

LARGER FUNGI FROM IRAN

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ABSTRACT. Twenty-two species of macromycete in the Basidiomycetes (Agaricales and Aphyllophorales) and Ascomycetes (more conspicuous forms) are recorded from northern Iran; several are apparently the first records for this part of SW Asia. In an appendix, *Helicomyces roseus*—Fungi Imperfecti—is also noted from Iran.

INTRODUCTION

Frey & Mayer (1971) have listed the literature dealing totally or in some part with cryptogams recorded from Iran. Although several papers, particularly by Petrak and his co-workers have been confined to mycological aspects, the fungal species dealt with therein have been basically parasitic forms and/or micromycetes. Perhaps the contributions made by Rabenhorst (1870) and Rostrup (1908) are really the two most pertinent publications connected with the list below.

Several vascular plant expeditions to Iran have brought back at various times small collections of dried larger fungi which have been deposited in Edinburgh (E); although containing no individually important records from a phytogeographical aspect, when grouped together they become useful for comparative purposes. A reference list is therefore offered with accompanying illustrations. The material is all from northern Iran and mostly from the mesophytic Hyrcanian phytogeographical province. The Golban forest locality which is mentioned several times below and is not normally indicated on maps is a forestry park 10 km from Asulab (51°30'E/36°24'N). The rainfall of the area from which all the collections were taken varies between 1000 and 2000 mm per annum, excepting near Ahar where it is 500–600 mm per annum. Collections were made between sea level and 2000 m (see Mobayen & Tregubov, 1971).

The expeditions involved were those of: D. Walton, 24 August–1 September 1969; D. Ferguson, 1 July–25 September 1970; Miss J. Lamond, 5 May–1 August 1971.

BASIDIOMYCETES

The agaric families used in this compilation follow Singer (1962); other basidiomycetous fungi follow Donk (1964). Fourteen collections of what can, from the field data, only be considered agaricoid fungi were collected by Ferguson between Niala and Galugah (prov. Mazandaran); unfortunately these collections decayed during transit but reflect how rich the basidiomycete flora of northern Iran really is.

AGARICACEAE

Agaricus sp. (determined from field notes only)
Mazandaran: between Niala and Galugah, Ferguson 229.

COPRINACEAE

Panaeolus phalaenarum (Fr.) Quélet. Fig. 1q.

Mazanderan: nr. Chalus, estuary of river, 20 yards from sea, growing on animal dung, *Walton* 225.

The material agrees with *Bride & Metrod's* excellent description of *P. teutonicus* (Bull. Soc. Myc. Fr. 66:106-108, 1950) which is taken as a synonym. The basidiospores are slightly lenticular unlike the closely related *P. semiovatus* (Sow. ex Fr.) Lundell.

P. sphinctrinus (Fr.) Quélet

Azerbaijan: nr. Ahar, north side of Kuhhaye Sabalan, radar road, mountain slopes near stream, c. 2650 m, *Lamond* 4727a.

CORTINARIACEAE

Galerina unicolor (Vahl ex Sommerf.) Singer

Mazanderan: Elburz mts., Golban forest, dead tree stumps and branches, 1200 m, *Walton* 258. Gilan: Navrud (Asalem) to Herowabad (Khalkhal), on dead wood, *Fagus* woodland, very steep mountain slopes, c. 1000-1300 m, *Lamond* 2976.

Both collections agree with the concept of Bas (1960) for *G. marginata* (Batsch ex Secr.) Kühner; at present the epithet '*unicolor*' is preferred although there is evidence that a complex of annulate species with roughened, rather broad, short basidiospores exists in the stirps *marginata*. The collections do not refer to *G. unicolor* in the sense of Smith & Singer (1964) (= *G. praticola* (F. H. Moeller) P. D. Orton, 1960).

CREPIDOTACEAE

Crepidotus cesatii (Rabenh.) Sacc. Fig. 1m.

Mazanderan: Elburz mts., Golban forest, dead tree branch, 1200 m, *Walton* 257.

Characterised by the subglobose to shortly ovoid, minutely prickly basidiospores ($6.5-8 \times 5-7 \mu\text{m}$). This fungus is illustrated by Lange (1938) under *C. sphaerosporus* (Pat.) Lange, a later synonym.

PLEUROTACEAE

Lentinus adhaerens (Alb. & Sch. ex Fr.) Fr.

Gilan: Nawrud (Asalem) to Herowabad (Khalkhal), on dead wood, *Fagus* woodland, very steep mountain slopes, c. 1000-1300 m, *Lamond* 2977.

