

**Zeitschrift:** Candollea : journal international de botanique systématique = international journal of systematic botany  
**Herausgeber:** Conservatoire et Jardin botaniques de la Ville de Genève  
**Band:** 46 (1991)  
**Heft:** 2

**Artikel:** Liverworts of Turkey and their position in South-West Asia  
**Autor:** Gökler, Isa / Öztürk, Münir  
**DOI:** <https://doi.org/10.5169/seals-879833>

### **Nutzungsbedingungen**

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. [Siehe Rechtliche Hinweise.](#)

### **Conditions d'utilisation**

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. [Voir Informations légales.](#)

### **Terms of use**

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. [See Legal notice.](#)

**Download PDF:** 03.01.2025

**ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>**

# Liverworts of Turkey and their position in South-West Asia

ISA GÖKLER  
&  
MÜNİR ÖZTÜRK

## ABSTRACT

GÖKLER, I. & M. ÖZTÜRK (1991). Liverworts of Turkey and their position in South-West Asia. *Candollea* 46: 359-366. In English, English and German abstracts.

In this study, the liverworts existing in Turkey are listed according to the grid square system and *Asterella lindenbergiana* (Corda ex Nees) H. Arn. is reported for the first time from here. A taxonomical and ecological comparison of the Turkish liverwort flora with that of South-West Asian countries is given.

## ZUSAMMENFASSUNG

GÖKLER, I. & M. ÖZTÜRK (1991). Lebermoose aus der Türkei und ihrer Lage in Südwest Asien-Länder. *Candollea* 46: 359-366. Auf English, mit englischer und deutscher Zusammenfassung.

In dieser Arbeit sind die Lebermoose nach dem Quadratsystem gelistet und darunter ist *Asterella lindenbergiana* (Corda ex Nees) H. Arn. für die Türkei neu erfunden. Ausserdem sind diese Pflanzen mit den Floren der Südwest Asien-Länder nach ihrer taxonomischen und ökologischen Hinsicht verglichen.

The latest list of Turkish liverworts has been published by CETIN (1988), based on the publication of HENDERSON & PRENTICE (1969). Although it represents a general potential of this group in Turkey, however, many gaps are visible in it. As such, current studies were undertaken so as to put forth the present situation in the light of work done by us (GÖKLER & al., 1984; GÖKLER, 1986, 1989; GÖKLER & ÖZTÜRK, 1986, 1987, 1989; ÖZTÜRK & GÖKLER, 1988; SECMEN & al., 1989) and the papers published by other workers (HENDERSON, 1961; WALTHER, 1967, 1970; HENDERSON & PRENTICE, 1969; VANA, 1974; CRUNDWELL & NYHOLM, 1979; DÜLL, 1983; GROLLE, 1983; BISCHLER & JOVET-AST, 1986; CETIN, 1988, 1989a, 1989b; EL-OQLAH & al., 1988).

## List of taxa

In all 145 species are seen to show a distribution in Turkey. Out of these 1 species has been recorded newly. This is given as follows:

### *Asterella lindenbergiana*

Aydin: Bozdoğan, Ziyaretli village alongside the stream, West, 500 m, 16.4.1986 (37°39', 28°19'E). EGE herbarium No. 8710 (*Gökler 705/115*).

The other species are listed below according to GROLLE (1983). The distributional areas reported before are given with the species according to the grid square system and new sites have been added to it which are designated by an asterisk (\*). The distributional areas of the species, reported for the first time in the list of CETIN (1988) and EL-OQLAH & al. (1988) are not given in the list, because no such record could be traced.

*ANTHOCEROPSIDA, ANTHOCEROTALES*

Anthocerotaceae Dum.

