

## A new species of *Matthiola* R. Br. (Brassicaceae) from Turkey

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A new species, *Matthiola trojana* T. Dirmenci, F. Satil & G. Tümen (Brassicaceae), is described from Turkey. Diagnostic characters, description, detailed illustrations, and taxonomic comments are given. Its characteristics are compared with the related species, *M. fruticulosa* (L.) Maire. The geographical distribution of the new species is mapped. The World Conservation Union (IUCN) threat category and observations on the population are noted. © 2006 The Linnean Society of London, *Botanical Journal of the Linnean Society*, 2006, 151, 431–435.

ADDITIONAL KEYWORDS: endemic – Kazdağ – *Matthiola fruticulosa* – taxonomy.

### INTRODUCTION

Some *Matthiola* R. Br. specimens were collected from B1 Balıkesir province during the Project of Flowering Plants of Kazdağ National Park supported by the TUBİTAK/YDABAG. They were similar to *Matthiola fruticulosa* (L.) Maire, but could not be identified using the *Flora of Turkey* (Cullen, 1965). After a thorough examination of all Turkish *Matthiola* sp. in herbaria (ANK, GAZI, HUB, ISTE) and consultation of the relevant literature (Ball, 1993; Cullen, 1965; Franzen, 1986; Davis, Mill & Tan, 1988; Livaniou-Tiniakou, 2002), it was concluded that the Balıkesir specimens represented a hitherto undescribed species. The total number of *Matthiola* species known from Turkey is now ten.

**MATTHIOLA TROJANA** T. DIRMENCI, F. SATIL & G. TÜMEN, **SP. NOV.** (FIGS 1, 2)

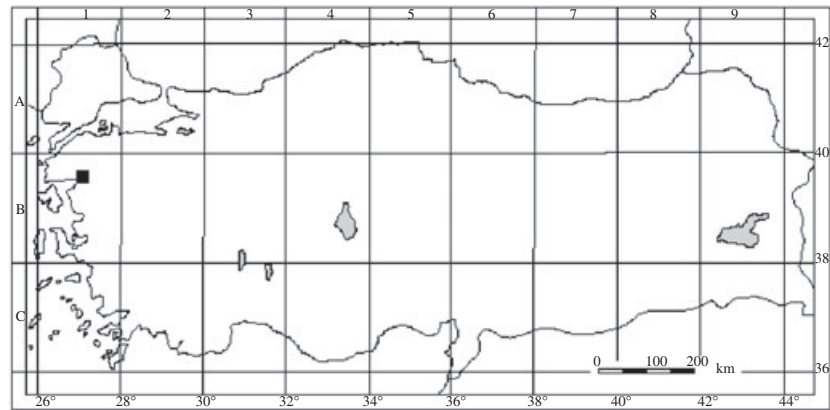
*Diagnosis:* Similis *M. fruticulosae* (L.) Maire sed caulibus brevibus, 2–9 cm (non 15–60 cm), foliis pin-

natisectis (non integris vel sinuatis), siliquae falcate differt.

*Type:* [Turkey]: B1 Balıkesir, Edremit, Kazdağ (Ida), Nanekırı place, rocky slopes, limestone, 1550 m, 5.vi.2004, T. Dirmenci (2522) & F. Satil (holo: ISTE, iso: ANK, EGE, GAZI).

*Description:* Caespitose perennial, scapose, woody at the base. STEM erect or ascending (2–) 3–9 cm, unbranched, stellate and dendroid hairy with sparse to dense minute yellowish glands. BASAL LEAVES (8–) 10–30 (–40) × 1–4.5 mm, linear-lanceolate to lanceolate in outline, pinnatifid to pinnatisect, acute to obtuse, stellate and dendroid hairy with minute yellowish glands, lateral lobes triangular to lanceolate, up to 4 mm. INFLORESCENCE a raceme, up to 5 cm, 3–10 flowered. Pedicel short, elongating to 4 mm in fruit. SEPALS 8–11 × 1.5–2 mm, oblong, acute to obtuse, outer sepals saccate, stellate hairy with sparsely minute yellowish glands, scarious margin 0.1–0.2 mm. PETALS pinkish to purplish, often turning brownish when dried, 14–18 × 3–5 mm, glabrous, obovate, rounded or rarely slightly emerginate at apex, clearly undulate and sometimes circinnately rolled. Siliqua (30–) 35–70 × 1.4–1.6 mm, terete, spreading, falcate, stellate hairy with minute yellowish glands. Stigma to

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**Figure 1.** Distribution map of *Matthiola trojana* (■) in Turkey.