A very fine clump agreeing in all ways with the description given by Pilát (1946). The fungus is characterised by the abundant elongate lageniform, facial cystidia with long neck and amorphous exudate, and by the non-amyloid basidiospores $6-10 \times 2.5-3.5 \mu\text{m}$.

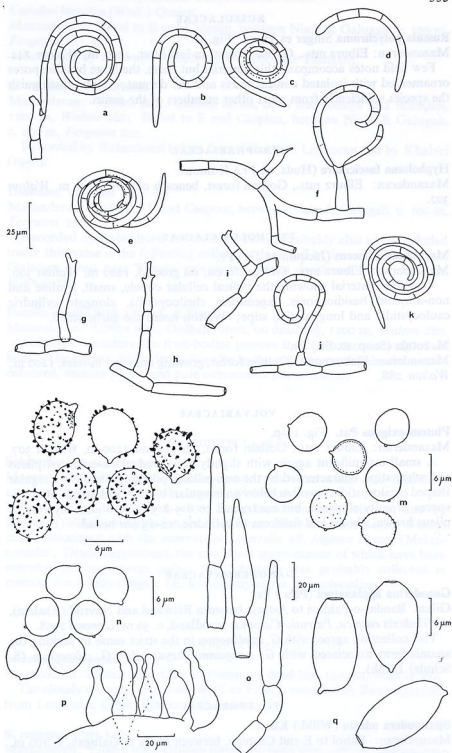


FIG. 1. a-k, *Helicomyces roseus*: a-d, k, conidia (b and d immature); e, two conidia intertwined; f, j, mycelium and conidiophores bearing immature conidia; g-i, conidiophores. l, basidiospores of *Russula polychroma*. m, basidiospores of *Crepidotus cesatii*; n-p, *Pluteus exiguus*: n, basidiospores; o, end-cells from pileopellis; p, cheilocystidia. q, basidiospores of *Panaeolus phalaenarium*.

RUSSULACEAE

Russula polychroma Singer ex Hora. Fig. 11.

Mazanderan: Elburz mts., Golban forest, in leaf litter, 1200 m, *Walton* 244.

Few field notes accompany this material but these, the large basidiospores ornamented with isolated conical warts and the dermatocystidia distinguish the species sufficiently from most other members of the genus.

STROPHARIACEAE

Hypholoma fasciculare (Huds. ex Fr.) Kummer

Mazanderan: Elburz mts., Golban forest, beneath old log, 1200 m, *Walton* 302.

TRICHOLOMATACEAE

Marasmius alliaceus (Jacquin ex Fr.) Fr.

Mazanderan: Elburz mts., Golban forest, on ground, 1200 m, *Walton* 306.

Very fine material showing the typical cellular cuticle, small, hyaline and non-amyloid basidiospores, lageniform cheilocystidia, elongate cylindric caulocystidia and long rooting stipe; *Walton* noted the garlic smell.

M. rotula (Scop. ex Fr.) Fr.

Mazanderan: Elburz mts., Golban forest, growing amongst mosses, 1200 m, *Walton* 288.

VOLVARIACEAE

Pluteus exiguus Pat. Fig. 1n-p.

Mazanderan: Elburz mts., Golban forest, on ground 1200 m, *Walton* 307.

A small insignificant agaric with slightly powdered, dark-coloured pileus and white stipe, characterised by the non-cellular pileopellis and the irregular shaped cheilocystidia (swollen below an irregular, blunt, short apex). Basidiospores broadly ellipsoid, but contracted to $6.5-8.5 \times 5-6 \mu\text{m}$; hyphae of pileus brown, obtuse and fusiform to cylindric, $12-15 \mu\text{m}$ broad.

GANODERMATACEAE

Ganoderma applanatum (Pers.) Pat.

Gilan: Bandar-e-Pahlavi to Astara, between Rizwand and Navrud (Asalem), on *Gleditsia caspica*, *Parrotia-Carpinus* woodland, c. 50 m, *Lamond* 2958.

This collection agrees with *G. applanatum* in the strict sense by lacking the anamioderm associated with *G. europaeum* Steyaert (= *G. adpersum* (S. Schulz) Donk).

POLYPORACEAE

Bjerkandera adusta (Willd.) Karst.

Mazanderan: Babol to E end Caspian, between Niala & Galugah, c. 100 m, *Ferguson* 233.

Coriolus hirsutus (Wulf.) Quelet

Mazanderan: Babol to E end Caspian, between Niala & Galugah, c. 100 m, *Ferguson* 223 & 235.

Recorded by Rostrup (1908) from Tshinas near Tashkent.

