

THE FERN FAMILY PTERIDACEAE IN TURKEY

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ABSTRACT

The last comprehensive study of Turkish Pteridaceae was made over 50 years ago. In this study the family Pteridaceae in Turkey is reviewed according to recent taxonomic and nomenclatural changes and a full description, synonyms and distribution information are given for each taxon and a key provided.

INTRODUCTION

A generic classification of cheilanthoid ferns (Pteridaceae) has eluded taxonomists for more than 200 years (Grusz & Windham, 2013). Several taxonomic and nomenclatural updates have been made in recent decades, based on morphological and molecular methods (Gastony & Rollo, 1995; Sanchez-Baracaldo, 2004; Zhang et al., 2005; Smith et al., 2006; Kamau, 2007; Schuettpelz et al., 2007; Windham et al., 2009; Grusz & Windham, 2013; Schneider et al., 2013; Abotsi et al., 2015). The current family diversity is about 1000 species distributed in 53 genera (Schuettpelz et al., 2007; Christenhusz et al., 2011).

The last comprehensive study of Turkish Pteridaceae was made over 50 years ago (Henderson, 1965) for the *Flora of Turkey*. A major project was recently initiated to illustrate and describe the flora of Turkey in the Turkish language and the first volume of *Resimli Türkiye Florası [Illustrated Flora of Turkey]* was published by Güner and Ekim (2014). The second volume, which will include the family Pteridaceae, is scheduled for publication in 2016. The aim of the present study has been to review Turkish Pteridaceae according to recent taxonomic and nomenclatural changes and to provide descriptions and distributions for each taxon. It is based on recent literature on Pteridaceae (e.g. Nardi & Reichstein, 1985; Benlioğlu et al., 1997; Kaynak et al., 2008; Christenhusz et al., 2011; Greuter & Raab-Straube, 2012; Jessen et al., 2012; Güner et al., 2012), and on herbarium specimens from Ankara University Faculty of Pharmacy (AEF), Ankara University Faculty of Science (ANK), Natural History Museum, London (BM), Royal Botanic Garden Edinburgh (E), Geneva (G), Gazi University Faculty (GAZI), Hacettepe University (HUB), Istanbul University Faculty of Pharmacy (ISTE) and Royal Botanic Gardens, Kew (K). All specimens listed below are from E, except where indicated otherwise.

PTERIDACEAE E.D.M.Kirchn., Schul-Bot.: 109 (1831).

Synonym: *Adiantaceae* Newman, Hist. Brit. Ferns: 5 (1840), *Sinopteridaceae* Koidz., Acta Phytotax. Geobot. 3: 50 (1934). *Cryptogrammaceae* Pic.Serm., Webbia 17: 299 (1963). *Cheilanthaceae* B.K.Nayar, Taxon 19: 233 (1970).

Key for Turkish Pteridaceae taxa

1. Fertile and sterile leaves or pinnae conspicuously dimorphic 2
1. Fertile and sterile leaves or pinnae not, or weakly dimorphic4
2. Annual, sori on the lower surface of the leaf, indusium absent
.....*Anogramma leptophylla*
2. Perennial, sori marginal, covered by the recurved leaf margin3
3. Lamina of sterile leaves up to 16 cm long, ovate to deltoid-ovate, spores <60µm long
.....*Cryptogramma crispera*
3. Lamina of sterile leaves up to 7 cm long, broadly deltoid, spores >60µm long
.....*Cryptogramma bithynica*
4. Pinnules fan-shaped; petiole blackish, glabrous, fine and wiry
.....*Adiantum capillus-veneris*
4. Pinnules not fan-shaped; petiole not as above.....5
5. Fronds pinnate to pinnatisect, weakly dimorphic.....6
5. Fronds 2-pinnate, not dimorphic7
6. Leaves 1-pinnate, lanceolate, >10 pinnae pairs *Pteris vittata*
6. Lower pinnae pinnatisect, frond ovate-triangular, with 7 or fewer pinnae pairs.....
.....*Pteris cretica*
7. Underside of pinnules glabrous or with glandular hairs.....8
7. Underside of pinnules densely covered with scales or eglandular hairs10
8. Pseudindusium entire, frond sparsely glandular below *Allosorus tinaei*
8. Pseudindusium ciliate, frond eglandular below9
9. Pseudindusium narrow, with dense long marginal hairs, spores <45 µm long
.....*Allosorus persicus*
9. Pseudindusium broad, irregular, with short cilia, spores >45 µm long
.....*Allosorus acrosticus*
10. Upper surface of pinnules glabrous*Paragymnopteris marantae*
10. Upper surface of pinnules white, woolly*Cosentinia vellea*

Adiantum L., Sp. Pl. 1094 (1753).

Short-creeping, scaly rhizome. Fronds dense or sparse; stipe dark brown or black shiny. Pinnae fan-shaped, without a midrib, sori borne on reflexed marginal lobes of lamina.

A. capillus-veneris L., Sp. Pl. 2: 1096 (1753).

Synonyms: *Adiantum capillus* Sw., J. Bot. (Schrader) (2): 83 (1801). *A. formosum* R.Br., Prodr. Fl. Nov. Holland 155 (1810). *A. schaffneri* Fourn., Bull. Soc. Bot. France 27: 328 (1880). *A. modestum* Underw., Bull. Torrey Bot. Club. 28: 46 (1901). *A. michelii* Christ, Bull. Geogr. Bot. Mans. 12 (1910).

Lectotype: Herb. Linn. 1252.9 (LINN)!

Rhizome densely covered with shiny, narrow lanceolate scales. Fronds bipinnate, (5–)15–30(–45) × (1.5–)4–6(–10) cm, glabrous; stipe (1.5–)8–12(–20) cm long, brown or black, shiny, glabrous. Pinnae 2–7 × 1–4 cm with stalk 0.3–3 cm long. Pinnules fan-shaped, (0.7–)1–2(–3.5) × (0.7–)1–2.4(–3) cm, cuneate at base, without midrib, 2–8 lobed with stalk (1–)2–5(–16) mm long. Sori borne on reflexed marginal lobes of lamina.

Habitat: In crevices of limestone and serpentine or tufa and base-rich soil on shady banks, 1–1000 m.

Distribution in Turkey:

Adana: Feke; Göksu gorge, 800 m, 09.vii.1952, *Davis* 19855!

