

Checklist of Algerian fungi – Part 1: Protozoan Fungal Analogues (Myxomycetes)

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Amrani S and Abdel-Azeem AM 2018 – Checklist of Algerian fungi – Part 1: Protozoan Fungal Analogues. *Microbial Biosystems* 3(1), 45-60.

Abstract

Informations on Algerian mycobiota are scattered through a wide array of journals, books, dissertations and the lack of comprehensive catalogs or checklists makes difficult to apprehend its diversity. By screening all available bibliographic sources and herbaria catalogues it was possible to delineate 97 species belonging to 31 genera and from which 9 species have not been yet reported in the literature for Algeria. This checklist is the first comprehensive species list fully dedicated to Algerian Protozoan Fungal Analogues.

Key words – Mycobiota, slime molds, biodiversity, literature and herbaria catalogs survey, species list.

Introduction

Since 1799 to the present days, Algeria has been the subject of intense mycological exploration, as evidenced by the abundant literature on Algerian mycobiota, the great number of new species provided to science and the considerable number of fungal specimens held by many herbaria worldwide. However despite this the diversity of Algerian mycoflora is relatively unknown by mycologists because the information on Algerian fungi is scattered over a large number of contributions most often written in French and that it does not exist until now a flora, a catalog or even a checklist of Algerian fungi.

In an attempt to provide a new impetus to mycological research in Algeria, which has suffered from the absence of a recent synthetic contribution dealing with Algerian fungal diversity, we compiled a checklist of Algerian fungi based on published sources and herbaria specimens catalogues. This checklist elaborated from nearly 10.000 records gathered from literature and herbaria catalogues survey indicate that Algerian fungal diversity comprises more than 3.100 specific or infraspecific taxa spread over more than 1000 genera. Since this list is too large to be published in a single contribution we have decided to split it into several contributions under a common title and different subtitles relating to the groups of fungi taken in consideration.

Our first contribution is dedicated to a group of organisms that although they are protozoa, are still studied mainly by mycologists under the denomination of Myxomycetes, Myxomycota, Mycetozoa or Protozoan Fungal like Analogs (PFA). The PFA commonly called also slime molds, are a cosmopolitan group of organisms comprising about 1.165 species developing in a variety of habitats; these include well-managed lawns and flower beds, moist places especially those on old wood and other plant material undergoing decomposition. The slime molds are also widespread on dung, and few representatives may also be restricted to this substratum. Another more recently recognized specialized niche is materialized by the dead branches attached to living trees. The major taxonomic treatises presently available on the slime moulds are those of Martin and Alexopoulos (1969), Alexopoulos (1973, 1978) and Farr (1976). They are heterotrophic and most are decomposers that feed on dead plants and animals by endocytosis (Kendrick 2000).

The first written reference on Algeria myxomycetes date back to 1799 when René Desfontaines (1750–1833) reported in his *Flora atlantica* (Desfontaines 1799) *Lycoperdon complanatum* (= *Lycoperdon bivalve* Pers.). Nearly a half century later the first major contribution to the fungi of Algeria and its myxomycetous part was provided by Tulasne and Lévillé who authored the fungi section of the Cryptogamic volume of the *Flore d'Algérie* (Durieu de Maisonneuve 1846) and where they report 34 records of myxomycetes corresponding to nowadays 29 distinct and recognized taxa.

Since that it took almost 8 decades to see the publication by Maire, Patouillard and Pinoy (Maire *et al.* 1926) of the first publication dedicated exclusively to Algerian myxomycetes and where is reported 55 records of myxomycetous fungi corresponding to nowadays 47 distinct and recognized taxa. The second major and last contribution dedicated to Algerian myxomycetes was published four decades later by Faurel, Feldmann, Schotter (Faurel *et al.* 1964) who reported 73 records of myxomycetous fungi corresponding to 61 nowadays distinct and recognized taxa.

Apart this historic and/or prominent contributions that have been published between 1799 and 1965 several minor contributions dealing with the observation of myxomycetes taxa in Algeria carried by several investigators viz: Montagne (1857), Maire (1906), Feldmann (1942), Malençon (1952) and Faurel and Schotter (1964). Other researchers reported this observations e.g. Rostafiński (1874 & 1875), Saccardo (1888 & 1892), Masee (1892), Buchet *et al.* (1912 & 1920), Duthie (1917), Lister (1925) and Macbride and Martin (1934). The latter authors cited North-Africa Myxomycetes without mention of the exact country of occurrence of each taxon they reported.

After this period it was necessary to wait until the works of Rojas and Stephenson (2010) and Djelloul (2014) to renew with the reporting of field observations of PFA in Algeria, thus constituting a good indicator at which extent the study of this group of organisms have been neglected. Although relatively recent regional (Lado 1994) or continental compilations (Ndiritu *et al.* 2009) give a good overview on the myxomycetes of Algeria we considered judicious to complete their list of taxa by records gathered from literature and herbarium specimen catalogues and to provide more details on their nomenclatural synonymy, substrate, distribution and abundance.

