

Myxomycetes Diversity of Belen Region of Hatay Province (Turkey)

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Abstract

Aim of study: The present study aimed to determine myxomycetes diversity in Belen region located in Hatay province, Turkey.

Area of study: The present study was conducted on samples collected in 10 stations in Belen district during 2012 and 2013.

Material and methods: Myxomycete sporophores were collected from leaf, tree bark, decayed and non-rotting plant material. Myxomycete sporophores were developed with the moist chamber technique in collected samples. Further myxomycete sporophores were collected in their natural environment.

Main results: As a result of the field and laboratory studies, 40 species in 9 families and 19 genera were identified.

Highlights: The present study contributed to Turkish Myxobiota.

Keywords: Myxomycetes, Taxonomy, Biodiversity, Belen (Hatay/Turkey)

Hatay (Türkiye) İlinin Belen Bölgesinin Miksomiset Çeşitliliği

Öz

Çalışmanın amacı : Bu çalışma, Belen (Hatay/Türkiye) bölgesinin miksomisetlerinin belirlenmesini amaçlamıştır.

Çalışmanın alanı : Bu çalışma 2012-2013 yıllarında, Belen ilçesinde 10 ayrı istasyondan toplanan numuneler üzerinde yapılmıştır.

Materyal ve yöntem : Miksomiset sporoforları yaprak, ağaç kabukları, çürümüş veya çürümemiş bitkisel materyallerden elde edilmiştir. Toplanan numunelere nem odası tekniği uygulanarak miksomiset sporoforları geliştirilmiştir. Ayrıca doğal ortamında miksomisetler de toplanmıştır.

Temel sonuçlar : Arazi ve laboratuvar çalışmaları sonucunda, 9 familya, 19 cinse ait 40 tür tespit edilmiştir.

Araştırma vurguları : Bu çalışmada Türk Myxobiota'ya katkı sağlanmıştır.

Anahtar kelimeler: Myxomycetes, Taksonomi, Biyoçeşitlilik, Belen - Hatay

Introduction

Myxomycetes are known as true slime molds, plasmodial slime molds or Myxogastrea. Myxomycetes are multinuclear single-celled organisms that can produce one or more spores (Stephenson & Stempen, 1994). Myxomycetes are sensitive to pH, humidity, temperature and light, as well as the properties of the substrate on which it develops. Myxogastrea species are abundant in cool, moist and shaded areas such as rotten tree trunks, branches, alive or dead bark, decayed fruit or fruit scraps, decayed leaves and leaf debris. Myxomycetes live in the environment by feeding on other microorganisms (bacteria, yeasts, fungus

hyphae, blue-green bacteria and green algae) (Farr, 1981). Myxogastrea fruit organs could develop spontaneously in the nature. Furthermore, especially after identification with the humid chamber technique, they could be detected especially on plant surfaces (Gilbert & Martin, 1933; Härkönen & Ukkola, 2000).

The number of known Myxomycetes is 1017 taxa globally (Lado, 2019). Two hundred and eighty-four taxa were identified in Turkey (Ergül et al., 2005a; Ergül et al., 2005b; Ergül & Akgül, 2011; Baba et al., 2013; Süerdem et al., 2015; Baba, 2015; Baba & Zümre, 2015; Alkan et al., 2016; Dülger et al., 2016; Ergül et al., 2016; Baba



et al., 2016; Sesli et al., 2016; Baba & Arslan, 2017; Baba & Özyiğit, 2017; Baba & Er, 2018; Baba et al., 2018 ; Ocak & Konuk, 2018 ; Baba & Sevindik, 2019).

The present study aimed to determine myxomycetes in different locations within the boundaries of Belen region. Also, the present study aimed to contribute to Turkish Myxobiota.

Material and Methods

Study Area

Belen is a district in Hatay province located in the Mediterranean region in Turkey. The district is surrounded by İskenderun district to the north, Antakya district to the southwest, Kırıkhan district to

the east, Samandağ district to the northwest and Altınözü district to the south (Figure 1). The altitude of the district center, which is 50 km to Antakya, is approximately 700 meters. The total surface area of the district is 689 km².