- Anthoceros punctatus* L. .... 1, 4, 6, 11, \*12  
*Phaeoceros bulbiculosus* (Brotero) Prosk. .... 6  
*Phaeoceros laevis* (L.) Prosk. .... 1, 4, 6, 11, 12

*MARCHANTIOPSIDA, SPHAEROCARPALES*

Riellaceae Ebgler

- Riella helicophylla* (Bory & Mont.) Mont. .... —

Sphaerocarpaceae (Dum.) Heeg

- Sphaerocarpos michelii* Bellardi .... 6, 11  
*Sphaerocarpos texanus* Aust. .... 11

*MARCHANTIALES*

Targioniaceae Dum.

- Targionia hypophylla* L. .... 2, 6, 11, \*12, 13  
*Targionia lorbeeriana* K. Müll. .... 6, 11

Aytoniaceae Cavers

- Plagiochasma rupestre* (R. & G. Forst.) Steph. .... 6, 11, \*12  
*Reboulia hemisphaerica* (L.) Raddi .... 4, 6, 7, 8, 11, 12, 13  
*Mannia androgyna* (L.) Evans. .... 12  
*Mannia fragrans* (Balbis) Frye & Clark .... —  
*Asterella gracilis* (F. Web.) Underw. .... 1  
*Asterella lindenbergiana* (Corda ex Nees) H. Arn. .... \*11

Conocephalaceae K. Müll. ex Grolle

- Conocephalum conicum* (L.) Underw. .... 1, 2, 3, 4, 5, 6, 8, 11, 12

Lunulariaceae Klinggr.

- Lunularia cruciata* (L.) Lindb. .... 1, 2, 3, 4, 6, 9, 11, 12

Cleveaceae Cavers

- Clevea rousseliana* (Mont.) Leit. .... 8, 12  
*Athalamia hyalina* (Sommerf.) Hatt. .... 1  
*Athalamia spathysii* (Lindenb.) Hatt. .... —

Marchantiaceae (Bisch.) Lindley

- Marchantia alpestris* (Nees) Burgeff. .... 1, 6, 9  
*Marchantia paleacea* Bertol. .... 4, 12  
*Marchantia polymorpha* L. .... 1, 2, 4, 5, 6, 8, 9, \*11, 12, 13, 15

Corsiniaceae Engler

- Corsinia coriandrina* (Spreng.) Lindb. .... 6, 11, 12

Oxymitraceae K. Müll. ex Grolle

- Oxymitra paleacea* Bisch. ex Lindenb. .... 6, 11, 12

## Ricciaceae Reichenb.

<i>Ricciocarpos natans</i> (L.) Corda .....	2
<i>Riccia bicarinata</i> Lindb. ....	6, 11, 12
<i>Riccia bifurca</i> Hoffm. ....	8
<i>Riccia ciliata</i> Hoffm. ....	6, 11
<i>Riccia ciliifera</i> Link ex Lindenb. ....	1, 6
<i>Riccia crystallina</i> L. emend. Raddi .....	6
<i>Riccia frostii</i> Aust. ....	3, 15
<i>Riccia gluca</i> L. ....	11
<i>Riccia gougetiana</i> Durieu & Mont. ....	6, 11
<i>Riccia lamellosa</i> Raddi .....	—
<i>Riccia macrocarpa</i> Levier .....	6, 11
<i>Riccia michelii</i> Raddi .....	11, 12
<i>Riccia nigrella</i> DC. ....	6, 11
<i>Riccia papillosa</i> Moris .....	—
<i>Riccia rhenana</i> Lorbeer .....	6
<i>Riccia sorocarpa</i> Bisch. ....	6, 11, 12
<i>Riccia trabutiana</i> Steph. ....	—

## METZGERIALES

## Metgeriaceae Klinggr.

<i>Metzgeria conjugata</i> Lindb. ....	3, 4, *6, 13
<i>Metzgeria furcata</i> (L.) Dum. ....	1, 2, 3, 4, 6, *11, 12, 13
<i>Apometzgeria pubescens</i> (Schrank) Kuwah. ....	4

## Aneuraceae Klinggr.

<i>Aneura pinguis</i> (L.) Dum. ....	12
<i>Riccardia chamedryfolia</i> (With.) Grolle .....	6
<i>Riccardia multifida</i> (L.) S. Gray .....	4, 9
<i>Riccardia palmata</i> (Hedw.) Carruth. ....	2, 4

