Saprobic fungi on wood and litter of *Alnus alnobetula* in the Swiss Alps

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ABSTRACT — 246 species representing 73 genera and 90 species of ascomycetes, basidiomycetes being represented with 44 genera of aphyllophoralean fungi with 77 species, 23 genera of agarics with 68 species and 8 genera of tremelloid fungi with 12 species growing on wood and litter of *Alnus alnobetula* in Switzerland are given. *Clitocybe* and *Mycena* species dominate among the leaf litter inhabiting species. Fallen branches have the highest species diversity. The host-specific *Peniophora aurantiaca* is one of the most conspicuous and most frequent species.

KEY WORDS — lignicolous and foliicolous fungi, diversity, subalpine alder stand

Introduction

Bush-like Green alder (*Alnus alnobetula* (Ehrh.) K. Koch, syn. *Alnus viridis* (Chaix) DC. aggr.*, Betulaceae)* is present in subarctic and in some subalpine vegetation types of the Northern Hemisphere. In the Alps two forms exist, *Alnus alnobetula* s.str. and *Alnus alnobetula* ssp. *brembana* (Rota) H.J.P. Winkl. with smaller leaves. Green alder is an early successional shrub that invades screes, avalanche slide paths and pastures in the subalpine zone of the Alpine, Carpathian and Dinaric chains in Europe. In the Western Alps, Green alder stands (*Alnetum viridis* Br.-Bl.) are widely spread at an altitude of 1000–2000 m, in Switzerland

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mostly on moist, north-exposed slopes on siliceous bedrock (Wettstein 2001). An expansion of this vegetation type due to deforestation and extensive grazing has been observed in the last decades in the Western Alps and in the Swiss Alps (Barbero et al. 1991; Wettstein 1999; Anthelme et al. 2003). Currently the *Alnetum viridis* is probably the most rapidly spreading vegetation type in Switzerland, colonising mainly abandoned subalpine pastures.

Green alder is a typical soft wood, which is easily degraded within a few years. A remarkable feature is the elasticity of its branches.

Fungi on Green alder have been mentioned in various taxonomic, mycofloristic or ecological literature. From Switzerland Favre (1960) and Müller (1977) recorded several species on Green alder in catalogues on fungi from the Swiss National Park and the Nature Reserve of Aletsch respectively, as does Schmid-Heckel (1988) for the National Park Berchtesgaden in Bavaria, Germany. From southern Bohemia Podlahova (1973) describes and enumerates *pyrenomycetes* on this substrate from exceptionally low altitudes. However, no exhaustive list of fungi on Green alder exists. Only Lamoure (1995) gave an overview of 150 species found in Green alder stands based on earlier publications (e.g. Favre 1960, Schmid-Heckel 1988) and included some of her own records. The study by Küffer & Senn-Irlet (2000) is the only elaborate ecological study on corticioid, polyporoid, and tremelloid fungi on woody parts of Green alder.

In this paper we compile data of our own collections of saprobic and parasitic fungi on Green alder in Switzerland from the last 20 years. Mycorrhizal species and soil-inhabiting saprobic fungi as well as fungi on other substrates within Green alder stands are excluded from this study (see Senn-Irlet et al. 2001 for *Cortinarius* species). As an exception to this rule we include ectomycorrhizal species fruiting on dead wood such as species of *Tomentella* and *Amphinema,* where additional saprobic abilities have been demonstrated or are assumed. Moreover we include fungicolous species on wood-inhabiting fungi such as *Tremella, Cosmospora*.

Material & methods

Most collections have been studied macroscopically and microscopically from fresh material and are often documented with pictures and line drawings deposited in the private collections of each collaborator. Measurements on living ascospores and asci are indicated with an (*), whereas measurements on dried material is indicated by (+) as proposed by Baral (2005).

From all species listed exsiccates are deposited in the fungarium of the first author at WSL or in the Museum of Luzern (NMLU) or in the private collection of Elia Martini. All records are included in the national database on fungal records (www.swissfungi.ch).

The collection sites include the whole range of distribution of Green alder stands within Switzerland. Preferably we collected in larger older stands. In 7 localities intensive studies (marked * in Table 2) on all macromycetes have been realised (e.g. Senn-Irlet et al. 2001, Wiedmer & Senn-Irlet 2006). In addition we indicate references to other studies from Switzerland where collections from Green alder are mentioned. Table 2 in annex describes the collection sites, including canton, community, locality, altitude, coordinates, exposition,

bedrock and main collector's name. A code for the canton, a number for the locality and the date of collection, and a categorized substrate indication follow collections examined.

Results

1. Ascomycotina

Ascomycetes on leaf-litter are found during the entire vegetation period, some are even found fruiting only after snow-melt, in late spring.

1.1 Eurotiomycetes

Erysiphe penicillata (Wallr.) Link

Syn. *Microsphaera penicillata* (Wallr.) Lév.

Collection examined: GR (12)- 30.VIII.2010, on attached and freshly falls leaves.

Phaeocalicium compressulum (Nyl. ex Vain.) A.F.W. Schmidt

Collections examined: BE (2)- 3.VII.2011, (1)- 12.VII.2011; GR (9)- 8.VIII.2011, (13)- 27.VIII.2009, (56)- 21.VIII.2008 on young standing twigs, living or freshly dead.

Ref.: Müller (1977).

Stenocybe pullatula (Ach.) Stein

Collection examined: GR (56)- 21.VIII.2008 on young standing twigs, living or freshly dead.

1.2 Leotiomycetes

Albotrichia laetior (P. Karst.) Raitv.

Ref.: Müller (1977) (sub *Dasyscyphus laetius*), on small fallen branches and on fallen coarse wood.

Ascocoryne cylichnium (Tul.) Korf

Ref.: Müller (1977), on small fallen branches and on fallen coarse wood.

Ascocoryne sarcoides (Jacq.) J.W. Groves & D.E. Wilson

Ascospores 4-celled, 15-19 × 4-6.6 µm, with conidium form-ation on one pole in chains. Paraphyses apically capitate.

Collection examined: TI (17)- 19.IX.1998, 9.X.1998, UR (21)- 26.X.1999, on small fallen branches, on fallen coarse wood and on standing coarse wood.

Ref.: Müller (1977), Favre (1960).

Bisporella citrina (Batsch) Korf & S.E. Carp.

Collections examined: VS (26)- 18.8.2009; GR (13)- 30.VIII.2011, on small fallen branches and on fallen coarse wood.

Brunnipila calyculiformis (Schumach.) Baral, in Baral & Krieglsteiner

Asci (*) 65-75 × 6-7 µm, cylindrical, with croziers. Paraphyses exceeding the asci. Ascospores (*) 9-13 × 1.8-2.5 µm, non-septate, oil content = 0-1. Hairs cylindrical, obtuse, at margin 220-240 × 4 µm, 6-8-celled, terminal cell often short and slightly broader and less coloured, scattered with large crystal exsudation, hairs at lower part of excipulum 110-130 µm, flexuous and intertwined, 4-5-celled mixed with very short 1-2-celled hairs, all hairs thick-walled and warty-granular, brownish.

Collections examined: VS (27)- 26.VI.2011, (28)- 17.VIII. 2009, on small fallen branches and on fallen coarse wood.

Ref.: Müller (1977) (sub *Dasyscyphus calyculiformis*).

Calycina alniella (Nyl.) Baral

Syn. *Pezizella alniella* (Nyl.) Dennis

Ref.: Müller (1977) (sub *Hymenoscyphus alniellus*), on leaf litter.

Calycellina araneocincta (W. Phillips) Baral & P. Blank

Apothecia minute, 0.2 mm diam., disc-shaped, margin ciliate, pale yellow. Asci (*) 38-40 × 6 µm, broad cylindrical, obtuse, 4-spored, IKI blue, with croziers. Paraphyses cylindrical, septate, in terminal cell with lemon-yellow refractive VB. Ascospores (*) 15-17 × 2-3 µm, ellipsoid, both ends acute, some almost scutuloid, non-septate, oil content =1-2, multiguttulate at the poles. Ectal excipulum forming a textura prismatica with thin-walled cells, margin with several tapering, hairlike terminal cells with a lemon-yellow refractive body.

Collections examined: BE (4)- 31.VII.2011; GR (10)- 10.VIII.2011; UR (23)- 25.VIII.1996, on leaf litter.

Ref.: Müller (1977) (sub *Hyaloscypha lachnobrachya* (Desm.) Nannf. (incl. f. *araneocincta* Rehm).

Calycellina leucella (P. Karst.) Dennis ex E. Müll.

Apothecia tiny, 0.2-0.5 mm, cup-like to urceolate, short-stipitate, greyish-cream, glassy, base brownish. Asci (*) 75-85 × 6-8 µm, (+) 65-75 × 6-9 µm, IKI blue, with croziers. Paraphyses filiform, septate, at times forked in upper part, terminal cell slightly enlarged, with large hyaline refractive bodies. Spores (*) 16-17 (-20) × 3-4 µm, oil content = 0-2, (+) 14-17 × 2.5-3.2 µm, ellipsoidal, tapering towards ends, non-septate, some slightly constricted in the middle, biseriate in ascus. Ectal excipulum textura oblita, gelatinous, with hair-like, smooth, terminal cells of (*) 6-10 × 1.5-2 µm with scattered large golden-ochre refractive vacuolar bodies, at margin and in lower flanks.

Collections examined: BE (1)- 12.VII.2011, (5)- 15.VII.2011, (4)- 31.VII.2011; GR (9)- 8.VIII.2011, (10)- 10.VIII.2011; SZ (15)- 21.VIII.2011, UR (23)- 15.IX. 1995, (24)- 27.VII.1996, on leaf litter and on catkins.

