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## A new species of *Isatis* (*Brassicaceae*) from the Pollino National Park (Basilicata, S Italy)

### Abstract

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A new species, *Isatis raimondoi* (*Brassicaceae*) is described from Mt Alpi in the Pollino National Park (Basilicata, Southern Italy). Its relationships with the other species of *Isatis* occurring in Italy are examined.

*Key words*: endemism, vascular flora, woad, phytodiversity, conservation.

### Introduction

*Isatis* L. (*Brassicaceae*) is an Eurasian genus including 79 species (Al-Shehbaz & al. 2006). It is one of the most difficult cruciferous genera from the taxonomic point of view (Moazzeni & al. 2010). Some species are, in fact, highly polymorphic in fruit morphology, the structure that provide the most diagnostic character (Davis 1965). In addition, due to the extreme variability in all morphological characters, the limits of many species are uncertain (Ball & Akeroyd 1993; Moazzeni & al. 2008). Most, if not all, diagnostic characters used in earlier classifications are very variable and because of the unreliability of vegetative and floral characters it is difficult or impossible to identify many specimens when mature fruits are missing (Davis 1964). The patterns of variation suggest that hybridisation may be widespread (Moazzeni & al. 2008). Moreover, intermediate specimens are rather frequent, even between some taxa that are morphologically easily recognisable (Moazzeni & al. 2008). In Italy, according to Conti & al. (2005), *Isatis* includes three species: *I. apennina* Grande (= *I. allioni* P. W. Ball), endemic to Italy and France (south-west Alps and central Apennine), *I. praecox* Tratt., European taxon restricted to Lombardia, and *I. tinctoria* L., Asiatic species widespread in central and south Italy. Floristic investigations in the Pollino National Park (on the Lucanian side) led to the discovery of a little population consisting of individuals that show peculiar morphological characters. The study of this group resulted in the description and illustration of a species new to Science here described and discriminated from the related taxa.

*Isatis raimondoi* Di Grist., Scafidi & Domina, **sp. nov.** (Fig.1)

*Holotype*: Basilicata, Pollino National Park, Mt Alpi (Latronico, Potenza), 40° 7' 9.65" N, 15° 59' 16.95" E, carbonate stony slopes, 1750 m a.s.l.", 11 July 2014, *Scafidi & Di Gristina s. n.* (PAL102699). *Isotypes*: PAL-Gr, FI.

*Etymology*: Plant named after Prof. Francesco Maria Raimondo, Italian botanist and promoter of the *Herbarium Mediterraneum Panormitanum*, for his 70th birthday.

Biennial herb. Stems erect, (30)40–90(100) cm, simple or branched above, hirsute or sparsely hairy at the base. Basal leaves simple with slender petiole shorter or approximately equaling lamina, usually withered at anthesis; lamina glaucous or green, (2)2.5–5(5.5) × (7.5)8–13(14) cm, lanceolate-oblong to obovate-oblong, entire or repand-dentate, obtuse to subacute, attenuate into petiole, hirsute-pubescent, seldom sparsely hairy, on both surface. Cauline leaves sessile-amplexicaul, 0.5–1.5 × 3–8(9) cm, astate to oblanceolate, entire, obtuse to subacute, sparsely hairy, with rounded auricles. Inflorescence a large corymbose panicle. Pedicells slender, 0.7–1.0 cm long, patent in fruit. Sepals 2–2.5 (3) mm, erecto-patent, yellow-greenish, glabrous, with membranous margin. Petals 3–3.5(4) mm, obovate, yellow glabrous. Silicula patent, 4–6 × 11–13 mm, elliptical or elliptical-obovate, rounded or emarginate at apex, tapering or rounded at base, glabrous; central rib simple, slender to prominent.

*Biological form*: Biennial hemicryptophyte.

*Phenology*: Flowering June. Fruiting in July.

