

A new species of *Pastinaca* L. (Apiaceae) from Turkey

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A new species, *Pastinaca yildizii* T.Dirmenci (Apiaceae), is described from Kazdağı (Ida) in Balikesir province, Turkey. It is distinguished from *P. armena* by the number of rays, petal colour and mericarp surface features. A description, detailed illustrations and taxonomic comments on the new species are given. An identification key is provided and the distribution of this new and other related species is discussed. © 2008 The Linnean Society of London, *Botanical Journal of the Linnean Society*, 2008, 158, 296–300.

ADDITIONAL KEYWORDS: endemic – Kazdağı – taxonomy – Umbelliferae.

INTRODUCTION

The genus *Pastinaca* L. is small, comprising *c.* 14 taxa distributed in Europe and Asia (Schischkin, 1951). Menemen & Jury (2001a) stated that the genus is represented by eight species and four subspecies, and reported an uncertain position and status of three species [*P. aurantiaca* (Alb.) K.-Pol., *P. chrysantha* (Alb.) K.-Pol. and *P. glandulosa* Boiss. & Hausskn. ex Boiss.]. Five species and one imperfectly known endemic species, namely *P. trysia* Stapf. & Wettst., were recorded in the *Flora of Turkey* (Chamberlain, 1972).

Some interesting *Pastinaca* specimens with flowers were collected by the author on a botanical expedition from Kazdağı in Balikesir province in 2004. The area was revisited and fruiting specimens were collected in 2006. These specimens were studied in herbaria (ANK, GAZI, HUB, ISTE, ISTF, ISTO) and compared with the *Flora of Turkey*, *Flora Europaea*, *Flora USSR* and other literature (Linnaeus, 1753; Boissier, 1872; Schischkin, 1951; Tutin, 1968; Chamberlain, 1972; Hartvig, 1986; Rechinger, 1987; Menemen & Jury, 2001a, b; Özhatay & Kültür, 2006). It was established that the specimens do not resemble any previously described species. The author has concluded that they represent a hitherto undescribed species allied to *Pastinaca armena* Fisch. & Mey.

DESCRIPTION

PASTINACA YILDIZII T.DIRMENCI, SP. NOV.

(FIGS 1, 2)

Type: Turkey. B1 Balikesir: Edremit, Kazdağı (Ida) above Mehmetalan village, Nanekırı place, in open places in *Pinus nigra* Arn. forest, 1600 m, 14.ix.2006, T. Dirmenci 3350 (holo: GAZI; iso: ANK, HUB, EGE, ISTE).

Diagnosis: *P. armenae* Fisch. & Mey. affinis, sed umbellae radiis (2–)3(–4) (non 5–10), petalis purpureis (non flavis) et extus pilosis (non glabris), fructibus sparsim scabris (non glabris vel sparsim pubescentibus) distinguitur.

Description: Erect biennial or perennial, fibrous collar absent. STEMS much branched from base, 30–60 cm, grooved, sparsely glandular-hispid at base, glabrous to scaberulous above. LEAVES rosette forming, one-pinnate, oblong in outline, 5–15 cm with petiole, densely glandular-hispid; leaflets 6–8 paired (rarely 5), broadly ovate to oblong, 0.8–1.5 × 0.6–1 cm, sessile, deeply lobed, lobes sometimes dentate, veins clearly visible on lower surface; upper leaves reduced, lanceolate, long acuminate, densely scaberulous above, margins membranous and densely long ciliate. UMBELS mainly terminal on stem and lateral branches, sometimes axillary, rays (2–)3(–4), unequal,

