

CONTRIBUTIONS TOWARDS A BRYOPHYTE FLORA OF IRAN,
NEW RECORDS FROM IRAN

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40 additional taxa are reported as new to the bryophyte flora of Iran. They are listed with their localities in this country. Bryogeographical remarks are given on some species.

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شمه‌ای از فلور بریوفیت ایران ،
گزارشات جدیدی از ایران

از: فری و کورشنر

۴۰ واحد رده‌بندی به فلور بریوفیت ایران اضافه شده و محل جمع‌آوری آنها ذکر میگردد، علاوه براین پراکندگی جغرافیایی تعدادی از گونه‌ها موردنظر قرار میگیرد.

Introduction

Størmø (1963) published the moss collection made in 1959 by Wendelbo in Iran and summarized all known finds up to 1962. Frey (1974) listed all known liverworts from Iran. Since this time only a few papers on the bryophyte flora and vegetation of this country have been published (Arnell 1963; Frey & Probst 1973, 1974 a, b; Frey & Kürschner 1977; Tregubov & Tregubov 1969 – 1970).

Between 1972 and 1977 we made several journeys to Iran and to Afghanistan for geobotanical research. There we had the opportunity to collect many bryophytes and also to investigate the bryophyte flora and vegetation, especially of Iran. We are greatly indebted to the Deutsche Forschungsgemeinschaft, the Sonderforschungsbereich 19 (Tübinger Atlas des Vorderen Orients) and the Department of Environmental Conservation of Iran, which sponsored this journeys.

The first results (Frey 1974; Frey & Kürschner 1977, 1979) indicate that the bryophyte flora of Iran, particularly in the southern Caspian forest region, can be expected to show much more variety than had previously been assumed. This can be seen from the many species reported for the first time in this study, such as *Pedinophyllum interruptum*, *Riccardia multifida*, *Dicranum scoparium*, *Rhodobryum roseum*, *Mnium punctatum*, *Mnium stellare*, *Rhytidiadelphus triquetrus*, *Rhytidium rugosum* and *Pogonatum aloides*, which are well known to many botanists and easy to recognize. It is clear that the bryophyte flora of this country has been

severely neglected up to now.

Some of the species listed are of special interest from the bryogeographical point of view. *Jubula hutchinsiae* subsp. *Javanica*, found in the Caucasus and in the forests on the southern coast of the Caspian Sea (Hyrcanian forest area) and Black Sea (Euxine forest area), appears to be a relict of the late Tertiary and Quaternary. The nearest other finds are in the Himalayas, followed by South-east Asia and Oceania (Guercke 1978). *J. hutchinsiae* is apparently an old tribe which was divided into two separate areas already before the ice age. The western tribe, *J. hutchinsiae* subsp. *hutchinsiae*, is distributed in the European and Macaronesian region, whereas the eastern tribe, *J. hutchinsiae* subsp. *Javanica*, has survived in the forest refuge areas on the southern coast of the Black and Caspian Seas. The one is a Tertiary relict, and the other, like *Palamocladium euchloron*, is a palaeoendemic which is descended from a tropical flora of the Indo - Malaysian type and which has been able to live on under suitable climatic conditions. Among the flowering plants a number of species with the same distribution, such as *Albizia julibrissin*, *Gleditsia caspica* and *Nelumbo speciosum*, are well known.

Trachycystis ussuriensis indicates a north and east Asian influence and probably immigrated to the Elburz from the Caucasus.

Conspicuous among the *Mniaceae* is *Mnium thomsonii* listed as a new find for Iran by Frey & Kürschner (1977), a species which is distributed in the subarctic and northern boreal zone. It occurs in mountain regions in southern latitudes, for example on the eastern periphery of

the Elburz mountains, at Kuh - e Alw Bagh massif. The records for *Fossombro-
nia caespitiformis* and *Southbya nigrella*
are the southeasternmost localities known
for these species.

Among the species treated in this
paper which are new to the bryophyte
flora of Iran 5 species, *Anomodon longi-
folius*, *A. rostratus*, *Trachycystis ussurie-
nsis*, *Orthotrichum obtusifolium* and
Encalypta ciliata, may be regarded as
new to the flora of the Middle East.

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identification and hints from R. Grolle.
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J. Váná .