Capitotricha bicolor (Bull.) Baral

Apothecia 1-2 mm diam., short-stipitate cupulate, hymenium egg-yellow. Asci 55-70 × 6-7 mm, cylindrical, aporhynch, apical pore IKI blue. Paraphyses lanceolate,

exceeding the asci 20-25 µm, terminal cell 110-115 × 5 µm, slightly refractive, Ascospores (*) 9-12 × 2-2.5 µm.

Collections examined: BE (1)- 12.VII.2011, (4)- 31.VII.2011; GR (9)- 8.VIII.2011; TI (17)- 19.IX.1998, on small fallen branches and on fallen coarse wood.

Ref.: Müller (1977) (sub *Dasyscyphus bicolor*), Favre (1960 sub var. *macrospora*).

Ciboria bolaris see comments with *Hymenoscyphus epiphyllus.*

Cistella tenuicula (P. Karst.) Raschle

Ref.: Müller (1977), on leaf litter.

Claussenomyces prasinulus (P. Karst.) Korf & Abawi

Collection examined: BE (2)- 3.VII.2011, on wet fallen branch without bark.

Encoelia furfuracea **(**Roth) P. Karst.

Collections examined: UR (21)-3.IX.1997, (24)- 26.V.1996; TI (17)- 19.IX.1998, 9.X.1998, on small fallen branches, on fallen coarse wood on dead standing coarse wood.

Ref.: Favre (1960).

Hyaloscypha albohyalina (P. Karst.) Boud.

Collections examined: VS (28)- 17.VIII.2009; VS (26)- 18.VIII.2009, on small fallen branches and on fallen coarse wood.

Hyaloscypha fuckelii var***. alniseda*** (Velen.) Huhtinen

Collection examined: GR (12)- 30.VIII.2010, on small fallen branches and on fallen coarse wood.

Hyaloscypha hyalina (Pers.) Boud.

Ref.: Müller (1977), on small fallen branches and on fallen coarse wood.

Hyaloscypha leuconica var. ***bulbopilosa*** (Feltgen) Huhtinen

Ref.: Müller (1977) (sub *Hyaloscypha bulbopilosa*), on leaf litter.

Hyaloscypha quercicola (Velen.) Huhtinen

Collections examined: UR (23)- 12.VII.1996, (33)-16.VII.1996, on small fallen branches and on fallen coarse wood.

Hyalopeziza alni E. Müll.

Description and illustration: Schmid & Schmid (1990) Nr. 20.

Collections examined: BE (1)- 12.VII.2011; VS (28)- 6.VIII.2007, 24.IX.2007; UR (23)- 20.V.1995, 6.VII.1995, on small fallen branches and on fallen coarse wood.

Ref.: Müller (1977), Raschle 1977 (several localities).

Hyalopeziza millepunctata (Lib.) Raitv**.**

Syn. *Olla scrupulosa* (P.Karst.) Svrček

Collections examined: UR (24)- 26.VI.1996; GR (13)- 30.VIII. 2011, on small fallen branches and on fallen coarse wood.

Ref.: Müller (1977) (sub *Unguicularia millepunctata*).

Hyalopeziza nectrioides (Rehm) Raschle

Ref.: Müller (1977), on small fallen branches and on fallen coarse wood.

Hyalopeziza valesiaca Raschle

Ascospores 6.5-10 × 2-2.5 µm. cells of outer excipulum with thin and brownish walls.

Ref.: Müller (1977), type locality, on small fallen branches and on fallen coarse wood.

Hymenoscyphus caudatus (P. Karst.) Dennis

Apothecia stipitate-cupulate, up to 1 mm diam., hymenium cream, margin white-cream, smooth, stipe soon orange-brownish, base dark, felty, older fruitbodies reddening. Asci (*) 90-120 × 7-10 µm, 8-spored, without croziers, IKI blue. Paraphyses cylindrical, tapering, strongly refractive, multiguttulate. Ascospores (*) 19-20 × 4-5.2 µm, scutuloid, without setulae, oil content 4-5, with many small guttules, biseriate in ascus. Ectal excipulum textura prismatica.

Baral (2005) characterizes *Hymenoscyphus caudatus* as follows: paraphyses with faintly refractive vacuoles, spores 15 – 21 × 4.5 - 5.8 µm, at least partly ± distinctly scutuloid, without setulae, oil content 3–4, stipe base never blackened (?), asci without croziers. Even if our collections do not fit in all details we include them in *H. caudatus*.

Collections examined: BE (4)- 31.VII.2011, GR (9)- 8.VIII. 2011, (10)- 10.VIII. 2011, (7)- 29.IX.2004, on leaf litter.

Hymenoscyphus epiphyllus (Pers.) Rehm ex Kauffman

One of the most frequent and striking discomycete on lying branches of alder, in various literature (e.g. Breitenbach & Kränzlin 1984) under *Rutstroemia bolaris.*

Apothecia up to 3 mm diam., up to 1 mm thick, cupshaped, stipitate, hymenium egg yellow, ocre-brown when old, context pale yellow in apothecia whitish in stipe, not arising from stromatised host tissue. Ascospores (*) 17-21 × 4.8-5.3 µm, ellipsoid to almost scutuloid, non-septate or occasionally some over-mature ones septate, with small guttules at both ends, oil content = 2; never with conidia. Asci with croziers, apical pore IKI b(b), spores partly biseriate in ascus. Paraphyses cylindrical, obtuse, strongly refractive, multiguttulate with many small guttules, almost to the base. Ectal excipulum textura angularis, often with guttulate cortical layer, medulla textura porrecta with slightly interwoven thin hyphae, subhymenium with large inflated cells embedded in thin hyphae.

Differs from *Rutstroemia* in the type of apical apparatus and spores which never form conidia.

Up to date no collection with a true *Rutstroemia* type of apical apparatus has been found in such collections with striking yellow fruitbodies, therefore we think that most records of *Rutstroemia (Ciboria) bolaris* on Green alder refer to *Hymenophyllus epiphyllus*.

Collections examined: BE (4) 31.VII.2011; SZ (14)- 5.VII. 1996; UR (21) 29.IX.1999, (23)- 6.VIII.1996, (33)-1.VIII.1985; VS (28)- 6.VIII.2007, on small fallen branches and on fallen coarse wood.

Ref.: Müller (1977 sub *Ciboria bolaris)*.

Hymenoscyphus galbula (P. Karst.) Kuntze

Ref.: Müller (1977), on small fallen branches and on fallen coarse wood.

Hymenoscyphus imberbis (Bull.) Dennis

Collection examined: UR (23)- 15.IX.1995, on small fallen branches and on fallen coarse wood.

Hymenoscyphus laetus (Boud.) Dennis

Ref.: Müller (1977) on wet wood, apothecia yellowish, ascospores 17-25×5-6.5 µm, on small fallen branches and on fallen coarse wood.

Hymenoscyphus scutula (Pers.) W. Phillips 1887

Ref.: Müller (1977), on young standing and fallen twigs, freshly dead.

Hymenoscyphus trichosporus Dougoud

Ascospores subscutuloid to fusiform, 0(1)-septate, (*) 18-22 × 4.5-5.5 µm, at both ends with 1-2 short cilia, oil content = 3-5.

Collections examined: BE (1)- 12.VII.2011, (5)- 17.VII.2011, (4)- 31.VII.2011, on small fallen branches and on fallen coarse wood.

Lachnum roridum (Wallr.) Rehm in Winter

Ref.: Müller (1977 sub *Dasyscyphus roridus*), on small fallen branches and on fallen coarse wood.

Lachnum virgineum (Batsch) P. Karst.

Collection examined: BE (1)- 12.VII.2011, on small fallen branches, on fallen coarse wood and on catkins.

Mollisia cinerea (Batsch) P. Karst.

Collections examined: UR (40)- 20.V.1996, (22)- 30.V.1996, on small fallen branches and on fallen coarse wood.

Mollisia melaleuca (Fr.) Sacc.

Collection examined: UR (24)- 17.VII.1995, on small fallen branches and on fallen coarse wood.

Mollisia fusca (Pers.) P. Karst.

Syn. *Tapesia fusca* (Pers.) Fuckel

Collections examined: BE (2)- 3.VII.2011, (1), 12.VII.2011; GR (10)- 10.VIII.2011, on small fallen branches and on fallen coarse wood.

Mollisia ramealis P. Karst.

Syn. *Dibeloniella citrinella* (Rehm) E. Müll. & Défago fide H.O. Baral.

Description with illustration: Schmid & Schmid (1990) Nr 6

Collections examined: BE (2)- 3.VII.2011, (1)-12.VII.2011, GR (13)- 28.VIII.2008, 30.VIII.2011; UR (23)- 12.VII1997, 3.IX.1996, (24)- 17.VII.1995, (33)- 16.VII.1996, on small fallen branches and on fallen coarse wood.

Ref.: Müller (1977).

Mollisia ventosa P. Karst.

Apothecia small, 0.6-1 mm, hymenium cream, pale yellowish, margin pale, outer excipulum in lower part brown, on blackish subiculum. Ascospores (*) 14.5-16 × 3-3.8 µm, oil content = 0, septate, asci 8-spored, (*) 77 × 7 µm, IKI blue, with croziers, para-physes with strongly refractive body in terminal cell, margin with terminal cells straight, hyaline, 38-48 × 3 µm, ectal excipulum with obtuse to clavate hyaline, terminal cells (hairs), other cells brown.

Collections examined: BE (3)- 11.IX.2010; SZ (14)-21.V.1995, on small fallen branches and on fallen coarse wood.

