

## An annotated check-list of the ferns of Iran

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## Abstract

Thirty-seven species of ferns are recorded from Iran. Most of them occur for natural reasons in the humid northern part of the country, in the zone of the Hyrcanian (Caspian) forests and are widespread in the northern temperate zone. *Polystichum woronowii* FOMIN, a well characterized species, belongs to a Hyrcano-Euxine element. Of special interest is the record of *Pteris dentata* FORSSK. ssp. *flabellata* (FORSSK.) RUNEM. from the Hyrcanian forests. This species was previously known from Yemen and Ethiopia southwards in Africa. *Cheilanthes marantae* (L.) DOMIN, *Asplenium viride* L. *Woodsia alpina* (BOLTON) S.F. GRAY, and *Polystichum braunii* (SPENN.) FEE are also new records for the flora of Iran. Several more species may be expected to be found in the future.

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## تقریظی بر لیست سرخسهای ایران

از : پروندلبو

## خلاصه

سی و هفت گونه از سرخسهای مختلف ایران گزارش داده میشود که اغلب آنها به دلایل طبیعی مختلف در قسمتهای مرطوب شمالی کشور از جمله منطقه جنگلهای هیرکانین روئیده و مناطق معتدله شمالی گسترش داده میشود. *Polystichum woronowii* FOMIN گونه کاملاً "شخصی از عناصر هیرکانین قفقاز میباشد. گونه *Pteris dentata* FORSSK. ssp. *flabellata* (FORSSK.) RUNEM. از جمله گونههای جالبی است که قبلاً از یمن و اتیوپی و قسمتهای جنوبی ترافریقاشناخته شده بود که اکنون از جنگلهای هیرکانین گزارش داده میشود. گونههای *Cheilanthes marantae* (L.) DON *Asplenium viride* L. *Woodsia alpina* (BOLTON) S.F. GRAY, *Polystichum braunii* (SPENN.) FEE نیز از گونههای جدیدی برای فلور ایران میباشد که گزارش داده میشوند. بنظر میرسد گونههای جدید دیگری برای فلور ایران در آینده یافت گردد.

### Introduction

Little interest has been shown in the ferns of Iran and no modern review of them exists. BOISSIER (1884) treated only 13 species from Iran in his *Flora Orientalis*. PARSA (1950) listed 30 species in his compilation for *Flore de l'Iran*, many under outdated names. WENDELBO et al. (1974) published a list in Farsi containing 34 species, and PARTOVI-TABAR (1975) presented a list of the localities of 26 species that were represented in the Herbarium of the Ministry of Agriculture, Evin.

In the present list 37 species of ferns are accepted. This number is very low for a country of the size of Iran, but is easily explained by the dry climate that prevails in most of the country. Most of the ferns for natural reasons occur in the humid, deciduous, broadleaved Hyrcanian forests developed between the southern coast of the Caspian Sea and the Elburz Mountains.

No doubt the ferns of Iran are under-collected and it is more than likely that several more species will be found in the future in the above mentioned forested region and most probably in the more humid western parts. Species to be expected are e.g. *Cryptogramma crista* (L.) HOOKER, *Thelypteris phegopteris* (L.) SLOSSON, *Athyrium distentifolium* OPIZ, *Woodsia livensis* (L.) R. BR., *Dryopteris dilatata* (HOFFM.) A. GRAY, *Gymnocarpium dryopteris* (L.) NEWM. and *Marsilia strigosa* WILLD.

The nomenclature follows that of *Flora Europaea* (TUTIN et al. 1964). The most commonly used synonyms have been listed.

### List of species

#### Ophioglossaceae

*Ophioglossum vulgatum* L. – Hyrcanian region, rarely collected.

*Botrychium lunaria* (L.) SWARTZ – Elburz Mts., Khorassan.