## Pelliaceae Klinggr.

<i>Pellia endiviifolia</i> (Dicks.) Dum. ....	1, 2, 3, 4, 6, 7, 9, 11, 12
<i>Pellia epiphylla</i> (L.) corda .....	2, 4, *11
<i>Pellia neesiana</i> (Gott.) Limpr. ....	4, 6

## Blasiaceae Klinggr.

<i>Blasia pusilla</i> L. ....	4
-------------------------------	---

## Codoniaceae Klinggr.

<i>Fossombronia angulosa</i> (Dicks.) Raddi .....	2, 4, 6, 11
<i>Fossombronia caespitiformis</i> De Not. ex Rabenh. ....	6, 11
<i>Fossombronia pusilla</i> (L.) Nees .....	4, 6, 11, *12
<i>Petalophyllum ralfsii</i> (Wils.) Nees & Gott. ....	6, 11, 12

## JUNGERMANNIALES

## Lophoziaceae (Joerg.) Vanden Berghen

<i>Barbilophozia attenuata</i> (Mart.) Loeske .....	4
<i>Barbilophozia barbata</i> (Schmid. ex Schreb.) Loeske ....	4, 6
<i>Barbilophozia hatcheri</i> (Evans) Loeske .....	1, 2, 6
<i>Lophozia badensis</i> (Gott.) Schiffn. ....	—
<i>Lophozia bicrenata</i> (Schmid. ex Hoffm.) Dum. ....	1
<i>Lophozia collaris</i> (Nees) Dum. ....	4
<i>Lophozia excisa</i> (Dicks.) Dum. ....	6

<i>Lophozia incisa</i> (Schrad.) Dum. ....	4
<i>Lophozia longidens</i> (Lindb.) Macoun .....	4
<i>Lophozia longiflora</i> (Nees) Schiffn. ....	2, 4
<i>Lophozia sudetica</i> (Nees ex Hüb.) Grolle .....	4
<i>Lophozia turbinata</i> (Raddi) Steph. ....	6, 11, 12
<i>Lophozia ventricosa</i> (Dicks.) Dum. ....	1, 4
<i>Gymnocolea acutiloba</i> (Schiffn.) K. Müll. ....	4
<i>Gymnocolea inflata</i> (Huds.) Dum. ....	—
<i>Tritomaria exsecta</i> (Schrad.) Loeske .....	4
<i>Tritomaria exsectiformis</i> (Breidl.) Loeske .....	1
<i>Tritomaria quinquedentata</i> (Huds.) Buch .....	4
Jungermanniaceae Reichenb.	
<i>Jamesoniella autumnalis</i> (DC.) Steph. ....	4
<i>Mylia taylori</i> (Hook.) S. Gray .....	2
<i>Jungermannia atrovirens</i> Dum. ....	4, *11, *12
<i>Jungermannia caucasica</i> Vana .....	4
<i>Jungermannia gracillima</i> Sm. ....	2, 4, 6
<i>Jungermannia handelii</i> (Schiffn.) Amak. ....	4
<i>Jungermannia hyalina</i> Lyell .....	4
<i>Jungermannia lignicola</i> (Schiffn.) Grolle .....	4
<i>Jungermannia obovata</i> Nees .....	4
<i>Jungermannia sphaerocarpa</i> Hook. ....	1, 4
<i>Jungermannia subtilissima</i> Schiffn.) Grolle .....	3, 4
<i>Nardia compressa</i> (Hook.) S. Gray .....	4
Gymnomitriaceae Klinggr.	
<i>Marsupella emarginata</i> (Ehrh.) Dum. ....	4
<i>Marsupella funckii</i> (Web. & Mohr) Dum. ....	4
<i>Gymnomitrium concinnatum</i> (Lightf.) Corda .....	4
Arnelliaceae Nakai	
<i>Southbya nigrella</i> (De Not.) Henriques .....	6, 11, 12
<i>Southbya tophacea</i> (Spruce) Spruce .....	6, 11, 12
<i>Gonylanthus ericetorum</i> (Raddi) Nees .....	11
Plagiochilaceae (Joerg.) K. Müll.	
<i>Plagiochila asplenioides</i> (L. emend. Tayl.) Dum. ....	2, 4, 5
<i>Plagiochila porelloides</i> (Torey ex Nees) Lindenb. ....	2, 3, 4, *6, *11
Geocalycaceae Klinggr.	
<i>Lophocolea bidentata</i> (L.) Dum. ....	1, 2, 3, 4, 6
<i>Lophocolea heterophylla</i> (Schrad.) Dum. ....	2, 3, 4, 6
<i>Lophocolea minor</i> Nees .....	1, 2, 3, 4
<i>Chiloscyphus pallescens</i> (Ehrh. ex Hoffm.) Dum. ....	*4, 6
<i>Chiloscyphus polyanthos</i> (L.) Corda .....	1, 2, 4, 5, 6
Scapaniaceae Migula	
<i>Diplophyllum albicans</i> (L.) Dum. ....	4
<i>Diplophyllum taxifolium</i> (Wahlenb.) Dum. ....	4
<i>Scapania aequiloba</i> (Schwaegr.) Dum. ....	2, 4
<i>Scapania aspera</i> M. & H. Bern. ....	4
<i>Scapania compacta</i> (A. Roth) Dum. ....	1, 6
<i>Scapania curta</i> (Mart.) Dum. ....	4
<i>Scapania irrigua</i> (Nees) Nees .....	1, 4
<i>Scapania nemorea</i> (L.) Grolle .....	2, 3, 4
<i>Scapania umbrosa</i> (Schrad.) Dum. ....	4