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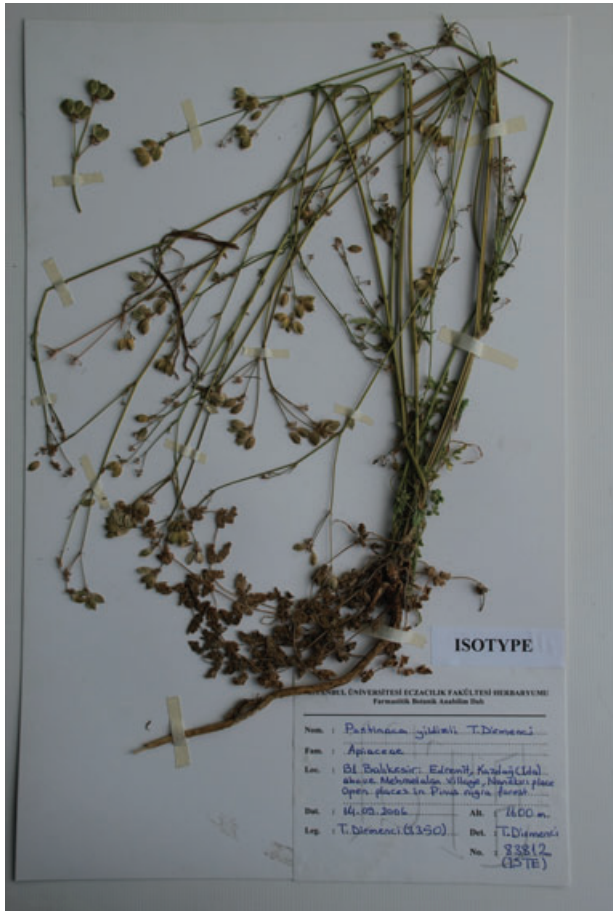


Figure 1. Habit of *Pastinaca yildizii* T.Dirmenci (isotype: *T. Dirmenci* 3350).

1–4 cm; umbellules *c.* 15 flowered; bracts 2–3, *c.* 5 mm, linear, persistent; bracteoles 5, persistent, 3–5 mm, linear-setaceous. FLOWERS pedicellate, pedicel 1–3 mm, to 5 mm in fruit, densely scaberulous. SEPALS absent. PETALS purple, equal, *c.* 1 mm, hairy to three-quarters on outer surface from base; ovary cylindrical, densely scaberulous; stamens 5, alternating with petal, anther yellow, filaments equal to \pm petals. FRUIT 5–7 \times 3.5–4.5 mm, oblong to obovate, sparsely scabrous all surface, strongly compressed dorsally, dorsal ridges prominent, not winged, lateral ridges narrowly winged, wing 0.4–0.5 mm, dorsal vittae 4, commissural vittae (2–)4, reaching the ends of the fruit or not.

Phenology: Flowers and fruits from June to September.

Habitat: Calcareous area in open places in *Pinus nigra* forest and alpine steppes, 1500–1700 m.

Specimens examined: *P. yildizii*: Turkey. B1 Balıkesir: Edremit, Kazdağı (İda mt.) above Mehmetalan village, Nanekırı place, 1600 m, in open places in *Pinus nigra* forest, 30.vi.2004, *T. Dirmenci* (2610) & *F. Satıl* (ADO); *ibid.* 9.viii.2004, *T. Dirmenci* 2925 (ADO); *ibid.* 24.vii.2006, *T. Dirmenci* 3318 (ADO); *ibid.* Zığındere valley, 1500–1600 m, open places in *Pinus nigra* forest, 24.vii.2006, *T. Dirmenci* 3308a (ADO); *ibid.* south of Sarıkız hill, calcareous area in alpine steppe, 1700 m, 24.vii.2006, *T. Dirmenci* 3308b (ADO). *P. armena* Fisch. & Mey. subsp. *armena*: A8 Rize: İkizdere, between Gölyayla and Cihan hill, 2700 m, alpine meadow, 25.vii.1985, *A. Güner* (6618) & *M. Vural* (HUB); A8 Rize: İkizdere, Başköy (Cimil), 2100 m, 24.vii.1984, *A. Güner* 6058 (GAZI); A9 Kars: Posof, Kadiyan, 1900–2050 m, 5.viii.1982, *N. Demirkuş* 1783 (HUB); A9 Ardahan: Hoçvan, Kısırdağı, Güvercinlik, 17.vii.1981, *N. Demirkuş* 1198 (HUB); B6 Malatya: Akçadağ, 18.vii.1954, *Davis* (21930) & *Polunin* (E); B7 Erzincan: Çayırılı-Erzincan, 3 km, Başköy, 1950 m, 15.vii.1988, *Nydegger* 43766 (E); B8 Erzurum: 28 km from Varto to Hınıs, 1700 m, 11.vii.1966, *P.H. Davis* 46263 (ISTO); 29 km from Hınıs to Pasinler, water meadows, 1800 m, 12.vii.1966, *Davis* 46406 (E).

