

Table S1. Complete rDNA sequence of *Orbilia xanthostigma*, comprising SSU (18S) with regions **V1–V9**, **ITS1–5.8S–ITS2**, and LSU (28S) with domains **D1–D12** (following Meyer et al. 2011). Regions and domains are separated by **primers** (SR1R primer with deviating **D**). **Blue markings** indicate central parts of each region or domain. **Intron** positions are given for those introns which occur in *Orbiliomycetes* (position numbers according to those of *Escherichia coli*). **Pink** nucleotides are those which are more or less variable within *Orbiliomycetes* (very rare exceptions are neglected). Some characteristic motives or primers are enhanced in **bold**.

Primer	KY419181 <i>Orbilia xanthostigma</i> (complete rDNA)	Primer
SR1R	TACCTGGTTGATCTGCGCAGTAGTCATATGCTTGTCTCAAAGATTAAAGCCATGCATGTCTAAGTATAAGCAATC	NS1
V1	TATACAGTGAACTGCGAATGGCTCATTTAAATCAGTTATCGTTTATTGATAGTACCTTACTACTGGATAACC	V2
	GTGGTAATTCTAGAGCTAATACATGCTAAAAATCCCGACCTTGGAAGGGATGTATTTATTAGATAAAAAACC	
SR3R	AATGCCCTTCGGGCTCCCTGGTGATTCATGATAACTTAACGGATCGCATGGCCTTGCGCCGCGCAAGGTTTCATTC	
	AAATTTCTGCGCTATCAACTTTTCGATGGTAGGATAGTGGCCTACCATGGTTCACACGGGTAACGGGGAATTAGG	
	GTTCATTCCGGAGAGGGAGCCTGAGAAACGGCTACCACATCCAAGGAAGGCAGCAGCGCGCAAAATTACCC	
	AATCCCATAACGGGGAGGTAGTGACAATAAATACTGATACAGGGCTCTTTGGGTCTTGAATTTGGAATGAGT	V3
NS3	ACAATTTAAATCTCTTAGCGAGGAACAATTGGAGGGCAAGTCTGGTGintronS516CCAGCAGCCGCGTAATTCC	SR1
SR7R	AGCTCCAATAGCGTATATTAAAGTTGTTCAGTTAAAAAGCTCGTAGTTGAACCTTGGGCTGGCTGCTCGGT	
loop E23-1-2	CCGCCTAACCCGCGTGCCTGATGCGCGCCGGGCTTTCCTTCGGCTAACCTCATGCCCTTCACTGGGTGTGCTG	
	GGGATCCAGGACTTTTACTTTGAAAAAATTAGAGTGTTCAAAGCAGGCCTATGCTCGAATACATTAGCATGGA	V4
	ATAATAAATAGGACCGCGGTTCTATTTTGTGGTTTCTAGAGCCACCCTAATGATTAATAGGGAAGTTCGGGG	
SR9R	GCATCAGTATTCATTGTGAGAGGTGAAATCTTGGATTATTGAAGACTAACTACTGCGAAAGCATTTCGCAA	
	GGATGTTTTCATTAATCAGTGAACGAAAGTTAGGGATCGAAGACGATCAGATACCCGTCGTAGTCTTAACCAT	
	AAACTATGCCAGTAGGATCGGGCGGTGTTTAACTATGACCCCTCGGCACCTTACGAGAAATCAAGTTT	V5
NS5	TGGGTTCTGGGGGAGTATGGTCGCAAGGCTGAACCTTAAGGAATTGACGGAAGGGCACACCAGATGTintron	SR5
NS23	ns943GGAGCTGCGGCTTAATTTGACTCAACACGGGGAAACTACCAGGTCCAGACACATTAAGGATTGACAG	-V6
SR2R	ATTGAGAGCTCTTCTTGATTATGGGTGGTGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTGTCTGCTTA	V7
	ATTGCCATAACGACGAGACCTTAACTCTGCTAAATAGCCAGGCGAGCTTTGCTCTCGCCGGCTCTTAGAG	
	GGACTATCCGCTCAAGCCGATGGAAGTTTGAGGCAATAACAGGTCTGTGATGCCCTTAGATGTTCTGGGCCGC	
NS6/NS7	ACGCGCGCTACACTGACAGGGCCACGAGTTCTAACTTGGCCGAGAGGTCTGGTAATCTTGTTTAAACCTGT	
-V8	CGTGATTGGGGATAGAGCATTTGCAATTATTGCTCTTCAACGAGGAATATCTAGTAAGCGCAAGTCATCAGCTTGC	