0.5 mm, narrower than siliqua, horns absent or if present not more than 0.5 mm, valves clearly 1-veined. SEEDS 2–2.5 × 1–1.2 mm, oblong, winged, brownish.

*Phenology:* Flowering and fruiting June–July.

*Habitat:* Open rocky slopes in *P. nigra* forests, 1550–1600 m.

*Material examined:* [Turkey] B1 Balıkesir: Edremit, Kazdağ (İda), Nanekırnı place, limestone, 1600 m, 30.vi.2004, *T. Dirmenci* 2604 & *F. Satıl*; *ibid*, 09.viii.2004, *T. Dirmenci* 2927 & *F. Satıl*; *ibid*, 07.vi.2005, *T. Dirmenci* 3031; *ibid*, 20.vii.2005, *T. Dirmenci* 3082.

*Etymology:* The species epithet is taken from the name of the district in which it occurs.

*Distribution and proposed conservation status:* *Matthiola trojana* is endemic to Kazdağ (İda)-Balıkesir, West Anatolia, and belongs to the Mediterranean element of the Turkish flora. It is known only from a single population at the type locality and from an area of approximately 5000 m<sup>2</sup>. The population is not in good condition and the number of individuals is approximately 100–150. Therefore, it should be regarded as belonging to the World Conservation Union (IUCN) Critically Endangered (CR) threat category (IUCN, 2001).

*Ecology:* *Matthiola trojana* grows on open rocky slopes in *P. nigra* forests. Species growing with *M. trojana* at the type locality include: *Allium kurtzianum* Asch. & Sint., *Astragalus heldrechii* Boiss., *Astragalus idae* Sirj., *Centaurea odyssei* Wagenitz, *Cerasus prostrata* (Lab.) Ser. var. *prostrata*, *Dianthus*

*erinaceus* Boiss. var. *alpinus* Boiss., *Draba brunifolia* Stev. ssp. *olympica* (Sibth. ex DC.) Coode & Cullen, *Iberis saxatilis* L. ssp. *saxatilis*, *Onobrychis* sp., *Papaver strictum* Boiss. & Bal., *Salvia argentea* L., *Sedum album* L., *Sedum lydium* Boiss., *Sideritis trojana* Bornm., *Sorbus umbellata* (Desf.) Fritsch var. *cretica* (Lindl.) Schneider, and *Thymus sipyleus* Boiss. ssp. *sipyleus* var. *sipyleus*.