Mollisia viridula Svrček

Apothecia 0.5-0-8 mm, disc-shaped, round or undulate, margin yellowish-olive, hymenium yellowish-olive, greyish, outer excipulum in lower part dark brown.

Asci (*) 53-67 × 5-6 µm, cylindrical, 8-spored, with croziers, IKI – (even after KOH treatment). Paraphyses cylindrical, strongly refractive, filled with lemon-yellow pigment, terminal cell large, 15-33 × 3 µm. Ascospores (*) 6-7.5 × 2-2.5 µm, ellipsoid, only some old ones one-septate, at both poles with small guttule. Margin with yellowish terminal cells 6-12 × 3 µm, often agglutinated, arising from yellowish globose cells of 5 µm diam., ectal exci-pulum of textura angularis, 7-9 µm diam., dark-walled. At base of apothecia thick-walled hyphae forming a minute subiculum.

Collections examined: BE (4)- 31.VII.2011; GR (10)- 10.VIII. 2011, on small fallen branches and on fallen coarse wood.

Mytilodiscus alnicola Kropp & S.E. Carp.

Description and illustration: Schmid & Schmid (1990) no 25, from a Swiss collection see Pellandini & Damiani (1998).

Collections examined: BE (5)- 17.VII.2011; UR (22)- 30.VII.1996, 5.VII.1996, on leaf litter an catkins.

Neodasyscypha cerina (Pers.) Spooner

Collection examined: BE, (5)- 15.VII.2011.

Ref.: Müller (1977) (sub *Dasyscyphus cerinus*), on small fallen branches and on fallen coarse wood.

Ombrophila violacea (Hedw.) Fr.

Collection examined: GR (13)- 30.VIII.2011; UR (24)- 20.VIII.1995, on small fallen branches and on fallen coarse wood.

Pachyella babingtonii (Berk.) Boud**.**

Collections examined: VS (31)- 16.VIII.2009; GR (13)- 30. VIII.2011, on wet wood, i.e. small fallen branches and on fallen coarse wood.

Pezizella vulgaris (Fr.) Sacc.

Collection examined: UR (23)- 15.IX.1995, (24)- 8.IX.1996.

Ref.: Müller (1977) (sub *Hymenoscyphus vulgaris*), on small fallen branches and on fallen coarse wood.

Rutstroemia bolaris see comments on *Hymenoscyphus epiphyllus*.

Rutstroemia aff. ***firma*** (Pers.) P. Karst**.**

Ascospores(*) 24-28 × 5-6.3 µm, ellipsoid with obtuse end or slightly fusoid, slightly curved, soon 1-3-septate, with many large and small guttules, oil content = 4-5; overmature with globose microconidia of 2-2.5 µm diam.

Differs from typical *R. firma* by longer spores. *R. alni* Rémy has broader spores (7-9.5 (-11) µm) and seem to be restricted to *Alnus incana* (L.) Moench.

Collections examined: BE (5)- 17.VII.2011; VD (25)- 27.VIII. 2005; GR (7)- 29.IX.2004, on small fallen branches and on fallen coarse wood.

Ref.: Favre (1960).

Tapesia villosa Aebi

Ref.: Müller (1977), on small fallen branches and on fallen coarse wood.

Vibrissea filisporia (Bonord.) Korf & A. Sánchez

Collections examined: GR (13)- 30.VIII.2011; SZ (14)- 20.VII.1997, on wet small fallen branches and on wet fallen coarse wood.

Ref.: Müller (1977 sub *Apostemidium fiscellum*).

Vibrissea truncorum (Alb. & Schwein.) Fr.

Collections examined: BE (5)- 17.VII.2011; UR, (21)- 8.VI.2000, 27.VII, 1999; VS (30)- 9.VIII.1999, on small fallen branches and on fallen coarse wood.

1.3 Sordariomycetes

Annulohypoxylon multiforme (Fr.) Y.M. Ju, J.D. Rogers & H.M. Hsieh var**.** ***multiforme***

Syn. *Hypoxylon multiforme* (Fr.) Fr.

Collection examined: VS (26)- 18.VIII.2009, on small fallen branches and on fallen coarse wood.

Bertia moriformis (Tode) De Not.

Collections examined: BE (1)- 12.VII.2011; SZ (14)- 20.V.1995, on small fallen branches and on fallen coarse wood.

Chaetosphaeria ovoidea **(**Fr.) Constant., K. Holm & L. Holm

Syn. *Melanomma ovoidea* (Fr.) Fuckel, *Zignoella ovoidea* (Fr.) Sacc.

Collection examined: UR (33)- 11.IX.1995, on small fallen branches and on fallen coarse wood.

Cosmospora purtonii (Grev.) Rossman & Samuels

Syn. *Nectria purtonii* (Grev.) Berk.

Collection examined: UR (33)- 16.VII.1996, on old *pyrenomycetes* on small fallen branches and on fallen coarse wood.

Cosmospora vilior (Starbäck) Rossman & Samuel

Syn. *Nectria vilior* Starbäck

Collection examined: VS (28)- 17.VII.2001, on old fruitbodies of *Hypoxylon fuscum* on small fallen branches and on fallen coarse wood.

Cryptodiaporthe oxystoma (Rehm) Z. Urb.

Asci (+) 30-40 × 5-7 µm with a rather long tapering base, 8-spored, very numerous and free at maturity. Ascospores (+) cylindrical to allantoid, with rounded ends 8.5-10 × 1.2-1.5 µm, hyaline.

Collections examined: GR. Avers, VIII.1991, leg. R. Engesser; UR, close to (21)-30 IX.1998, leg. R. Engesser, on young standing twigs, freshly dead, causing a dieback.

Ref.: Meier et al. (1999).

Daldinia petriniae Y.-M. Ju, J.D. Rogers & F. San Martín

Collection examined: TI (38)- 15.II.2000, det. M. Stadler on standing coarse wood.

Dialonectria episphaeria (Tode) Cooke

With *Fusarium*-anamorph; ascospores 8-9 × 3-4 µm.

Collection examined: BE (39)- 11.IX.2010; UR (22)- 20.VII.1996, on old pyrenomycetes on wood on small fallen branches and on fallen coarse wood.

Diatrypella favacea (Fr.) Ces. & De Not.

Collection examined: UR (33)- 16.VII.1996, on small fallen branches and on fallen coarse wood.

Eutypella cerviculata (Fr.) Sacc.

Collection examined: BE (5)- 17.V.2012, UR (33)- 11.IX.1995, on small fallen branches and on standing and fallen corticated coarse wood.

Gnonomia alni-viridis Podl. & Svrček

Detailled description see Monod (1983), on veins and surface.

Perithecia single, dispersed over the whole leaf surface. Asci 8-spored, ascospores narrowly fusoid, 2-celled, 10-12 × 1.8-2.1µm.

Collections examined: BE (2)- 3.VII.2011, (5)- 17.V.2012; SZ (15)- 21.VIII.2011, on leaf litter and catkins.

Gnomonia trientensis Monod

Detailled description see Monod (1983).

Ascospores (+) 8-11 × 2.2-3 µm, without cilia. Type locality in Valais/Wallis, on leaf litter.

Gnomoniella alnobetula Volkart

Detailled description see Monod (1983), on the surface, fruits early in spring.

Perithecia in groups. Asci 4-spored. Ascospores broadly ellipsoid, rounded, 18-19 × 8-9 µm, pale brownish.

Collections examined: BE (1)- 12.VII.2011; VS (27)- 26.VI.2011, on leaf litter.

Ref.: Müller (1977).

Hypocrea rufa (Pers.) Fr.

Collection examined: UR (24)- 18.VII.2001; VS (31)- 26.IX. 1997, (28)- 17.VIII.2001, on small fallen branches and on fallen coarse wood.

Hypoxylon fuscum (Pers.) Fr. var. ***fuscum***

Collections examined: BE (2)- 3.VII.2011, (1)- 12.VII.2011, (5)- 13.VII.2011; UR (24)- 17.VII.1995, on small fallen branches and on fallen coarse wood.

Ref.: Müller (1977).

Lasiosphaeria phyllophila Mouton

Perithecia globose, black, totally hairy. Hairs straight or flexuose, brown, thick-walled, septate. Asci (*) 140-150 × 10 µm, apex tapering with subapical globulus, aporhynch. Ascospores (*) 26-28 × 5-5.5 µm, banana-shaped, non-septate, oil content = 4-5, hyaline, biseriate in ascus. Not fully mature single fruitbody, IKI reaction not tested.

Collection examined: BE (4)- 31.VII.2011, on leaf litter.

Melanconis alni Tul. & C. Tul.
On freshly dead twigs.
Collections examined: BE (1)- 17.VIII.2010, 12.VII.2011; GR (13)- 30.VIII.2011, on young standing twigs, freshly dead.
Ref.: Müller (1977), Podlahova 1972 (noted with ascospores 18-25 × 5-8 µm).

Mycosphaerella alnicola (Peck) House
Ref.: Müller (1977), on leaf litter.

Neonectria punicea (J.C. Schmidt) Castl. & Rossman
Collection examined: UR (24)- 18.VIII.2001, on small fallen branches and on fallen coarse wood.

Phragmoporthe conformis (Berk. & Broome) Petr.
Collection examined: VS (26)- 18.VIII.2009, on small fallen branches and on fallen coarse wood.

Plagiostoma alneum (Pers.) Arx
Detailled description see Monod (1983), three localities within Switzerland cited, on leaf litter.