- Scapania undulata* (L.) Dum. .... 1, 4, 6, \*11  
*Scapania verrucosa* Hegg ..... 3, 4
- Cephaloziellaceae Douin  
*Cephaloziella baumgartneri* Schiffn. .... 6, 11  
*Cephaloziella divaricata* (Sm.) Schiffn. .... 4, 6, 11  
*Cephaloziella hampeana* (Nees) Schiffn. .... 11  
*Cephaloziella stellulifera* (Tayl. ex Spruce) Schiffn. .... 6, 11
- Cephaloziaceae Migula  
*Cephalozia bicuspidata* (L.) Dum. .... 1, 2, 4  
*Cephalozia catenulata* (Hüb.) Lindb. .... 4  
*Cephalozia pleniceps* (Aust.) Lindb. .... 1  
*Nowellia curvifolia* (Dicks.) Mitt. .... 4  
*Cladopodiella fluitans* (Nees) Buch ..... 1, \*6
- Antheliaceae Schust.  
*Anthelia julacea* (L.) Dum. .... 4
- Lepidoziaceae Limpr.  
*Lepidozia reptans* (L.) Dum. .... 4  
*Bazzania tricrenata* (Wahlenb.) Lindb. .... 2, 4  
*Bazzania trilobata* (L.) S. Gray ..... 4
- Calypogeiaceae (K. Müll.) H. Arn.  
*Calypogeia arguta* Nees & Mont. .... 4, \*6  
*Calypogeia azurea* Stotler & Crotz ..... 4  
*Calypogeia fissa* (L.) Raddi ..... 1, 4, 6  
*Calypogeia sphagnicola* (H. Arn. & J. Perss.) Warnst. & Loeske ..... 1
- Pseudolepicoleaceae Fulf. & J. Tayl.  
*Blepharostoma tricophyllum* (L.) Dum. .... 2, 4
- Radulaceae (Dum.) K. Müll.  
*Radula complanata* (L.) Dum. .... 1, 2, 4, 6, \*11  
*Radula lindenbergiana* Gott. & Hartm. .... 2, \*3, 4
- Porellaceae Cavers  
*Porella arboris-vitae* (With.) Grolle ..... 2, \*6, \*11  
*Porella baueri* (Schiffn.) C. Jens. .... 6, \*11  
*Porella cordaeana* (Hüb.) Moore ..... 1, 2, 6, 7, 13  
*Porella obtusata* (Tayl.) Trev. .... 3, 6  
*Porella pinnata* L. .... 12  
*Porella platyphylla* (L.) Pfeiff. .... 1, 2, 3, 4, 5, 6, 7, 11, 12, 13
- Frullaniaceae Lorch  
*Frullania dilatata* (L.) Dum. .... 1, 2, 3, 4, 5, 6, 11, 12  
*Frullania jackii* Gott. .... 4  
*Frullania tamarisci* (L.) Dum. .... 1, 2, 3, 4, 6, 13
- Jubulaceae Klinggr.  
*Jubula hutchinsiae* (Hook.) Dum. .... 3, 4
- Lejeuneaceae Cas.-Gil  
*Lejeunea cavifolia* (Ehrh.) Lindb. .... 3, 4, 6, 11  
*Lejeunea lamacerina* (Steph.) Schiffn. .... \*3, 6  
*Lejeunea patens* Lindb. .... 4  
*Cololejeunea calcarea* (Libert.) Schiffn. .... 2  
*Cololejeunea rosettiana* (Mass.) Schiffn. .... 2

