densely leafy, sepals 8–12 × 0.9–1.3 mm, leaves with hairs longer than 0.5 mm,  
 angle 1: 50–60°, angle 2: 30° ..... *E. ligusticum* (II: 113)
- 24 Seeds 1.6–1.9 mm long, stems 390–720 (–860) mm long in flower, 680–760 mm  
 in fruit ..... *E. pignattii* (III: 161)  
 Seeds 1.8–2.5 mm long, stems 160–300 (–400) mm in flower and (200–) 290–400 mm  
 in fruit ..... *E. appeninum* (III: 153)

### Discussion

Twenty-five species of *Erysimum* are to be found in Italy, one of which is represented by 3 subspecies. Of these 27 taxa 16 are endemic to Italy (Table 1), some of restricted distribution. The highest number of different species is found in N-Italy, while *E. cheiri* is the only species which can be found in all parts of Italy.

The annual life form (Table 2) is only represented in Italy by two widespread species, namely *E. cheiranthoides* and *E. repandum*. Chromosome numbers are known for all species except *E. brulloi*; base numbers vary widely between  $x = 6, 7, 8, 9$ ; while ploidy levels from  $2n$  to  $10n$  are present. The base numbers 6 and 9 are found in perennial species only, while the base number 8 is found in monocarpic (annual and biannual) species only. Species with chromosome base number 7 display both, biannual and perennial life forms, as well as the widest variety in ploidy level from  $2n$  to  $10n$ . The groups provided in Table 2 are informal arrangements and do not represent validly published taxa. They are based on the author's observations in both nature and cultivation and are provided as an aid for further investigations.

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