Rosellinia mammiformis (Pers.) Ces. & De Not.
Ascospores with hyaline appendices, 22-26 × 6-6.5 µm, apical apparatus 4-4.5 µm long.
Collections examined: UR (24)- 18.VIII.2001, (33)- 16.VII.1996, on small fallen branches and on fallen coarse wood.
Ref.: Müller (1977).

Rosellinia subsimilis P. Karst. & Starbäck
Ascospores with hyaline appendices, 19.5-29 × 7-9.5 µm, apical apparatus 8 µm long.
Collection examined: GR (13)- 30.VIII.2011, on small fallen branches and on fallen coarse wood.

Sillia ferruginea (Pers.) P. Karst.
On very rotten wood.
Collection examined: BE (1)- 17.VIII.2010, on small fallen branches and on fallen coarse wood.

1.4 Dothideomycetes

Dactylospora aff. ***caledonia*** Hafellner
Apothecia 0.5 mm, disc-shaped with a small margin, black. Ascospores 11-13 × 4.5-5 µm, ellipsoidal with rounded ends, brownish, phragmosporous, 3-septate,

slightly constricted. Asci 42-46 × 10 µm, broadly clavate, thick-walled, with gelatinous cap staining deeply blue in IKI. Paraphyses septate, with capitate brown-walled terminal cell of 5-6 µm diam., overlaid by a red-brown mass. Hypothecium yellowish-brown. Ectal excipulum thick, forming a radially oriented textura globulosa with thick dark red-brown walls.

Collection examined: BE (1)- 17.VIII.2010, on small fallen branches and on fallen coarse wood.

Schmid-Heckel (1988) reports *D. stygia* (Berk. & M.A. Curtis) Hafellner from alder wood. Our collection clearly differs from this species.

Dactylospora stygia (Berk. & M.A. Curtis) Hafellner

Ref.: Müller (1977 sub *Pseudokarschia stygia*), on small fallen branches and on fallen coarse wood.

Fenestella princeps Tul. & C. Tul.

Ascospores muriform, (*) 36-52 × 13-17 µm, brown, end cells less coloured.

Collection examined: BE (2)- 3.VII.2011, on young standing twigs, freshly dead.

Herpotrichia petrakiana S. Bose

Causes blue-green coloration.

Ref.: Müller (1977), on small fallen branches and on fallen coarse wood.

Herpotrichiella moravica Petr.

Ref.: Müller (1977), on small fallen branches and on fallen coarse wood.

Kirschsteiniothelia aethiops (Berk. & M.A. Curtis) D. Hawksw.

Collection examined: VS (31)- 16.VIII.2009, on small fallen branches and on fallen coarse wood.

Ref.: Müller (1977 sub *Microthelia inaequalis*).

Leptosphaeria lonicerina (P. Karst.) L. Holm

Ref.: Müller (1977), on small fallen branches and on fallen coarse wood.

Lophiostoma quadrinucleatum P. Karst.

Ascospores 24-29 × 9-10 µm, 3-septate, constricted in the middle, brown, obtuse, smooth.

Collections examined: BE (1)- 17.VIII.2010, 12.VII.2011, on small fallen branches and on fallen coarse wood.

Melanomma pulvis-pyrius (Pers.) Fuckel

Syn. *Gibberidea alnicola* Rehm (fide Holm 1968, type from Graubünden, Fürstenalp, 1903)

Melanomma rhododendri Rehm f. *alni* Rehm (fide Holm 1968, from Austria / Tyrol).

Asci 8-spored, with croziers. Ascospores 17-20.5 × 5-6.5 µm, 3-septate (occasionally 5 septate), in the middle slightly constricted, olivaceous-brownish, septae darker, uniseriate in ascus.

Collections examined: BE (2)- 3.VII.2011, (1)- 12.VII.2011, (4)- 31.VII.201; GR (39)- 2.IX.2006, (56)- 21.VIII.2008, TI (19)- 10.VIII.2011; VS, (27)- 26.VI.2011, (31)-16.VIII.2009, SZ (15)- 21.VIII.2011, on small fallen branches and on fallen coarse wood.

Ref.: Müller (1977), Holm (1968).

Melanomma sanguinarium (P. Karst.) Sacc.

Ref.: Müller (1977), on small fallen branches and on fallen coarse wood.

Melanomma sparsum Fuckel

Ref.: Müller (1977), on small fallen branches and on fallen coarse wood.

Pleospora herbarum (Pers.) Rabenh.

Ref.: Müller (1977), on small fallen branches and on fallen coarse wood.

Rhizodiscina lignyota (Fr.) Hafellner

Collection examined: VS (26)- 18.VIII.2009, on small fallen branches and on fallen coarse wood.

Venturia alnea (Fr.) E. Müll.

Ref.: Müller (1977), on leaf litter.

1.5 Orbiliomycetes

Orbilia coccinella (Sommerf.) Fr.

Collections examined: BE (1)- 17.VIII.2010; UR (23)- 1.VIII.1996, on small fallen branches and on fallen coarse wood.

Orbilia leucostigma (Fr.) Fr.

Ref.: Müller (1977), on small fallen branches and on fallen coarse wood.

Orbilia luteorubella (Nyl.) P. Karst.

Collection examined: UR (24)- 20.VIII.1995, on small fallen branches and on fallen coarse wood.

Orbilia xanthostigma (Fr.) Fr.

Collection examined: VS (28)- 17.VIII.2009, on small fallen branches and on fallen coarse wood.

2. Basidiomycotina

2.1 Agaricomycetes

Agarics rarely fruit on single leaves, most often on compressed packages of leaf-litter, often even mixed with herb litter. They start fruiting in summer and their fruiting responds strongly to rainy periods.

Amphinema byssoides (Pers.) J. Erikss.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000), on small fallen branches and on fallen coarse wood.

Amylocorticium cebennense (Bourdot) Pouzar
Collection examined: VS (28)- 31.VIII.2000, on small fallen branches and on fallen coarse wood.

Armillaria cepistipes Velen.
Collection identified from spore deposit by cultural techniques (Buller-test): UR (24)- 5.VIII.1997, on small fallen branches and on fallen coarse wood.

Asterostroma medium Bres.
Collection examined: VS (51)- 4.IX.1998, on small fallen branches and on fallen coarse wood.

Athelia arachnoidea (Berk.) Jülich
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000), on small fallen branches and on fallen coarse wood.

Athelia bombycina Pers.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000), on small fallen branches and on fallen coarse wood.

Athelia decipiens (Höhn. & Litsch.) J. Erikss.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000), on small fallen branches and on fallen coarse wood.

Athelia epiphylla Pers.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000), on small fallen branches and on fallen coarse wood.

Athelia fibulata M.P. Christ.
Collections examined: TI (44)- 16.X.2010, (45)- 20.VIII.2010, on small fallen branches and on fallen coarse wood. Really common at first frost in mid October.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000).

Bjerkandera adusta (Willd.) P. Karst.
Collection examined: VD (25)- 27.VIII.2005, on small fallen branches and on fallen coarse wood.

Botryobasidium subcoronatum (Höhn. & Litsch.) Donk
Collection examined: TI (45)- 20.VIII.2010, on small fallen branches and on fallen coarse wood.

Botryobasidium vagum (Berk. & M.A. Curtis) D.P. Rogers
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000), on small fallen branches and on fallen coarse wood.

Byssocorticium pulchrum (S. Lundell) M.P. Christ.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000), on small fallen branches and on fallen coarse wood.

Ceraceomyces eludens K.H. Larss. 1998
Collection examined: TI (45)- 20.VIII.2010, on small fallen branches and on fallen coarse wood.

Ceriporia reticulata (Hoffm.) Domański
Collection examined: UR (33)- 16.VII.1996, on small fallen branches and on fallen coarse wood.

Clitocybe truncicola (Peck) Sacc.
Collections examined: GR (11)- 5.VII.1998; TI (19)-30.VIII.1999; UR (24)- 24.IX.2000, on small fallen branches and on fallen coarse wood.

Clitocybe candicans (Pers.) P. Kumm.
Collections examined: TI (17)- 17.X. 1998, (18)- 28.VIII.2000, (19)- 30.IX.2000; UR (21)- 17.VIII.1999, 31.VIII.1999, (24)- 26.VIII.1997; VS (30)- 25.VIII.1999, 23.IX.1998, on leaf litter.

Clitocybe ditopa (Fr.) Gillet
Collections examined: TI (19)- 25.IX.1998, (17)- 19.X.1998, UR (33)- 20.IX.1996, (21)- 31.VII.1999; VD (36)- 9.IX.1990; VS (30)- 9.IX.1999, on leaf litter.

Clitocybe fragilipes J. Favre
Collection examined: TI (18)- 28.VIII.2000, det. Th.W. Kuyper, on leaf litter.

Clitocybe fragrans (With.) P. Kumm.
Collection examined: UR (24)- 8.IX.1996, on leaf litter.

Clitocybe nebularis (Batsch) P. Kumm.
Collection examined VS (29)- 23.IX.1999, on leaf litter.

Clitocybe suaveolens (Schumach.) P. Kumm.
Collection examined: TI (18)- 26.IX.1997, on leaf litter.

Clitocybe velenovskyi Bon (illegit.)
Syn. *Clitocybe alnetorum* J. Favre
Similar to *C. candicans*, yet with smaller basidiospores.
Collections examined: TI (19)- 25.IX.1998, 20. X.1998, (20)- 21.X.1998; UR (21)- 6. VIII. 1998, 22. IX.1998; 29. IX.1999, (24)- 26. VIII.1997; UR, (23)- 25.VIII.1996, (33)- 20.IX.1996; VS (30)- 25.VIII.1999; (29)- 9.IX.1999, on leaf litter.