The material is deposited in the her-
barium of W. Frey and duplicates are
in the herbarium of the Botanical Insti-
tute of Iran, Tehran. The numbers men-
tioned refer to the herbarium of W. Frey.

LIST OF SPECIES

MUSCI

Polytrichaceae

Pogonatum aloides (Hedw.) P. Beauv.
Mazandaran: 12 km S. of Abbasabad,
400 m, lowland forest, on soil, 1- 2533.

Dicranaceae

Dicranum scoparium Hedw.
Mazandaran: Kelardasht, 1200 m, mont-
ane forest, on rocks and soil, 1 - 2597,
1 - 2601.

Fissidentaceae

Fissidens cristatus Wils. ex Mitt.
Mazandaran: Kelardasht, 1200 m, mont-
ane forest, at a brook, 1 - 2545; S. of
Abbasabad, 700 m, lowland forest, on
rocks, 1 - 3232 .

Fissidens exilis Hedw.
Mazandaran: S. of Abbasabad, 700 m,
lowland forest, on soil, 1 -3223 .

Fissidens minutulus Sull.
Mazandaran: Polsefid, direction to pan-
dar, 1200 m, montane forest, on rocks,
1 - 3231 .

Fissidens rivularis (Spruce) B. S. G.
Mazandaran: S. of Abbasabad, 400 m,
lowland forest, waterfall, 1 - 3201 .

Pottiaceae

Tortella humilis (Heu .) Jenn.
Mazandaran: Babolsar, — 10 m. dune,
1- 763.

Encalyptaceae

Encalypta ciliata Hedw.
Mazandaran: 5 km SW. of Rudbarak(Kel-
ardasht), 2100 m, on rocks, 1 - 3218.

Bryaceae

Rhodobryum roseum (Hedw.) Limpr .
Mazandaran: 12 km S. of Abbasabad,
400 m, lowland forest, on soil, 1 - 2536.

Mniaceae

Trachycystis ussuriensis (Maack & Regel)

Kop.

Mazandaran: Chalus - Kandevar road, 1850 m, scrub, leg. W. Probst, det. T. Koponen, 1 - 2622.

Mnium marginatum (With.) P. Beauv.

Mazandaran: 7 km S. of Ramsar, 400 m, lowland forest, on rocks, 1 - 2521; 2 km SW. of Makarud (Kelardasht), 1200 m, montane forest, on soil and rocks, 1 - 3248; 5 km SW. of Rudbarak (Kelardasht), 2100 m, montane forest, on rocks, 1 - 3253; Dalir - valley (Makarud at Marzanabad), 1800 m, montane forest, on soil and rocks, 1 - 3241, 1 - 3252.

Mnium punctatum Hedw.

Gilan: Between Hashtpar and Hirabad, 600 m, lowland forest, 1 - 3246.

Mnium stellare Hedw.

Mazandaran: Between Ramsar and Neydasht, 800 m, lowland forest, on soil, 1 - 113; Kelardasht, 1200 m, montane forest, on rocks and soil, 1 - 2512; FAO-Camp near Lajim (15 km E. of Polsefid), 1600 m, montane forest, on soil, leg. W. Probst, 1-119. — Ostan-e Markazi: Gadok - pass (Firouzkuh-Shahi road), 2100 m, on rocks, leg. W. Probst, 1 - 118 .

Bartramiaceae

Bartramia halleriana Hedw.

Mazandaran: 5 km SW. of Rudbarak (Kelardasht), 2100 m, montane forest, on rocks, 1 - 3185 .

Orthotrichaceae

Orthotrichum anomalum Hedw. var. *saxatile* Mild.

Khorasan: Mountain range S. of Mehmanak (Gorgan - Bodjnurd road), 900 m, on calcareous rocks, 1 - 2066, 1 - 2069; 5 km W. of Havar, 1200 m, on calcareous rocks, 1 - 2516.

Orthotrichum obtusifolium Brid.

Khorasan: S. of Jowzak (Gorgan - Bodjnurd road), 1700 m, on *Quercus castaneifolia*, 1 - 3094; — Fars: 30 km NW. of Ardekan, 2000 m, on *Pyrus syriaca*, 1 - 2508 .

Fontinalaceae

Fontinalis duriaei Schimp .

Gilan: Langarud, — 10 m, rice - field, in water, 1 - 2620; — Mazandaran: 2 km E. of Mahmudabad, — 10 m, alluvial forest, in water, 1 - 2617 .