Antalya: Kemer, Sumakşehiri Deresi, kalkerli G. Deresi değil vadisi, *P. nigra-C.*

- sempervirens* ormanı 500-700 m, 06.x.1977, *H. Peşmen* 3569 & *Ş. Yıldırım* HUB 36734! Alanya, 120 m, 04.viii.1982, *Ş. Yıldırım* 4451 HUB 36732! Aksu, Düden Çağlayanı, 06.ix.1988, *Ş. Yıldırım* 11596 HUB 36736!
- Artvin: Çoruh gorge, between Yusufeli and Artvin. 600 m, 01.viii.1966, *Davis* 47690! Demirkent nahiyesi, zwischen Tortum Gölü und Artvin, 620 m, 03.viii.1973, *F. Holtz, P. Hanel & T. Kesercioğlu* 991! Hopa, Kemalpaşa-Sarp arası, denize dik kayalıklar, 0-50 m, 19.v.1985, *Ş. Yıldırım* 7898 HUB 36740!
- Bursa: Uludağ, 25.vi.1946, *A. Yılmak*!
- Denizli: 13.vii.1947, *Davis* 13263! Pamukkale, 16.x.1980, *Ş. Yıldırım* HUB 36728!
- Düzce: Akçakoca, Edilli Köyü, kıyı kumul, orman, 50 m, 29.ix.2001, *A. Doğru Koca* 1489 (HUB)!
- Hatay: Dört Yol, Kuzuculu to Bülke on forest road, 1000 m, 04.iv.1965, *M.J.E. Coode & B.M.G. Jones* 416! Valley above Dört Yol, south bank, north facing, boulder clay and serpentine, 150 m, 12.viii.1969, *J. Darrah* 623! Valley above Yeşilkent, 305 m, 11.viii.1969, *J. Darrah* 505! Samadağ, Çevlik, Vespasiyanus ve Titus Tüneli boyunca, Beşikli mağarası ve taşlık maki, 10-150 m, 04.ix.1990, *Ş. Yıldırım* 13926 (GAZI)!
- Antakya, Harbiye, Şelale, 180 m, 25.iv.1978, *M. Coşkun* 332, *B. Şener & F. Ilisulu* AEF 6353! Kırıkhan, Delibekirli, nemli kayalıklar, 500 m, 21.iv.1977, *M. Koyuncu* AEF 5668! Musa Dağı, nemli yerlerde, 14.iv.1967, *Y. Akman* ANK 7943!
- İçel: Kanlıdivane, 23.iv.1974, *H. Peşmen & S. Erik* HUB 36733! Anamur, Nasrettin Köyü üstü, 21.iv.1975, *M. Koyuncu & M. Coşkun* AEF 4854!
- İzmir: Kemalpaşa, Next to a stream in shady ravine in macchia in the foothills of Nif Dağ, 06.vi.1966, *R. Alava & C. von Regel* 5040!
- Karamanmaraş: Andırın; 8 miles South of Çatak, 800 m, 17.v.1965, *M.J.E. Coode & B.M.G. Jones* 1147! Süleymanlı, Akdağ, nemli dere içi, 1500 m, 24.vii.1977, *B. Yıldız* 1555 HUB 36731!
- Konya: Ermenek, Kazancı kasabası, Yeşilköy, Göksu Nehri boyunca, 700 m, 12.x.1983, *H. Sümbül* 2536 HUB 36730! Ermenek, Göktepe Kasabası, Darcın Köyü, Ayaşlı mevkii, Göksu Nehri Boyunca, 600 m, 15.ix.1983, *H. Sümbül* 2477 HUB 36729!
- Malatya: Pütürge, Ferikhan Köyü, dere kenarı, ca. 650 m, 06.v.1981, *Y. Altan* ANK 1252!
- Manisa: Manisa Dağı (Spil), Karaçay boyunca, 150-450 m, 23.iv.1984, *Ş. Yıldırım* 6014, HUB 36739!
- Mardin: Hessana at S foot of Cudi Dağ, 900 m, 10.v.1966, *Davis* 42776! Kasrık Boğazı, 11 km from Cizre to Şırnak, shady river bank near bridge, 400 m, 7.v.1966, *Davis* 42641! Dargeçit, Çelik Köyü, Umutlu mezarası, kaya üzeri, 520 m, S. Aslan 3308 et al. (GAZI)!
- Muğla: 13 km South of Köyceğiz, by road to Dalyan, just east of the village of Tepearası, 10-20 m, 19.v.1990, *R. Lampinen* 7492! Köyceğiz, Yangı Köyü Yangı Deresi, kalkerli, sarp derin vadi, kazmofit, 22.iii.1981, *A. Güner* 8421 et al. HUB 36725! Fethiye, Katrancı Adası, 0-20 m, 21.v.2011, *Z. Aytaç* 9830 (GAZI)! Boyobası Köyü, Saklayıcı mevkii, şistik arazi, nemli çakıllık, 120 m, 18.ii.1991, *A. Güner* 8103 et al. (GAZI)!
- Yatağan-Milas arası, su kenarı, 21.v.1970, *N. Tanker* AEF 4851!
- Rize: Rize-Çayeli arası, c. 10 m, yol kenarı, 19.viii.1985, *A. Güner* 6848 & *M. Vural* HUB 36726! Pazar-Hemşin, nemli kaya üzerinde, 150 m, 19.vi.1984, *M. Vural* 2913 HUB 36735!
- Sakarya: Adapazarı; Karasu to Söğütlü, 30 m, 07.viii.1962, *Davis & Coode*, D. 39101!
- Samsun: Samsun'un 10 km doğusu, asfalt kenarı, 10 m, 12.ix.1964, *H. Kayacık & G. Elçin* 2211! Seaside cliffs, 3 miles east of Samsun, 10 m, 19.v.1963, *Tobey* 133!
- Sinop: On south wall of bath, 10 m, 23.iv.1966, *Tobey* 1624! Ayancık, Bakırlı Köyü yol

ayrımından Akgöl'e 2 km, 15.ix.2009, *A. Dönmez* 16205 & *Z. Uğurlu* (HUB)!
 Şanlıurfa: Urfa-Gaziantep c. 1 km from Urfa, 600 m, 11.ix.1956, *McNeill* 794!
 Trabzon: Maçka, 24 km south of Trabzon, 250 m, 28.vi.1960, *Stainton & Henderson* 5895!

General Distribution: Widespread in temperate and subtropical regions of the New and Old World, absent from South America.

Anogramma Link, Fil. Spec. 137 (1841).

Small, annual, delicate plants with short rhizome. Prothallus perennial and mostly persistent. Fronds dimorphic, mature fertile fronds bi-tripinnate, pinnae simple. Sori linear, indusium absent.

A. leptophylla (L.) Link, Fil. Spec. 137 (1841).

Synonyms: *Polypodium leptophyllum* L., Sp. Pl. 2: 1092 (1753); *Acrostichum leptophyllum* Lam. & DC., Fl. Franc. (de Candolle & Lamarck), ed. 3. 2: 565. (1805); *Grammitis leptophylla* (L.) Sw. Syn. Fil. (Swartz) 23, 218, t. 1. f. 6. (1806); *Gymnogramma leptophylla* (L.) Desv. in Berl. Mag. 5: 305 (1811); *Hemionitis leptophylla* Lag. Gen. Sp. Pl. (Lagasca) 33: (1816).