Clitocybe vibecina (Fr.) Quél.
Collection examined: UR (24)- 18.VIII.1997, on leaf litter.

Coniophora arida (Fr.) P. Karst.
Collection examined: VS (31)- 22.VIII.1992, leg. & det. Jean Keller, on small fallen branches and on fallen coarse wood.

Cristinia gallica (Pilát) Jülich
Collection examined: OW, Giswil, Lau 1602 m, 18.IX.1983, leg. Theo Honermann (coll. NMLU), on small fallen branches and on fallen coarse wood.

Cylindrobasidium evolvens (Fr.) Jülich
Collections examined: TI (45)- 24.7.2010, (47)- 19.VI.2011; VS (51)- 4.IX.1999 on young standing twigs, freshly dead.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000).

Cystoderma amianthinum (Scop.) Fayod
Collections examined: VS (29)- 1900, 23.IX.1999; TI (19)- 25.IX.1998, on leaf litter.

Cystoderma carcharias (Pers.) Fayod
Collection examined: UR (33)- 20.IX.1996, on leaf litter.

Cystoderma fallax A.H. Sm. & Singer
Collection examined: TI (18)- 28.VIII.2000, on leaf litter.

Cystoderma jasonis (Cooke & Massee) Harmaja var. ***jasonis***
With abundant arthroconidia in pileipellis, and strong earthy smell.
Collections examined: TI (18)- 28.VIII.2000, (19)- 30.IX.2000; UR (21)- 22.IX.1998, (23)- 25.VIII.1996; VS (30)- 09.IX.1999, on leaf litter.

Datronia stereoides (Fr.) Ryvarden
Collections examined: GR (56)- 21.VIII.2008; (55)- 14.VIII 2008; VS (28)- 17.VIII.2009; TI (18)- 28.VIII.2000, on small fallen branches and on fallen coarse wood.
Ref.: Favre (1960) sub *Trametes stereoides*.

Delicatula integrella (Pers.) Fayod
Collection examined: UR (33)- 20.IX.1996, on leaf litter, and on fallen coarse wood.

Fuscoporia ferruginosa (Schrad.) Murrill
Syn. *Phellinus feruginosus* (Schrad.) Pat.
Collection examined: UR (21)- 03.IX.1997, on fallen coarse wood.

Gamundia striatula (Kühner) Raithelh.
Collection examined: UR (23)-17.9.1996, on leaf litter.

Galerina ampullaceocystis P.D. Orton
Collections examined: TI (19)- 12.VIII.1999; UR (21)- 31.VIII.1999, on leaf litter.

Galerina autumnalis var. ***angusticeps*** A.H. Sm.
Description and illustration of this record see Breitenbach & Kränzlin 5: 312, on fallen coarse wood.

Galerina cinctula P.D. Orton
Collections examined: TI (19)- 10.VIII.1998; UR (21)- 31.VIII.1999, on rotten woody debris and on fern rhachis litter.

Galerina marginata (Batsch) Kühner
Syn. *Galerina unicolor* (Fr.) Singer
Collection examined: VS (29)- 09.IX.1999, on small fallen branches and on fallen coarse wood.

Galzinia incrustans (Höhn. & Litsch.) Parmasto
Collections examined: TI (16)- 30.VIII.2000, (45)- 20.VIII.2010, (44)- 29.VIII.2010, on small fallen branches and on fallen coarse wood.

Gymnopus androsaceus (L.) J.L. Mata & R.H. Petersen
Collection examined: UR (24)- 20.VIII.1995, 26.VI.1996, on leaf litter.

Gymnopus dryophilus (Bull.) Murrill
Collections examined: BE (1)- 11.IX.1997; UR, (21)- 16.VII.1998, (35)- 26.VII.1996, on leaf litter.

Hapalopilus rutilans (Pers.) P. Karst.
Collections examined: UR (21)- 3.IX.1997, 29.VII.1999 on standing coarse wood.

Hemimycena delectabilis (Peck) Singer
Collections examined: VS (29)- 29.VII.1998, 9.IX.1999, on leaf litter.

Hemimycena pseudocrispula (Kühner) Singer
Collection examined: VS (29)- 9.VIII.1999, on leaf litter.

Hymenochaete cinnamomea (Pers.) Bres.
Collections examined: SZ (14)- 14.VIII.1995, VS (51)- 4.IX.1999, on small fallen branches and on fallen coarse wood.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000).

Hymenochaete corrugata (Fr.) Lév.
Collection examined: TI (44)- 29.VIII.2010, on small fallen branches and on fallen coarse wood.

Hyphoderma argillaceum (Bres.) Donk
Collections examined: UR (23)- 15.IX.1995, (22)- 31.VIII.1995, on small fallen branches and on fallen coarse wood.

Hyphoderma capitatum J. Erikss. & Å. Strid
Collection examined: UR (24)- 7.VIII.1997, on small fallen branches and on fallen coarse wood.

Hyphoderma setigerum (Fr.) Donk
Collections examined: TI (45)- 20.VIII.2010, (46)- 26.VIII.2010, (44)- 29.VIII.2010; UR (23)- 6.VIII.1995; VS (51)- 4.IX.1999, on small fallen branches and on fallen coarse wood.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000).

Hyphodontia aspera (Fr.) J. Erikss.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000), on small fallen branches and on fallen coarse wood.

Hyphodontia breviseta (P. Karst.) J. Erikss.
Collections examined: TI (44)- 29.VIII.2010, on small fallen branches and on fallen coarse wood.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000).

Hyphodontia nespori (Bres.) J. Erikss. & Hjortstam
Collection examined: TI (44)- 16.1X.2010, on small fallen branches and on fallen coarse wood.

Hyphodontia rimosissima (Peck) Gilb.
Collections examined: TI (18)- 16.IX.1997, on small fallen branches and on fallen coarse wood.

Hyphodontia sambuci (Pers.) J. Erikss.
Collections examined: TI (46)- 16.X.2010, (44)- 29.VIII.2010, VS (51)- 4.IX.1999, on small fallen branches and on fallen coarse wood, also found on hanging or standing dead wood.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000).

Hyphodontia subalutacea (P. Karst.) J. Erikss.
Collection examined: TI (44)- 29.VIII.2010, on small fallen branches and on fallen coarse wood.

Hypochnicium polonense (Bres.) Å. Strid
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000), on small fallen branches and on fallen coarse wood.

Hypochnicium eichleri (Bres. ex Sacc. & P. Syd.) J. Erikss. & Ryvarden
Collection examined: UR (24)- 20.VIII.1995, on small fallen branches and on fallen coarse wood.

Lentinellus tridentinus (Sacc. & P. Syd.) Singer
With short excentric stipe and abundant leptocystidia.
Collections examined: BE (4)- 31.VII.2011; TI (53)- 10.VIII.2001; UR (32)- 3.IX.1997, (21)- 31.VIII.1999, on small fallen branches and on fallen coarse wood.

Macrotyphula fistulosa (Holmsk.) R.H. Petersen (incl. var. ***contorta*** (Holmsk.) Nannf. & L. Holm)
Collections examined: BE (4)- 31.VII.2011, (5), 23.VIII.2001; GR (13)-27.VIII, 2009; UR (21)- 27.VII.1999; VD (25)- 27.VIII.2005, VS (26)- 18.VIII.2009, (29)- 29.VII.1998 on standing coarse wood.
Ref.: Favre (1960).

Macrotyphula tremula Berthier
Collection examined: VD (25)- 27.VIII.2005, on leaf litter.

Marasmius alniphilus J. Favre
Collections examined: TI (16)- VIII.2000, (20)- 12.IX.1999; UR (23)- 6.VIII.1996, close to (34)- 29.VIII.1996; VS (30)- 9.IX.1999, on leaf litter.

Marasmius androsaceus (L.) Fr.
Collections examined: TI (19)- 25.IX.1998; UR (24)-20.VIII.1995, 26.VI.1996, on small fallen branches and on fallen coarse wood.

Megalocystidium leucoxanthum (Bres.) Jülich
Syn. *Gloeocystidiellum leucoxanthum* (Bres.) Boidin.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000), on small fallen branches and on fallen coarse wood.

Merismodes anomala (Pers.) Singer
Basidiospores ellipsoid to cylindrical, Q = 2-2.5.
Collections examined: BE (6)- 16.VII.1999; VD (25)-1.IX.1997; VS (31)-16.VIII.2009 on young standing twigs, freshly dead.

Merismodes fasciculata (Schwein.) Donk
Syn. *Merismodes confusa* (Bres.) D.A. Reid
Basidiospores allantoid, Q = 3.5-4.
Collections examined: VD (37)- 12.V.1998, UR (21)- 3.IX.1997, (22)-31.VIII.1995, (23)- 6.VIII.1998 on young standing twigs, freshly dead.

Mycena abramsii Murrill
Collections examined: UR (21)- 07.08.98; VS (30)- 09.VIII.1999, on small fallen branches and on fallen coarse wood.

Mycena alnetorum J. Favre
See Senn-Irlet (1999).
Collections examined: UR (22)- 31.VIII.1995, (23)- 12.VII.1997, on small fallen branches and on fallen coarse wood.

Mycena arcangeliana Bres.
Collections examined: GR (11)- 05.VIII.1998; TI (18)- 26.IX.1997; UR, (21)-17.VIII.1999, (24)- 17.VII.1995, 5.VIII.1997, (23)- 12.VII.1996; VS (29)-01.IX.1998, on small fallen branches and on fallen coarse wood.

Mycena cinerella (P. Karst.) P. Karst.
Collections examined: UR (21)- 22.IX.1999, on leaf litter.

