

Supplementary Table 2.: PlutoF identification of fungal OTUs in soil and their mean relative abundances before and after the bark beetle-induced tree dieback. All OTUs with abundance >0.5% in at least three samples were included. Data represent means of three samples, italic indexes represent significant differences at  $P < 0.05$  (ANOVA + Fisher LSD post-hoc test). Abbreviations: A – *Ascomycota*, B – *Basidiomycota*, G – *Glomeromycota*, M – *Mortierellomycotina*.

OTU	Order (Phylum)	Best identified hit (Accession number)	Similarity		Relative abundance (%)					
			(%)	E-value	Mean	2008	2009	2010	2011	2012
23	<i>Filobasidiales</i> (B)	<i>Cryptococcus terricola</i> (FN298663)	100	0.0	147.5	64.1 <sup>a</sup>	33.1 <sup>a</sup>	70.7 <sup>a</sup>	191.7 <sup>ab</sup>	387.2 <sup>b</sup>
25	<i>Saccharomycetales</i> (A)	<i>Nadsonia fulvescens</i> (AB056137)	98	0.0	54.5	8.3	4.3	98.9	103.5	89.2
69	<i>Mortierellales</i> (M)	<i>Mortierella turficola</i> (HQ630350)	96	e-173	49.0	3.4 <sup>a</sup>	222.6 <sup>b</sup>	2.5 <sup>a</sup>	16.0 <sup>ab</sup>	0.9 <sup>a</sup>
101	<i>Pezizales</i> (A)	<i>Pseudaleuria quinaultiana</i> (EU669387)	89	e-133	47.4	59.4	1.9	116.9	68.9	27.7
13	<i>Helotiales</i> (A)	<i>Acephala applanata</i> (AY078145)	100	0.0	41.6	3.5	41.8	17.0	48.6	35.4
3	<i>Russulales</i> (B)	<i>Russula ochroleuca</i> (HM189876)	99	0.0	39.8	55.9 <sup>b</sup>	98.3 <sup>b</sup>	0.0 <sup>a</sup>	43.9 <sup>ab</sup>	0.9 <sup>a</sup>
9	<i>Helotiales</i> (A)	<i>Cadophora finlandica</i> (EF093179)	94	e-122	36.0	13.8	30.1	10.1	36.9	71.2
32	<i>Helotiales</i> (A)	<i>Leptodontidium elatius</i> (JF340290)	94	e-170	32.8	0.8	0.0	218.9	1.9	5.7
17	<i>Mortierellales</i> (M)	<i>Mortierella verticillata</i> (JN943796)	100	0.0	27.9	87.4	32.6	0.0	12.2	4.4
80	<i>Agaricales</i> (B)	<i>Resupinatus applicatus</i> (UDB011386)	98	2e-82	27.0	17.3	0.7	99.4	17.8	32.8
10	<i>Mortierellales</i> (M)	<i>Mortierella globulifera</i> (HQ847056)	97	1e-97	26.6	3.7 <sup>a</sup>	46.7 <sup>bc</sup>	4.9 <sup>a</sup>	52.0 <sup>c</sup>	13.8 <sup>ab</sup>
30	<i>Eurotiales</i> (A)	<i>Penicillium inflatum</i> (AJ608959)	99	0.0	25.1	0.5	42.9	22.6	64.1	3.0
12	<i>Atheliales</i> (B)	<i>Tylospora fibrillosa</i> (AF052562)	99	0.0	23.4	117.0 <sup>b</sup>	0.0 <sup>a</sup>	0.0 <sup>a</sup>	0.0 <sup>a</sup>	0.0 <sup>a</sup>
21	<i>Helotiales</i> (A)	<i>Cadophora finlandica</i> (EF093179)	92	e-111	22.5	2.6	12.7	11.1	1.9	31.1
49	<i>Dothideomycetes</i> (A)	<i>Cenococcum geophilum</i> (AM087244)	99	0.0	20.9	22.3	45.1	51.7	0.0	1.8