Checklists are important tools in taxonomy, systematics and conservation (Söderström *et al.* 2007, 2008; Moustafa and Abdel-Azeem 2011; Abdel-Azeem and Salem 2013; Nafady *et al.* 2016). In spite of that, several important areas lack recent checklists, including Algeria. This work aimed to close the gaps in knowledge on the fungi diversity of Algeria by providing a comprehensive checklist of protozoan fungal analogues.

Materials and Methods

Study area

Algeria, c. 2.4 million km² in area, is the largest country of Africa since the partition of Sudan in 2011. It is situated to the north of this continent, its entire northern coastline stretches for c. 1200 km along the southern boundary of the Mediterranean Sea, while inland it is delimited clockwise, along a boundaries totalling c. 6400 km, by Tunisia, Libya, Niger, Mali, Mauritania, Sahrawi Arab Democratic Republic and Morocco. The country, which is mainly mountainous with an average altitude of 800 m, stretches from north to south (18°57'N to 37°08'N) to a distance of c. 2000 km and from west to east (08°39'W to 12°00'E) to a distance of c. 2100 km; the western parts of Algeria are only c. 160 km from the Atlantic Ocean. The Mediterranean coastline and the two major mountain ranges, the Tell Atlas and the Saharan Atlas, delimitates southwards three major topographic and climatic regions (1) the Tell, (2) the Hauts-Plateaux and (3) the Sahara (Fig. 1).

The Tell region, stretching only 80-190 km inland, includes the coastal strip and the Tell Atlas Mountains (Tellian Atlas) that consist of narrow coastal plains, hills and mountains. The annual precipitation ranges from semi-arid (400-600 mm) to moderately humid with an increasing gradient from west to east where some permanent wetland areas occur. Although this region represents only c. 4% of the Algerian territory, it includes 70% of the country's agricultural soils and hosts 65% of the population. The natural vegetation of this area is typically Mediterranean and many of the mountain slopes are covered with dense forest or scrub of mainly oaks (*Quercus suber*, *Quercus ilex*, *Q. coccifera*), junipers (*Juniperus oxycedrus*, *J. thurifera* *J. phoenicea*), Aleppo pine (*Pinus halepensis*) and Atlas cedar (*Cedrus atlantica*).

The Hauts-Plateaux area is essentially a huge basin, c. 950 km in length, lying at an altitude of c. 1000 to 1400 m between the parallel mountains ranges of the Tell Atlas to the north and the Saharan Atlas to the south. This basin, which is 190 km at its widest point, includes a series of depressions running along a central south-west to north-east axis that support in some places shallow saline wetlands (Chotts and Sebkhass), which are seasonally flooded and become more saline as they gradually dry out. The region covers 13% of the country and hosts 26.5% of its population. The annual precipitation of the region is c.150-400 mm and agriculture is limited to the cultivation of salt-tolerant cereals; natural vegetation is represented mainly by steppes of *Stipa tenacissima*, *Artemisia herba-alba* and *Lygeum spartum*.

The Saharan area is essentially a vast arid to desertic area characterized by very little rainfall (< 100 mm per annum) and only ephemeral streams. The Sahara desert is not homogenous and takes on many forms. In the far north-west it consists of stony and gravely desertic high land known as the Hamada du Draâ. Eastwards, the southern slopes of the Saharian Atlas descend over a distance of c. 250 km to a central depression at an altitude of 200-500 m running south-west to north-east and filled by extensive ergs (vast sandy desertic areas with mobile dunes). In the centre of the region the land rises up to the stony plateau of Tademait, while further south it drops away into the Tidikelt depression that lies at an altitude of less than 200 m. Southwards and eastwards of this depression, the land rises again through a series of mountains of different heights, including Mount Tahat (ca. 3000 m), the highest peak in Algeria. This mountainous area, with its deep canyons and high plateaux, delimitate the Hoggar-Tassili region that can be considered as a fourth topographic and climatic region of Algeria due to its situation that make it under the influence of the West African monsoon. The whole Saharan region covers 83% of the country, but hosts only 8.5% of its population in several oases developed from underground rivers or aquifers. Agriculture, in almost all cases limited to the oases, is based on the cultivation of the date palm and food crops. Natural vegetation cover is very scarce and represented mainly by highly adapted bushes and trees.