*Distribution and ecology*: *Isatis raimondoi*, occurs exclusively on Mt Alpi (Latronico, Potenza province), within the Pollino National Park (Fig. 2 & 3). Actually only a small population of about 150 individuals is known. It grows on north-exposed carbonate rocky slopes, at the upper border of *Fagus sylvatica* L. wood, between 1.700 and 1.850 m of elevation. Within this narrow mountain belt, it grows together with *Festuca circummediterranea* Patzke, *Cerastium tomentosum* L., *Sideritis taurica* Willd., *Centaurea deusta* Ten. subsp. *deusta*, *Vicia onobrychioides* L., *Edraianthus graminifolius* (L.) A. DC. subsp. *graminifolius*, *Clinopodium alpinum* subsp. *meridionale* (Nyman) Govaerts, *Pedicularis comosa* L. subsp. *comosa*, *Achillea rupestris* subsp. *lucana* (Pignatti) Greuter, *Narcissus poeticus* L., *Myosotis sylvatica* subsp. *elongata* (Strobl) Grau, etc.

*Conservation Status*: The new species, known only from the type locality in an area of about 2 ha. The population can be estimated in only 150 mature individuals. According to the IUCN Criteria (IUCN 2001) it can be classified as Critically endangered (CR B2a) due to its punctual distribution and reduced population size.