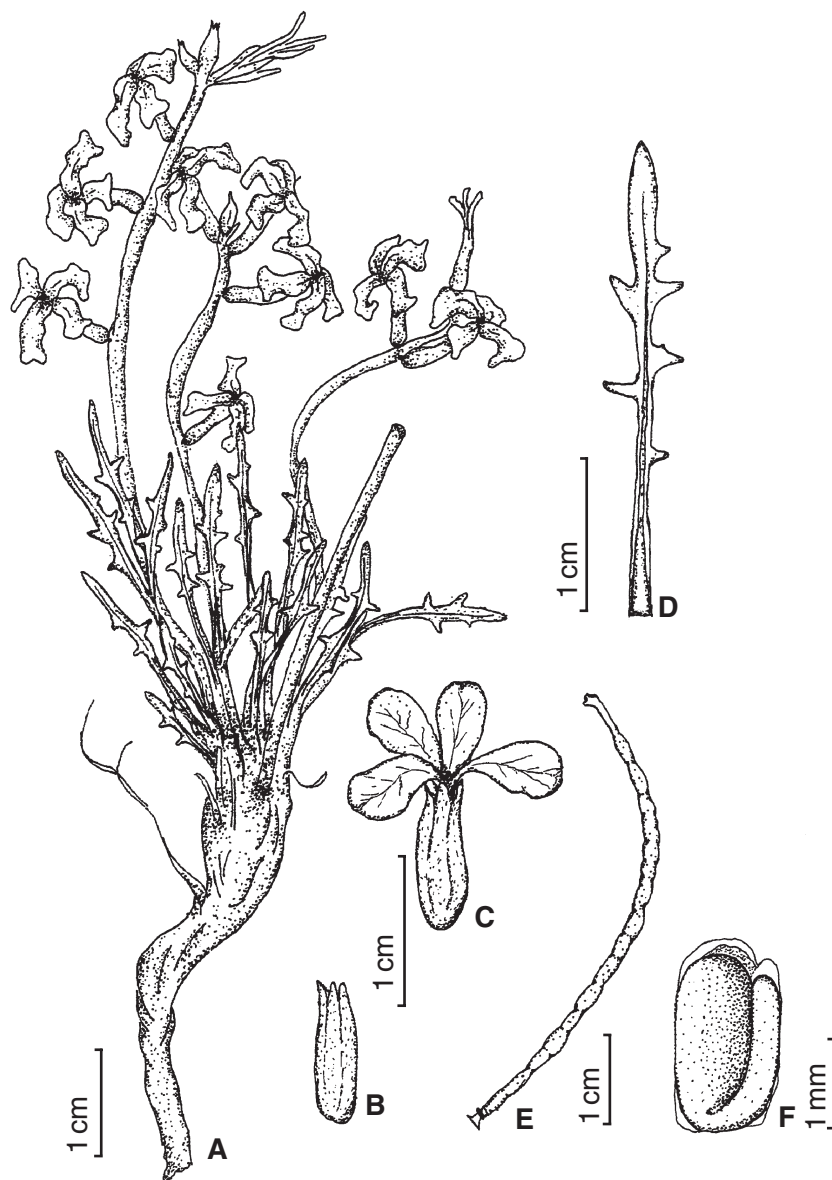
## DISCUSSION

*Matthiola trojana* is endemic to Turkey and was collected from Balıkesir province by the authors. *M. trojana* is related to *M. fruticulosa* according to the *Flora of Turkey* (Cullen, 1965), *Flora of Europaea* (Ball, 1993), and *Flora Hellenica* (Livaniou-Tiniakou, 2002).

*Matthiola fruticulosa* is morphologically very variable and was divided into the three subspecies *M. fruticulosa* ssp. *fruticulosa*, *M. fruticulosa* ssp. *valesiaca* (Gay ex Gaudin) P.W. Ball, and *M. fruticulosa* ssp. *perennis* (Conti) P.W. Ball in *Flora of Europaea* (Ball, 1993) and *Flora Hellenica* (Livaniou-Tiniakou, 2002). Only one subspecies, *M. fruticulosa* ssp. *fruticulosa*, occurs in Turkey.

As shown in Table 1, *M. trojana* can be easily distinguished from *M. fruticulosa* ssp. *fruticulosa* by its short stems (2–) 3–9 cm [not (5–) 15–40 (–60) cm], unbranched (not laxly branched) and glandular stems (not eglandular), pinnatipartite to pinnatisect leaves (not entire to sinuate lobed), pedicel to 4 mm in fruit (not 0.5–1.5 mm), yellow glandular (not eglandular), spreading (not patent or deflexed) and falcate siliqua, valves clearly 1-veined (not 1–3-veined), and bigger seeds, 2–2.5 × 1–1.2 mm (not 1–1.5 × 0.8–1 mm).