The elevation in the study area is between 300-1350 m and it can exhibit great variations within short distances. The mean annual temperature in Belen is 16.8 °C. The mean annual rainfall is 697.5 mm. The mean annual relative humidity is 65%. There are pine, cedar, sycamore, larch and juniper forests between 700-1200 m altitudes in Amik Plain and Mediterranean sections in Belen (Anonymous, 2019).

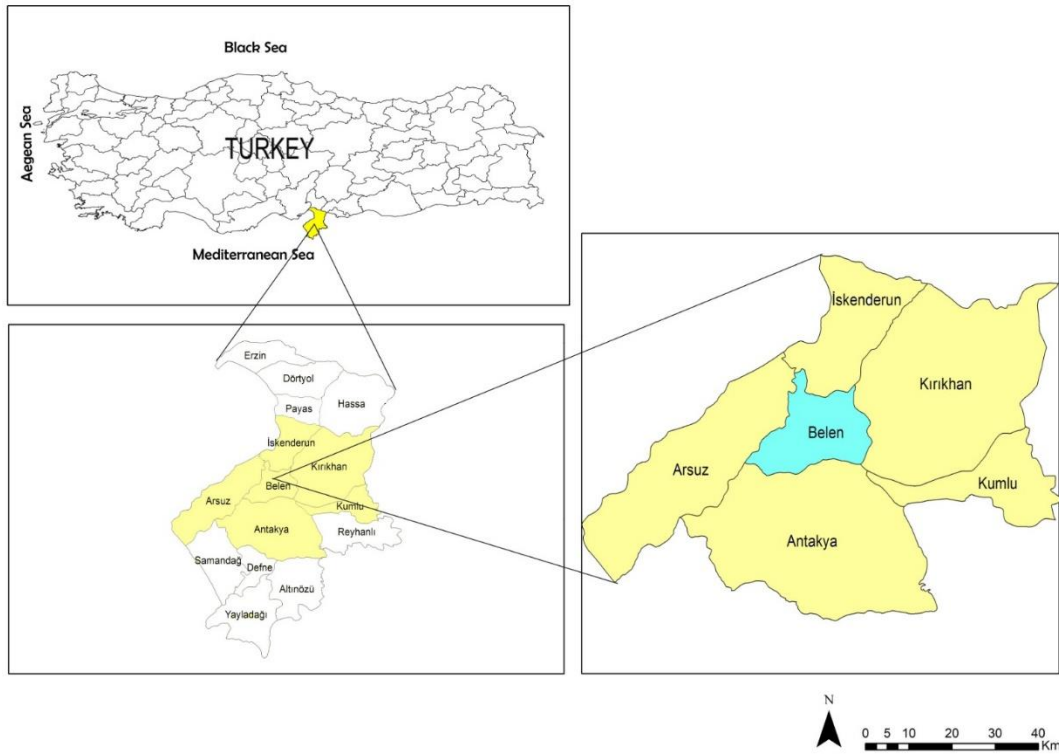


Figure 1. Map of the research area

Samplings and Identifications

In the field studies, myxomycetes fruits that were collected in different regions of Belen district were transferred to the laboratory in small carton boxes.

Material that did not contain myxomycetes and sporophore samples but that contained myxomycet spores (tree bark, cut tree stumps, rash and decaying leaves,

pointer, cones, fruit and residues of vegetable material) were placed in small zip-lock storage bags and transferred to the laboratory. Then, in the laboratory, it was ensured that they were able to form fructification with Moist Chamber Technique developed by Gilbert & Martin (1933).

Moist Chamber Technique

A double layer of sterile filter paper was placed in petri dishes or transparent storage containers. Samples were then placed in these containers and distilled water was added. The samples were then allowed to swell for 24-48 hours. The samples were monitored with light stereomicroscope at regular intervals. The collected samples were prepared by placing one or two layers of blotting paper in petri dishes inside the storage containers and the samples were allowed to dry at room temperature. Then, the samples were turned into fungarium material (Gilbert & Martin, 1933 ; Härkönen & Ukkola, 2000).