Conservation status: *Pastinaca yildizii* is endemic to Kazdağı-Balıkesir, west Anatolia, and a Mediterranean phytogeographical region element. The new species is known only from Kazdağı between 1500 and 1700 m, where its distribution area is less than 10 km² and the total number of individuals is approximately 500–600 (B2abii). Therefore, it should be regarded, according to the World Conservation Union (IUCN), as a Critically Endangered (CR) species (IUCN Species Survival Commission, 2001)

Distribution and ecology: The new species is known only from Kazdağı. *Pastinaca yildizii* grows in open places in *Pinus nigra* forest, alpine steppes and calcareous areas. Species growing with the new species include *Astragalus idea* Sirj., *Centaurea odyseii* Wagenitz, *Cerasus prostrata* (Lab.) Ser. var. *prostrata*, *Crataegus stevenii* Pojark., *Juniperus communis* L. var. *saxatilis* Pall., *Saxifraga sancta* Gris., *Pinus nigra* Arn., *Sedum album* L., *Salvia fruticosa* Mill., *Seseli peucedanoides* (Bieb.) Koso-Pol., *Sideritis trojana* Bornm., *Stachys cretica* L. subsp. *smyrnea* Rech.f., *Thymus cherlerioides* Vis. var. *cherlerioides* and *Thymus longicaulis* C.Presl.

Etymology: *Pastinaca yildizii* is dedicated to Prof. Dr Bayram Yıldız, a well-known Turkish taxonomist, who was also the author's PhD adviser.