	GTTGATTACGTCCCTGCTTGTACACACCCGCGCTCGCTACTACCGATTGAATGCTCAGTAGGCGCTTCGG	
V9 ITS1F	ACTGGCTCAGGAAGGTTCGGCAACGACCATCCAGCGCGGGAAGTTGGTCAAACTTGGTCATTAGAGGAAGT	SF16a
NS24	AAAAGTCGTAACAAGGTintronS1506TTCGTAGGTintronS1516GAACCTGCGGAAGGATCATTACGAATTC AAC	ITS5 SR6
	GGGCACAAACCTCTGGCCTCCCGGGTCTGCTGGGTGCTCCGGTCCACTCCCTAAACCTTTGTGAACCAAA	ITS1, NS8
ITS1	ACACCCCTCTGCTCGGCAGCATTGTCAGCCAGCGCTGTGAGTCTGCCGGAGCCGATTCAAAACCTTGATTTTA	
	ATCCAGTCTGAACCACTTGAATTTGAATAAATAAACTTTCAACAACGGATCTCTTGGTCTTCGATCGAT	ITS3 5.8SR
5.8S	GAAGAACCGCAGCAAAACGCGATAGTTAATGTGAATTCAGAAATCATCGAGTCTTTGAACGCACA	Orb5.8S1F
	TTGCGCCCGTTGGTATTCGACGGGACGCTCTGTGAGCTCATGTCAAAACTCAACCAGCCTTGGTTGGTAC	Orb5.83F
ITS2	TGGGCATAGGTATCCCCTGGAACCTGGCCTTAAAGTAGCACGCTCTGCGGGCCTGCTGGTCTCCGAAAACATA	
	GTACAAAACGCCTTGTGTGAACCGGACCGGTCTGGCTACCGCTGAACAAAATCAAACTCAAAGGTTTGACC	
LR0R LR1	TCAGATCAGAGGAGATACCCGCTGAACTTAAGCATATCAATAAGCGGAGGAAAAGAAACCAACAGGGATT	ITS4 NL1
	GCCCGCAGTAACGGCGAGTGAAGCGGCAAGAGCTCAATTTGAAATCTGGCAAAAGCCCGAGTTGTAATTTGAA	
D1	GAGGATGCCTCGGTTGCGGCCCCAGCCCAAGTTCTTGGAACAGAAGCTCAAGGAGGGTGAGAATCCCCGTCG	
	GCTGCCGGCTATACCATGTGTGGCTCTTCGAAGAGTCGAGTTGTTTGGGAATGCAGCTCAAAATGGGTGGTA	LR2
	GATTTCTAATAAGCTAAATACTGGCGAGAGACCGATAGCGCACAAAGTAGAGTGATCGAAAGTAAAGAG	
	ACTTTGAAAAGAGAGTTTAAACAGTACGTGAAATTTGTAAGGGAAGCGCTTGGATCAGACTCACCAGCGGT	
D2	TGATCAACGTTCTCTTGGTTCTGCACTTGGCCGGGTGGGCCAGCATCGGTTGGGACGGCGGGACAAAGG	
	CTGTGGGAATGTGGCTCTCGGAGTTTATAGCCAGTGTGCAATGCCGCTGCCCGACTGAGGTCGCGCT	LR3 NL4
Orb28s2R	CGGCTAGGATGCTGGCTTAATGGTCTAAGCGAACCTGTCTGAAACACGGACCAAGGAGTCTAACATCTATG	
D3	CAAGTTTTGGGTGCAAAACCCATGAGCGCAATGAAAGTGAACGGAGGTGGAGCCTTAGGGTGCACCATCGA	
	CCGATCCTGATGTTCTCGGATGGATTGAGTATGAGCATAGCTGTTGGGACCCGAAAGATGGTGAACATATGCCT	
	GAATAGGTGAAGCCAGAGGAAACCTCGGTGGAGGCTCGCAGCGGTTCTGACGTGCAATCGATCGTCAATT	LR4
D4	TGGGTATAGGGCGAAAGACTAATCGAACCATCTAGTAGCTGGTTCTGCGCAAGTTTCCCTCAGGATAGCAG	LR5
LR5g	TAACGTTTCAGTTTATGAGGTAAAGCAATGATTAGAGGCCTTGGGGTTGAAACAACCTTAACCTATTCTC	LR17R
D5	AAACTTTAAATATGTAAGAAGTCTTGTGCTTAATTGAACGTGGAATTCGAATGATTCGTACTAGTGGGCC	
	ATTTTGGTAAGCAGAACTGGCGATGCGGGATGAACCGAACCGGGGTTAAGGTGCCGGAATGCACGCTCATC	LR6
	AGACACCACAAAAAGTGTTAGTTCTAGACAGCAGGACGGTGGCCATGGAAGTCGGAAATCCGCTAAGGAGT	
D6	GTGTAACAACTCACTGCCGAATGAATAGCTGTGAAATGGATGGCGCTTAAGCGTGCTACCCATACCTTCGC	
	CGCCACGGCAGAAACCAAGCCGTGGCGAGTAGGCAGGCGCGAGGTGAGTGACGAAGCCTTGGAGTGATCC	LR7R
LR17	CGGGTCGAACGGCTCTGGTGCAGATCTTGGTGGTAGTAGCAAACTCAAAATGAGAACTTTGAGGACTGAAG	
	TGGGGAAGGTTCTGTGTGAACAGCAGTTGGACAAGGGTATGTCATCTTAAGGCATAGGGGAAATCCGTTT	