The general structure, shape, color, macroscopic measurements, capillitium, presence of pseudocapillitium and columella, if any, shape measurements, shape, color, size and spore ornamentations of the spores were investigated in detail. Samples were identified based on the literature (Martin & Alexopoulos, 1969; Farr, 1981; Thind, 1977; Martin, et al., 1983; Neubert et al., 1993; 1995; 2000; Stephenson & Stempen, 1994; Lado & Pando, 1997; Ing, 1999; Sesli et al., 2016). The fungarium material of the identified samples were stored in the Department of Biology Laboratory at MKU Faculty of Science and Arts.

Results

The present study was the first systematic study on myxomycetes in Belen region. In the present study conducted in the district of Belen (Hatay) in 2012-2013, 561 sporophores were collected in different locations and processed in the laboratory. A total of 303 myxomycete sporophores were obtained from these sporophores. Forty-three sporophores were collected from the nature, and 260 sporophores were obtained with the moist chamber culture. As a result of the identification of myxomycete sporophores obtained from natural environment and moist chamber culture, 40 species were identified in 5 ordo, 9 families and 19 genera.

The taxa were listed alphabetically. The habitat, settlement, collection date, altitude, geographical location, sample numbers of the sporophores are indicated.

Systematic classification

Eukaryota
Protozoa
Amoebozoa
Myxomycetes

Ceratiomyxales

1. *Ceratiomyxa fruticulosa* (O.F. Müll.) T. Macbr., Kömürçukuru, on *Pinus* sp. wood, Er. 382, 28.04.2013 569 m. 35° 53' 20" N; 36° 05' 28" E.

Echinosteliales

Echinosteliaceae

2. *Echinostelium minutum* de Bary, Atik, on *Pinus brutia* Ten. wood, Er. 222, 24.12.2012 507 35° 54' 45" N; 36° 02' 14" E; Osman Tiryaki Forest, on *P. brutia* wood, Er. 13, 18.11.2012 501 m. 35° 54' 39" N; 36° 00' 55" E; Güzelyayla, on the rash, Er. 333, 26.01.2013 486m. 35° 51' 02" N; 36° 02' 29" E; Akgün, on *P. brutia* wood, Er. 174, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E; Gedik, on the rash, Er. 183, 25.11.2012 516m. 35° 54' 13" N; 36° 01' 00" E.

Liceales

Cribrariaceae

3. *Cribraria cancellata* (Batsch) Nann.-Bremek., Kömürçukuru, on *P. brutia* wood, Er. 384, 28.04.2013 569m. 35° 53' 20" N; 36° 05' 28" E; Müftüler, on *P. brutia* wood, Er. 529, 14.04.2013 589m. 35° 53' 24" N; 36° 04' 50" E; Gedik, on *P. brutia* wood, Er. 125, 25.11.2012 516m. 35° 54' 13" N; 36° 01' 00" E.

4. *C. violacea* Rex., Akgün, on *Pinus* sp. wood, Er. 163, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E; Osman Erdal Tiryaki Forest, on *Quercus* sp. wood, Er. 18, 18.11.2012 501 m. 35° 54' 39" N; 36° 00' 55" E; Atik, on *Pinus* sp. wood, Er. 228, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E; Güzelyayla, on *Pinus* sp. wood, Er. 335, 26.01.2013 486m. 35° 51' 02" N; 36° 02' 29" E; Şenbük, on *Pinus* sp. wood, Er. 298, 26.01.2013 460m. 35° 54' 21" N; 36° 01' 41" E.

Liceaceae

5. *Licea castanea* G. Lister, Kömürçukuru, on *P. brutia* wood, Doğal, Er. 386, 28.04.2013 569m. 35° 53' 20" N; 36° 05' 28"

E; Osman Erdal Tiryaki Forest, on *P. brutia* wood, Er. 88, 18.11.2012 501 m. 35° 54' 39" N; 36° 00' 55" E; Müftüler, on *Pinus* sp., Er. 533, 14.04.2013 589m. 35° 53' 24" N; 36° 04' 50" E.

6. *L. kleistobolus* G.W. Martin, Atik, on *P. brutia* wood, Er. 223, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E; Güzelyayla, on *P. brutia* wood, Er. 338, 26.01.2013 486m. 35° 51' 02" N; 36° 02' 29" E; Gedik, on *P. brutia* wood, Er. 190, 25.11.2012 516m. 35° 54' 13" N; 36° 01' 00" E.