16	<i>Eurotiales</i> (A)	<i>Penicillium spinulosum</i> (JN246018)	100	0.0	18.6	3.3	28.9	3.6	50.4	7.9
53	<i>Pezizales</i> (A)	<i>Pseudaleuria quinaultiana</i> (EU669387)	99	0.0	17.3	7.0	3.8	14.4	49.5	15.3
333	<i>Mortierellales</i> (M)	<i>Mortierella gemmifera</i> (HQ630293)	93	e-123	16.3	3.4 <sup>a</sup>	15.5 <sup>ab</sup>	0.0 <sup>a</sup>	16.0 <sup>ab</sup>	38.9 <sup>b</sup>
6	<i>Helotiales</i> (A)	<i>Leptodontidium elatius</i> (FJ903294)	95	e-180	16.0	1.5	6.0	47.4	16.0	23.5
81	<i>Mortierellales</i> (M)	<i>Mortierella macrocystis</i> (AJ878782)	99	0.0	16.0	5.8	9.4	2.8	18.0	30.4
113	<i>Mortierellales</i> (M)	<i>Mortierella turficola</i> (HQ630350)	96	e-173	15.6	1.6 <sup>a</sup>	54.0 <sup>b</sup>	0.0 <sup>a</sup>	1.9 <sup>a</sup>	5.3 <sup>a</sup>
104	<i>Atheliales</i> (B)	<i>Tylospora fibrillosa</i> (JN943896)	99	0.0	14.7	44.2	24.1	0.0	0.0	5.1
15	<i>Eurotiales</i> (A)	<i>Thysanophora penicillioides</i> (JF340235)	99	0.0	14.3	0.0 <sup>a</sup>	69.9 <sup>b</sup>	0.0 <sup>a</sup>	1.0 <sup>a</sup>	0.4 <sup>a</sup>
4	<i>Coniochaetales</i> (A)	<i>Lecythophora hoffmannii</i> (JN942898)	95	3e-84	12.8	1.2	5.9	7.7	13.1	12.5
361	<i>Leotiomycetes</i> (A)	<i>Geomyces pannorum</i> (DQ189228)	100	0.0	11.9	0.0	0.0	32.6	37.6	0.0
1	<i>Agaricales</i> (B)	<i>Nolanea conferenda</i> (AF538624)	100	0.0	9.2	1.7	6.9	7.4	0.9	31.8
682	<i>Helotiales</i> (A)	<i>Meliniomyces vraolstadiae</i> (HQ157883)	98	0.0	9.1	21.6 <sup>b</sup>	14.3 <sup>ab</sup>	0.4 <sup>ab</sup>	1.9 <sup>ab</sup>	3.2 <sup>a</sup>
14	<i>Helotiales</i> (A)	<i>Phialocephala virens</i> (AF486132)	96	e-174	8.5	2.4	4.9	23.5	7.5	3.3
297	<i>Atheliales</i> (B)	<i>Tylospora fibrillosa</i> (DQ068974)	99	0.0	8.4	31.2	10.8	0.0	0.0	0.0
22	<i>Agaricales</i> (B)	<i>Lyophyllum connatum</i> (UDB011836)	99	1e-86	8.3	1.6	20.4	8.7	10.5	2.9

2	<i>Mortierellales</i> (M)	<i>Mortierella macrocystis</i> (AJ878782)	98	0.0	8.0	2.7	6.3	5.9	8.5	9.3
256	<i>Helotiales</i> (A)	<i>Cadophora finlandica</i> (EF093179)	93	e-119	7.7	3.4	6.1	27.2	2.8	7.3
52	<i>Helotiales</i> (A)	<i>Leptodontidium elatius</i> (JF340290)	96	0.0	6.9	0.0 <sup>a</sup>	0.0 <sup>a</sup>	7.8 <sup>ab</sup>	18.9 <sup>b</sup>	7.4 <sup>ab</sup>
26	<i>Mortierellales</i> (M)	<i>Mortierella gemmifera</i> (HQ630293)	100	0.0	6.8	9.6	9.0	2.5	7.5	4.9
156	<i>Leotiomycetes</i> (A)	<i>Pseudeurotium bakeri</i> (GU934582)	95	e-178	6.6	8.1	6.8	0.8	14.1	3.5
36	<i>Helotiales</i> (A)	<i>Meliniomyces variabilis</i> (EF093164)	97	0.0	6.2	2.9	3.8	1.6	11.3	10.8