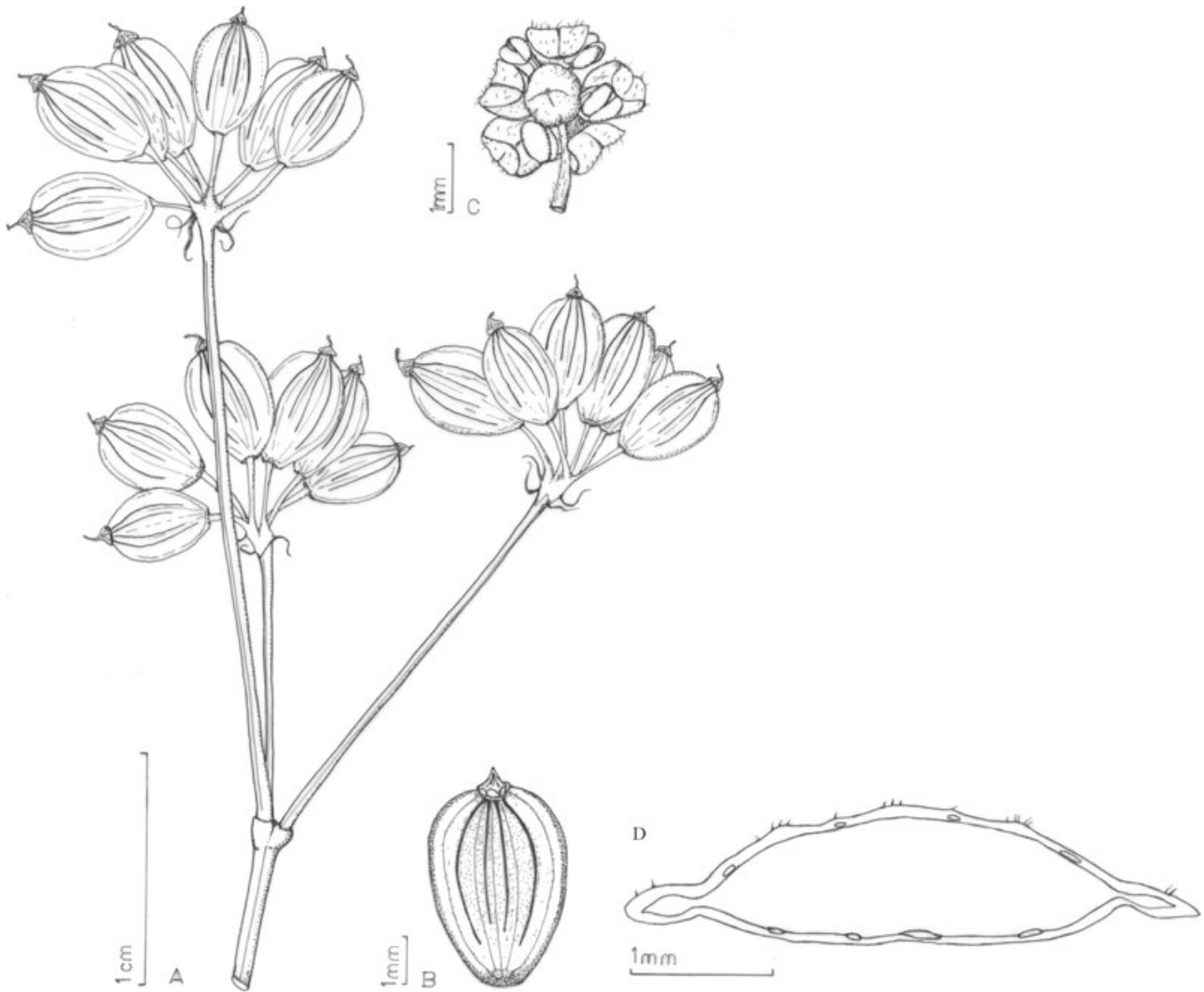


Figure 2. Illustration of *Pastinaca yildizii*: A, umbel rays in fruit; B, fruit; C, flower; D, cross-section of a mericarp.

DISCUSSION AND CONCLUSIONS

Pastinaca yildizii is closely related to *P. glandulosa* and *P. armena*. In *Flora Orientalis* and the *Flora of Turkey*, *P. glandulosa* was reported to be a doubtful species, because the type specimen lacks a mature mericarp (Boissier, 1872; Chamberlain, 1972; Menemen & Jury, 2001a). The new species differs from *P. glandulosa* with regard to several characters: stems 30–60 cm (not *c.* 100 cm), umbel rays 3 (not 6–8), bracts and bracteoles present (not absent), flowers purple (not whitish-red) and ovary densely scaberrulous (not densely hispid).

The new species and *P. armena* share common characters of their stems, the indumentum on the

stem, leaves, bracts and bracteoles. The most important characters that distinguish between these two species are the number of umbel rays, the indumentum and the colour of the petals. *Pastinaca yildizii* can be distinguished easily from *P. armena* by its three-rayed umbel (not 5–10), purple flowers (not yellow), hairy petals (not glabrous) and sparsely scabrous fruit (not glabrous to pubescent). Moreover, *P. yildizii* is distributed in the west of Turkey and is a Mediterranean phytogeographical region element, whereas *P. armena* is mainly distributed north-east of Turkey to the Caucasus and is a Euro-Siberian element (Fig. 3).

The differences between the new species and the other species growing in Turkey are given in the Key and in Table 1.