7. *L. minima* Fr., Güzelyayla, on *P. brutia* wood, Er. 338, 26.01.2013 486m. 35° 51' 02" N; 36° 02' 29" E; Atik, on *P. brutia* wood, Er. 241 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E.

Trichiales

Arcyriaceae

8. *Arcyria cinerea* (Bull.) Pers., Osman Erdal Tiryaki forest, on *Pinus brutia* Ten. wood, Er. 13, 18.11.2012 501 m. 35° 54' 39" N; 36° 00' 55" E; on *Pinus* the bark, Er. 37, 18.11.2012 501 m. 35° 54' 39" N; 36° 00' 55" E; on the rash, Er. 59, 18.11.2012 501 m. 35° 54' 39" N; 36° 00' 55" E; Gedik, on *P. brutia* wood, Er. 109, 25.11.2012 516m. 35° 54' 13" N; 36° 01' 00" E; on *Pinus* the bark, Er. 106, 25.11.2012 516m. 35° 54' 13" N; 36° 01' 00" E; Akgün, on *P. brutia* wood, Er. 147, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E; on *Pinus* the bark, Er. 148, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E; on the rash, Er. 159, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E; Atik, on *P. brutia* wood, Er. 224, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E, on the rash, Er. 224, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E; Şenbük, on *P. brutia* wood, Er. 293, 26.01.2013 460m. 35° 54' 21" N; 36° 01' 41" E; Güzelyayla, on *P. brutia* wood, Er. 333, 26.01.2013 486m. 35° 51' 02" N; 36° 02' 29" E; Kömürçukuru, on *P. brutia* wood, Er. 383, 28.04.2013 569m. 35° 53' 20" N; 36° 05' 28" E; on *P. brutia* wood, Er. 380, 28.04.2013 569m. 35° 53' 20" N; 36° 05' 28" E; Müftüler, on *P. brutia* wood, Er. 514, 14.04.2013 589m. 35° 53' 24" N; 36° 04' 50" E; Soğukoluk, on *Pinus* sp. wood, Er. 472, 24.02.2013 585m. 35° 53' 15" N; 36° 06' 36" E; Kıcı, on *P. brutia* wood, Er. 508,

12.02.2013 540m. 35° 53' 23" N; 36° 03' 54" E.

9. *A. globosa* Schwein, Akgün, on *Pinus* sp. wood, Er. 148, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E; Güzelyayla, on *Quercus* sp. wood, Er. 332, 26.01.2013 486m. 35° 51' 02" N; 36° 02' 29" E;

10. *A. incarnata* (Pers. ex J.F. Gmel.) Pers., Osman Erdal Tiryaki Forest, on *P. brutia* bark and wood, Er. 22, 18.11.2012 501 m. 35° 54' 39" N; 36° 00' 55" E; Akgün, on *P. brutia* the bark and wood, Er. 163, 15.12.2012 489 m. 35° 54' 21" N; 36° 01' 41" E; Atik, on *P. brutia* wood, Er. 224, 24.12.2012 507 m. 35° 54' 45" N; 36° 02' 14" E; Gedik, on *P. brutia* wood, Er. 117, 25.11.2012 516 m. 35° 54' 13" N; 36° 01' 00" E; Güzelyayla, on *Pinus* sp. wood, Er. 333, 26.01.2013 486 m. 35° 51' 02" N; 36° 02' 29" E.

11. *A. minuta* Buchet, Atik, on *Quercus* sp. wood, Baba. 234, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E.

12. *A. obvelata* (Oeder) Onsberg, Gedik, on *Pinus* sp. wood, Baba. 121, 25.11.2012 516m. 35° 54' 13" N; 36° 01' 00" E; Atik, on the rash, Er. 211, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E; Osman Erdal Tiryaki Forest, on the rash, Er. 3, 18.11.2012 501 m. 35° 54' 39" N; 36° 00' 55" E;