Mycena citrinomarginata Gillet
Collection examined: UR (21)- 9.IX.1999, on small fallen branches and on fallen coarse wood.

Mycena epipterygia (Scop.) Gray var. ***epipterygia***
Collections examined: UR (21)-31.VIII.1999, on leaf litter.

Mycena filopes (Bull.) P. Kumm.
Collections examined: SZ (14)- 25.VIII.1996; TI (20)- 19.VIII.1999; VS (30)-, 09.IX.1999, on small fallen branches and on fallen coarse wood.

Mycena galericulata (Scop.) Gray
Collections examined: NW (49)- 14.VIII.1996; UR (21)- 17.VIII.1999, on small fallen branches and on fallen coarse wood.

Mycena galopus (Pers.) P. Kumm.
Collections examined: TI (19)- 12.VIII.1999; UR (21)- 17.VIII.99, (23)- 31.VIII.1995; VS (29)- 09.VIII.1999, on small fallen branches and on fallen coarse wood.

Mycena grisellina J. Favre
Collection examined: UR (33)- 20.IX.1996, on leaf litter.

Mycena haematopus (Pers.) P. Kumm.
Collections examined: TI (19)- 10.VIII.1998; UR (21)- 16.VII.1998, (22)- 26.VI.1996; SZ (14)- 26.IX.1996, on small fallen branches and on fallen coarse wood.

Mycena leptocephala (Pers.) Gillet
Collections examined: TI (20)- 19.VIII.1999; UR (21)- 7.VIII.1998; VS (30)- 09.VIII.1999, on small fallen branches and on fallen coarse wood.

Mycena metata (Fr.) P. Kumm.
Collections examined: TI (20)- 19.VIII.1999; UR, (21)- 22.IX.1998; VS (30)- 09.VIII.1999, on small fallen branches and on fallen coarse wood.

Mycena mirata (Peck) Sacc.
Collections examined: SZ (14)- 25.VIII.1996; UR (23)- 17.IX.1996, on small fallen branches and on fallen coarse wood.

Mycena olivaceomarginata (Massee) Massee
Collection examined: OW (48)- 8.IX.1998, on small fallen branches and on fallen coarse wood.

Mycena pearsoniana Dennis ex Singer
Collections examined: TI (19)- 12.IX.1999; UR (21)- 25.VII.1999; VS (30)- 5.VIII.1999, (29)- 25.VIII.1999, on leaf litter.

Mycena polyadelpha (Lasch) Kühner
Collection examined: UR (23)- 25.VIII.1996, on leaf litter.

Mycena pura (Pers.) P. Kumm. (f. ***pura*** and f***. alba***)
Collections examined: TI (19)- 29.IX.1999; UR (34)- 29.VIII.1996 (forma *alba*), (24)-20.VIII.1995, 5.VIII.1996, 8.IX.1996 (forma *pura*), (21)- 27.VII.1999; VS (30)- 9.IX.1999, on leaf litter.

Mycena sanguinolenta (Alb. & Schwein.) P. Kumm.
Collections examined: TI (19)- 10.VIII.1998; UR (32)- 3.IX.1997, (21)- 9.IX.1998, on small fallen branches and on fallen coarse wood.

Mycena speiraea (Fr.) Gillet
Collections examined: BE (6)- 16.VII.1999; TI (20)- 19.VIII.1999, UR (21)- 31.VIII.1999; VS (29)- 31.VIII.1999, on small fallen branches and on fallen coarse wood.

Mycena stylobates (Pers.) P. Kumm.
On *Alnus* litter and *Vaccinium myrtillus* litter.
Collection examined: UR (21)- 9.IX.1998, on leaf litter.

Mycena xantholeuca Kühner
Collection examined: UR (23)-15.IX.1995, on leaf litter.

Mycenella margaritispora (J.E. Lange) Singer
Collections examined: VS (29)- 9.VIII.1999, 25.VIII.1999, on leaf litter.

Peniophora aurantiaca (Bres.) Höhn. & Litsch.
Collections examined: BE (50)- 28.VIII.1998; GR (8)- 4.VIII.1998; TI (45)- 20.VIII.2010, (46)- 16.X.2010, (44)- 29.VIII.2010; VS (30)- 23.IX.1998, (26)- 18.VIII.2009.
Common in all localities on bark of living branches and twigs.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000).

Peniophora incarnata (Pers.) P. Karst.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000), on small fallen branches and on fallen coarse wood.

Peniophorella praetermissa (P. Karst.) K.H. Larss.
Syn. *Hyphoderma praetermissum* (P. Karst.) J. Erikss. & Å. Strid.
Collection examined: TI (44)- 29.8.2010, on small fallen branches and on fallen coarse wood.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000).

Phanerochaete avellanea (Bres.) J. Erikss. & Hjortstam
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000), on small fallen branches and on fallen coarse wood.

Phanerochaete binucleosporida Boidin, Lanq. & Gilles
Collection examined: TI (52)- 24.VI.1995, on small fallen branches and on fallen coarse wood.

Phanerochaete calotricha (P. Karst.) J. Erikss. & Ryvarden
Collections examined: TI (44)- 29.VIII.2010; UR (24)- 12.VIII.1997, on small fallen branches and on fallen coarse wood.

Phanerochaete laevis (Fr.) J. Erikss. & Ryvarden
Collection examined: TI (44)- 29.VIII.2010, on small fallen branches and on fallen coarse wood.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000).

Phanerochaete sanguinea (Fr.) Pouzar
Collection examined: TI (49)- 25.VI.1996, leg. G.-F. Lucchini, on small fallen branches and on fallen coarse wood.

Phanerochaete sordida (P. Karst.) J. Erikss. & Ryvarden
Collections examined: TI (52)- 25.VI.1995; (47)- 19.VI.2011; (45)- 20.VIII.2010, (46)- 28.VIII.1988, (44)- 16.X.2010; UR (22)- 26.VI.1996; VS (51)- 4.IX.1999, on small fallen branches and on fallen coarse wood.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000).

Phanerochaete tuberculata (P. Karst.) Parmasto
Collection examined: SZ (15)- 19.VI.1993, on small fallen branches and on fallen coarse wood.

Phellinus lundellii Niemelä
Collections examined: GR (54)- 13.VIII.2008, (55)- 14.VIII.2008; VS (28)- 17.VIII.2009, (31)- 26.IX.1997, on fallen coarse wood.

Phlebia rufa (Pers.) M.P. Christ. aggr.
This collection is somewhat doubtful because it is said to be cream while *P. rufa* is reddish brown. It represents probably *Phlebia acerina* (see Nakasone & Sytsma 1993).
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000), on small fallen branches and on fallen coarse wood.

Pholiota alnicola (Fr.) Singer
Collections examined: BE (5)- 26.X.2001, on fallen coarse wood.

Plicatura nivea (Fr.) P. Karst.
Collections examined: BE (50)- 16.IX.1997; GR (7)- 29.IX.2004; TI (45)- 20.VIII.2010, (46)- 16.X.2010, (44)- 29.X.2010, (18)- 20.VIII.2002; VS (30)- 23.IX.1998. Quite common on standing (living and dead), hanging or lying.
Ref.: Favre (1960), Küffer (1999), Küffer & Senn-Irlet (2000).

Pluteus alniphilus Citérin & Deparis
Identified with the key by Citérin & Eyssartier (1998).
This species of section *Pluteus* is characterized by felty, grey cap colours, and the presence of abundant clamp connections.
Collections examined: TI (18)- 26.IX.1997, (16)- 29.VIII.2000, (19)- 30.IX.2000; UR (24)- 12.VIII.1997; VS (29)- 9.IX.1999, (30)- 23.IX.1998, on fallen coarse wood.

Pluteus leoninus (Schff. : Fr.) P. Kumm.
Collections examined: UR (21)-20.VIII.1998, on small fallen branches and on fallen coarse wood.

Polyporus arcularius (Batsch) Fr.
Collection examined: VS (19)- 14.IX.1998, on small fallen branches and on fallen coarse wood.

Polyporus brumalis (Pers.) Fr.
Collections examined: BE (2)- 22.VIII.1997; SZ (14)- 12.IX.1996; TI (18)- 26.IX.1997; VS (28)- 24.IX.2007, on small fallen branches and on fallen coarse wood.

Polyporus ciliatus Fr.
Collection examined: UR (22)- 5.VII.1996, UR below (22)- 5.VII.1996, on small fallen branches and on fallen coarse wood.

Polyporus leptocephalus (Jacq.) Fr.
Collections examined: TI (18)- 28.VIII. 2000, VS (28)- 31.VIII.2000, on small fallen branches and on fallen coarse wood.

Polyporus melanopus (Pers.) Fr.
Collections examined: BE (50)- 28.VIII.1998; OW (49)- 14.VIII.1996; TI (19)- 26.IX.1998, (17)- 19.IX.1998, UR (22)- 27.VII.1996; VS (51)- 4.IX.1999, on small fallen branches and on fallen coarse wood.

Postia alni Niemelä & Vampola
A species in the *Postia caesia*-complex.
Collection examined: UR (21)- 31.VIII.1999, on small fallen branches and on fallen coarse wood.

Postia stiptica (Pers.) Jülich
Collection examined: TI (19)- 28.VIII.1998, on small fallen branches and on fallen coarse wood.

Psathyrella fulvescens (Romagn.) M.M. Moser ex A.H. Sm.
Collections examined: UR (24)- 20.VIII.1998, 31.VIII.1999, on leaf litter.

Psathyrella storea (Fr.) M.M. Moser
Collection examined: UR (21)- 14.IX.1998, on small fallen branches and on fallen coarse wood.