#### Sinopteridaceae

*Cheilanthes marantae* (L.) DOMIN Syn.: *Notholaena marantae* (L.) DESV., Fig. 1 – Previously not

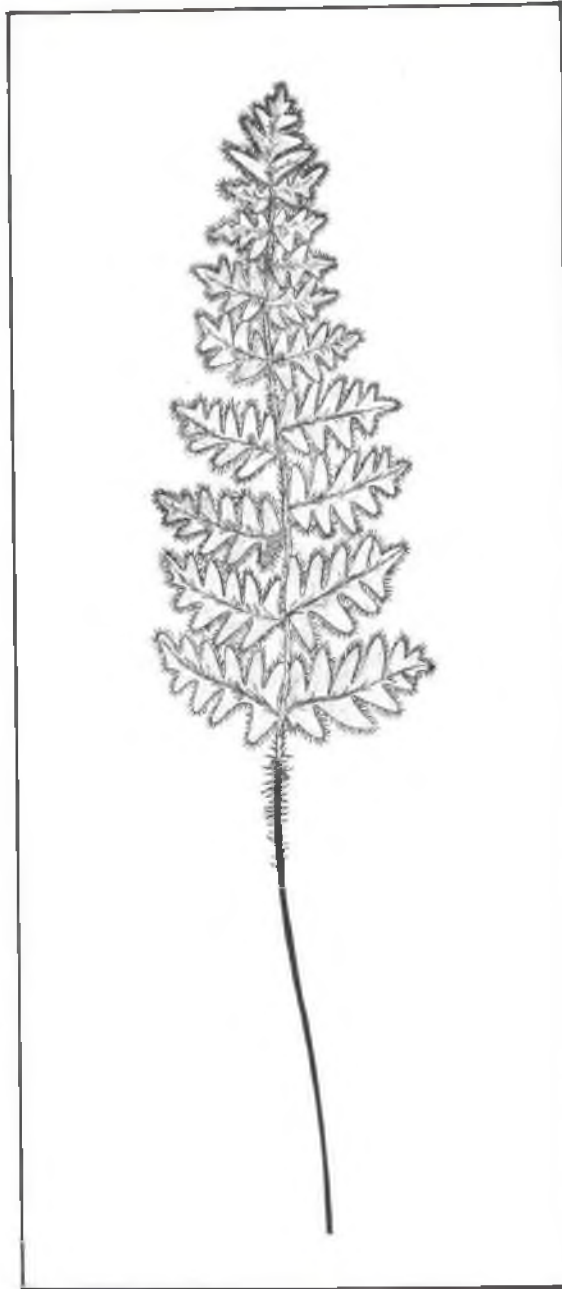
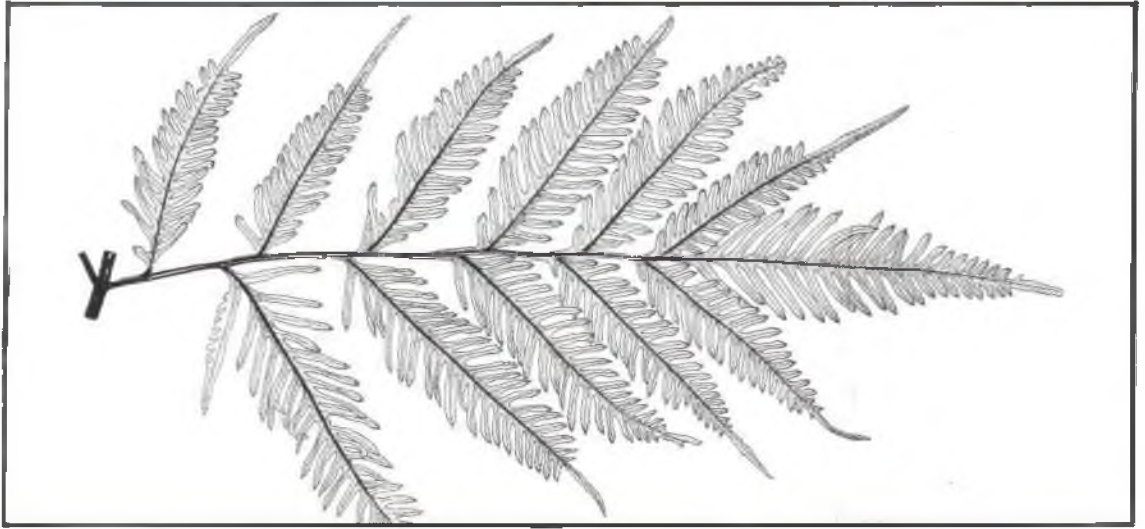