13. *A. pomiformis* (Leers) Rostaf., Osman Erdal Tiryaki Forest, on *P. brutia* wood, Baba. 59, 18.11.2012 501 m. 35° 54' 39" N; 36° 00' 55" E; Akgün, on *P. brutia* bark and wood, Er. 160, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E; Atik, on *P. brutia* wood, Er. 222, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E; Soğukoluk, on *P. brutia* wood, Er. 467, 24.02.2013 585m. 35° 53' 15" N; 36° 06' 36" E; Gedik, on *P. brutia* wood, Er. 110, 25.11.2012 516m. 35° 54' 13" N; 36° 01' 00" E; Güzelyayla, on *Pinus* sp. wood, Er. 295, 26.01.2013 486m. 35° 51' 02" N; 36° 02' 29" E; Kömürçukuru, on *Pinus* sp. wood, Er. 389, 28.04.2013 569m. 35° 53' 20" N; 36° 05' 28" E; Müftüler, on *P. brutia* wood, Er. 515, 14.04.2013 589m. 35° 53' 24" N; 36° 04' 50" E.

Trichiaceae

14. *Hemitrichia* sp. Rostaf., Atik, on *P. brutia* wood, Er. 229, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E; Şenbük, on *P.*

brutia wood, Er, 297, 26.01.2013 460m. 35° 54' 21" N; 36° 01' 41" E.

15. *Trichia decipiens* (Pers.) T. Macbr., N. Amer, Atik, on the rash, Er. 221, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E; Müftüler, on the rash, Er. 510, 14.04.2013 589m. 35° 53' 24" N; 36° 04' 50" E; Şenbük, on *P. brutia* wood, Er. 297, 26.01.2013 460m. 35° 54' 21" N; 36° 01' 41" E.

16. *T. munda* (Lister) Meyl., Akgün, on *P. brutia* wood, Er. 53, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E; Gedik, on *P. brutia* wood, Er. 112, 25.11.2012 516m. 35° 54' 13" N; 36° 01' 00" E; Kömürçukuru, on *P. brutia* wood, Er. 384, 28.04.2013 569m. 35° 53' 20" N; 36° 05' 28" E

Physarales

Didymiaceae

17. *Diderma hemisphaericum* (Bull.) Hormen., Güzelyayla, on *P. brutia* wood, Baba. 338, 26.01.2013 486m. 35° 51' 02" N; 36° 02' 29" E.

18. *Didymium clavus* (Alb. & Schwein.) Rabenh., Atik, on *P. brutia* wood, Baba. 234, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E.

19. *D. megalosporum* Berk. & M.A. Curtis, Kömürçukuru, on *Pinus* sp. wood, Er 487, 28.04.2013 569m. 35° 53' 20" N; 36° 05' 28" E.

20. *D. squamulosum* (Alb.& Schw.) Fries, Atik, on *Pinus* the bark, Er. 265, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E.

Physaraceae

21. *Badhamia dubia* Nann.-Bremek., Atik, on *Quercus* sp. bark, Er. 223, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E.

22. *B. panicea* (Fries) Rost., Atik, on *Quercus* sp. bark, Er. 228, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E.

23. *Craterium* sp. Trentep., Kömürçukuru, on *P. brutia* leaf, Baba. 385, 28.04.2013 569m. 35° 53' 20" N; 36° 05' 28" E;.

24. *C. dictyosporum* (Rostaf.) H. Neubert, Nowotny & K. Baumann, Akgün, on *P. brutia* wood, Baba. 148, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E; Kömürçukuru, on *P. brutia* wood, Er. 384, 28.04.2013 569m. 35° 53' 20" N; 36° 05' 28" E;.

25. *Physarum* sp. Pers., Osman Erdal Tiryaki Forest, on *Pinus* sp. wood, Baba. 7,

18.11.2012 501 m. 35° 54' 39" N; 36° 00' 55" E.

26. *P. album* (Bull.) Chevall., Osman Erdal Tiryaki Forest, on *P. brutia* wood, Er. 9, 18.11.2012 501 m. 35° 54' 39" N; 36° 00' 55" E; Akgün, on *P. brutia* wood, Er. 148, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E; Kömürçukuru, on *P. brutia* wood, Er. 385, 28.04.2013 569m. 35° 53' 20" N; 36° 05' 28" E;.

27. *P. oblatum* Macbr., Osman Erdal Tiryaki Forest, on *Pinus* sp. wood, Er. 36, 18.11.2012 501 m. 35° 54' 39" N; 36° 00' 55" E.

28. *P. robustum* (Lister) Nann –Bremek, Atik, on *Pinus* the bark, Baba. 225, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E.