Pseudochaete tabacina (Sowerby) T. Wagner & M. Fisch.
Syn. *Hymenochaete tabacina* (Sowerby) Lév.
Collection examined: TI (18)- 20.VIII.2002, on small fallen branches and on fallen coarse wood.

Pseudobaeospora pilodii (Quél.) E. Horak
Collections examined: TI (18)- 26.IX.1997; UR (32)- 3.IX.1999, (21)- 9.IX.1997, (24)- 9.IX.1997, on leaf litter.

Pycnoporus cinnabarinus (Jacq.) P. Karst.
Collection examined: TI (46)- 16.X.2010, on small fallen branches and on fallen coarse wood.

Resupinatus trichotis (Pers.) Singer
Collection examined: TI (20)- 11.VIII.2001, on small fallen branches and on fallen coarse wood.

Rhodocollybia butyracea (Bull. : Fr.) Lennox (including var. ***asema*** (Fr.) Antonín, Halling & Noordel.)
Collections examined: UR (21)- 9.IX.1999; VS (30)- 25.VIII.1998, on leaf litter.

Ripartites metrodii Huijsm.
Collections examined: GR (8)- 04.VIII.1998; TI (20)- 21.X. 1998, (16)- 29.VIII.2000; UR (21)- 09.IX.9, 29.IX.1999, on leaf litter.

Ripartites tricholoma (Alb. & Schwein.) P. Karst.
Collection examined: UR (23)- 17.IX.1996, on leaf litter.

Roridomyces roridus (Fr.) Rexer
Syn. *Mycena rorida* Fr.) Quél.
Collection examined: UR (40)- 4.IX.1996, on small fallen branches and on fallen coarse wood.

Royoporus badius (Pers.) A.B. De
Syn. *Polyporus badius* (Pers.) Schwein.
Collections examined: TI (44)- 16.X.2010; UR (24)- 12.VIII.1997, (21)- 3.IX.1997, on small fallen branches and on fallen coarse wood.

Sarcomyxa serotina (Pers.) P. Karst.
Collection examined: SG (41)- 26.IX.1998 on standing coarse wood.

Schizophyllum commune Fr.
Collections examined: TI (16)- 30.VIII.2000; UR (22)- 31.V.1995, on small fallen branches and on fallen coarse wood.

Schizopora paradoxa (Schrad.) Donk
Collections examined: UR (24)- 5.VIII.1997, 17.V.1995, 27.VII.1996, on small fallen branches and on fallen coarse wood.

Scopuloides rimosa (Cooke) Jülich
Collections examined: TI (47)- 19.VI.2011; (44)- 29.VIII.2010, on small fallen branches and on fallen coarse wood.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000).

Scytinostroma portentosum (Berk. & M.A. Curtis) Donk
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000), on small fallen branches and on fallen coarse wood.

Sistotrema brinkmannii (Bres.) J. Erikss.
Collections examined: TI (44)- 29.VIII.2010; VS (51)- 4.IX.1999, on small fallen branches and on fallen coarse wood.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000).

Sistotrema octosporum (J. Schröt. ex Höhn. & Litsch.) Hallenb.
Collection examined: TI (44)- 29.VIII.2010, on small fallen branches and on fallen coarse wood.

Sistotrema porulosum Hallenb.
Collection examined: TI (44)- 29.VIII.2010, on small fallen branches and on fallen coarse wood.

Steccherinum ochraceum (Pers.) Gray
Collection examined: TI (39)- 08.XI.1998, on small fallen branches and on fallen coarse wood.

Stereum hirsutum (Willd.) Pers.
Collections examined: TI (44)- 29.VIII.2010; UR (22)- 31.VIII.1995, on standing coarse wood, also on lying dead wood, especially branches.
Ref.: Favre (1960), Küffer (1999), Küffer & Senn-Irlet (2000).

Stereum rugosum Pers.
Collections examined: TI (44)- 29.VIII.2010; UR (33)- 14.VIII.1996, on standing coarse wood, also on lying dead wood, especially branches.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000).

Tectella patellaris (Fr.) Murrill
Collections examined: VS (29)- 9.IX.1999, 25.VIII.1999, 30.VIII.2000 on standing coarse wood.
For additional description and illustrations of another Swiss collection from Green alder see Cucchi (1997).

Tephrocybe langei (Singer) Raithelh.
Syn. *Clitocybe favrei* Kühner & Romagn.
Collection examined: UR (33)- 20.IX.1996, on leaf litter.

Tomentella bryophila (Pers.) M.J. Larsen
Collection examined: VS (29)- 09.IX.1999, on small fallen branches and on fallen coarse wood.

Tomentella radiosa (P. Karst.) Rick
Collection examined: TI (46)- 16.IX.2010, on small fallen branches and on fallen coarse wood.

Trametes hirsuta (Wulfen) Lloyd
Collection examined: UR (22)- 31.VIII.1995, on small fallen branches and on fallen coarse wood.
Ref.: Favre (1960).

Trametes versicolor (L.) Lloyd
Collections examined: BE (50)- 28.VIII.1998; UR (22)- 31.V.1996, on small fallen branches and on fallen coarse wood.
Ref.: Favre (1960).

Trechispora microspora (P. Karst.) Liberta
Collection examined: TI (43)- 2.VI.1990, on small fallen branches and on fallen coarse wood.

Trechispora mollusca (Pers.) Liberta
Collections examined: OW (48)- 17.IX.1997; VS (31)- 26.IX.1997, on small fallen branches and on fallen coarse wood.

Tyromyces chioneus (Fr.) P. Karst.
Collection examined: TI (45)- 20.VIII.2010, on small fallen branches and on fallen coarse wood.

Xenasmatella vaga (Fr.) Stalpers
Syn. *Phlebiella vaga* Fr.; *Trechispora vaga* (Fr.) Liberta
Collection examined: UR (33)- 25.VIII.1996, on small fallen branches and on fallen coarse wood.

Xeromphalina picta (Fr.) A.H. Sm.
Syn. *Mycena picta* (Fr.) Harmaja
Collections examined: UR (23)- 25.VIII.1996; VS (29)- 25.VIII.1999, on leaf litter.

2.2 Dacrymycetes, Tremellomycetes & other small groups

Basidiodendron caesiocinereum (Höhn. & Litsch.) Luck-Allen
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000), on small fallen branches and on fallen coarse wood.

Dacrymyces stillatus Nees
Collections examined: TI (17)- 5.VIII.1998, 17.X.1998, UR (24)- 26.V.1996, (22)- 5.VI.1996, on standing coarse wood and on small fallen branches and on fallen coarse wood.

Dacrymyces variisporus McNabb
Collection examined: TI (18)- 28.VIII.2000, on standing coarse wood.

Exidia plana Donk
Collection examined: TI (17)- 9.X.1998 on standing coarse wood.

Exidiopsis effusa Bref.
Collections examined: SZ (14)- 20.V.1996; UR (21)- 1500 m, 8.VI.2000, (24)- 26.V.1996, on small fallen branches and on fallen coarse wood.

Saccoblastia farinacea (Höhn.) Donk
Collections examined: TI (44)- 16.X.2010; VS (51)- 4.IX.1999, on small fallen branches and on fallen coarse wood.
Ref.: Küffer (1999), Küffer & Senn-Irlet (2000).

Thanatephorus fusisporus (J. Schröt.) Hauerslev & P. Roberts
Syn. *Hypochnus fusisporus* J. Schröt.
Collection examined: TI (44)- 29.VIII.2010, on small fallen branches and on fallen coarse wood.

Tremella foliacea (Pers. : Fr.) Pers.
Collections examined: BE (5)- 17.VII.2011, TI (17)- 9.X.1998, (45)- 20.VIII.2010, on standing coarse wood.

Tremella moriformis Berk.
Collection examined: BE (5)- 17.VII. 2011, on standing coarse wood.
Ref.: Favre (1960) (4 sites in Graubünden).

Tulasnella pinicola Bres.

Collection examined: TI (45)- 20.VIII.2010, on small fallen branches and on fallen coarse wood.

Tulasnella violacea (Johan-Olsen) Juel var. ***violacea***

Collection examined: TI (44)- 16.X.2010, on small fallen branches and on fallen coarse wood.

Tulasnella violea (Quél.) Bourdot & Galzin

Collection examined: TI (45)- 20.VIII.2010, on small fallen branches and on fallen coarse wood.

Discussion

Leaf litter was mainly colonized by agarics (TABLE 1) with many *Mycena* and *Clitocybe* species. The genus *Mycena* contributed by far with the highest species richness per genus, i.e. 23 species.

On catkins only a small number of species was observed without any of the known substrate specialists known from catkins of other alder species.

The wood-inhabiting fungi show an extremely high diversity with slightly fewer ascomycetes than basidiomycetes in numbers of species, however with a remarkably high number of ascomycete genera present.

Species composition varied remarkably between young freshly died twigs, standing coarse wood and fallen branches and stems. Young fine twigs are often colonized by *Cryptodiaporthe oxystoma*, *Melanconis alni* and the minute *Phaeocalicium compressulum*, young standing branches and thinner stems with extended orange fruitbodies of *Peniophora aurantiaca*. Standing coarse dead wood in humid to wet weather conditions typically shows fruitbodies of tremelloid genera. Multiannual fruitbodies have only been found of *Phellinus lundellii* and alder-specific species such as *Inonotus radiatus* have never been observed. The highest fungal diversity was found on fallen branches of 1-4 cm diameter.