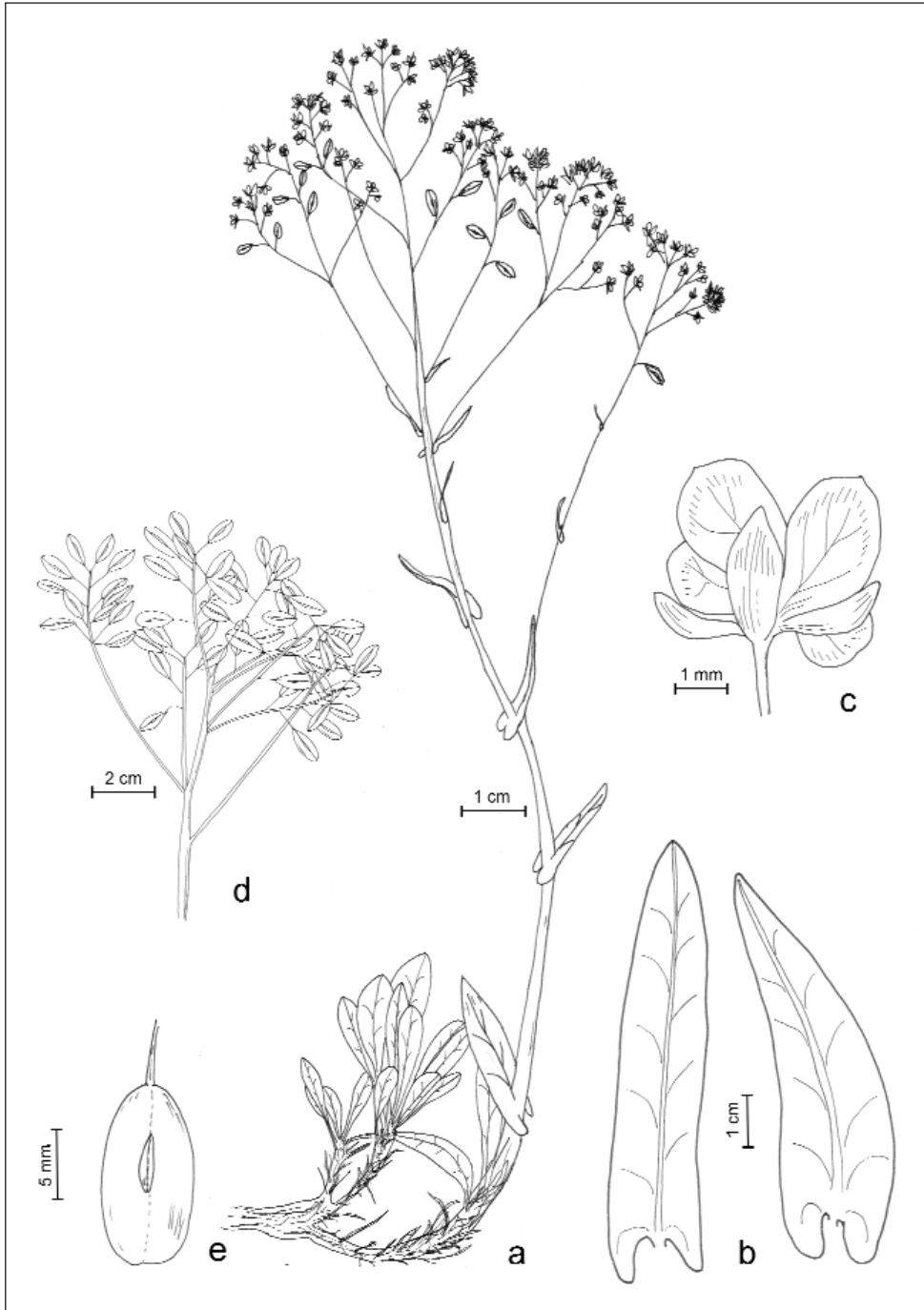


Fig. 1. *Isatis raimondoi*: a) habit, b) cauline leaves; c) flower; d) fruiting branch; silicula (Drawings by G. Domina).

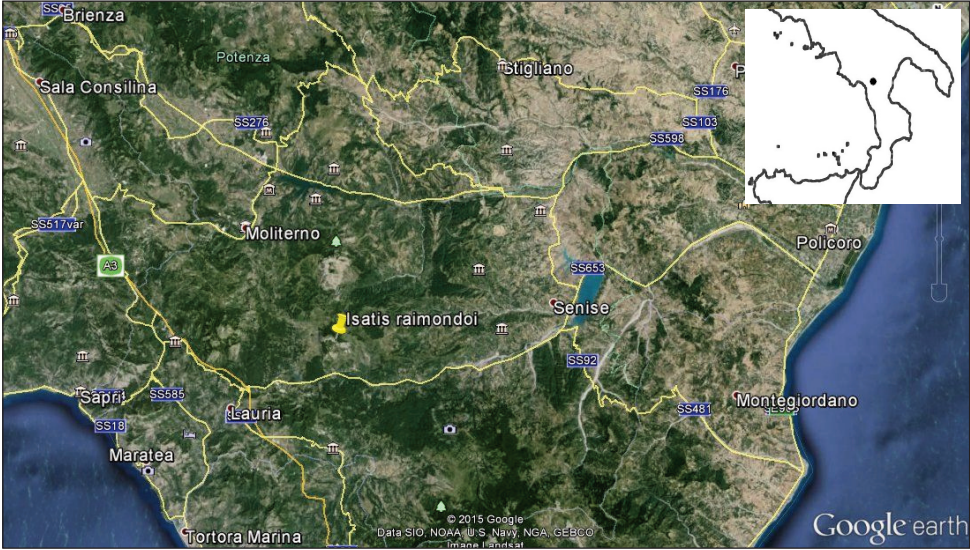


Fig. 2. Geolocation of the locus classicus of *Isatis raimondoi*.



Fig. 3. *Isatis raimondoi* in its natural habitat.

Taxonomic relationships: *Isatis raimondoi* strictly differs from the other Mediterranean species of *Isatis* by bearing the silicules patent rather than pendulous. The diagnostic characters with the other species of *Isatis* occurring in Italy are summarized in Table 1 and Fig. 4. *Isatis raimondoi* is taxonomically close to *I. tinctoria* but differs from it by the rounded (not acute) auricles of the cauline leaves and the short silicula with a ratio length/width of 2.1–2.75 instead than 4.8–5.3.