Stemonitales

Stemonitidaceae

29. *Collaria lurida* (G. Lister) Nann.-Bremek., Osman Erdal Tiryaki Forest, on *Pinus* sp. wood, Er. 6, 18.11.2012 501 m. 35° 54' 39" N; 36° 00' 55" E; Gedik, on *Pinus* sp. wood, Er 122; 25.11.2012 516m. 35° 54' 13" N; 36° 01' 00" E; Akgün, on *Pinus* sp. wood, Er. 200, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E; Atik, on *Pinus* sp. wood, Er. 256, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E.

30. *Comatricha ellae* Härk., Osman Erdal Tiryaki Forest, on *P. brutia* wood, Er. 11, 18.11.2012 501 m. 35° 54' 39" N; 36° 00' 55" E; Gedik, on *P. brutia* wood, Baba. 113, 25.11.2012 516m. 35° 54' 13" N; 36° 01' 00" E; Akgün, on *P. brutia* wood, Baba. 167, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E; Atik, on *P. brutia* wood, Baba. 261, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E; Şenbük, on *P. brutia* wood, Er. 296, 26.01.2013 460m. 35° 54' 21" N; 36° 01' 41" E; Güzelyayla, on *P. brutia* wood, Er. 335, 26.01.2013 486m. 35° 51' 02" N; 36° 02' 29" E; Kömürçukuru, on *P. brutia* wood, Er. 377, 28.04.2013 569m. 35° 53' 20" N; 36° 05' 28" E; Soğukoluk, on *P. brutia* wood, Er. 460, 24.02.2013 585m. 35° 53' 15" N; 36° 06' 36" E.

31. *Comatricha nigra* (Pers.) J. Schröt., Atik, on *P. brutia* wood and on *Quercus* sp. wood, Er. 222, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E; Osman Erdal Tiryaki Forest,

on *P. brutia* wood, Baba. 5, 18.11.2012 501 m. 35° 54' 39" N; 36° 00' 55" E; Akgün, on *P. brutia* wood, Er. 113, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E; Gedik, on *P. brutia* wood, Baba. 181, 25.11.2012 516m. 35° 54' 13" N; 36° 01' 00" E; Şenbük, on *P. brutia* wood, Er. 294, 26.01.2013 460m. 35° 54' 21" N; 36° 01' 41" E; Güzelyayla, on *P. brutia* wood, Er. 338, 26.01.2013 486m. 35° 51' 02" N; 36° 02' 29" E; Kömürçukuru, on *P. brutia* wood, Er. 373, 28.04.2013 569m. 35° 53' 20" N; 36° 05' 28" E.

32. *Enerthenema papillatum* (Pers.) Rostaf, Gedik, on *P. brutia* Ten. wood, Er. 106, 25.11.2012 516m. 35° 54' 13" N; 36° 01' 00" E; Akgün, on *P. brutia* wood, Baba, 148, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E; Atik, on *P. brutia* wood, Er, 241, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E.

33. *Lamproderma arcyrioides* (Sommerf.) Rostaf., Güzelyayla, on *P. brutia* Ten. Er. 333, 26.01.2013 486m. 35° 51' 02" N; 36° 02' 29" E; Soğukoluk, on *P. brutia* wood, Er. 472, 24.02.2013 585m. 35° 53' 15" N; 36° 06' 36" E; Kıcı, on *P. brutia* wood, Er. 506, 12.02.2013 540m. 35° 53' 23" N; 36° 03' 54" E.

34. *Macbrideola cornea* (G. Lister & Cran) Alexop., Akgün, on *Pinus* sp. wood, Baba. 166, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E.

35. *M. decapillata* H. C. Gilbert, Şenbük, on *Pinus* sp. wood, Baba, 297, 26.01.2013 460m. 35° 54' 21" N; 36° 01' 41" E.

36. *Stemonitis fusca* Roth., Gedik, on *P. brutia* wood, Baba. 127, 25.11.2012 516m. 35° 54' 13" N; 36° 01' 00" E.