FIG. 1 *Cheilanthes marantae*. Nat. size.

FIG. 2 (Opposite page) *Pteris dentata* ssp. *flabellata*, lowermost pinna x 1/3.



recorded from Iran. Fars: Kazerun, Abgineh, crevices of S. facing cliffs, 820 m, FOROUGHJI & ASSADI 15098. Azarbaijan: Kaleibar Protected Region, between Makedi and Veinagh, c. 1500 m, at base of limestone rocks, WENDELBO and ASSADI 17018.

The locality in Fars is the south-easternmost station for this fern which is known from the Mediterranean to C. Europe and Caucasus.

*Cheilanthes fragrans* (L.f.) SWARTZ Syn.: *C. pteridioides* (RICH.) C. CHR.-S. and W. Iran.

*Cheilanthes persica* (BORY) KUHN Syn.: *C. szovitsii* FISCH. & C.A. MEY. - NW. and NE. Iran.

*Cheilanthes catanensis* (COS.) FUCHS Syn.: *Not-holaena lanuginosa* (DESF.) POIRËT; *N. vellea* (AITON) DESV.-S. Iran.

#### Adiantaceae

*Adiantum capillus-veneris* L. - Widespread, mostly in wet cliff-walls.

#### Pteridaceae

*Pteris dentata* FORSSK. ssp. *flabellata* (FORSSK.) RUNEM. Fig. 2. -Previously not recorded from Iran. Mazandaran: east of Noushahr, near Andarvar, c. 100 m, SABETI 7868; same area 10-50 m, WENDELBO and ASSADI 14574; Kelarabad, collector unknown (Evin Herbarium).

The surprising find of this species in the Hyrcanian forests needs some comments. Sterile material

(SABETI 7868) was found among the unnamed ferns of the Ariamehr Herbarium. The locality Andarvar east of Noushahr was revisited to obtain fertile material (WENDELBO and ASSADI 14574) and to check whether the fern could be considered native to the region. It was found to grow plentifully in a rather wide area with low forest consisting mainly of *Buxus hyrcana* but with scattered large specimens of *Celtis caucasica* and *Ulmus*, sp. There does not seem to be any reason not to consider *Pteris dentata* ssp. *flabellata* spontaneous to the Hyrcanian forests. Comparing our plant with the drawing and description given by RUNEMARK (1962) one cannot be much in doubt about the determination. Ssp. *flabellata* has previously not been found nearer to Iran than in Yemen, and it has its main distribution in Ethiopia and further southwards in Africa (cp. fig. 3).

*Pteris cretica* L. - Hyrcanian forests, frequent at lower altitudes.

#### Cryptogrammeae

*Onychium melanolepis* (DECNE) KUNZE Fig. 4. Southern Iran (Fig. 5). This species must be considered belonging to an Afro-Arabian element in the flora of Iran. It is quite a frequent plant found in shade of rocks and big stones as well as in crevices of rocks, mainly on south slopes. It is