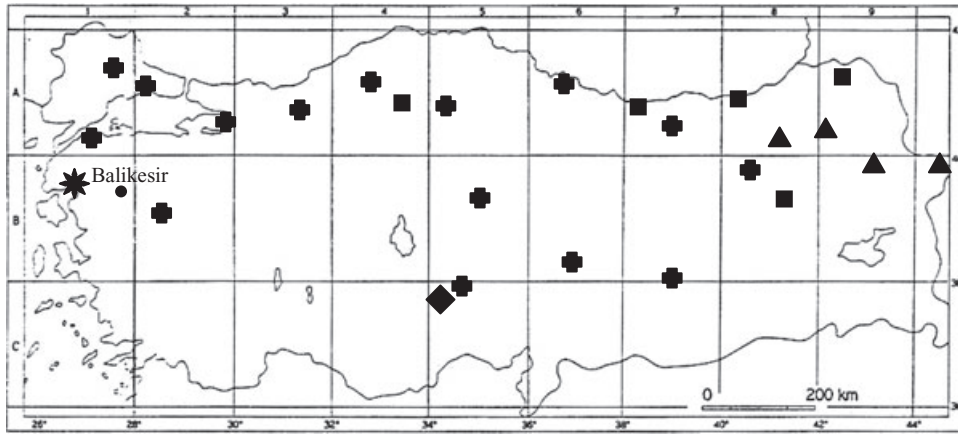


Figure 3. Distribution map of *Pastinaca yildizii* (*), *P. armena* (■), *P. pimpinellifolia* (▲), *P. sativa* (⊕) and *P. zozimioides* (◆).

Table 1. Distinguishing characters of Turkish *Pastinaca* species

Character	<i>P. yildizii</i>	<i>P. armena</i>	<i>P. glandulosa</i>	<i>P. pimpinellifolia</i>	<i>P. zozimioides</i>	<i>P. sativa</i> subsp. <i>urens</i>
Habit	Erect, 30–60 cm	Erect, 20–60 cm	Erect, c. 100 cm, digitate rootstock	Erect, 50–90 cm	Dwarf ascending, 5–15 cm	Erect, 20–100 cm
Stem indumentum	Lanate to base	Lanate to base	–	Sparsely pubescent at base	Densely hispidulous	Long flexuose pubescence
Basal leaves	One-pinnate	One-pinnate	One-pinnate	One- to two-pinnate	Two-pinnate	One-pinnate
Umbel rays	(2–)3(–4), unequal	5–10(–15)	6–8	(5–)12–35, ± equal	3–9	5–7
Bracts	2–3	(0–)2–4	Absent	1–5	0 or 1–2	0–2
Bracteoles	5	3–5	Absent	2–6	0 or 1–2	0–2
Petals	Purple, hispid to three-quarters on outer surface	Yellow, glabrous	Whitish-red, hairy on outer surface	Yellow, glabrous	Whitish-red, hairy on outer surface	Glabrous
Fruit	5–7 × 3.5–4.5 mm, margin 0.4–0.5 mm, sparsely scabrous	4–6 × c. 4 mm, margin 0.2–0.4 mm, glabrous to sparsely pubescent	Unknown	4–5 × 3.5–4.4 mm, margin 0.1–0.2 mm	4–5 × c. 3 mm, margin 0.2 mm	5–7 × c. 4 mm, margin 0.5 mm, glabrous
Commissural vittae	2–4	2–6	–	2	–	–

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KEY TO *PASTINACA* SPECIES GROWING IN TURKEY

1. Flowers whitish-red or purple, petals hairy on outer surface, fruit (where known) and ovary hispid or scaberulous
2. Stems 5–15 cm, dwarf ascending, leaves two-pinnate.....*zozimioides*
2. Stems 30–100 cm, erect or ascending, leaves one-pinnate
3. Stems c. 100 cm, umbels six- to eight-rayed, bracts and bracteoles absent, petals whitish-red, ovary densely hispid.....*glandulosa*
3. Stems 30–60 cm, umbel rays (2–)3(–4)-rayed, bracts 2–3, bracteoles 5, petals purple, ovary densely scaberulous.....*yildizii*
1. Flowers yellow, petals glabrous to sparsely pubescent, fruit and ovary glabrous or sparsely pubescent
4. Bracteoles absent or 1–2, caducous; umbels mostly axillary.....*sativa*
4. Bracteoles 2–7, persistent; umbels mostly terminal
5. Umbels 5–10(–15)-rayed, leaves always one-pinnate, leaflets deeply lobed, stems often lanate to base.....*armena*
5. Umbels (5–)12–35-rayed, leaves one- to two-pinnate, stems sparsely pubescent at base.....*pimpinellifolia*

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