37. *Stemonitopsis amoena* (Nann.-Bremek.) Nann.-Bremek., Osman Erdal Tiryaki Forest, on *P. brutia* wood, Er. 36, 18.11.2012 501 m. 35° 54' 39" N; 36° 00' 55" E; Gedik, on *P. brutia* wood, Er. 117, 25.11.2012 516m. 35° 54' 13" N; 36° 01' 00" E; Akgün, on *P. brutia* wood, Er. 156, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E; Soğukoluk, on *P. brutia* wood, Er. 469, 24.02.2013 585m. 35° 53' 15" N; 36° 06' 36" E.

38. *S. hyperopta* (Meylan) Nann.-Bremek., Akgün, on *P. brutia* wood, Baba. 169, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E.

39. *S. reticulata* (H.C.Gilbert) Nann.-Bremek., Atik, on *P. brutia* wood, Er. 230, 24.12.2012 507m. 35° 54' 45" N; 36° 02' 14" E; Gedik, on *P. brutia* wood, Er. 118, 25.11.2012 516m. 35° 54' 13" N; 36° 01' 00" E.

40. *S. subcaespitosa* (Peck) Nann.-Bremek., Osman Erdal Tiryaki Forest, on *P. brutia* wood, Baba. 4, 18.11.2012 501 m. 35° 54' 39" N; 36° 00' 55" E; Akgün, on *P. brutia* wood, Er. 157, 15.12.2012 489m. 35° 54' 21" N; 36° 01' 41" E; Kömürçukuru, on *P. brutia* wood, Er. 383, 28.04.2013 569m. 35° 53' 20" N; 36° 05' 28" E; Güzelyayla, on *P. brutia* wood, Er. 335, 26.01.2013 486m. 35° 51' 02" N; 36° 02' 29" E.