Lectotype: Herb. Linn. 1251: 56 (LINN)!

Plant delicate, up to 15 cm high, annual, with short rhizomes. Prothallus perennial, reniform, bilobed, 7–10 mm long. Fronds yellow-green, glabrous, young fronds reniform and 3–5 lobed, mature fronds bipinnate 5–15 × 1–1.5 (–2) cm, stipe glabrous 2.5–7 cm long, dark brown-black below and yellow-green above. Pinnae glabrous, 0.5–2 × 0.5–1 cm, dichotomously veined, pinnae stipe 1–2 mm. Pinnule mostly bilobed or lanceolate. Sori linear along veins; no indusium.

Habitat: Dry metamorphic rocks or moist shady serpentine rocks, 30–1000 m.

Distribution in Turkey:

Adana: Feke; Senean dere between Gurumze and Suphandere, 1000 m, 01.vii.1952, *Davis* 1961, *Dodds & Çetik*!

Antalya: Rocks near the sea, 12.iv.1955, *H. Walter* 3891! Side, c. 40 m, 19.v.1994, *K. Karamanoğlu, M. Koyuncu & M. Coşkun* AEF 16! Kemer, Kesmeboğaz, kalker kayalığı, 200 m, 25.iii.1978, *H. Peşmen* 3649 & *B. Yıldız* HUB 36798! Kemer, Beycik-Delikin Tepesi arası, 500-700 m, kalker kayalığı, *P. brutia* maki karışık ormanı, 28.iv.1980, *H. Peşmen* 4818 HUB 36796!

Hatay: Dörtüol; Rabat, vertical serpentine flush, c. 100 m, 05.v.1965, *M.J.E. Coode & B.M.G. Jones*!

Isparta: Ş.Karaağaç, Kızıldağ Milli Parkı, Kuzgu Tepe, kaya üzeri, 1350 m, 24.vii.1994, *B. Mutlu* 1084 HUB 36794!

İçel: Anamur, Nasrettin Köyü üstü, pınar civarı nemli yerlerde, 250 m, 21.iv.1975, *M. Koyuncu & M. Coşkun* HUB 36797!

Kastamonu: Taşköprü, Kayabaşı Köyü yukarısı, yangın kulesine tırmanış, dağ bozkırı, *P. nigra-P. sylvestris* açıklığı, 04.viii.2010, *A. Dönmez* 17533 & *Z. Uğurlu* (HUB)!

Muğla: behind Marmaris, 50–100 m, 14.iv.1965, *Davis* 41407! Marmaris, On soil amongst rocks in ravine forest near Hotel Lidya, 06.v.1984, *E.C. Wallace*! Marmaris, Pinetum brutiae, on serpentine, 30 m, 24.iii.1956, *Davis* 25258 & *O. Polunin*! Ortaca, Dalyan, Gökbel Köyü, Kızıl Çam ormanı, kalkerli arazi, 100-150 m, 14.iv.1991, *A. Güner* 8622 et al. HUB 36795! Köyceğiz, Ekincik Köyü, Sandallı tepe, makilik, kalkerli arazi, 10-500 m, 19.v.1991, *A. Güner* 9097, *M. Vural & H. Şağban* HUB 36799! Ortaca, Dalyan, Marmarlı çevresi, makilik arazi, 30 m, 19.iv.1991, *A. Güner* 8918 et al. (GAZI)!

General Distribution: Mediterranean area, Switzerland, W. France and Channel Islands, Crimea, N. America; scattered to S. Africa, India and Australasia.

Allosorus Bernh., Neues J. Bot. 1(2): 36 (1805).

Rhizome short-creeping or tufted. Fronds persistent, bipinnate; stipe wiry. Sori terminal on veins, protected by a linear pseudoindusium, a recurved and modified leaf margin.

A. acrosticus (Balbis) Christenh. Willdenowia 42(2):284. (2012)

Synonyms: *Pteris acrostica* Balb. Elenco 98. (1801). *Cheilanthes acrostica* (Balbis) Tod. Giornale de Scienze Naturali ed Economiche de Palermo 1(10): 215. (1866).

Lectotype: "Polypodium ilvense Bell. / puto esse potius novam plantam pteridis genus" [Balbis's handwriting] / "est Polypodium fragrans L." [not Balbis's handwriting] (TO).

Four plants. (see Nardi & Reichstein. 1985).

Plant up to 20 cm, rhizome brown and covered with long linear, reddish brown scales. Fronds bipinnate, 3–20 × 1–2.5 cm, glabrous, green; stipe dark brown-black 1.5–11.5 cm with a few scales. Pinnae 0.5–3 × 0.3–1 cm, stalk sessile, 1–3 mm long at end of the fronds. Pinnule 0.5–2 mm broad, without midrib. Sori many; pseudoindusium broad, irregularly lobed, ciliate.

Habitat: Crevices in limestone rocks, sea level up to 500 m.

Distribution in Turkey:

Antalya: Antalya-Burdur yolu, 33. km, 12.iv.1965, *A. Baytop & T. Baytop* 7926! Çarma Dağ, 700ft., 17.vi.1958, *E.R.B.Little!* Aspendos Amphitheatre near Serik, c.50m. 02.viii.1975, *C.R.Fraser Jenkins* 4573. BM! Kemer Küçükburun, kasabanın doğusundaki küçük yarımada, *P. brutia* ormanı, 20 m, 21.iii.1949, *H. Peşmen* 4150 & *A. Güner* HUB 36705! Kemer, Kesmeboğaz, kalker kayalığı, 300 m, 25.iii.1978, *H. Peşmen & B. Yıldız* HUB 36707! Kaş, Kekova, Alan-Kale Mahallesi, kalker kaya çatlağı, 10-20 m, 14.ii.2009, *Z. Aytaç* 9286 & *H. Duman* (GAZI)! Alanya, Hacımemetli Köyü, Bağderesi, 200 m, 21.iii.1993, *M. Koyuncu* 9595 & *H. Duman* (AEF)!

Aydın: Söke Milet harabeleri, anfitiyatro duvarları üzerinde, 10.v.1965, *Kayacık & Yaltırık* ISTO 3545!

Balıkesir: Ayvalık, Pınar Adası, 60 m, 10.v.1996, *K. Alpınar* ISTE 71797!

Çorum: Alacahöyük Köyü, 01.vii.1995, *U. Sönmez* ISTE 68382!

Denizli: Mt. above Pamukkale (Hierapolis) hot springs near Burdur, rock crevice, dry place on vertical earth bank with *C. persica* and *Selaginella denticulata*, 1000-1150m, 16.v.1973, *Betty E.G. Molesworth Allen* 8102. BM!