A perusal of the list given above shows that, the maximum number of liverworts is distributed in the grid square 4 which lies alongside the Black Sea coast, in the Euro-Siberian phytogeographical region and experiences a heavy rainfall with mild winters. This is followed by the grid square 6, with 62 species covering the states of Izmir, Manisa, Balıkesir; and lying in the Mediterranean phytogeographical region. The grid square 11 and 1 including Aydin, Denizli, Muğla and Marmara region show 46 and 32 species respectively. In our opinion a poor record from the grid squares in the great Irano-Turanian phytogeographical region is due to the lack of work done in this region.

Out of a total of 35 families of liverworts in Turkey (Tab. 1) Lophoziaceae with 18 species from 4 genera tops the list followed by Ricciaceae with 17 species from 2 genera, Jungermanniaceae with 12 species from 4 genera, Scapaniaceae with 11 species from 2 genera, Aytoniaceae with 6 species from 4 genera and Porellaceae 6 species from 1 genus. At present the minimum number of species (1) is found in the families like Riellaceae, Conocephalaceae, Lunulariaceae, Corsiniaceae, Oxymitracae, Blasiaceae, Antheliaceae, Pseudolepicoleaceae and Jubulaceae.

The variations in the edaphic, microclimatological and microtopographical conditions play a great role in the distribution as well as the survival of liverworts. This can be clearly seen from the records reported from the countries and islands in the region surrounding Turkey. A comparison of the liverworts of island of Crete and West Anatolia (A1, B6, C11 grid squares) shows that, as against 66 species reported from the former area (DÜLL, 1979) latter embodies 82 species. Out of these 49 species are common between the two and 33 are found only in the West Anatolian part of Turkey. Out of the species reported from the Crete although 17 are not found in West Anatolia but 9 are reported from other parts of Turkey. Eight species recorded from Crete have not been reported from Turkey. In particular the species like *Barbilophozia barbata*, *B. hatcheri*, *Lophozia bicrenata*, *L. excisa*, *L. turbinata*, *L. ventricosa* and *Tritomaria exsectiformis* belonging Lophoziaceae distributed in West Anatolia are not found in Crete at all. Out of 82 liverworts recorded from Western part of Turkey, 3 belong to Anthocerotales, 2 to Sphaerocarpaceae, 24 to Marchantiales, 11 to Metzgeriales and 42 to Jungermanniales. In Crete Jungermanniales is represented by 25 species followed by Marchantiales with 24 species, Metzgeriales with 11 species, Anthocerotales with 3 species and Sphaerocarpaceae with 3 species.