TABLE 1. Fungi on *Alnus alnobetula*: Numbers of species and genera respectively (species/genera) per plant parts, organized by taxonomic groups.

	leaves	cat-kins	young twigs	Fallen coarse wood and fine branches	standing coarse wood
Basidiomycotina					
Agaricomycetes	37/17		5/4	27/11 (agarics) 70/39 (aphyllo-phorales)	6/5
Dacrymcetes, Tremellomycetes				8/6	5/3
Ascomycotina					
Dothideomycetes	1		2/2	12/10	
Eurotiomycetes	1		2/2		
Leotiomycetes	7/6	3/3	1	37/19	2/2
Orbiliomycetes				4/1	
Sordariomycetes	6/5	1	1	15/13	1
total	52/30	4/4	11/10	173/102	14/11

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Annex

TABLE 2. Collection sites

Number, canton, community, locality, altitude, coordinates (WGS84), bedrock, exposition, main collectors

1, Bern (BE), Guttannen, Handegg, 1401 m, 46.6184 N/ 8.3079 E, granit, E slope, BSI
2, Bern (BE), Kandersteg, Sunnbühl, 1640 m, 46.4606 N/ 7.6521 E, chalkstone, E slope, BSI
3, Bern (BE), Lauenen, Geltenschuss, 1740 m, 46.3753 N/7 .3347 E, chalkstone, E slope, BSI
4, Bern, (BE), Lauterbrunnen, Marchegg, 1750 m, 46.603 N/ 7.8804 E, dogger stone, N slope, BSI
5, Bern (BE), Riggisberg, Selibühl, 1640 m, 46.7334 N/ 7.4402 E, calcareous Flysch, N slope, BSI
6, Bern (BE), Wilderswil, Schynige Platte, 1970 m, 46.6515 N/ 7.9063 E, late Jurassic limestone, N slope, BSI
7, Graubünden (GR), Klosters, Monbiel-Alpegg, 1740 m, 46.8478 N/ 9.9144 E slope, calcareous upper Jurassic, RM
8, Graubünden (GR), Medel, A. Stgegia, 1860 m, 46.5931 N/ 8.7971 E, granit, acidic, W slope, BSI
9, Graubünden (GR), Val Mustair, Fuldera-Funtauna Grossa, 1900 m, 46.6147 N / 10.3422 E slope, perm, acidic, NE slope, BSI
10, Graubünden (GR), Val Mustair, Val Vau-Las Clastras, 1985 m, 46.5776 N / 10.378 E, triassic dolomit, S slope, BSI
11, Graubünden (GR), Vals, Zerveila, 1910 m, 46.5522 N/ 9.0947 E, gneiss, W slope, BSI
12, Graubünden (GR), Vaz, Bargias, 1500 m, 46.7381 N / 9.5442 E, calcareous Flysch, E slope, BSI
13, Graubünden (GR), Vaz, Alp Stätz, 1640 m, 46.7608 N / 9.5437 E, calcareous Flysch, E slope, BSI
14, Schwyz (SZ), Küssnacht, Rigi, Bänderen, 1540 m, 47.0561 N/ 8.4784 E, molasse, N slope, RM
15, Schwyz (SZ), Muotatal, Bödmeren, 1530 m, 46.9784 N / 8.8398 E, limestone, N slope, BSI
16, Ticino (TI), Airolo, Val Tremola, 1730 m, 46.5415 N / 8.5729 E, granit, S slope, BSI
17, Ticino (TI), Cimadera, Pianca, 1480 m, 46.065 N / 9.0632 E, gneiss, N slope, RdM
18, Ticino (TI), Bedretto, Ponte di Paltano, 1840 m, 46.4729 N / 8.4529 E, granit, N slope, GB, BSI, NK
19, Ticino (TI), Rivera, Alpe Foppa*, 1550 m, 46.1142 N / 8.8874 E, gneiss, N slope, GB, BSI
20, Ticino (TI), Monte Generoso, Alpe Squadrina, 1500 m, 45.9292 N / 9.0269 E, acidic, E slope, GB
21, Uri (UR), Andermatt, Tristel*, 1500 m, 46.6295 N/ 8.5904 E and 1700 m, 46.6259 N / 8.5906 E, granit, N slope, BSI, GB, NK
22, Uri (UR), Bristen, Bristenstock*, 1600 m, 46.7565 N / 8.681 3E, gneiss, acidic, N slope, RM
23, Uri (UR), Meiental, Heugand*, 1650 m, 46.7374 N / 8.4987 E, granit, acidic, N slope, RM
24, Uri (UR), Unterschächen, Steinboden*, 1580 m, 46.8588 N / 8.7527 E, sandstone, acidic, N slope, BSI, RM
25, Vaud (VD), Gryon, Taveyanne-Chaux Ronde, 1840 m, 46.2975N / 7.1103 E, sandstone, acidic, W slope, BSI
26, Wallis (VS), Binn, Heiligkreuz, 1510 m, 46.337N / 8.1712 E, gneiss, acidic, N slope, BSI, RM. RdM
27, Wallis (VS), Naters, Belalp, 2000 m, 46.3598 N / 7.9614 E, granit, E slope, BSI
28, Wallis (VS), Oberwald, Gletsch, 1770 m, 46.563 N / 8.3625 E, gneiss, N slope, BSI, RdM
29, Wallis (VS), Oberwald, Schneetole*, 1900 m, 46.5658 N / 8.379 E, calcareous schists, N slope, BSI
30, Wallis (VS), Oberwald, Oberalpenstafel*, 2100 m, 46.5693 N / 8.3941 E, calcareous schists, N slope, BSI, GB
31, Wallis (VS), Ulrichen, Ladstafel, 1925 m, 46.4773 N / 8.3684 E, calcareous schists, E slope, RdM, BSI, NK
32, Uri (UR), Hospental, Gamsboden-Wyssgand, 1650 m, 46.6072 N /8.5716 E, granit, acidic, W slope, BSI
33, Uri (UR), Andermatt, Unteralptal, 1571 m, 46.6269 N / 8.623 E, granit, acidic, N slope, RM
34, Uri (UR), Göschenen, Börtlistafel, 1613 m, 46.6553 N / 8.5481 E, granit, acidic, N slope, RM
35, Uri (UR), Spirigen, Untere Gisleralp, 1760 m, 46.9 N / 8.721 E, Flysch, S slope, RM
36, Vaud VD), Villars-sur-Ollon, Col de Bretaye, 1740 m, 46.3262 N / 7.0783 E, limestone, S slope, BSI
37, Vaud (VD), Château d'Oex, Pâquier Mottier, 1380 m, 46.4048 N / 7.1903 E, limestone, W slope, BSI
38, Ticino, (TI), Sonvico, Pairolo, 1250 m, 46.0635 N / 9.0463 E, ultrametamorphic gneiss, N slope, RdM
39, Graubünden (GR), Bergün, Crap Alv, 1990 m, 46.58039 N / 9.79380 E, granit, N slope, BSI
40, Uri (UR), Spirigen, Chinzig, Bödmer-Rindermatt, 1833 m, 44.9096 N / 8.74998 E, upper Jurassic, calcareous, RM
41, St.Gallen (SG,) Sargans, Pizol Furt 1540 m, 47.00062 N / 9.41502 E, calcareous Flysch, N slope, RdM

42, Ticino, (TI), Campo, V.Maggia, S'Ceda, 1640 m, 46.28041 N/ 8.50255 E, gneiss, EM
43, Ticino, (TI), Olivone, Campra, 1420 m, 46.51926 N / 8.87216 E, Lias, N slope, EM
44, Ticino, (TI), Quinto, Val Piora-Mottone, 2010 m, 46.54451 N / 8.71636 E, Lias, EM
45, Ticino, (TI), Quinto, Val Piora-Canariscio di Ritom, 1770 m, 46.52681 N/ 8.68987 E, gneiss, EM
46, Ticino, (TI), Quinto, Val Piora-Larici di Campo, 1950 m, 46.53926 N/ 8.70320 E, gneiss, EM
47, Ticino, (TI), Val Bavona, Val Calnègia-Gerra, 1060 m, 46.35668 N/ 8.5353 E, gneiss, N slope, EM
48, Obwalden (OW), Hergiswil, Ober Lauelen-Chilchstein, 1377 m, 46.98200 N/ 8.24173 E, limestone, GB
49, Obwalden (NW), Stans, Stanserhorn-Rinderalp, 1640 m, 46.94405 N / 8.34847 E, upper Jurassic, calcareous, N slope, RM
50, Bern (BE), Brienz, Axalp-Hinterburgseeli, 1550 m, 46.71819 N/ 8.06384 E, upper Jurassic, calcareous, N slope, NK
51, Wallis (VS), Blatten, Heitigen-Chüedmatte 1680 m, 46.42367 N/ 7.84320 E, gneiss, NK
52, Ticino (TI), Ludiano, Alp Püschett, 1502 m, 46.41762 N / 8.93973 E, gneiss, acidic, E slope, EM
53, Ticino (TI), Miglieglia, Monte Lema, 1600 m, 46.04111 N / 8.83249 E, granitoid gneiss, N slope, BSI
54, Graubünden (GR), Sils, 1800 m, 46.42233 N/ 9.77783 E, calcareous Trias, N slope, BSI
55, Graubünden (GR), Pontresina, Muottas da Puntraschigna, 2060 m, 46.47990 N / 9.90668 E, granitoid gneiss, E slope, BSI
56, Graubünden (GR), Bever, Val Bever, 1742 m, 46.54976 N / 9.88052 E, gneiss, E slope, BSI

Collectors: BSI = Beatrice Senn-Irlet, EM = Elia Martini, GB = Guido Bieri, NK = Nicolas Küffer, RdM = Romano de Marchi, RM = Rolf Mürner