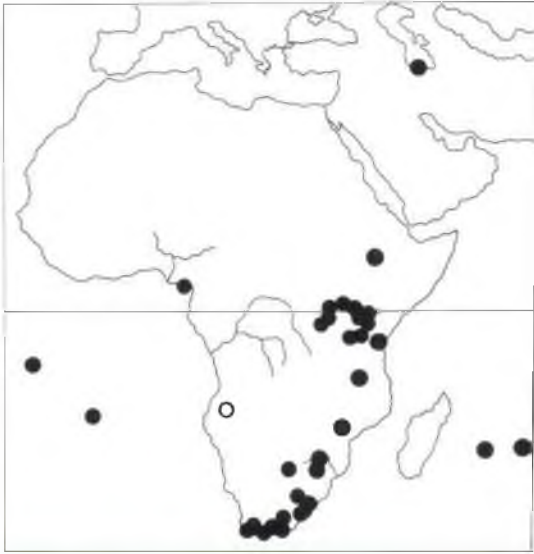


FIG. 3 The distribution of *Pteris dentata* ssp. *flabellata*. The open ring indicates a locality with specimens intermediate between ssp. *flabellata* and ssp. *dentata*. Redrawn from RUNEMARK (1962, fig. 6) with the Iranian locality added.

surprising that such a slender and finely divided fern can withstand the prevailing drought.

#### Gymnogrammeaceae

*Anogramma leptophylla* (L.) LINK Syn.: *Gymnogramme leptophylla* (L.) DESV. - N., SW. and S. Iran. A rarely collected plant. Obviously easily overlooked due to its small size.

#### Hypolepidaceae

*Pteridium aquilinum* (L.) KUHN Syn.: *Pteris aquilina* L. - One of the most common ferns in the Hyrcanian region. It has a strong tendency to invade clearings of the forest and easily becomes a weed in meadows at the margin of the forest. It is cut and used to cover young rice plants as well as fruit baskets.

#### Thelypteridaceae

*Thelypteris limbosperma* (ALL.) FUCHS Syn.: *Aspidium montanum* (VOGL.) ASCHERS.; *Nephrodium oreopteris* (EHRH.) DESV. - Mazan-

daran: Kelar Dasht, above Hasan Kif, 1600 m, in open forest of *Fagus orientalis* WENDELBO 14963. Gilan: Lasak valley, side valley from Kash-e Khale, (c. 5 km E. of Emam Zade Ebrahim), 750-1000 m, in *Fagus*-forest, WENDELBO and ASSADI 18609. The only previous record from Iran is that of ALEXEENKO from "Chaludescht" between Lan-gerud and Qazvin in the province of Gilan (BORN-MÜLLER 1908, 832).

*Thelypteris palustris* SCHOTT Syn.: *Nephrodium thelypteris* (L.) STREMPER -Hyrcanian region, in wet places.

#### Aspleniaceae

*Asplenium trichomanes* L. - Hyrcanian forests, usually in cliffs but also in stone walls in the cultivated areas. Frequent.

*Asplenium viride* L. Fig. 6. - Kerman: Kuh-e Lalezar, Zarda valley, 3700 m, in crevices of rocks, FOROUGHI and ASSADI 16339.

This species has previously not been recorded from Iran in the literature, but in the herbarium of the Natural History Museum of Vienna there is material collected in the Elburz Mountains.

*Asplenium adiantum-nigrum* L. - Hyrcanian forests, frequent.

*Asplenium septentrionale* (L.) HOFFM. - N. Iran. Semnan: Kuh-e Ghatri (Kuh-e Abr), N. of Shahrud, 2500 m, crevices of rocks in upper part of *Quercus macranthera*-forest, WENDELBO and FOROUGHI 12914 A. Gilan: Crevices of limestone rocks near top of mountain above Damesh, east of Rudbar, 2100 m, WENDELBO and ALA 18208. Azarbayejan: Kaleibar Protected Region, between Makedi and Veinagh, c. 1500 m, in crevices of limestone rocks, WENDELBO and ASSADI 17017. Previously recorded only once from Iran, in Azarbayejan (cp. PARSA 1950, 912).

*Asplenium ruta-muraria* L. - Azarbayejan, Elburz Mts., Khorassan.