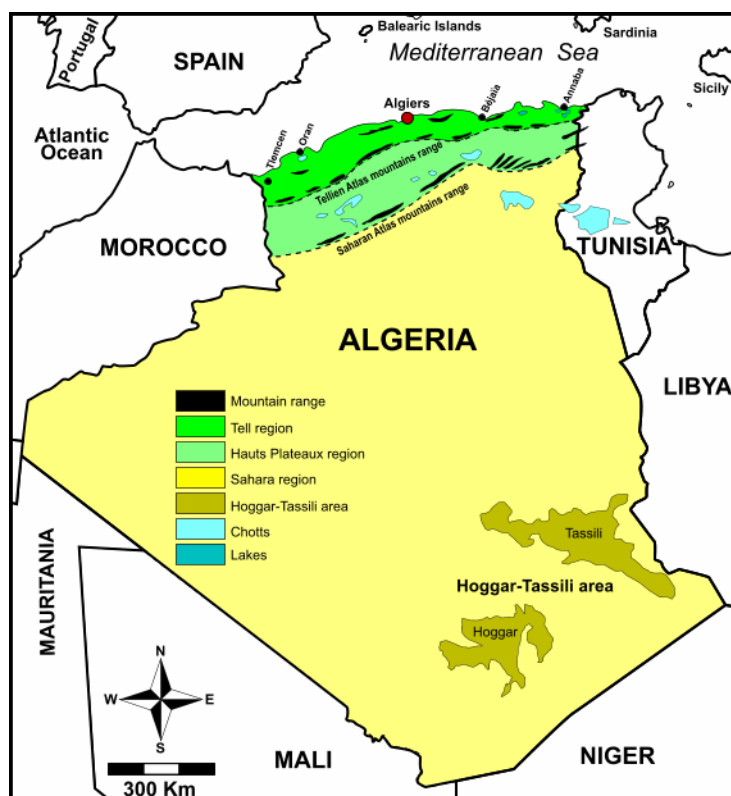


Fig. 1- Major biogeographical/bioclimatic regions of Algeria (see text for details)

Data Collection

The species listed here were compiled from bibliographical, herbarium online database. A main list of Algerian PFA has been developed and the taxa are given in alphabetical sequence of orders, families and genera. The names of authors of fungal taxa are abbreviated according to Kirk and Ansell (1992) and Kirk *et al.* (2008). Species of each group were given in a taxonomic sequence and accepted names are highlighted in bold. The systematic arrangement in the present list follows the system of classification of Martin *et al.* (1983). Name corrections, authorities, and taxonomic assignments of all taxa reported in this work were checked against the databases nomen.eumycetozoa (<http://eumycetozoa.com/data/index.php>) (Lado (2005-2018) and Index fungorum (www.indexfungorum.org)).

Result and Discussion

This survey based on the analysis of bibliographic sources and catalogs of herbaria holding Algerian fungal material allowed us to delineate 99 species of PFA that have been reported for Algeria (Tab. 1). These species that belongs to 6 orders and 31 genera are dominated by Physarales (49 species) which represent circa 50% of all reported species. After Physarales, Trichiales (25 species), Stemonitales (14 species) and Liceales (8 species) appears as the two other main components of the Algerian PFA mycobiota while the two other order represented in Algeria Ceratoxyxiales and Echinosteliales and which are more less speciose are both represented by only one species each. This diversity is rather consistent since it represent respectively 1/4 of this reported for Meditteranean area by Lado (1994) and 1/3 of this reported for Africa by Ndiritu *et al.* (2009).

Almost of the AFP species reported for Algeria were reported from the Tell area where abundant precipitations and the presence of great number of forests are favorable to their implantation and persistence. Therefore five coprophilous PFA species were obtained in moist chamber from mammalian dung material (Dromedary, Hare, Gundi, Barbary Sheep) collected from the Saharan desert area.

The report in a relatively recent study done by Rojas and Stephenson (2010) and the presence in BR herbarium of several species of PFA that have not been yet reported in the literature as occurring in Algeria indicate that the country is seemingly poorly explored from the PFA point of view and almost certainly contains many other taxa yet to be discovered. We trust that this Checklist of Algerian PFA, will encourage scientists to investigate an important component of Algeria's biodiversity and to make it better known to the world's scientific community.

Table 1 – Summary of the systematic distribution of the taxa of PFA reported for Algeria

Orders	Taxa	Genera	Species	Varieties	Forms
Ceratiomyxales	1	1	1	0	0
Echinosteliales	1	1	1	0	0
Liceales	8	6	8	0	0
Stemonitales	14	7	14	0	0
Physarales	49	9	49	0	0
Trichiales	24	7	24	0	0
Total number	97	31	97	0	0

Checklist of Algerian Protozoan Fungal Analogs

Abbreviations used

#Newly reported taxa: Taxa preceded by # are new to Algeria.

[Herbaria Specimens]: The herbaria specimens cited are between square brackets with the corresponding collector name.

Cited herbaria: BR = Botanical Garden Meise (Belgium), MPU = Montpellier (France)

Biogeographical areas cited (see Figure 1): TA = Tellian area, SD = Saharan Desert area –

Taxon abundance: C : Common, F : Frequent, R : Rare.

Origin of the taxa: ^F : Field collected, ^M : cultivated in moist chamber.