Hatay: Castle of Payas, near Dörtöy, sea level, 03.iv.1965, *M.J. Coode & B.M.G. Jones* 394! Kırıkhan to Hamam, c. 100 m, 06.v.1965, *M.J. Coode & B.M.G. Jones* 533!

İçel: Işıktepe (Seydüşih) Köyü üstü, maki, kalker anakaya, 150-500 m, 19.iv.1985, *Ş. Yıldırım* 7594 HUB 36723! Mersin, Anamur çevresi, 09.v.1972, *M. Koyuncu* HUB 36697! Dibek Mağarası girişi, Cennet-Cehennem, 09.xi.1973, *A. Baytop & E. Tuzlacı* ISTE 27072!

İzmir: Schuth hinter Friendhof von Ahmetbeli, ca. 100 m, 19.iii.1966, *G. Bocquet* 1523!

Selçuk harabeleri, 09.iv.1971, *A. Baytop & T. Baytop* ISTE 19112!

Konya: Bucakkışla, Dede Dağı, Kayalık, kurak yamaçlar, maki, ca.580 m, 25.v.1979, *M. Vural* 1873 GAZI!

Muğla: ca. 4 km nw Muğla. Felsen in der Macchie, 03.iv.1974, *K. Lewejohann* (Tu-74-137) & *F. Holtz!* Dereköy, between Marmaris and Muğla, 10 m, 26.iii.1956, *Davis* 25395 & *O. Polunin!* BM! Fethiye, 30 m, 27.iii.1956, *Davis* 25421 & *O. Polunin!* BM! Kişle to Kozağaç (Milas-Yatağan), 550 m, 13.iv.1965, *Davis* 41056! Marmaris, Söğüt to

Bozburun, sea level–50 m, 15.iv.1965, *Davis* 41168! Dalyan–Sülüngür Gölü, Ortaca arası, 100-200 m, 14.iv.1981, *A. Güner* 8571 et al. (HUB)! Bodrum, Türkbükü-Bodrum, 200-500 m, 15.iii.1984, *Ş. Yıldırım* 5883 HUB 36696! Köyceğiz, Çandır Köyü, Kaunos Harabeleri, duvar arası, 80 m, 08.xi.1991, *A. Güner* 10323 (GAZI)! Köyceğiz, Yangı Köyü, Yangı Deresi, sarp ve derin vadi, kalkerli yamaçlar, 60-80 m, 24.v.1981, *A. Güner* 8324, *M. Vural & H. Şağban* (GAZI)!

General Distribution: From Mediterranean area to West Himalayas.

Note: There has been confusion in the past between *Allosorus acrosticus* and *A. pteridioides* (Reichard) Christenh. (see Nardi & Reichstein, 1985). *Allosorus acrosticus* is a tetraploid taxon, whereas *A. pteridioides* is diploid. This latter has a more western Mediterranean distribution and, so far, has not been recorded for Turkey, although there are records from Cyprus and Jordan in BM and from Syria and Palestine in E, and it may have been overlooked in Turkey. The two taxa have similar morphology but can be distinguished; *A. acrosticus* has a pseudoindusium with ciliate margins, with scales on rachis and costae, whereas *A. pteridioides* has pseudoindusium entire, and rachis and costae are ± glabrous.

A. persicus (Bory) Christenh. Willdenowia 42(2): 284 (2012).

Synonyms: *Notholaena persica* Bory in Bélanger & al., Voy. Indes Or.: 23 (1833); *Cheilanthes szovitsii* Fisch. & Mey. apud Hohen. in Bull. Soc. Nat. Mosc. 1838 No. 3: 241 (1838); *Cheilanthes persica* (Bory) Kuhn in Bot. Zeitung (Berlin) 26: 234 (1868). Lectotype: [Iran] La Perse, parmi les rochers, 1821, *C. Bélanger s.n.* P00607931 (P)!

Plant up to 20 cm, rhizomes covered densely in narrow dark brown-black scales. Fronds bipinnate, 3–16 × 1–4 cm, green and glabrous above and with brown scales on rachis and costae, eglandular; stipe 1–8 cm, covered with dark brown-black and narrow lanceolate or linear long brown hairs. Pinna (0.3–) 1–3 × 0.2–2 cm; pinna stalk very short c. 1 mm, pinnules lobed, lobes lanceolate. Sori many; pseudoindusium narrow, with many long marginal hairs that cover the lower surface of the segment.

Habitat: Shady crevices in limestone or metamorphic rocks, 200–2300 m.

Distribution in Turkey:

Adana: Feke, Sencan Dere between Belenköy and Suphandere, 1000 m, 02.vii.1952, *Davis* 19586A, *Dodds, Çetik!* Kozan, (Anti-taurus), 300 m, 12.iv.1957, *Davis* 26614, *Hedge!* Osmaniye-Yarpuz, 15 km e Osmaniye, 800 m, 29.iv.1986, *M. Nydegger* HUB 36695!

Ankara: mamak, Kıbrıs Köyü vadisi, Dipsiz gölü mevki, kaya çatlağı, gölgeli yerler, 1000-1100 m, 26.vi.2005, *S. Arslan* 2352 (GAZI)!

Antalya: Kumluca, Sazak Koyu, kalker kayalığı, 40 m, 29.iv.1980, *H. Peşmen* 4876 HUB 36704! Konyaaltı, 10 m, 23.v.1977, *M. Koyuncu & M. Coşkun* HUB 36703! Koslu Dere, n.of Bozburun Dağ, 1200 m, 27.vii.1949 *Davis* 15754.

Aydın: 3 km westlich Ortaklar, Abangh am Ovacık Dag oberhalb der Strasse Selçuk-Ortaklar, 200 m, 22.v.1966, *G. Bocquet* 2472! Söke, piriye, 400 m, 30.v.1972, *N. Tanker*, AEF 17!

Denizli: Bozdağ above Geynam yaila, 16.vii.1947, *Davis* 13432!

Erzincan: Kemaliye, Yaka Köyü, Sazak deresi, kazmofit, 850-1000 m, 18.xi.1980, *Ş. Yıldırım* 4186 HUB 36708!

Isparta: Ş. Karaağaç, Kızıldağ Milli Parkı girişi, sedir ormanı, kalker, 1200-1300 m, 17.xi.1993, *B. Mutlu* 163 HUB 36701! Eğridir, Yaka Köyü, 2 km güneyi, derin kalker vadisi, *P. nigra-J. excelsa* ormanı, 1800 m, 20.v.1973, *Peşmen* 3401, *Erik, Pamukçuoğlu* HUB 36709! Eğridir, Anamas Köyü, Kapız Deresi, kalkerli sarp ve derin vadi, 1250-

1450 m, 05.viii.1974, *H. Peşmen & A. Güner* 1836 HUB 36706! Eğridir, Aksu, Karacahisar Köyü, Başak mevkii, kalkerli vadi, 1000 m, 03.vii.1974, *H. Peşmen & A. Güner* 1653 HUB 36702!