*Asplenium haussknechtii* GODET & REUT. - Recorded from the Elburz Mts. by BORN-MÜLLER (1908, 831) as a variety of the preceding species. ALSTON (1958,9) confirmed the report.

[*Asplenium fissum* KIT. ex WILLD. - Reported



FIG. 4 *Onychium melanolepis*. Nat. size.

from SW. Iran by NABELEK (1929, 38). The material has not been available for checking. There is reason to believe that it has been wrongly named as the nearest stations are in the Balkans.]

*Ceterach officinarum* DC. – W. and N. Iran, rather frequent.

*Phyllitis scolopendrium* (L.) NEWM. Syn.: *Scolo-*

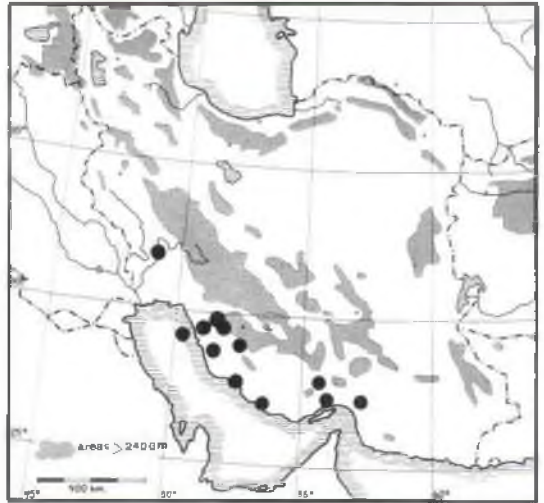


FIG. 5 Distribution of *Onychium melanolepis* in Iran. The nearest localities outside Iran are in Yemen.

*pendrium officinale* SM. – Hyrcanian forests. Very frequent in the lower parts, but also recorded from the mountains of Kordestan (BOISSIER 1884, 729)

#### Athyriaceae

*Athyrium filix-femina* (L.) ROTH. – Hyrcanian forests, frequent in the more humid parts.

*Cystopteris fragilis* (L.) BERNH. – Hyrcanian forests, frequent in cliff walls, but also found in cliffs above timber line in the Elburz Mountains; mountains of Kerman and Yazd. The material seen looks rather uniform, but as much of it is without ripe spores no attempt has been made to check whether it also includes the somewhat doubtful *C. dickieana* R. SIM.

*Woodsia alpina* (BOLTON) S.F. GRAY Fig. 6. – Azarbaijejan: Gardaneh Almas on the road from Asalem to Khalkhal, crevices of conglomerate rocks, 2350-2400m, WENDELBO and ASSADI 18492. This species is new to the flora of Iran.

*Matteuccia struthiopteris* (L.) BERNH. Syn.: *Onoclea struthiopteris* HOFFM. – Hyrcanian forests. Fertile leaves seem to be rather rare.