Ceratiomyxales

1. *Ceratiomyxa fruticulosa* (O.F. Müll.) T. Macbr.
Maire *et al.* (1926), Faurel *et al.* (1964), Ndiritu *et al.* (2009)
TA –R : Decaying wood (*Populus alba*^F, *Ulmus campestris*^F).

Echinosteliales

2. *Echinostelium minutum* de Bary
Rojas & Stephenson (2010), [BR - Rammello J. 1984]
TA - R : Decaying wood^F (*Cedrus atlantica*^M), Ground litter^M, Aerial litter^M.

Liceales

3. ***Cribraria aurantiaca* Schrad.**
Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Decaying wood^F.
4. ***Cribraria cancellata* (Batsch) Nann.-Bremek. (syn. *Dictydium cancellatum*)**
Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Decaying wood^F.
5. **#*Cribraria violacea* Rex**
[BR - Rammello J. 1984]
TA - R : Decaying wood (*Quercus faginea*^M).
6. ***Licea rugosa* Nann.-Bremek. & Y. Yamam. (syn. *L. rugosa* var. *fujiokana*)**
Rojas & Stephenson (2010)
TA - R : Decaying wood^M.
7. ***Lycogala epidendrum* (J.C. Buxb. ex L.) Fr.**
Massee (1892), Duthie (1917), Maire *et al.* (1926), Malençon (1952), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - F : Decaying wood (*Populus alba*^F, *Quercus afares*^F, *Q. ilex*^F, *Q. suber*^F).
8. ***Reticularia lycoperdon* Bull. (syn. *R. umbrina*, *Enteridium lycoperdon*)**
Durieu (1846), Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - F : Decaying wood (*Pinus halepensis*^F, *Populus alba*^F).
9. ***Tubifera ferruginosa* (Batsch) J.F. Gmel. (syn. *T. arachnoidea*)**
Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Decaying wood (*Salix alba*^F).
10. ***Dictydiaethalium plumbeum* (Schumach.) Rostaf. ex Lister (syn. *Clathroptychium rugulosum*, *Lycogala lenticulare*)**
Durieu (1846), Montagne (1857), Rostafiński (1875), Massee (1892), Saccardo (1888), Duthie (1917), Lister (1925), Maire *et al.* (1926), Buchet *et al.* (1920), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - C : Decaying wood (*Alnus glutinosa*^F, *Cytisus triflorus*^F), Bark.

Stemonitales

11. ***Comatricha nigra* (Pers.) J. Schröt. (syn. *Stemonitis oblonga*, *S. ovata*)**
Durieu (1846), Maire *et al.* (1926), Faurel *et al.* (1964), Eliasson & Lundqvist (1979), Lado (1994), Ndiritu *et al.* (2009)
TA - F : Decaying wood (*Ericae arboreae*^F, *Ulmus campestris*^F), Plant debris (*Agaves* sp^F, *Daphne gnidioides*^F).
12. ***Comatricha pulchella* (C. Bab.) Rostaf.**
Faurel *et al.* (1964), Eliasson & Lundqvist (1979), Lado (1994), Ndiritu *et al.* (2009)
SD - R : Barbary sheep Dung^M (*Ammotragus lervia*) from Sahara.
13. ***Comatricha tenerrima* (M.A. Curtis) G. Lister**
Rojas & Stephenson (2010)
TA - R : Decaying wood^M.

14. *Diachea leucopoda* (Bull.) Rostaf. (syn. *D. elegans*)
 Durieu (1846), Rostafiński (1874), Maire *et al.* (1926), Buchet *et al.* (1920), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009), Rojas & Stephenson (2010), Djelloul *et al.* (2014)
 TA - C : Ground litter^F.
15. *Lamproderma arcyrrioides* (Sommerf.) Rostaf. (syn. *L. violaceum*)
 Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
 TA - R : Decaying wood (*Cedrus atlantica*^F).
16. *Lamproderma columbinum* (Pers.) Rostaf.
 Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
 TA - R : Ground litter^F.
17. #*Lamproderma ovoideum* Meyl.
 [BR - Rammello J. 1984].
 TA - R : Dead stems of herbaceous plants.
18. #*Meriderma carestiae* (Ces. & De Not.) Mar. Mey. & Poulain (syn. *Lamproderma carestiae*)
 [BR - Rammello J. 1984]
 TA - R : Dead stems of herbaceous plants^F, Aerial litter (*Asphodelus sp.*^F).
19. *Stemonitis axifera* (Bull.) T. Macbr. (syn. *S. ferruginea*)
 Rostafiński (1874), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009), Djelloul *et al.* (2014)
 TA - R : Decaying wood (*Quercus suber*^F).
20. *Stemonitis fusca* Roth
 Durieu (1846), Rostafiński (1874), Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009), Rojas & Stephenson (2010), [BR - Rammello J. 1984].
 TA - F : Decaying wood (*Alnus glutinosa*^F, *Quercus ilex*^F).
21. *Stemonitis splendens* Rostaf.
 Maire *et al.* (1926), Buchet *et al.* (1920), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
 TA - R : Decaying wood (*Quercus suber*^F).
22. *Stemonitopsis typhina* (F.H. Wigg.) Nann.-Bremek. (syn. *Stemonitis typhoides*, *Comatricha typhina*, *C. typhoides*)
 Durieu (1846), Saccardo (1888), Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009), [BR - Rammello J. 1984]
 TA - F : Decaying wood (*Quercus suber*^F, *Ricinus sp.*^F).
23. *Symphytocarpus confluens* (Cooke & Ellis) Ing & Nann.-Bremek (syn. *Stemonitis confluens*)
 Buchet *et al.* (1920), Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
 TA - R : Decaying wood (*Ulmus campestris*^F).
24. *Symphytocarpus trechisporus* (Berk. ex Torrend) Nann.-Bremek. (syn. *Stemonitis fusca* var. *trechispora*, *S. trechispora*)
 Buchet *et al.* (1920), Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
 TA - R : Plant debris (*Ricinus sp.*^F).