*Matthiola trojana* is allied to *M. fruticulosa* ssp. *valesiaca*, but can be distinguished from ssp. *valesiaca*



**Figure 2.** Illustration of *Matthiola trojana*: A, habit; B, calyx; C, flower; D, leaf; E, fruit; F, seed.

by its short stems (2–) 3–9 cm [not (6–) 15–40 (–60) cm], pinnatifid to pinnatisect leaves (not entire to sinuate lobed) (Fig. 3), pedicel to 4 mm in fruit [not (0.5–) 1–2 mm], spreading (not ± erect) and falcate siliqua, valves clearly 1-veined (not 1–3-veined), and bigger seeds, 2–2.5 × 1–1.2 mm (not 1–1.5 × 1–1.5 mm).

It differs from *M. fruticulosa* ssp. *perennis* as follows: yellow glandular (not eglandular) and narrower siliqua, 1.4–1.6 mm (not 2–3 mm), valves clearly 1-veined (not 3–5-veined).

According to some morphological properties, *M. trojana* is allied to *M. fruticulosa*. However, it differs from *M. fruticulosa* in its shorter stems (less than

10 cm), pinnatifid to pinnatisect leaves, and spreading and falcate siliqua.

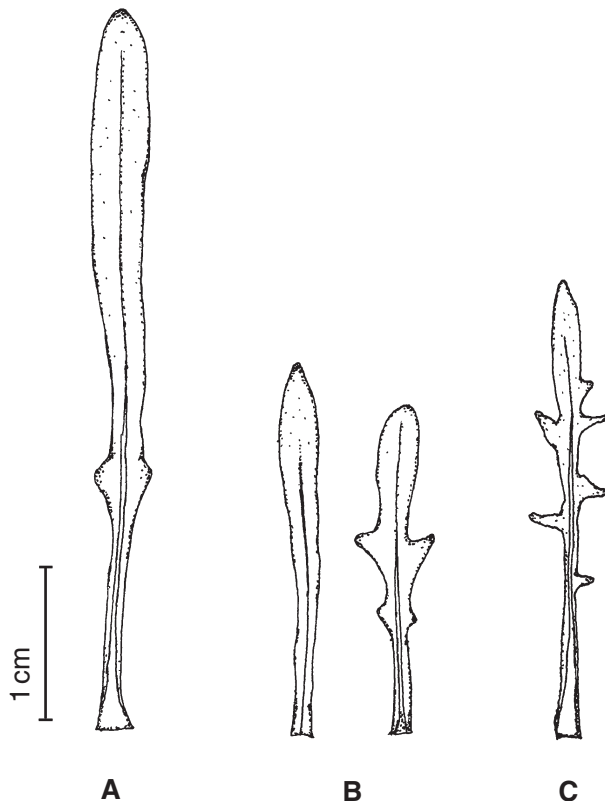
Because of the characters mentioned above, the Kazdağ population is described as a species new to science.

#### ACKNOWLEDGEMENTS

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**Table 1.** Characters used to distinguish between *Matthiola trojana* and *M. fruticulosa* ssp.

	<i>M. trojana</i>	<i>M. fruticulosa</i> ssp. <i>fruticulosa</i>	<i>M. fruticulosa</i> ssp. <i>valesiaca</i>	<i>M. fruticulosa</i> ssp. <i>perennis</i>
Stem	(2–) 3–9 cm, unbranched, glandular	(5–) 15–40 (–60) cm, laxly branched, eglandular	(6–) 15–40 (–60) cm, glandular	–
Leaves	Linear-lanceolate to lanceolate, pinnatifid to pinnatisect	Linear or narrowly oblanceolate, subentire to sinuate lobed	Linear to oblong, entire to sinuate lobed	–
Pedicel in fruit	To 4 mm	0.5–1.5 mm	(0.5–) 1–2 mm	–
Petal	14–18 × 3–5 mm, slightly emerginate, undulate, circinnately rolled	(15–) 22–25 × 3–5 (6) mm, emerginate, undulate margin	(12–) 20–22 (–25) × (2.5–) 3–4 mm, slightly emerginate, undulate margin	–
Siliqua	1.4–1.6 mm wide, spreading, falcate, terete, glandular, valves 1-veined	1–1.5 (–2) mm wide, patent or deflexed, eglandular, valves 1–3-veined	1.5–1.8 (–2) mm wide, erect glandular, valves 1–3-veined	2–3 mm wide, erect, eglandular, valves 3–5-veined
Stigma	c. 0.5 mm	c. 1.5 mm	c. 1 mm	–
Seed	2–2.5 × 1–1.2 mm, oblong, winged	1–1.5 × 0.8–1.2 mm, oblong	1–1.5 × 1–1.5 mm, ovoid	–

**Figure 3.** Comparison of leaf type: A, *Matthiola fruticulosa* ssp. *valesiaca*; B, *Matthiola fruticulosa* ssp. *perennis*; C, *Matthiola trojana*.