Table 1. Diagnostic characters of the species of *Isatis* occurring in Italy.

| Character / Taxon  | <i>I. raimondoi</i> | <i>I. tinctoria</i> | <i>I. apennina</i> | <i>I. praecox</i> |
|--------------------|---------------------|---------------------|--------------------|-------------------|
| lifecycle          | biennial            | biennial            | perennial          | biennial          |
| Leaves auricles    | rounded             | acute               | rounded            | acute             |
| Petal length (mm)  | 3–3.5(4)            | (2.5)3–4            | 4–5                | 2.5–3             |
| Silicula direction | patent              | pendulous           | pendulous          | pendulous         |
| Silicula size (mm) | 4–6 × 11–13         | 3–6 × 16–29         | 8–10 × 16–29       | 3–6 × 7–14        |

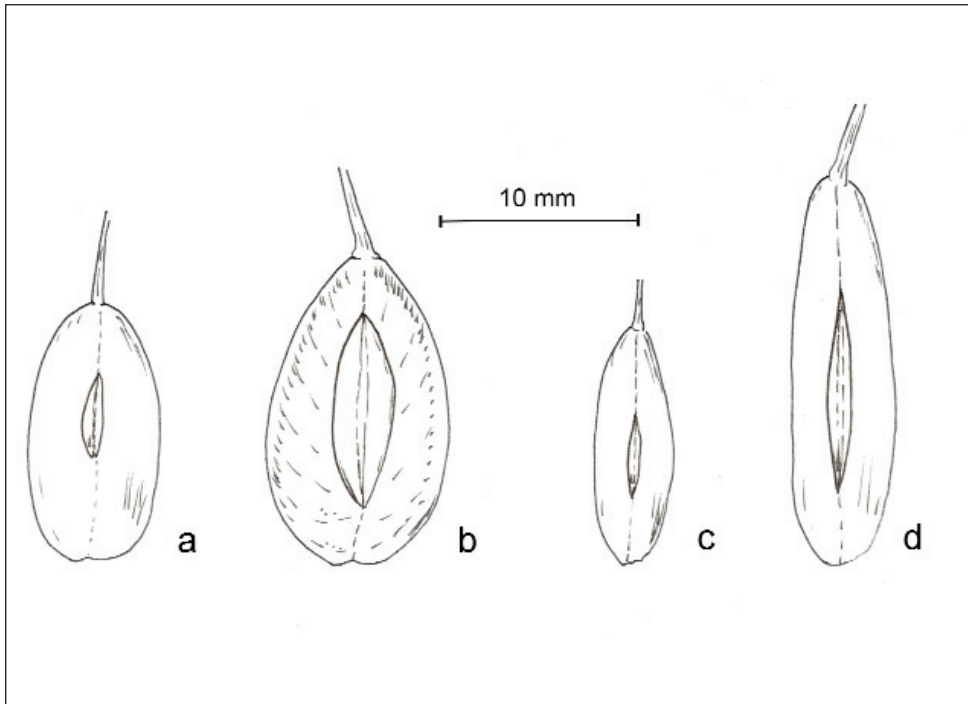


Fig. 4. Comparison of the silicules of: a) *I. raimondoi*; b) *I. apennina*; c) *I. praecox*; d) *I. tinctoria* (drawings by G. Domina).

### Other studied specimens

#### *Isatis raimondoi*

Italy, Basilicata: Pollino National Park, Mt Alpi (Latronico, Potenza), 40° 7' 9.65" N, 15° 59' 16.95" E, carbonate stony slopes, 1750 m a.s.l.", 10 June 2015, *Scafidi & Di Gristina s. n.* (PAL).

#### *Isatis apennina*

Italy, Piemonte: Mount Viso (Hautes Alpes), 1899, *A. Jordan s. n.* (PAL); Mt. Viso, s. d., *A. Jordan s. n.* [sub. *I. alpina*] (PAL); Mount Vizo, s. d., *Dauphiné Huguenin, s.n.* (PAL); Abruzzo: M.te Corno, s.d., *Orsini s. n.* (PAL); Abruzzo, P.so Portella, Gran Sasso, 2210 m, 6 Aug. 1996, *Ina Dinter 4728a.* (PAL-Gr38477).