165	<i>Leotiomycetes</i> (A)	<i>Collophora pallida</i> (GQ154575)	90	e-127	5.3	2.8	5.2	3.7	2.8	6.3
31	<i>Helotiales</i> (A)	<i>Hyaloscypha daedaleae</i> (AY789416)	98	0.0	5.0	1.0	1.2	5.3	5.6	8.8
147	<i>Helotiales</i> (A)	<i>Cadophora finlandica</i> (EF093179)	94	e-119	4.6	0.4	0.0	0.0	5.6	10.8
38	<i>Helotiales</i> (A)	<i>Meliniomyces bicolor</i> (HQ157880)	96	0.0	4.5	2.4	12.1	2.5	3.7	2.1
102	(A)	<i>Spirosphaera carici graminis</i> (EF029232)	88	e-124	4.2	0.5	0.0	17.3	5.6	0.8
123	<i>Mortierellales</i> (M)	<i>Mortierella pulchella</i> (HQ630351)	99	0.0	4.0	0.5 <sup>a</sup>	11.7 <sup>b</sup>	7.4 <sup>a</sup>	1.9 <sup>a</sup>	1.1 <sup>a</sup>
523	<i>Mortierellales</i> (M)	<i>Mortierella verticillata</i> (JN943796)	98	0.0	4.0	14.6	5.4	0.0	0.0	0.0
41	<i>Verrucariales</i> (A)	<i>Verrucaria funckii</i> (EU249488)	86	e-111	3.9	4.3 <sup>ab</sup>	9.5 <sup>b</sup>	0.0 <sup>a</sup>	0.9 <sup>ab</sup>	4.0 <sup>ab</sup>
44	<i>Mortierellales</i> (M)	<i>Mortierella gamsii</i> (AJ878508)	92	e-149	3.5	0.2	1.5	0.0	5.6	10.0
51	<i>Helotiales</i> (A)	<i>Mollisia cinerea</i> (AY259135)	96	e-154	3.4	0.0 <sup>a</sup>	1.5 <sup>ab</sup>	12.4 <sup>b</sup>	0.0 <sup>a</sup>	2.5 <sup>ab</sup>
590	<i>Helotiales</i> (A)	<i>Helgardia aestiva</i> (AY266145)	98	0.0	3.3	1.9	0.0	17.3	0.0	0.9
76	<i>Mortierellales</i> (M)	<i>Mortierella macrocystis</i> (AJ878782)	97	0.0	3.3	0.0 <sup>a</sup>	0.0 <sup>a</sup>	5.0 <sup>ab</sup>	0.0 <sup>a</sup>	8.1 <sup>b</sup>
108	<i>Helotiales</i> (A)	<i>Phialocephala virens</i> (AF486132)	95	e-167	3.2	0.5	0.4	0.4	0.9	9.1
2921	<i>Helotiales</i> (A)	<i>Ascocoryne cylichnium</i> (AY789395)	91	e-146	3.2	0.0	0.0	9.9	3.7	1.4
68	<i>Leotiomycetes</i> (A)	<i>Oidiodendron echinulatum</i> (DQ069040)	98	0.0	2.9	0.0	5.4	0.0	4.7	4.3
56	<i>Helotiales</i> (A)	<i>Chalara longipes</i> (FR667214)	99	0.0	2.5	0.5 <sup>a</sup>	11.9 <sup>b</sup>	0.0 <sup>a</sup>	0.0 <sup>a</sup>	0.0 <sup>a</sup>
404	<i>Helotiales</i> (A)	<i>Phialocephala fortinii</i> (HM595526)	98	0.0	2.2	0.0	0.4	0.0	4.7	0.6
301	<i>Venturiales</i> (A)	<i>Venturia fraxini</i> (EU035457)	89	e-139	2.1	4.7 <sup>b</sup>	5.7 <sup>b</sup>	0.0 <sup>a</sup>	0.0 <sup>a</sup>	0.0 <sup>a</sup>
134	<i>Helotiales</i> (A)	<i>Allantophomopsis lycopodina</i> (AB041243)	98	0.0	2.0	7.2 <sup>b</sup>	3.0 <sup>ab</sup>	0.0 <sup>a</sup>	0.0 <sup>a</sup>	0.0 <sup>a</sup>
151	<i>Agaricales</i> (B)	<i>Mycena galopus</i> (JF908484)	92	7e-89	2.0	0.4	1.5	0.0	7.6	0.2
269	<i>Septobasidiales</i> (B)	<i>Auriculoscypha anacardiicola</i> (DQ419922)	86	4e-87	1.4	3.0	3.9	0.0	0.0	0.0