C. versicolor (L.) Quelet

Mazanderan: Elburz mts., Golban forest, dead tree stumps and branches, 1200 m, *Walton* 262; Babol to E end Caspian, between Niala & Galugah, c. 100 m, *Ferguson* 222.

Recorded by Rabenhorst (1870) from Gilan and Lenkoran and by Khabiri (1958).

Daedalea quercina (L.) Fr.

Mazanderan: Babol to E end Caspian, between Niala & Galugah, c. 100 m, *Ferguson* 226.

Recorded by Rabenhorst (1870) from Tiflis. Probably also to be included under this name is the following collection damaged by insects: Khorassan, Gulestan forest near Tangar, tree stump, mixed deciduous forest, 1000 m, *Walton* 222.

Funalia trogii (Berk.) Bond. & Sing.

Mazanderan: Elburz mts., Golban forest, on dead log, 1200 m, *Walton* 280.

Although immature the fruit-bodies possess the characteristic long pileal hairs. The species differs from *F. gallia* in the paler context, pale cinnamon-coloured, smaller pores, and pale ochraceous pileus-colour.

SCHIZOPHYLLACEAE

Schizophyllum commune Fr.

Mazanderan: Elburz mts., Golban forest, dead tree stump and branches, 1200 m, *Walton* 261; on bark, 1200 m, *Walton* 264.

Recorded by Rabenhorst (1870) from Lenkoran and Zerkowa, and by Rostrup (1908) from Gilan (on trunk of *Morus alba*) and from Resht. *Walton* 264 is associated with the acervuli of *Libertella* aff. *faginea* Desm. (Melanconiales; Deuteromycotina), the now dried spore-masses of which have been extruded as long orange coils; the *Libertella* was probably collected in mistake for a jelly-fungus, i.e. hymenomycetous heterobasidia.

STEREACEAE

Stereum gausapatum Fr.

Mazanderan: Elburz mts., Golban forest, on dead log, 1200 m, *Walton* 292.

The closely related *S. hirsutum* Wulf. ex Fries is recorded by Rostrup (1908) from Lenkoran, Gilan, Elburz & Caucasus.

S. rugosum (Pers.) Fr.

Mazanderan: Elburz mts., Golban forest, on dead tree, 1200 m, *Walton* 299.

ASCOMYCETES

(Nomenclature and taxonomy follow Dennis 1968)

CLAVICIPITACEAE

Cordyceps militaris Fr.

Mazanderan: Elburz mts., Golban forest, dead tree stumps and branches, 1200 m, *Walton* 259.

The larva or pupa on which the fungus was undoubtedly growing did not accompany the material.

PEZIZACEAE

Peziza repanda Pers.

Mazanderan: Elburz mts., Golban forest, dead tree stumps and branches, 1200 m, *Walton* 263.

The stratified flesh, shape and size of the smooth ascospores, and the clavate non-moniliform paraphyses are typical of this species.

XYLARIACEAE

Daldinia concentrica (Bolt. ex Fr.) Ces. & De Not.

Mazanderan: Elburz mts., Golban forest, on dead log, 1200 m, *Walton* 281.

The collection consists of very small and immature fruit-bodies which in places are associated with a species of *Nodulosporium* (Moniliales-Deuteromycotina)—presumably the conidial state.

Appendix

A NEW RECORD OF HELICOMYCES

Amongst the dried material of larger fungi collected by Walton in Iran, a suspected resupinate fungus was located—*Walton* 260. It consisted of a pale, hoary, pinkish lavender mycelial growth on dead wood in many ways resembling members of the genus *Tulasnella* (Tremellales: Hymenomycetous heterobasidiae). However, on examination the fungus was seen to exhibit coiled conidia borne on short conidiophores. The fungus from the Golban Forest, Elburz mountains, prov. Mazanderan (alt. 1200 m) was determined as *Helicomyces roseus* Link; apparently it is the first record for this part of SW Asia.

The genus *Helicomyces* in the strictest sense is characterised by cottony to velvety colonies of a non-parasitic nature and bearing hyaline, narrow conidia coiled in two planes. *H. roseus* is distinguished from all the other species described in the genus by the lack of setae amongst the conidiophores, hyaline mycelium and conidial apparatus, and filaments of the conidial coil varying between 2.5–5 μ m broad. The pinkish-lavender colouration is an additional field character. The relevant characters are illustrated in fig. 1a-k. The fungus is widespread; Linder (1929) gives several synonyms and has examined material from Europe (Austria, Belgium, France, Germany, Italy and the United Kingdom) and United States.

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