Physarales

25. *Badhamia affinis* Rostaf.
Rojas & Stephenson (2010)
TA - R : Decaying wood^F, Aerial litter^F.
26. *Badhamia capsulifera* (Bull.) Berk.
Maire *et al.* (1926), [BR - Rammello J. 1984].
TA - R : Decaying wood (*Pinus sp.*^F), Bark (*Cedrus atlantica*^M).
27. *Badhamia foliicola* Lister
Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Ground litter (*Ulmus campestris*^F).
28. *Badhamia macrocarpa* (Ces.) Rostaf.
Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Plant debris (*Opuntia sp.*^F).
29. *Badhamia panicea* (Fr.) Rostaf.
Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : On mosses bed^F.
30. *Craterium aureum* (Schumach.) Rostaf. (syn. *C. mutabile*)
Durieu (1846), Rostafiński (1874), Masee (1892), Saccardo (1888), Duthie (1917),
Buchet *et al.* (1920), Lister (1925), Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994),
Ndiritu *et al.* (2009)
TA - F : Decaying wood^F, Barks^F, Ground litter^F.
31. *Craterium leucocephalum* (Pers. ex J.F. Gmel.) Ditmar
Faurel *et al.* (1964), Eliasson & Lundqvist (1979)
SD - R : Dromedary dung from Sahara desert^M.
32. #*Diderma asteroides* (Lister & G. Lister) G. Lister
Botanic Garden Meise Herbarium
TA - R : Decaying wood (*Ilex aquifolium*^F).
33. *Diderma globosum* Pers.
Durieu (1846), Macbride & Martin (1934), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Living and dry twigs^F.
34. *Diderma hemisphaericum* (Bull.) Hornem.
Maire *et al.* (1926), Buchet *et al.* (1920), Lister (1925), Faurel *et al.* (1964), Lado (1994),
Ndiritu *et al.* (2009)
TA - R : Ground litter (*Erophaca baetica*^F).
35. *Diderma peyerimhoffii* (Maire & Pinoy) H. Neubert, Nowotny & K. Baumann (syn. *D. nivale*, *D. trevelyanii* var. *nivale*)
Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009), [MPU, Maire R.C.J.E. 1915]
TA - R : Ground litter (*Acer obtusatum*^F).
36. *Diderma radiatum* (Rostaf.) Morgan
Maire *et al.* (1926), Macbride & Martin (1934), Faurel *et al.* (1964), Faurel *et al.* (1964),
Lado (1994), Ndiritu *et al.* (2009)
TA - R : Plant debris^F.