Konya: Ereğli, Aydos Dağı, Delimahmutlu, Kapız, kayalık, 1600 m, 21.vi.1977, *S. Erik* 2179 HUB 36718! Beyşehir, Kurucuova Köy, Kuzgun tepe, *P. ningra* ormanı, kalkerli K:B. yamaç kayalık arazi, 1300-1500 m, 24.iv.1974, *H. Peşmen & A. Güner* 1019 HUB 36710!

Mardin: Cudi Dağ above Hessana (d. Silopi), 900–1150 m, 11.v.1966, *Davis* 42862A! Savur, 900 m, 24.v.1957, *Davis* 28568, *Hedge!* Dargeçit, Çelik Köyü, Umutlu mezarası, kaya üzeri, 520 m, *S. Arslan* 3297 (GAZI)!

Muğla: Kara Dağ, 750 m, 18.v.1988, *P. Ainsworth* T27/88! Ortaca, Dalyan-Sülüngür Gölü arası, 10 m, kalkerli arazi, makilik dik yamaçlar, 12.ii.1991, *A. Güner* 7999 et al. (HUB)! Fethiye, Babadağı, batı etekleri, gıdırak mevkii, 100 m, 10.v.1984, *E. Tuzlacı* ISTE 53054!

Niğde: Side valley W. of Maden, 30.vii.1969, *J. Darrah* 349!

Samsun: Vezirköprü at Kızılırmak, 400 m, 06.iv.1969, *Tobey* 2446!

Şanlıurfa: Yenice Köyü üstü, Nemrut Dağları, kalker kayalığı tabakalar, taşlık, bozkır, 475-675 m, 26.vi.1988, *Ş. Yıldırım* 10791a HUB 36700!

Şırnak: Beytüşebap, Dağdibi Köyünden anayola, kalker kayalığı, 25.v.2004, *A. Dönmez* 11916 (HUB)!

Siirt: Botan Çay, by the bridge 19 km from Siirt, 400 m, 17.v.1966, *Davis* 43220!

Tunceli: Ovacık, Munzur Dağları, Karagöl vadisi, 1300-1500 m, 06.v.1979, *Ş. Yıldırım* 1388 & *Ş. Kaplan* HUB 36711!

Yozgat: Sorgun to Çekerek, 1200 m, 27.v.1965, *M.J.E. Coode & B.M.G. Jones* 1598!

General Distribution: Distributed in Europe, Asia, and Africa.

A. tinaei (Tod.) Christenh. Willdenowia 42(2): 284 (2012).

Synonyms: *Cheilanthes tinaei* Tod. in Giorn. Sci. Nat. Econ. Palermo 1: 217 (1866); *C. duriensis* Mendonça & Vasc., Anais Inst. Vinho Porto 15(4): 47 (1956); *C. pteridioides* subsp. *tinaei* (Tod.) O. Bolòs & al., Fl. Man. Països Catalans 1213 (1990).

Holotype: [Sicily] “Messina, *Cheilanthes odora* var. *stipites glabrato*” Id. 9541 (PAL).

Isotype: Id. 9542 (PAL) (see Nardi, Rasbach & Reichstein, 1979).

Plant up to 25 cm, rhizome covered with brown long scales. Fronds bipinnate 5–25 × 1–2.5 cm, shortly and sparingly pilose when young, later ± glabrate above, scattered 2-5-celled red glandular hairs beneath; stipe densely covered with long scales at base and with a few scattered scales further up when young then almost glabrous, brown-black, 1–10 cm. Pinnae 0.5–1.5 × 0.3–0.5 cm with very short stalks c. 1 mm. Pinnule 0.5–2 mm broad. Pseudoindusium with rounded, entire membranous margin.

Habitat: Coastal, bare rocks, sea level to 1250 m.

Distribution in Turkey:

Istanbul: Büyükkada, Eskibağ, kayalıklar, 17.08.1977, *H. Demiriz, B. Tütel, A. Aydın* (ISTE 31028!)

General Distribution: N.W. Africa, Portugal, S. Europe.

Cryptogramma R.Br., Narr. Journey Polar Sea [Franklin] 767 (1823).

Rhizome creeping to ascending covered with light brown to black long scales. Fronds dimorphic, tripinnate; sori terminal on veins protected by recurved membranous lateral margins of segments.

C. bithynica S.Jess., L.Lehm. & Bujnoch, Fern Gaz. 19(2): 52 (2012).

Holotype: Northwestern Turkey: Uludağ southeastern of Bursa: silicate scree near the roadway, NNE of the summit of Uludağtepe, 1770 m, 09.ix.2009, leg. *S. Jesen & L. Lehmann* (SJ-3820), JE. Isotype: 09.ix.2009, leg. *S. Jesen & L. Lehmann* (SJ-3820), ANK!

Plant 10(–22) cm, - covered with light brown long scales. Fronds tripinnate, green, reddish at the end of the fronds, glabrous above, veins visible at and of the lobes in white-yellow colour. Stipe straw-coloured to greenish, glabrous to sparsely covered with light brown scales. Fertile fronds 8–10 × 3–4 cm; stipe 6–7 cm. Pinnae 2 × 1–2 cm; pinna stalks 1–3 mm. Pinnules linear-lobed, convolute at the edge of lobes. Vegetative fronds slightly thick and relatively tough, 8–10(–22) × 3–4.5 cm, broadly deltate; stipe 5–6 cm. Pinnae ovate to orbicular, 1.5–2.5 × 1–2.5 cm; pinna stalks 1–3 mm. Pinnules lanceolate-lobed. Sori terminal on veins protected by recurved margins of lobes.

Habitat: Silicate scree near the cycle roadway, 1700–2300 m.

Distribution in Turkey:

Northwestern Turkey: Uludağ southeastern of Bursa: silicate scree near the roadway, NNE of the summit of Uludağtepe, 1770 m, 09.ix.2009, leg. *S. Jesen & L. Lehmann* (SJ-3820), JE. Isotype: 09.ix.2009, leg. *S. Jesen & L. Lehmann* (SJ-3820)(ANK)!

General Distribution: Endemic to Turkey.

C. crispa (L.) R.Br. ex Hook., Gen. Fil. pl. 115B (1842).

Synonyms: *Osmunda crispa* L., Sp. Pl. 1067 (1753); *Allosorus crispus* (L.) Bernh. in Schrad Jour. 1(2): 36 (1800).

Type: Habitat in Anglia, Helvetia, Herb. Sloane 85: 128 (BM-SL).