#### *Isatis praecox*

Italy, Lombardia: Rupi del Lago Sebino, P. di Bergamo (PAL); Makedonja: in lat. Boreo-occ. Montis Galicia supra vicum Trpeja, alt. 1000 m, 9.7.1976, *W. Greuter 13853.* (PAL-Gr25247); Transylvania: Langenthal, in collibus apricis argillosis, 300 a s.m., 5.5.1893, *Bart s.n* (P5349021); in apricis collium junta Maros Solymos, solo argillacea, 200 m s. m., s. d., *Simkovics 578,* (P104177373); *sine loco, s. d., Kitaibel P. s. n.* (W8668, original material).

#### *Isatis tictoria*

Italy, Sicily: Presso il Parco, Maggio, s. d., *Todaro* (PAL); Sicani, Monte Carcaci, 37°42'N-13°29'E, 900-1100 m a.s.l., calcareous soil, 01/06/1990, *Raimondo et al. 651* (PAL); Sciacca, Gole della Tardara, 37°33'N-13°00'E, 50-200 m a.s.l., calcareous soil, 02/06/1990, *Raimondo et al. 875* (PAL); Greece: Lakonia, ep. Lakedhemona, between Mistras and Aj. Joannis Gorge naer Paroreou, alt 300 m, 37°03'50"N, 22°22'50"E, cliffs and scree, limestone, 2 April, Plants from Peloponnisos, Greece, *W. Greuter & B. Zimmer 24260* (PAL-Gr46537); Spain: Sierra de Gador: Fondon, Cortijo de Bolichas, Pena Horadada, Prov. Almería, Altim. 1450-1600, Hab. calcareous soils, 18/06/88, *B. Valdes et al. 790/88b* (PAL-Gr64352); Albania: Devoll-Tall, Gramshi, zwischen kokla und Bratila, 500-600 n, Serpentin, 7/5/1960, F.K. Meyer 5495 (PAL-Gr52703)

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### References

- Al-Shehbaz, I. A., Beilstein, M. A. & Kellogg, E. A. 2006: Systematics and phylogeny of the *Brassicaceae* (*Cruciferae*): An overview. – *Pl. Syst. Evol.* **259**: 89-120. doi: 10.1007/s00606-006-0415-z
- Ball, P. W. & Akeroyd, J. R, 1993: *Isatis* L. – Pp. 324-325 in: Tutin, T. G., Burges, N. A., Chater, A. O., Edmondson, J. R., Heywood, V. H., Moore, D. M., Valentine, D. H., Walters, S. M. &

- Webb, D. A., *Flora Europaea*, 2° ed, **1**. – Cambridge.
- Conti, F., Abbate, G., Alessandrini, A., & Blasi, C. 2005: An annotated checklist of the Italian vascular flora. – Roma.
- Davis, P. H. 1964: Materials for a Flora of Turkey, VIII *Cruciferae* 1: *Isatis*. – Notes Roy. Bot. Gard. Edinb. **26**: 11-25.
- 1965: *Isatis*.– Pp. 287-307 in: Flora of Turkey and the East Aegean Islands, **1**. – Edinburgh.
- IUCN 2001: Red List Categories, Version 3.1 – Gland & Cambridge.
- Moazzeni, H., Zarre, S. & Maroofi, H. 2008: *Isatis* L. (*Brassicaceae*) in Iran: A new record and a new synonym. – Turk. J. Bot. **32**: 243-247.
- , —, Al-Shehbaz, I. A. & Mummenhoff, K. 2010: Phylogeny of *Isatis* (*Brassicaceae*) and allied genera based on ITS sequences of nuclear ribosomal DNA and morphological characters. – Flora **205**: 337-343. doi:10.1016/j.flora.2009.12.028

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