37. *Diderma simplex* (J. Schröt.) G. Lister
Faurel *et al.* (1964), , Eliasson & Lundqvist (1979), Ndiritu *et al.* (2009)
SD - R : Dung of hare from Sahara desert Plant^M.
38. *Diderma spumarioides* (Fr.) Fr.
Rostafinski (1874), Faurel *et al.* (1964), Ndiritu *et al.* (2009), [BR - Rammello J. 1984].
TA - R : Decaying wood^F, Ground litter^F, living or decaying twigs of *Euphorbia sp.*^F.
39. *Diderma testaceum* (Schrad.) Pers.
Duthie (1917), Macbride & Martin (1934), Ndiritu *et al.* (2009)
TA - R : Plant debris (*Opuntia sp.*^F).
40. *Diderma umbilicatum* Pers.
Durieu (1846), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Decaying herbaceous plant material^F.
41. *Didymium anellus* Morgan
Rojas & Stephenson (2010)
TA - R : Decaying wood^M, Aerial litter^M, Ground litter^M.
42. *Didymium crustaceum* Fr.
Durieu (1846), Maire *et al.* (1926) , Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Decaying plant material^F.
43. *Didymium difforme* (Pers.) Gray syn. *Diderma difforme*)
Durieu (1846), Faurel *et al.* (1964), Eliasson & Lundqvist (1979), Lado (1994), Ndiritu *et al.* (2009), Rojas & Stephenson (2010), [BR - Rammello J. 1984]
TA - F : Decaying plant material^{FM}.
44. *Didymium eximium* Peck (syn. *Didymium nigripes* var. *eximium*)
Maire *et al.* (1926), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Ground litter^F.
45. *Didymium iridis* (Ditmar) Fr. (syn. *D. nigripes* var. *xanthopus*, *D. xanthopus*)
Durieu (1846), Maire *et al.* (1926), Faurel *et al.* (1964), Eliasson & Lundqvist (1979), Lado (1994), Ndiritu *et al.* (2009), Rojas & Stephenson (2010)
TA - F : Decaying wood^F, ground litter (*Eryobotrya japonica*^F).
46. #*Didymium leptotrichum* (Racib.) Masee
[BR - Rammello J. 1984].
TA - R : Ground and Aerial litter (*Asphodelus sp.*^F).
47. *Didymium megalosporum* Berk. & M.A. Curtis
Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Ground litter^F.
48. *Didymium melanospermum* (Pers.) T. Macbr. (syn. *D. farinaceum*, *D. lobatum*, *D. sinuosum*)
Durieu (1846), Maire *et al.* (1926), Faurel *et al.* (1964), Ndiritu *et al.* (2009)
TA - R : Decaying wood^F, Plant debris (*Opuntia sp.*^F).
49. *Didymium minus* (Lister) Morgan
Rojas & Stephenson (2010)
TA - R : Aerial litter^M.

- 50. *Didymium nigripes*** (Link) Fr. (syn. *D. porphyropus*)
 Durieu (1846), Montagne (1857), Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009), [BR - Rammello J. 1984]
 TA - F : Ground litter (*Quercus sp.*^F).
- 51. *Didymium serpula*** Fr. (syn. *D. complanatum*, *Lycoperdon complanatum*)
 Desfontaines (1799), Maire *et al.* (1926)
 TA - R : Plant debris (*Opuntia sp.*^F).
- 52. *Didymium squamulosum*** (Alb. & Schwein.) Fr. (syn. *D. costatum*, *D. fuckelianum*, *D. herbarum*)
 Durieu (1846), Rostafiński (1874), Maire *et al.* (1926), Faurel *et al.* (1964), Faurel et Schotter (1964-65), Eliasson & Lundqvist (1979), Lado (1994), Ndiritu *et al.* (2009), Rojas & Stephenson (2010)
 TA - C : Ground litter^F, Plant debris^{FM}.
- 53. *Didymium vaccinum*** (Durieu & Mont.) Buchet (syn. *D. trochus*, *Chondrioderma vaccinum*)
 Durieu (1846), Montagne (1857), Rostafiński (1874), Masee (1892), Saccardo (1888), Lister (1925), Maire *et al.* (1926), Maire & Werner (1938), Buchet *et al.* (1920), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009), [BR - Rammello J. 1984]
 TA - F : Plant debris (*Opuntia sp.*^F).
- 54. *Fuligo septica*** (L.) F.H. Wigg. (syn. *F. septica* var. *candida*, *Aethalium septicum*)
 Durieu (1846), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
 TA - R : Decaying wood (*Quercus suber*^F, *Q. afares*^F), stems of herbaceous plants^F.
- 55. *Leocarpus fragilis*** (Dicks.) Rostaf.
 Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
 TA - R : Ground litter (*Pinus halepensis*, *Quercus ilex*^F, *Q. ilex*^F), Plant debris (*Juniperus sp.*^F), Mosses bed.
- 56. *Lepidoderma trevelyanii*** (Grev.) Poulain & Mar. Mey. (syn. *Diderma Trevelyanii*)
 Ndiritu *et al.* (2009), [BR - Rammello J. 1984]
 TA - R : Decaying wood (*Cedrus atlantica*^F)
- 57. *Mucilago crustacea*** P. Micheli ex F.H. Wigg. (syn. *M. spongiosa*, *Spumaria alba*)
 Durieu (1846), Rostafiński (1874), Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
 TA - F : Ground litter (*Juniperus phoenicea*^F), Living stems and leaves of grasses^F.
- 58. *Physarum album*** (Bull.) Chevall. (*P. nutans*)
 Durieu (1846), Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
 TA - F : Decaying wood^F.
- 59. *Physarum bivalve*** Pers. (syn. *P. sinuosum*)
 Rostafiński (1874), Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
 TA - R : Cups of chesnut tree^F (*Castanea sativa*).
- 60. *Physarum cinereum*** (Batsch) Pers.
 Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009), Rojas & Stephenson (2010)
 TA - R : Stems and leaves (*Vicia sp.*^F).