#### Aspidiaceae

*Polystichum woronowii* FOMIN Fig. 7B. – Hyr-

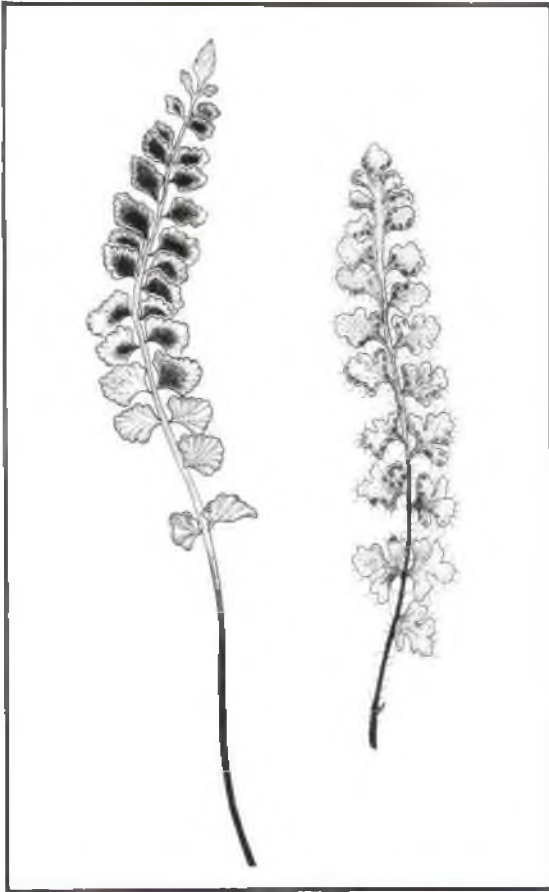


FIG. 6 A. *Asplenium viride*. Nat. size. B. *Woodsia alpina*. Nat. size.

canian forests, frequent. HENDERSON (1965, 56) stated that *P. woronowii* is closely related to *P. aculeatum*. The two species which very often grow together in the lower part of the Hyrcanian forests, however, look rather different and there is no difficulty in distinguishing between them. *P. woronowii* has a dull dark green colour (not glossy green as in *P. aculeatum*), the lamina of the leaf is oblong-triangular in outline (not lanceolate getting markedly narrower towards base). The lowermost pinna on each side is somewhat longer than the next above and only little shorter than the longest of the pinnae. The pinnules are also smaller and distinctly stalked.

*Polystichum aculeatum* (L.) ROTH Syn.: *Aspidium lobatum* (HUDS.) SWARTZ Fig. 7A - Hyrcanian forests, frequent.

*Polystichum braunii* (SPENN.) FEE Fig. 7C Gilan: road from Asalem to Khalkhal, 1080 m, in *Fagus orientalis*-forest, WENDELBO and SHIRDELPUK 14898; Lasak valley, side valley from Kash-e Khale (c.5 km. E. of Emam Zade Ebrahim), 750-1000 m, WENDELBO and ASSADI 18609. Not previously recorded from Iran.

*Dryopteris filix-mas* (L.) SCHOTT Syn.: *Aspidium filix-mas* (L.) SWARTZ; *Nephrodium filix-mas* (L.) STREMPER - Hyrcanian forests, mostly in the higher regions.

*Dryopteris borrieri* NEWMAN - Hyrcanian forests, frequent.

*Dryopteris pallida* (BORY) FOMIN - Hyrcanian forests, frequent.

#### Blechnaceae

*Blechnum spicant* (L.) ROTH - Gilan: Lasak valley, side valley from Kash-e Kale (c. 5 km E. of Emam Zade Ebrahim), 750-1000 m, on slope in *Fagus orientalis* -forest with undergrowth of *Vaccinium arctostaphylos*, WENDELBO & ASSADI 18607. Recorded only once from Iran (BORN-MÜLLER 1908, 831).

#### Polypodiaceae

*Polypodium vulgare* L. - Hyrcanian forests, frequent. Very often one finds this species as an epiphyte on moss-clad stems of different trees.

*Polypodium interjectum* SHIVAS - Hyrcanian forests, rare. Recorded by WENDELBO (1962, 5). The localities of *P. vulgare* and *P. interjectum* have been exchanged in the mentioned paper, thus the collecting number 168 belongs to the latter species. Collected close to the same locality in the Haraz valley in 1974 by the present author. The plant looks very distinct with its long, acutish segments.

#### Marsiliaceae

*Marsilia quadrifolia* L. - Hyrcanian region, collected a few times in rice-fields and wet places, but is obviously not a rare plant.