Plant to 30 cm, rhizome covered with brown-black long scales. Fronds thin, tripinnate, green, reddish at the end of the fronds, glabrous above, veins visible at and of the lobes in white-yellow colour. Stipe straw-coloured to greenish, glabrous. Fertile fronds 15–30 × 2.5–5 cm; pinna stalks 8–20 cm. Pinnae 2–5 × 1–1.5 cm; stipe 1–6 mm. Pinnules linear-lobed, convolute at the edge of lobes. Vegetative fronds ovate to deltoid-ovate, 15–20 × 3–4 cm; pinna stalks 4–11 cm. Pinnae narrowly ovate, 1.5–3 × 0.7–1.8 cm; pinna stalks 1–4 mm. Pinnules lanceolate-lobed. Sori terminal on veins protected by recurved margins of lobes.

Habitat: Screes, 200–2400 m.

Distribution in Turkey:

Artvin: Arhavi, above Dikyamaç village, 2200 m, 26.vii.1974, *M. Coşkun* AEF 19! Çoruh, Şaval Tepe above Murgul (igneus), 2000 m, 13.viii.1957 *Davis* 32393 & *Hedge!* Şavşat, Kocabey Kışlası, Camız patlatan mevkii, kayalık alanlar, 1900-1950 m, 14.v.2004, *H. Altınözlü* 3945 (HUB)! Kaçkal Dağı, Pırnallı Üst Yaylası, Cehennem Deresi Mevkii, 1750-3100 m, 12.vii.1984, *Demirkuş* 2641b HUB 36758! Arhavi, Dikyamaç Köyü yaylası, Arpaçay civarı, 2200 m, *M. Coşkun* AEF!

Rize: Kaçkar Mountains, east of Elevit, north of road beyond village, 2365 m, 27.ix.2008! Çamlıhemşin, Amlakıt Yaylası, çayırılık, 1350 m, 10.viii.1984, *A. Güner* 6117 & *M. Vural* HUB 36755! Çamlıhemşin, Amlakıt Yaylası, Kayguttan Çovinovit yoluyla yayla, kalkerli arazi, alpinik step, 2200-2720 m, 19.vii.1974, *A. Güner* 1087 HUB 36753! Çamlıhemşin, Yukarı Amlakıt Yaylası-Kışyatağı arası, *Rhododendron caucasicum* çalılığı, granit anakaya, 2200-2350 m, 20.ix.1979, *A. Güner* 2190 HUB 36754!

General Distribution: Europe and Caucasus.

Cosentinia Tod. Giorn. Sci. Nat. Econ. Palermo 1: 219 (1866).

Rhizomes short-creeping to erect with long linear brown scales. Fronds pinnate, both

surfaces of the frond covered, densely below, with long whitish multicellular hairs.

C. vellea (Aiton) Tod. Giorn. Sci. Nat. Econ. Palermo 1: 220 (1866).

Synonyms: *Acrostichum velleum* Aiton Hort. Kew. 3: 457 (1789). *Notholaena vellea* (Aiton) Desv. in J. Bot. Appl., 1:92 (1813) non R. Br. (1810); *N. lanuginosa* (Desf.) Desv. ex Poir., *Fragenta Phytographiae Australiae* 5 (1865); *Cheilanthes vellea* (Aiton) F. Muell. *Domin. Bibl. Bot.* 85. 133 nota. (1913); *Acrostichum catanense* Cosent., *Atti Accad. Gioenia Sci. Nat. Catania* 1/2: 207 (1827); *Cheilanthes catanensis* (Cosent.) H.P.Fuchs, *Brit. Fern Gaz.* 9(2): 45 (1961).

Lectotype: Portugal, 1777, *F. Masson s.n.* BM000829683 (BM)!

Plant 10–20 cm, rhizomes brown with long linear pale brown scales. Fronds pinnate, 8–16 × 1.5–4 cm, green above and brownish below, both surfaces of the frond covered, densely below, with tangled long whitish multicellular hairs; stipe brown, 1–4.5 cm, densely covered with hairs when young, becoming glabrous when mature, young fronds almost sessile, lobed, 0.5–2 × 0.3–0.8 cm. Sori not discrete, sporangia spread along veins from leaf margin, ± protected by recurved but not modified leaf-margin.

Habitat: Dry limestone, calcareous rocks, sea level to 300 m.

Distribution in Turkey:

Ankara: Beynam, Karaçam ormanı, 1300-1500 m, 15.v.1986, Ş. Yıldırım 9221 HUB 36713!

Antalya: Kumluca, Adrasan Köyü kuzeyi, serpantin arazi, 300 m, 29.ii.1980, H. Peşmen 4791 & A Güner HUB 36721!

Aydın: Priene, 100 m, 09.iv.1965, *Davis* 40788! Milet harabeleri, R. Lampinen 7441 ISTE 63662!

Bolu: Eğerci'den Yedigöller'e 4. km, Yağmurca Köyü ilerişi, 193 m, 03.xi.2001, A. Dönmez 10387 & S. Işık (HUB)! Kıbrısık, Kıbrısık'tan Beypazarı'na 5 km, *Paliurus spina-christi* açıklığı, 1110 m, 08.viii.2010, A. Dönmez 17616 & Z. Uğurlu (HUB)!

Çankırı: Eldivan, Seydiköy üstü, step, 1300-1350 m, 09.viii.1984, Ş. Yıldırım 7409 HUB 36716!

Hatay: İskenderun, Musa Dağı, Kale ilerişi, P. brutia ormanı, 200 m, 30.iii.1995, A. Dönmez 4423 (HUB)!

İsparta: Ş.Karaağaç, Kızıldağ Milli Parkı girişi, Sedir ormanı açıklığı, kalker, 1200-1300 m, 18.xi.1993, B. Mutlu 180!

İçel: Anamur'un üstü, Kayalıklarda 200 m, 06.iii.1977, M. Koyuncu HUB 36722!

Kastamonu: Hanönü, Karapınar Köyü'nden, Derencik Köyü'ne gidiş, köprü çevresi, çakıllı yamaçlar, 26.ii.2010, A. Dönmez 16603 & Z. Uğurlu (HUB)!

Kayseri: Yılanlı Dağ, 1200 m, 12.vi.1975, M. Coşkun & N. Çelik HUB 36719!

Muğla: Marmaris-Emecik, 5 m, 25.iii.1956, *Davis* 25349 & O. Polunin! Marmaris, Hisarönü to Turgut, 20 m, 15.iv.1965, *Davis* 41147! Ören, 50–100 m, 10.iv.1965, *Davis* 40855! Köyceğiz, Yargı Köyü, Yargı Deresi, 60-80 m, sarp ve derin vadi, kalkerli kayalık yamaçlar, kazmofit, 24.v.1981, A. Güner 9322, M. Vural & H. Şağban HUB 36720! Köyceğiz, Sultaniye, Kersele Deresi, dere yatağı, metamorfik arazi, 15-30 m, 21.v.1991, A. Güner 9195, M. Vural & H. Şağban HUB 36715!