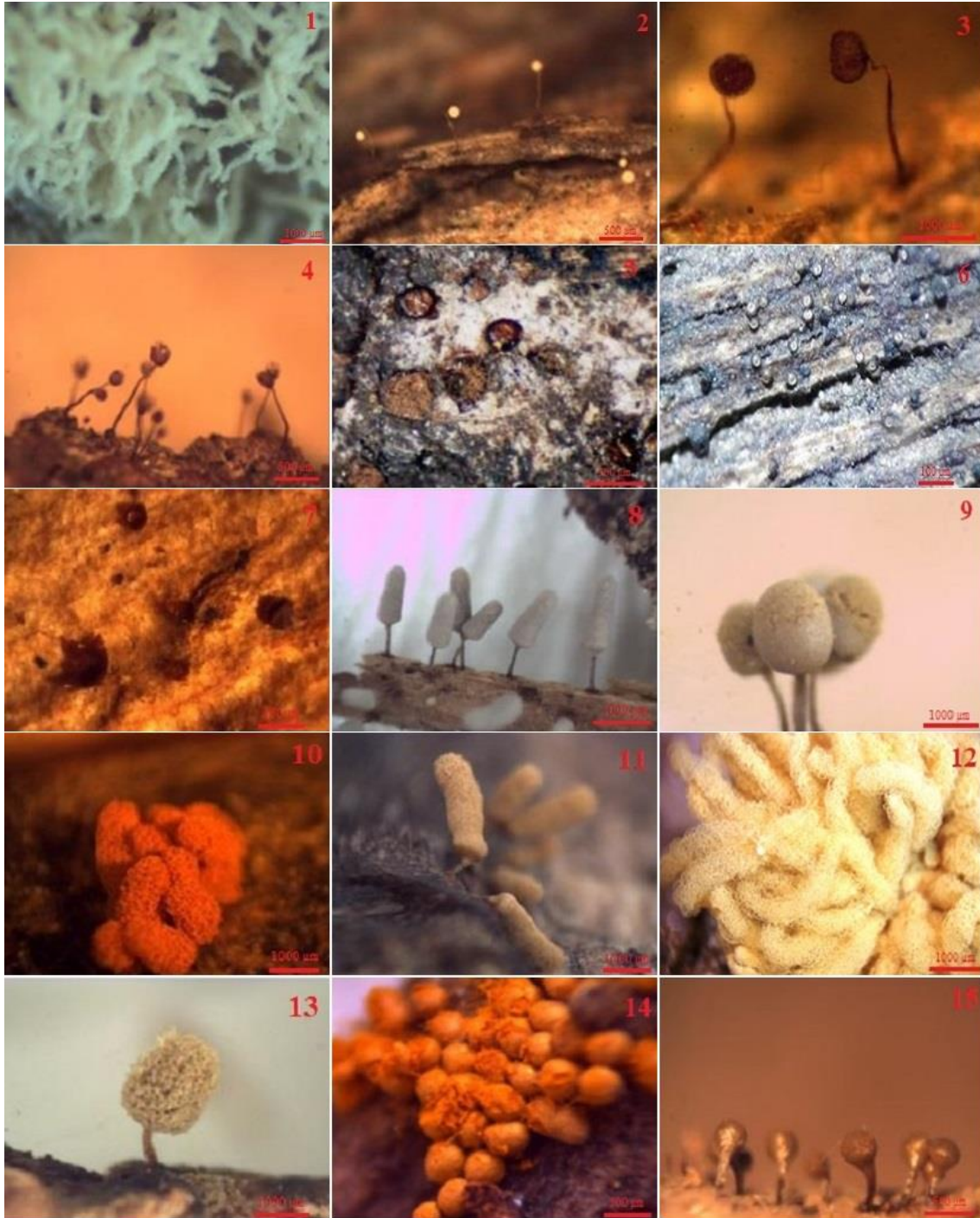


Figure 2. Myxomycetes images (1- *Ceratiomyxa fruticulosa*, 2- *Echinostelium minutum*, 3- *Cribraria cancellata*, 4- *C. violacea*, 5- *Licea castanea*, 6- *L. kleistobolus*, 7- *L. minima*, 8- *Arcyria cinerea*, 9- *A. globosa*, 10- *A. incarnata*, 11- *A. minuta*, 12- *A. obvelata*, 13- *A. pomiformis*, 14- *Hemitrichia* sp., 15- *Trichia decipiens*)



Figure 3. Myxomycetes images (Cont.) (16- *T. munda*, 17- *Diderma hemisphaericum*, 18- *Didymium clavus*, 19- *D. megalosporum*, 20- *D. squamulosum*, 21- *Badhamia dubia*, 22- *B. panicea*, 23- *Craterium* sp., 24- *C. dictyosporum*, 25- *Physarum* sp., 26- *P. album*, 27- *P. oblatum*, 28- *P. robustum*, 29- *Collaria lurida*, 30- *Comatricha ellae*)



Figure 4. Myxomycete images (Cont.) (31- *Comatricha nigra*, 32- *Enerthenema papillatum*, 33- *Lamproderma arcyrioides*, 34- *Macbrideola cornea*, 35- *M. decapillata*, 36- *Stemonitis fusca*, 37- *Stemonitopsis amoena*, 38- *S. hyperopta*, 39- *S. reticulata*, 40- *S. subcaespitosa*)

Discussion

Myxomycetes spread on decayed Gymnosperm woods, leaves and debris. The Liceales, Trichiales and Stemonitales members are generally known to spread in coniferous forests (Martin and Alexopoulos, 1969; Stephenson & Stempen, 1994; Ergül and Akgül, 2011; Baba et al., 2016). In the present study, myxomycete sporophores were collected from Pinus sp. and Quercus sp., leaves and coarse wood debris. Corticolous myxomycetes and lignicolous myxomycetes material were collected only from bark and rotten wood in the study area.

The distribution of the species determined in the study area included Stemonitidaceae 12, Physaraceae 8, Arcyriaceae 6, Didymiaceae 4, Trichiaceae 3, Liceaceae 3, Cribrariaceae 2, Ceratiomyxidae 1 and Echinosteliaceae 1 species.

Previous studies reported that *Echinostelium minutum*, *Arcyria cinerea* and *Stemonitis fusca* could grow on all types of substrates and in almost all parts of the world (Stephenson & Stempen, 1994). These species were also identified in our study area.

Furthermore, *A. pomiformis*, *A. cinerea*, *C. ellae* and *C. nigra* were determined at several locations in the present study area. The detection of these common species was consistent with other studies conducted in Turkey (Ocak & Hasenekoğlu, 2003; Yağız & Afyon, 2007; Baba, 2015; Ergül et al., 2016).

Conclusion

In the present study, 40 species in 9 families and 19 genera were determined in order to determine myxomycetes diversity in Belen district. Also, the present study contributed to Turkish Myxobiota.

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