D7	AAAGATCCGGCTCGCGACACCCGCGCAAGGGAAGCCGGTTAATATCCGGCACCTGGATTCGCG	
	GGCAACGCAACAGAACTCGGAGACGCGGGCGGGAGCCCTGGGAAGAGTTCTCTTTCTTCTTACAGTCCGTC	
	ACCCTGAAATCGGTTTGTCCGGAGCTAGGGTTAATGGCTGGCAGAGCTCGGCACCTTTGCGGGTCCGGTGGC	
	CTCCCGACCGTCTTGAATAATCCGGGGGATGGAATAGCTTACGCGAGGTCGTACTCATAACCCGAGCAGGT	LR8R
	CTCAAGGTGAAAGCCTCTAGTTGATAGAACAATGTAGGTAGGGAAGTCGGCAAAATAGATCCGTAACCTC	
	GGGAAAGGATTTGGCTCTAAAGGTTGGGTGCGTTGGGCTTGGGCGGATCCCGTCGACCAAGCTCGTCCCTAG	
D8	CCTCACCGCCGGGATTTCAGGACCGGTTGGAGGATGCCCTTGGCAGGTTCTCGGCGCTCCGGCGCACGCTTA	

D9 LR9-10b D10 LR20R D12 LR13R	ACAACCGACTTAGAACTGGTACGGACAAGGGGAATCTGACTGTCTAATTAACATAGCATTGCGATGGCCAG AAAGTGGTGTGACGCAATGTGATTTCTGCCCAGTGTCTGAATGTCAAAGTGAAGAAATTCACCAAGCGCG GGTAAACGGCGGGAGTAAGTATGACTintronL192CTCTTAAGGTAGCCAAATGCCTCGTCATCTAATTAGTGAC GCGCATGAATGGATTAACGAGATTGCCACTGTCCCTATCTACTATCTAGCGAAACCACAGCCAAGGGAAACGGG CTTGGCAGAAATCAGCGGGGAAAGAAACCCCTGTTGAGCTTGACTCTAGTTTGACATTGTGAAGAGACATATGA GGTGTAGAATAGGAGGGAGCTTCCGCGCCGGTGAATACCTCCACTCGTACTGTTCTTTACTTATTCATTGAA CGCGAACTGGGTTTCACCGCCCACTTCTGGCTTAAAGTCCTTCGCGGGCTGATCCGGGATGAAACATTGTG AGGTGGGGAGTTTGGCTGGGGCGGCACATCTGTAAACCATAACGCAGGTGTCTTAAGGGGGCTCATGTGAGA ACAGAAATCTCCAGTAGAGCAAAAGGGCAAAAAGTCCCCCTTGATTTTGATTTTCAGTGTGAATACAAACCATGA AAGTGTGGCCTATCGATCCTTTAGTCCTTCGGAGTCTGAGGCTAGAGGTGCCAGAAAAGTTACCACAGGGATint ronL2449AACTGGCTTGTGGCAGCCAAGCGTTCATAGCGACGTTGCTTTTGTATCCTTCGATGTCGGCTCTTCCTA TCATACCGAAGCAGAAATTCGGTAAGCGTTGGATTGTTACCCACTintronL2563AATAGGGAACGTGAGCTGGGT TTAGACCGTCGTGAGACAGGTTAGTTTTACCCTACTGATGACCGTCTCGCAAACAGTAATCAACTTAGTACGA GAGGAACCGTTGATTCCGATAAATGGTTTTGCGGCTGTCCGACCGGGCATTGCCGCGAAGCTACCATCCGTTG GATTATGGCTGAACGCCTCTAAGTCAGAATCCATGCTGGAAAGCGACGATTTTACTCCCTCCCATCGTACTCG TACACGAATAGCTTCGGCCGTGATCTAGCAGGCTGGCAACGGGTCTGGTGGTCAAAAGGCCGCCCTCTCT CGCTGGCGATTGCAATTAAACCTTGGCTGGGAATAAATCCCTTGACAGCAGCTTGAATGTGGCAGGGGTGCT GTAAGCGGTAGAGTAGCCTTGTGTGTACGATCTGCTGAGGCTAAACTTTCG	LR9 LR9-10a LR10 LR11 LR11-14 D11 LR12 LR13 IGS1
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Table S2. Intraspecific variation of ITS rDNA in selected taxa of *Orbiliomycetes* in comparison with variation between morphologically very closely related species or intraspecific subclades (p-distances evaluated with MEGA7 using transitions + transversions, uniform rates, pairwise deletion). Note high distance in *Orbilbia xanthostigma* and *O. leucostigma*, even among different subclades from New Zealand, and in *O. eucalypti*, although morphological differences have not been observed.