- 61. *Physarum compressum*** Alb. & Schwein.
Feldmann (1933), Faurel *et al.* (1964), , Eliasson & Lundqvist (1979), Lado (1994), Ndiritu *et al.* (2009), [BR - Rammello J. 1984]
TA - R : Decaying wood^F, Plant debris (*Opuntia sp.*^F, *Agaves sp.*^F)
- 62. *Physarum contextum*** (Pers.) Pers.
Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Ground litter (*Ulmus campestris*^F).
- 63. *Physarum didermoides*** (Ach. ex Pers.) Rostaf.
Maire *et al.* (1926), Faurel *et al.* (1964), Faurel et Schotter (1964-65), , Eliasson & Lundqvist (1979), Lado (1994), Ndiritu *et al.* (2009)
TA & SD - R : Leaves of date palm^F, Manure (Hamma botanical garden^F), Dromedary dung from sahara desert^M.
- 64. *Physarum echinosporum*** Lister
Rojas & Stephenson (2010)
TA - R : Aerial litter^M.
- 65. *Physarum leucophaeum*** Fr. (syn. *P. nutans* var. *leucophaeum*)
Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Plant debris^F.
- 66. *Physarum leucopus*** Link
Faurel *et al.* (1964), Faurel et Schotter (1964-65), , Eliasson & Lundqvist (1979), Lado (1994), Ndiritu *et al.* (2009)
SD - R : Dromedary dung from Sahara-desert^M.
- 67. *Physarum licheniforme*** (Szabó ex Schwein.) Lado (syn. *P. lividum*)
Rostafiński (1874), Masee (1892), Saccardo (1888)
TA - R : Plant debris (*Opuntia sp.*^F).
- 68. *Physarum nucleatum*** Rex
Faurel *et al.* (1964), , Eliasson & Lundqvist (1979), Lado (1994), Ndiritu *et al.* (2009)
SD - R : Gundi dung^M (*Ctenodactylus gundi*) from Sahara desert.
- 69. *Physarum pusillum*** (Berk. & M.A. Curtis) G. Lister (syn. *P. calidris*)
Buchet *et al.* (1920), Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Plant debris (*Opuntia sp.*^F).
- 70. *Physarum utricularae*** (Bull.) Chevall. (syn. *Badhamia utricularis*)
Durieu (1846), Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - F : Plant debris (*Opuntia sp.*^F, *Agaves sp.*^F, *Chamaerops sp.*^F).
- 71. *Physarum vernum*** Sommerf.
Feldmann (1933), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Decaying wood^F.
- 72. *Physarum virescens*** Ditmar
Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Ground litter^F.
- 73. *Physarum viride*** (Bull.) Pers.
Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Decaying wood^F.

Trichiales

74. *Arcyria affinis* Rostaf.
[BR - Rammello J. 1984]
TA - R : Decaying wood (*Quercus faginea*^F).
75. *Arcyria cinerea* (Bull.) Pers.
Durieu (1846), Rostafiński (1875by records(, Maire *et al.* (1926), Faurel *et al.* (1964), Eliasson & Lundqvist (1979), Lado (1994), Ndiritu *et al.* (2009), Rojas & Stephenson (2010), [BR - Rammello J. 1984]
TA - F : Decaying wood (*Alnus glutinosa*^F, *Coriolis versicolor*^F, *Cedrus atlantica*^{M*}, *Quercus faginea*^M...), decaying leaves (*Quercus faginea*^M).
76. *Arcyria denudata* (L.) Wettst. (syn. *A. punicea*)
Durieu (1846), Maire & al. (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009), Djelloul *et al.* (2014)
TA - F : Decaying wood (*Laurus nobilis*^F, *Olea sp.*^F).
77. *Arcyria incarnata* (Pers.) Pers.
Maire (1906), Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Decaying wood (*Quercus suber*^F, *Ulmus sp.*^F, *Fomes sp.*^F).
78. *Arcyria minuta* Buchet (syn. *A. carnea*)
[BR - Rammello J. 1984].
TA - R : Decaying wood (*Cedrus atlantica*^M).
79. *Arcyria obvelata* (Oeder) Onsberg (syn. *A. nutans*)
Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - F : Decaying wood (*Quercus ilex*^F).
80. *Arcyria oerstedii* Rostaf.
Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Decaying wood^F.
81. *Hemitrichia clavata* (Pers.) Rostaf. (syn. *Trichia clavata*)
Durieu (1846), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Decaying wood^F.
82. *Hemitrichia serpula* (Scop.) Rostaf. (syn. *Trichia serpula*)
Durieu (1846), Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - F : Plant debris (*Opuntia sp.*^F).
83. *Metatrichia vesparium* (Batsch) Nann.-Bremek. ex G.W. Martin & Alexop.
Durieu (1846), Lado (1994)
TA - R : Decaying wood^F.
84. *Oligonema flavidum* (Peck) Peck (syn. *Oligonema minutulum*)
Massee (1892), Saccardo (1892), (Maire *et al.* (1926), Buchet *et al.* (1920), Macbride & Martin (1934), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : – No information on substrate available.
85. *Perichaena corticalis* (Batsch) Rostaf. (syn. *P. populina*)
Durieu (1846), Rostafiński (1874), Maire *et al.* (1926), Faurel *et al.* (1964), Eliasson & Lundqvist (1979), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Decaying wood (*Populis alba*^F).