General distribution: Macaronesia, Mediterranean region including S. Europe and North Africa and east to Turkey, Egypt, Yemen and Oman.

Note: *Cosentinia vellea* has two subspecies, a tetraploid *C. vellea* subsp. *vellea* and a diploid *C. vellea* subsp. *bivalens* (Reichstein) Rivas Mart. & Salvo. On macromorphological characters the two are indistinguishable, but can be separated by comparison of spore size and stomatal length (see Haou et al., 2011). Of four Turkish

specimens for which spores have been measured, three correspond with subsp. *vellea* [64-(67)-71µm: *Davis 25349, 40855, 41147*] and one with subsp. *bivalens* [55-(57)-62 µm: *Davis 40788*], although cytological verification is still lacking.

Paragymnopteris K.H. Shing, *Indian Fern J.* 10(1-2): 227 (1994) [1993].

Rhizome short-creeping, covered with long, linear scales. Fronds pinnate, linear-lanceolate scales along the midrib above and covered with lanceolate brown scales below.

P. marantae (L.) K.H. Shing, *Indian Fern J.* 10(1-2): 229 (1994) [1993].

Synonyms: *Acrostichum marantae* L., *Sp. Pl.* 2: 1071 (1753). *Ceterach marantae* (L.) DC., *Fl. Franc.* ed. 3. 2: 567 (1805); *Cheilanthes marantae* (L.) R.Br., *Prodr. Fl. Nov. Holland.* 145 (1810); *Notholaena marantae* (L.) R.Br., *Prod. Fl. N. Holl.* 146 (1810); *Cincinialis maranthae* (L.) Desv., *Berl. Mag.* 5. 312 (1811); *Gymnogramma marantae* (L.) Mett., *Fil. Hort. Bot. Lips.* 43 (1856); *Gymnopteris marantae* (L.) Ching, *Acta Phytotax. Sin.* 10: 303 (1965); *Paraceterach marantae* (L.) R.M.Tryon, *Amer. Fern J.* 76(4): 186 (1986).

Lectotype: *Pierre Magnol s.n.* Herb. Linn. 1245.12 (LINN)!

Plant 10–30 cm. Rhizome covered with long, linear light brown scales. Fronds pinnate-pinnatisect, 10–30 × 1.2–4.5 cm, linear-lanceolate scales only along the midrib above, lower frond surface densely covered with lanceolate brown scales; stipe 4–20 cm, with scattered brown scales. Pinnae 1–2.5 × 0.5–1.2 cm, 3–7 lanceolate or broad triangular lobed, main lobe almost lyre-shaped, edge of pinnae undulate or simple; pinna stalks 1–2 mm or sessile. Sori not discrete, sporangia spread along veins from leaf margin, ± protected by slightly recurved and modified leaf-margin.

Habitat: Serpentine rocky slopes, sea level to 1400 m.

Distribution in Turkey:

Adana: Karsanti, Kumbükü, Hızır yolu, ca. 880 m, 05.v.1972, *E Yurdakul* ANK 1768!

Feke: Sencan Dere between Belankey and Suphandere, metamorphic rocks, 100 m, 02.vii.1952, *Davis 19586B, Dodds, Cetik!* Bahçe (N. Amanus), Dumanlı Dağ above Haruniye, shady metamorphic rocks, 1200 m, 19.iv.1957, *Davis 26845, Hedge!*

Ardahan: In Felsritzen etwa 10-15 km östlich von Kosor zw. Göle und Olta, 22.iv.1957, *E. Sauer 306/57!*

Artvin: Yusufeli, Altıparmak Köyü üzeri, *P. sylvestris*-*P. orientalis* ormanı, 1250 m, 20.v.1983, *A. Güner 4829 & M. Vural* (GAZI)!

Erzincan: Erzincan'ın 30 km batısında serpantin boğazı, ca. 1500 m, 18.vii.1958, *H. Birand* ANK 10909! Keşiş dağ above Cimin, among igneous rocks, 2700 m, 28.vii.1957, *Davis 31652, Hedge!*

Giresun: Şebinkarahisar, Arslanyurdu Deresi, ca. 1380-1460 m, 28.viii.1976, *K.P. Buttler* ANK 21819!

Hatay: Hassa to Dört Yol, mountain road, slopes above Dört Yol, 1100 m, *A.J. Byfield & D. Pearman* B 2620 ISTE 73362!

İçel: Mersin, Findıkpınar, Demirişık, *P. brutia* altı, nemli yerler, 24.vi.1971, *T. Uslu* ANK 526!

Kahramanmaraş: Andırın, Elma Dağı, orman açıklığı, 1550 m, 22.vi.1979, *E. Tuzlacı & M. Saraçoğlu* ISTE 42386!

Kastamonu: Tosya, Sekiler Köyü, Seki Deresi, kayaların arası, ca. 1100 m, 28.ix.1977, *M. Kılınç* ANK 6866!

Konya: 2 km from Çamlık village, Akseki-Beyşehir area, 1360–1370 m, 03.vi.2003, *R.D. Reeves 2693 & N. Adıgüzel!*

Muğla: Marmaris, 50 m, 13.iv.1965, *Davis* 41021! Marmaris, Pinetum brutiae, on serpentine, shady rocks, 30 m, 24.iii.1956. *Davis* 25,255, *O.Polunin*! Nordwestlich Köyceğiz oberhalb Ağla, Felsspalte im Kiefernforst, 950 m, 30.vi.1973, *F. Holtz* 428, *P. Hanel*, *T. Kesercioğlu*! Köyceğiz, Sultaniye, Kersele Deresi, dere yatağı, metamorfik arazi, 5-30 m, 21.v.1991, *A. Güner* 9195, *M. Vural*, *H. Şağban* HUB 36715! Sandras Dağı, Çiçekbaba Tepesinin güney yamaçları, 1700 m, 14.vii.1978, *N. Özhatay* & *E. Özhatay* ISTE40635!

Samsun: Ladik İstasyon, Karadağ, 1050 m, 08.v.1965, *Tobey* 947! Vezirköprü at Kızılırmak, 400 m, 20.iv.1969, *Tobey* 2451!

Zonguldak: Dirgine to Devrek, cliff edges (serpentine), 180m, 18.vii.1962. *Davis* 37906, *Coode*, *Yaltirik*!

General Distribution: Mediterranean area, northern Austria and Caucasus. C. & S. Europe, Macaronesia, N. Africa.

Pteris L., Sp. Pl. 2: 1073 (1753).

Fronds pinnate to bipinnate, green and glabrous, midrib and secondary veins distinct.

P. cretica L., Mant. Pl. 130 (1767).

Synonyms: none.

Lectotype: *Pietro Arduino* s.n. Herb. Linn. 1246.7 (LINN)!