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## APPENDIX

SPECIMENS EXAMINED OF *MATTHIOLA FRUTICULOSA* (L.) MAIRE SUBSP. *FRUTICULOSA*

Europe: Macedonia occidentalis, Distr. Kozani, in declivibus marnosis denudates prope pontem trans Aliakman flumen inter Kozani et Servia, c. 400 m, 13.vii.1956, *K.H. Rechinger 1773 5* (W).

Turkey: A1 Tekirdağ: Kasatura, sahildeki kum-luklar, ix.1994, *N.Özhatay*, ISTE 69852; Kırklareli:

*İgneada langosu*, vii.1993, 5 m, *A.J.Byfield* (B 275), ISTE 65879; Kırklareli: *İgneada* ile liman arası, 27.vi.1974, *N.E. Özhatay*, ISTE 30033; Kırklareli: Kasatura, kumluk tepeler, 11.viii.1976, *A. & T. Baytop*, ISTE 11975; A2 (E) İstanbul: Kilyos Gümüşdere arasındaki kumluklar, iv.1993, *A. Byfield* (B40), ISTE 64866; İstanbul: Kilyos kumlukları, v.1971, *R. Gezgin*, ISTE 21002, İstanbul: Terkos gölü sahili, 2.vii.1969, *A. Baytop*, ISTE 15548.

SPECIMENS EXAMINED OF *MATTHIOLA FRUTICULOSA*  
(L.) MAIRE SSP. *VALESIACA* (GAY EX GAUDIN)  
P.W. BALL

Greece: N. Central, in regione inferiori Olympi, Thessali ad 'Hagios Dionysios' Orphanides 3695 (Type photo!) (G-Boiss). 0.5 km S. of 'Olympus-lyritsa' campsite, Mt. Litochoran station, scree at base of low cliff, sea level, 14.vii.1973 JR. AKEROYD No:18, E00203412. Thessaly: Mt. Olympus to Litochoron; very dry, stony slopes south facing among rock; buff-yellow; 5.500 ft, 30.vii.1964, Coll. J.C. Archibald, No: 405, E00203411. Fl Helvetica: Wallis. 'In den Wickern'. 5.85, F. O. Wolf. E00203409,

E00203408. *M. Varia* Sibth. Et Sm. Fl. Graec. VII. t. 636. (sub *Cheirantho*) ist nanch Boissier a. a. O. von der durch Wallis, Südtirol und Friaul verbreiteten. *M. valesiaca* J.Gay durch doppelt grössere Blüten verschieden. In confinibus Carinthiae et Venetiae in glareosis et arenosis ad ripam fluvii Fellae. Picher. E00203407.

SPECIMENS EXAMINED OF *MATTHIOLA FRUTICULOSA*  
SSP. *PERENNIS* (CONTI) P.W. BALL

Province Santander, Pecos de Europa. Fuerto Dé limestone cliffs and screes near path around La Colledena and Cuetos de Juan Torikio, 1800–1900 m, 5.vii.1978, Coll. P.Harold&RJD. McBeath No:094, E00203414. Province Leon. Picos de Europa. West slopes of alto de Valdean near Sta. Marina de Valdean, hard limestone. 1300 m, 9.vii.1978, Coll. P.Harold&RJD. McBeath No:229, E00203413. Dist. Ovideo:Santander:Leon: Picos de Europa main massif near Refugio Aliva. 1750 m. Fixed scree slope. Damp, near snow patch. Below cliff on East Face Peria Vieja, 3.viii.1960, D.W. Dresser No:1319, E00203415.