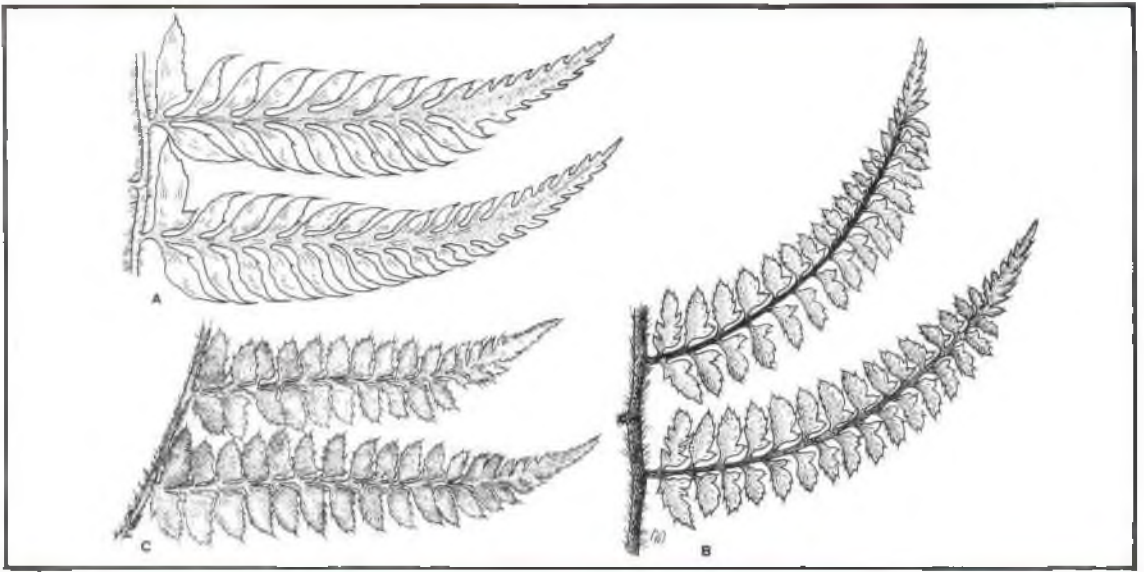


FIG. 7 Primary pinnae from middle part of leaf of: A. *Polystichum aculeatum*, B. *P. woronowii*, C. *P. braunii*. x 2/3.

### Salviniaceae

*Salvinia natans* (L.) ALL. – Hyrcanian region, rather frequent, rice-fields and other wet places.

### References

- ALSTON, A.H.G. 1958. Pteridophyta in K.H. RECHINGER & M. KÖEIE. *Symbolae Afghanicae*. IV. – *Biol. Skr. Dan. Vid. Selsk.* 10,3:7-12.
- BOISSIER, E. 1884. *Flora Orientalis* 5, 2. – Geneva et Basiliae.
- BORNMÜLLER, J. 1908. Beiträge zur Flora der Elburzgebirge Nord-Persiens. – *Bull. Herb. Boiss.* 2 Ser., 8:821-836.
- HENDERSON, D.M. 1965. Filicales in P.H. DAVIS. *Flora of Turkey* 1: 38-63. – Edinburgh.
- NABELEK, FR. 1929. *Iter Turcico-Persicum Pars V.* – *Publ. Fac. Sci. Univ. Masaryk* 111:3-42.
- PARSA, A. 1950. *Flore de l'Iran*. – Tehran.
- PARTOVI-TABAR, PARVINE 1975. Liste des plantes de l'Herbier d'Evine. Pteridophyta. – Institut de Recherches Entomologiques Phytopathologique d'Evine. Departement de Botanique No. 4. 12 pp. Tehran.
- RUNEMARK, H. 1962. A revision of *Pteris dentata* and related species. – *Bot. Notiser* 115: 177-195.
- TUTIN, T.G. & al. 1964. *Flora Europaea* 1. – Cambridge.
- WENDELBO, P. 1962. *Iranian Plants V.* – *Acta Univ. Bergensis Ser. Math. Nat.* 1962 No.1.
- et al. 1974. *Sarakshshaye Iran (in Farsi)*. Ariamehr Botanical Garden Handbook 1. – Tehran.