A comparison of the number of species with other South-West Asian countries (FREY, 1986; BISCHLER & JOVET-AST, 1986) reveals that, Turkey stands first with 145 species belonging to 57 genera followed by Iran with 56 species from 32 genera, Israel with 36 species from 19 genera, Lebanon-Syria-Jordan triangle with 20 species from 14 genera, Arabian Peninsula with 15 species from 7 genera and Iraq with 7 species from 6 genera.

Out of these Jordan with a representation from only Marchantiales and Metzgeriales gives an interesting example for comparison with Turkey. Former has 12 species of liverworts as against 145 species in the latter. Eleven species are common between the two countries. Two species of *Riccia* namely *R. lamellosa* and *R. trabutiana* recorded by EL-OQLAH & al. (1988) to our knowledge have not been reported before in other lists of Turkish species.

The speciation is seen to be maximum in the Caucasian-Euxine-Hyrcanian (CEH) region covering North Anatolia too, wherefrom 300 species are reported to have got originated (BISCHLER & JOVET-AST, 1986). This ratio is quite poor in the Mediterranean belt and its environs. For example Turkish Mediterranean part has only 61 species, Lebanon 46, Israel 41, Cyprus 34, Arabian Peninsula 23, South Iran 19 and Egypt 13 species of hepatics.

The North Anatolian part of Turkey is dominated by the taxa from Jungermanniales whereas other parts are dominated by Marchantiales taxa. This can be attributed to a heavy rainfall and mild winters in this region as compared to East, West, South and Central Anatolian parts of Turkey. We believe that, Turkish liverwort flora will get enriched only through detailed studies in the East Black Sea coast (Euro-Siberian part) followed by Irano-Turanian and Mediterranean phytogeographical regions of the country.

	<i>Genera</i>	<i>Species</i>
1. Lophoziaceae .....	4	18
2. Ricciaceae .....	2	17
3. Jungermanniaceae .....	4	12
4. Scapaniaceae .....	2	11
5. Aytoniaceae .....	4	6
6. Porellaceae .....	1	6
7. Cephaloziaceae .....	3	5
8. Geocalycaceae .....	2	5
9. Lejeuneaceae .....	2	5
10. Aneuraceae .....	2	4
11. Codoniaceae .....	2	4
12. Cephaloziellaceae .....	1	4
13. Calypogeiaceae .....	1	4
14. Anthocerotaceae .....	2	3
15. Cleveaceae .....	2	3
16. Metzgeriaceae .....	2	3
17. Gymnomitriaceae .....	2	3
18. Arnelliaceae .....	2	3
19. Lepidoziaceae .....	2	3
20. Marchantiaceae .....	1	3
21. Pelliaceae .....	1	3
22. Frullaniaceae .....	1	3
23. Sphaerocarpaceae .....	1	2
24. Targioniaceae .....	1	2
25. Plagiochilaceae .....	1	2
26. Radulaceae .....	1	2
27. Riellaceae .....	1	1
28. Conocephalaceae .....	1	1
29. Lunulariaceae .....	1	1
30. Corsiniaceae .....	1	1
31. Oxymitriaceae .....	1	1
32. Blasiaceae .....	1	1
33. Antheliaceae .....	1	1
34. Pseudolepicoleaceae .....	1	1
35. Jubulaceae .....	1	1

Table 1. — List of the families according to the number of genera and species.