Lembophyllaceae

Isothecium myurum Brid.

Mazandaran: Kelardasht, 1300 m, montane forest, on rocks, 1 - 2579.

Thuidiaceae

Anomodon longifolius (Brid.) Hartm.

Mazandaran: Kelardasht, 1200 m, montane forest, on *Carpinus*, 1 - 2105; FAO-Camp near Lajim (15 km E. of Polsefid), 1600 m, montane forest, on soil, leg. W. Probst, 1 - 89; near Behshahr in the direction to Sari, 100 m, on soil, 1 - 2053.

Anomodon rostratus (Hedw.) Schimp.

Mazandaran: 7 km S. of Ramsar, 400 m, lowland forest, on rocks, 1 - 2078 .

Brachytheciaceae

Oxyrrhynchium schleicheri (Hedw. f.)
Roell.

Gilan: 12 km W. of Ramsar, 100 m,
lowland forest, on soil, 1-2535. —

Mazandaran: 7 km S. of Gorgan, 450 m,
lowland forest, on soil, 1 - 2529.

Rhytidiaceae

Rhytidiadelphus triquetrus (Hedw.)
Warnst.

Mazandaran: 5 km SW. of Rudbarak
(Kelardasht), 2100 m, montane forest,
on rocks, 1 - 2081; FAO - Camp near
Lajim (15 km E. of Polsefid), 1700 m,
on soil, leg. W. Probst, 1-168, 1-169.

Rhytidium rugosum (Hedw.) Kindb.

Mazandaran: Kelardasht, 1300 m, mon-
tane forest, on soil, 1 - 2626.

HEPATICAЕ

Aytoniaceae

Plagiochasma rupestre (Forst.) Steph.

Ostan-e Hormozgan: 5 km N. of Hajiabad,
1300 m, 2-378; 20 km S. of Kahgan,
1000 m, 2-381. — Fars: 17 km E. of
Kazerun, 1100 m, 2-386; 91 km from
Shiraz in direction to Kazerun, 1400-
1500 m, on soil, 72 - 1577, 2-204, det. H
Bischler, in Bischler (1979).

Ricciaceae

Riccia artromarginata Levier

Ostan-e Hormozgan: 20 km S. of Khagan

(N. of Bandar - Abbas), 1000 m, Calcar-
eous rocks, 2-379, det: S. Jovet - Ast.

Riccia lamellosa Raddi

Ostan-e Hormozgan: 20 km S. of Khagan
(N. of Bandar-Abbas), 1000 m, calcareous
rocks, 2-390, det, S. Jovet - Ast.

Riccia trichocarpa Howe

Ostan-e Hormozgan: Kuh-e Geno near
Bandar - Abbas, 2050 m, calcareous
rocks, 3-384, det. S. Jovet - Ast.

Codoniaceae

Fossombronia caespitiformis De Not. ex
Rabenh.

Fars: 70 km NE. of Borazjan, 300 m, wet
gorge, leg. W. Kramer, det. R. Grolle,
2 - 375.

Lophoziaceae

Barbilophozia barbata (Schmid.) Loeske

Mazandaran: 5 km SW. of Rudbarak
(Kelardasht), 2100 m, montane rock
formation, on soil, det. R. Grolle, 2-459.

Jungermanniaceae

Jungermannia gracillima Sm.

Mazandaran: 4 km SW. of Makarud
(Kelardasht), 1100 m, montane forest,
on soil, det. R. Grolle & Váná, 2 - 338;
12 km S. of Abbasabad, 400 m, waterfall,
on soil, det. R. Grolle, 2 - 450.

Jungermannia hyalina Lyell

Mazandaran: 12 km S. of Abbasabad,
400 m, lowland forest, on rocks, det.
R. Grolle & J. Váná, 2 - 452.