Plant 30–70 cm. Rhizomes short-creeping dark brown with dark brown scales. Fronds pinnate to bipinnate, green and glabrous, midrib and secondary veins distinct. Pinnae ≤ 7 pairs, often with a long basal segment. Fertile fronds serrate only at the end, convolute at the edge of lobes, 40–70 × 15–20 cm; stipe 20–40 cm, pinnae 10–15 cm and sessile or with c. 1 mm stalk. Vegetative fronds serrate at margin, 30–70 × 10–20 cm; stipe glabrous, 20–35 cm. Pinnae 5–20 cm, sessile or with 1–3 mm stalk. Sori submarginal, in a continuous line protected by scarious recurved leaf-margin.

Habitat: Shady banks and shady damp places in deciduous forests, sea level to 800 m.

Distribution in Turkey:

Artvin: 10 km south of Hopa on road to Artvin, 120 m, 25, 25.ix.2005, *B. Güner* et al., TUDI 46! Arhavi, Dikyamaç village, 800 m, 15.vii.1994, *M. Coşkun* AEF 20! Çoruh, 1 km südwestlich von Hopa neben Küstenstrabe steiler, 05.viii.1973, *F. Holtz* (01.056), *P. Hanel* & *T. Kesercioğlu*! Çoruh, Borçka, Hopa, 300 m, 21.vi.1957, *Davis* & *Hedge* 29832! Çoruh, deciduous forest, 2 ft. 6 ins. high, 18.viii.1966, *Tong* 496! Çoruh, Hopa, near sea level, 22.vi.1957, *Davis* & *Hedge* 29876! Hopa, Sarp Köyü, 5 m, 11.iv.1982, *Ş. Yıldırım* 4414 HUB 36746! Hopa, Kemalpaşa-Sarp arası denize dik kayalıklar, 0-50 m, 19.v.1985, *Ş. Yıldırım* 7895 HUB 36751! Hopa, orman altı, 0-50 m, 25.01.1992, *D. Osmanoğlu* & *Z. Aytaç* 4473 (GAZI)! Murgul, Meratit Köyü, 02.viii.1959, *R. Çetik* & *Davis* ANK 20500!

Giresun: Denize yakın çalılık ve ıslak yerlerde, 07.vii.1958, *H. Birand*, A 10692a! Gengene Köyü, Fagus ormanı, 24.vi.1977, *Y. Akman* ANK 6977!

Ordu: Fatsa, rocks above Kayalar Dere, 60 m, 23.iv.1963, *C. Tobey* 46!

Rize: 2 km south east of Rize, 100 m, 04.viii.1974, *J.R. Akeroyd* 173! Shady banks, 100–200 m, 21.viii.1952, *Davis* 20785 & *Dodds*! Çamlıhemşin, Aşağı Vice Mahallesi üstü, karışık orman ve nemli çayırılık, 500-600 m, 13.vii.1979, *A. Güner* 2095 HUB 36750! Çamlıhemşin, Boğazıçık Köyü, Pogina çevresi, karışık orman, 650 m, 04.ix.1978, *A. Güner* 1820 HUB 36748! Alipaşa Köyü civarı, 29.vii.1956, *K. Karaosmanoğlu* HUB 36749!

Trabzon: Valley above Çaykara, 700 m, 05.viii.1957, *Davis* & *Hedge* 32107! Sürmene,

Gökçesu Mahallesi, İdrum tepe çevresi, 350-550 m, 04.vii.1997, *H. Duman* 6464 (GAZI)!

General Distribution: S. Europe, W. Syria, Caucasus, subtropical Asia, E. and S. Africa, N. America, Hawaii.

P. vittata L., Sp. Pl. 1074 (1753).

Synonyms: *P. ensifolia* Poir. in Lam, Encycl. 5: 711 (1804); *P. diversifolia* Sw. Syn. Fil. 96: 288 (1806); *P. costata* Bory, Sp. Pl. 5: 367 (1810); *P. inaequilateralis* Poir. Encycl. 4: 601 (1816); *Pycnodoria vittata* (L.) Small, Ferns Florida 89 (1931).

Lectotype: Herb. Linn. 1246.3 (LINN)!

Plant 10–70 cm. Rhizomes short-creeping, brown with fine long scales. Fronds pinnate, 10–70 × 5–20 cm, green, long thin scales along with midrib; stipe 1.5–10 cm, yellowish brown with thin long scales. Pinnae (2–)6–10 × 0.3–1 cm, ≥10 pairs, longer at apex of frond, reducing in length towards frond base, narrowly lanceolate, undivided, serrate, almost sessile. Sori submarginal, in a continuous line protected by scarious recurved leaf-margin.

Habitat: Shady rocks or serpentine.

Distribution in Turkey:

Antalya: Kemer-Ulupınar arası, 200 m, 08.vii.1979, *H. Peşmen* 4380 & *A. Güner* HUB 36744! Kemer, Götnük Deresi, Kalker vadisi, 50-200 m, 22.iii.1979, *H. Peşmen* 4199 & *A. Güner* HUB 36743! Alanya, *P. brutia* altı, c. 300 m, 04.viii.1982, *Ş. Yıldırım* 4452 HUB 36741! Düden Şalalesi, 23.iv.1976, *N. Kızılgül* AEF 5714!

Hatay: Valley above Dört Yol, S. bank, N. facing, 150 m, 12.viii.1969, *J. Darrah* 534, 634, 620! Antakya, Harbiye, şalale civarı, 180 m, *M. Coşkun* 321, *B. Şener* & *F. İlisulu*! Mersin: Silifke-Anamur arasında Değirmenönü, köy değirmeni yakını, 50 m, 09.ix.1962, *H. Kayacık* 2958!

General Distribution: Europe and Asia.

CONCLUSION

In the first volume of the *Flora of Turkey* (Henderson, 1965) the family currently recognised as Pteridaceae was represented by nine species from five genera and classified in five different families. Since this publication, further new records of *Cheilanthes tinaei* (Davis, 1988) and *Cryptogramma bithynica* (Jessen et al., 2012), have been published. In this revision the single family Pteridaceae in Turkey includes 11 species from seven different genera. Families Adiantaceae, Cryptogrammaceae, Gymnogrammaceae and Sinopteridaceae have been combined in the family Pteridaceae (see Christenhusz et al., 2011). The names of the genera *Anogramma*, *Adiantum*, *Cryptogramma* and *Pteris* have not changed since 1965. However, Turkish *Cheilanthes* species are now placed in three different genera: *Allosorus*, *Cosentinia* and *Paragymnopteris*. *Cheilanthes marantae* is a synonym of *Paragymnopteris marantae* and *Cheilanthes catanensis* is a synonym of *Cosentinia vellea*, whilst *Cheilanthes persica*, *Cheilanthes acrostica* and *Cheilanthes tinaei* are now placed within *Allosorus* (Christenhusz et al., 2011; Greuter & Raab-Straube, 2012).

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