## REFERENCES

- BISCHLER, H. & S. JOVET-AST (1986). The Hepatic flora of South-West Asia: a survey. *Proc. Roy. Soc. Edinburgh* 89B: 229-241.
- CETIN, B. (1988). Checklist of liverworts and hornworts of Turkey. *Lindbergia* 14: 12-14.
- CETIN, B. (1989a). *Porella pinnata* L., Türkiye için yeni bir ciğerotu (Hepaticae). *Doğa TU Bot. D.* 13(2): 134-138.
- CETIN, B. (1989b). Antalya çevresi (Kurşunlu Şelalesi-Köprülü Kanyon Milli Parkı) Ciğerotları (Hepaticae). *Doğa TU Bot. D.* 13(2): 151-156.
- CRUNDWELL, C. C. & E. NYHOLM (1979). Some additions to the bryophyte flora of Turkey I. Hepaticae. *J. Bryol.* 10: 479-489.
- DÜLL, R. (1979). Neue Übersicht zur Moosflora der Insel Kreta (Aegaeis). *J. Bryol.* 10: 491-509.
- DÜLL, R. (1983). Distribution of the European and Macaronesian liverworts (Hepaticophytina). *Bryol. Beit.* 2: 1-115.
- EL-OQLAH, A. A., W. FREY & H. KÜRSCHNER (1988). The Bryophyte Flora of Trans-Jordan. A catalogue of species and floristic elements. *Willdenowia* 18: 253-279.
- FREY, W. (1986). Bryophyte flora and vegetation of South-West Asia. *Proc. Roy. Soc. Edinburgh* 89B: 217-227.
- GÖKLER, I. (1986). Türkiye'de yayılış gösteren bazı ciğerotları (Hepaticae) üzerinde taksonomik araştırmalar II. Marchantiales ve Anthocerotales. *Doğa TU Bio. D.* 10(3): 354-361.
- GÖKLER, I. (1989). Türkiye ciğerotları florasına yeni bir kayıt, *Lejeunea lamacerina* (Steph.) Schiffn. *Doğa TU Bot. D.* 13(3): 470-473.
- GÖKLER, I., H. INOUE & M. ÖZTÜRK (1984). A new record for Turkey, *Pellia neesiana* (Gott.) Linpr. *E. U. Fac. Sci. Journ.* B, VII, 1: 85-89.
- GÖKLER, I. & M. ÖZTÜRK (1986). Türkiye'de yayılış gösteren bazı ciğerotları (Hepaticae) üzerinde taksonomik araştırmalar I. Jungermanniales Anacrogynae ve J. Acrogynae. *Doğa TU Bio. D.* 10(2): 163-170.
- GÖKLER, I. & M. ÖZTÜRK (1987). A new record for Turkey, *Porella thuja* (Dicks.) C. Jens. *Doğa TU J. Bot.* 11(3): 313-315.
- GÖKLER, I. & M. ÖZTÜRK (1989). An investigation on the liverworts (Hepaticae) of Black Sea region. *Doğa TU J. Bot.* 13(2): 242-248.
- GROLLE, R. (1983). Hepatics of Europe including the Azores: an annotated list of species, with synonyms from recent literature. *J. Bryol.* 12: 403-459.
- HENDERSON, D. M. (1961). Contributions to the bryophyte flora of Turkey IV. *Not. Roy. Bot. Gard. Edinburgh* 23: 263-278.
- HENDERSON, D. M. & H. PRENTICE (1969). Contributions to the bryophyte flora of Turkey VIII. *Not. Roy. Bot. Gard. Edinburgh* 29: 235-262.
- JOVET-AST, S. (1986). Les Riccia de la région méditerranéenne. *Crypto. Bryol. Lichenol.* 7(3): 287-431.
- ÖZTÜRK, M. & I. GÖKLER (1988). Ecology of West Anatolian liverworts. *Bryol. Times* 47: 1-3.
- SEÇMEN, Ö., E. LEBLEBİCİ & I. GÖKLER (1989). Türkiye için yeni bir ciğerotu, *Ricciocarpos natans* (L.) Corda. *Doğa TU Bot. D.* 13(2): 311-313.
- VANA, J. (1974). Studien über die Jungermannioideae (Hepaticae) 6. *Jungermanniana* subg. *Solenostoma*. *Folia Geobot. Phyt.* 9: 369-423.
- WALTHER, K. (1967). Beiträge zur Moosflora Westanatoliens I. *Mitt. Staatsinst. Allg. Bot.* 12: 129-186.
- WALTHER, K. (1970). Beiträge zur moosflora Westanatoliens II. *Mitt. Staatsinst. Allg. Bot.* 13: 168-180.