- 86. *Perichaena depressa*** Lib.
Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009), Rojas & Stephenson (2010)
TA - R : Decaying wood (*Populus alba*^F), Aerial litter, Ground litter.
- 87. *Perichaena vermicularis*** (Schwein.) Rostaf.
Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Bark (*Cupressus sempervirens*^F).
- 88. #*Prototrichia metallica*** (Berk.) Masee
[BR - Rammello J. 1984].
TA - R : Decaying wood (*Cedrus atlantica*^F).
- 89. *Trichia affinis*** de Bary
Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Decaying wood (*Populus alba*^F).
- 90. *Trichia botrytis*** (Pers.) Pers.
Faurel *et al.* (1964), Ndiritu *et al.* (2009)
TA - R : Decaying wood (*Eucalyptus sp.*^F).
- 91. #*Trichia contorta*** (Ditmar) Rostaf.
[BR - Rammello J. 1984].
TA - R : Bark (*Cedrus atlantica*^M), living and dead twigs (*Euphorbia sp.*^F).
- 92. *Trichia decipiens*** (Pers.) T. Macbr.
Maire *et al.* (1926), Lado (1994), Ndiritu *et al.* (2009), [BR - Rammello J. 1984].
TA - R : Decaying wood (*Cedrus atlantica*^F).
- 93. **Trichia crateriformis*** G.W. Martin (Syn. *Trichia decipiens* var. *olivacea*)
[BR - Rammello J. 1984]
TA - R : Decaying wood (*Cedrus atlantica*^M).
- 94. *Trichia favoginea*** (Batsch) Pers. (syn. *T. chrysosperma*, *T. nitens*)
Durieu (1846), Maire *et al.* (1926), Macbride & Martin (1934), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - F : Decaying wood (*Alnus sp.*^F, *Quercus sp.*^F), Barks^F.
- 95. *Trichia flavicoma*** (Lister) Ing (syn. *T. botrytis* var. *flavicoma*)
Maire *et al.* (1926), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Decaying wood (*Eucalyptus sp.*^F).
- 96. *Trichia persimilis*** P. Karst.
Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Decaying wood^F.
- 97. *Trichia varia*** (Pers.) Pers. (syn. *T. varia* var. *aurata*, *T. nigripes*)
Durieu (1846), Maire *et al.* (1926), Macbride & Martin (1934), Faurel *et al.* (1964), Lado (1994), Ndiritu *et al.* (2009)
TA - R : Decaying wood (*Alnus glutinosa*^F, *Quercus afares*^F, *Q. canariensis*^F, *Ulmus campestris*^F).

Erraneous or dubious taxa

1. *Diderma niveum* (Rostaf.) T. Macbr.

Ndiritu *et al.* (2009)

[This taxon cited for Algeria only by Ndiritu *et al.* (2009) must be considered as dubious since we did not find additional references or herbarium material supporting its presence in Algeria]

2. *Didymium capitatum* Link

Durieu (1846)

[Considered by Rostafinski (1874) as synonym of *Cionium farinaceum* Link and by Saccardo (1888) as synonym of *Didymium farinaceum* Schrad both corresponding to *Didymium melanospermum* (Pers.) T. Macbr., listed in this checklist.]

3. *Didymium physaroides* (Pers.) Fr.

Durieu (1846)

[Cited by Durieu (1846) as *Didymium physaroides* Fr. by considering it as synonym of *Spumaria Physaroides* Pers. while Rostafinski (1874) considered the material of Durieu as *Physarum lividum* Rostaff. which correspond to *Physarum licheniforme* (Szabó ex Schwein.) Lado, listed in this checklist.]

4. *Oligonema schweinitzii* (Berk.) G.W. Martin (syn. *O. nitens*)

Buchet *et al.* (1912), Macbride & Martin (1934), Ndiritu *et al.* (2009)

[This taxa reported by Buchet *et al.* (1912) and Ndiritu *et al.* (2009) for Algeria must be removed from the list of species assigned to this country and seemingly for North-Africa. Indeed, G. Lister after examination of the herbarium specimen submitted to her appreciation by Buchet *et al.* (1912) under label *Trichia minutula* considered this material as pertaining to *Oligonema flavidum* (Peck) Peck. Faurel and *al.* (1964) were of the same opinion as G. Lister and considered the report of *Oligonemina nitens* for Algeria and North Africa as erroneous and seemingly due to the “in herbarium” misassimilation of *Trichia minutula* (= *Oligonema flavidum*) to *Oligonema nitens* (= *Oligonema schweinitzii*).]

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