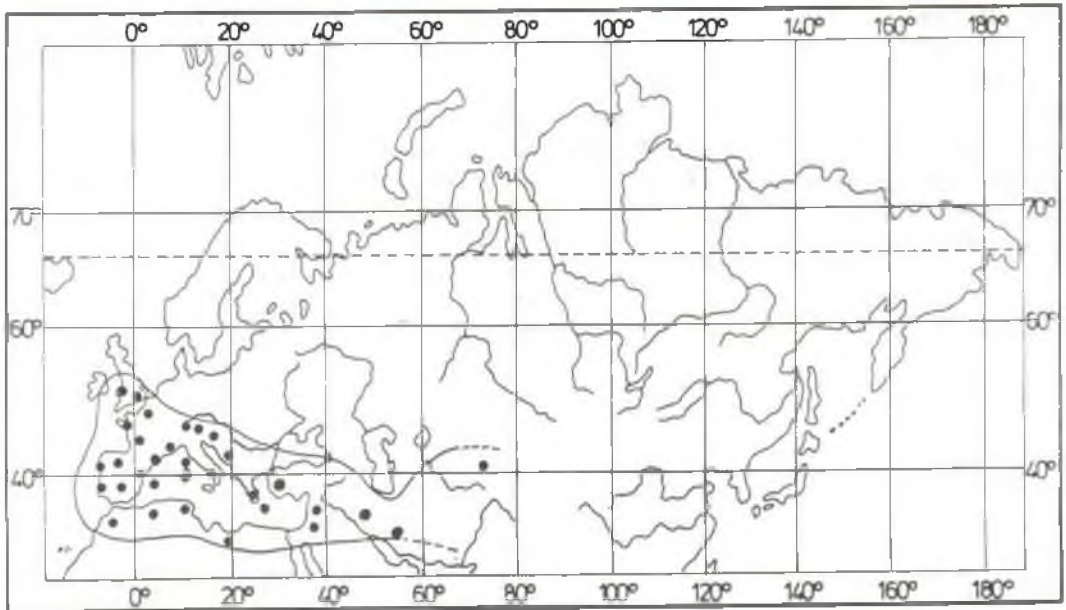


Fig. 1. Distribution of *Southbya nigrella* in Western Europe, the Mediterranean area and in South West Asia (after Ladyzhenskaja & Gajevaja 1975).

Jungermannia subulata Evans

Mazandaran: 12 km S. of Abbasabad, 400 m, lowland forest, on soil, det. R. Grolle, 2-451, 2-460.

Plagiochilaceae

Pedinophyllum interruptum (Nees) Kaal.

Mazandaran: 12 km S. of Abbasabad, 400 m, lowland forest, on rocks 2-434.

Lophocoleaceae

Chiloscyphus pallescens (Ehrh. ex Hoffm.) Dum.

Mazandaran: 4 km SW. of Makarud (Kelardasht), 1100 m, montane forest, on soil, det. R. Grolle, 2-336.

Lophocolea cuspidata (Nees) Limpr.

Mazandaran: 12 km S. of Abbasabad, 400 m, lowland forest, on soil, 2-489.

Scapaniaceae

Scapania nemorea (L.) Grolle

Mazandaran: Elburs, Abbasabad In the direction to Kelardasht, 400 m, waterfall, 2-453, det. R. Grolle.

Jubulaceae

Jubula hutchinsiae (Hook.) Dum. subsp. *javanica* (Steph.) Verd.

Mazandaran: 12 km S. of Abbasabad, 400 m, lowland forest, on rocks, det. R. Grolle & W.R. Guercke, 2 - 454; 700 m, montane forest, on rocks, det. R. Grolle, 2-455.

Southbyaceae

Southbya nigrella (De Not.) Henriques

Fars: 70 km NE. of Borazjan, 300 m, wet gorge, leg. W. Kramer, det. R. Grolle, 2-374b.

Aneuraceae

Riccardia multifida (L.) S. Gray

Mazandaran: S. of Abbasabad, 700 m, lowland forest, on soil, 2-436.

Riccardia palmata (Hedw.) Carruth.

Mazandaran: 2 km SW. of Makarud (Kelardasht), 1200 m, montane forest, on rotten wood, 2-435.

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Appendix

- Concerning Frey & Kürschner: Studies on the bryophyte flora and vegetation of the Mohammad Reza Shah National Park, N. Iran. — *Iran. Journ. Bot.* 1(2): 137 — 153, 1977.
- (1) *Plagiochila asplenioides* (L.) Dum. var. *minor* Lindenb. instead of *Plagiochila asplenioides* (L. em Tayl.) Dum.
- (2) *Mnium seligeri* Jur. does not occur in the Mohammad Reza Shah National Park.