Species	Number of collections	ITS-variation within subclade		ITS-variation between subclades	ITS-variation between clades or species	
<i>Lilapila oculispora</i>	6	0–1%		10–10.8%	13–13.5%	
<i>Lilapila oculisporella</i>	8	0–1%				
<i>Lilapila jurana</i>	3	0%				
<i>Orbilbia euonymi</i>	5	0.4–0.7%			6.3–6.5%	
<i>Orbilbia pleioeuonymi</i>	1	–				
<i>Orbilbia vinosa</i>	8	0–1.9%			9.5–11%	
<i>Orbilbia subvinosa</i>	7	0.2–1.1%				
<i>Orbilbia aurantiorubra</i> s.str.	7	0–0.4%		0.4–0.9%	9–11.5%	
<i>Orbilbia aurantiorubra</i> (<i>Fabaceae</i>)	3	0–0.4%				
<i>Orbilbia jugulospora</i>	3	2.5–5%				
<i>Orbilbia xanthoguttulata</i> (Europe)	8	0.6–3.5%			4–6%	
<i>Orbilbia succulenticola</i>	11	0–1%				
<i>Orbilbia dryadum</i> s.str.	5	0–1.4%			6.5–6.7%	
<i>Orbilbia</i> aff. <i>dryadum</i> (<i>Ulex</i> bark)	1	–				
<i>Orbilbia eucalypti</i> (10 genotypes)	17	0–2.7%		2.3–7.5%	4–11.5%	13–23%
<i>Orbilbia plurivacuolata</i>	2	1.1%			9–10%	
<i>Orbilbia cejpui</i> s.str. (<i>Salix/Sorbus</i>)	4	0–0.4%				16–16.5%
<i>Orbilbia</i> cf. <i>cejpui</i> (<i>Fagus/Clematis</i>)	1	–				
<i>Orbilbia tremulae</i>	5	0(–0.6)%			15–16%	
<i>Dicranidion inaequale</i>	1	–				
<i>Orbilbia xanthostigma</i> s.str.	9	0(–0.6)%		6.3–15.5%	~16–20%	
<i>Orbilbia</i> cf. <i>xanthostigma</i> (New Zealand)	15	0–3.8%	10–17.5%			
<i>Orbilbia leucostigma</i> s.str.	3	0(–0.2)%		6.5–6.8%		
<i>Orbilbia</i> cf. <i>leucostigma</i> (N-America)	1	–				
<i>Orbilbia auricolor</i> s.str.	16	0–2%			8–10%	
<i>Orbilbia cladodes</i> (<i>O. auricolor</i> s.auct.)	7	0.2–1.5%				
<i>Orbilbia oligospora</i> (8 genotypes)	~130	0–1%			1.3–3%	
<i>Arthrobotrys musiformis</i> s.str. (A)	10	0–1.5%			4.8–6.5% to B and C	
<i>Arthrobotrys</i> aff. <i>musiformis</i> (B)	7	0–1.3%		3.6–4.2%		
<i>Arthrobotrys</i> aff. <i>musiformis</i> (C)	2	0%				
<i>Gamsylella cionopaga</i> (c1)	6	0.2–0.8%			2.8–4.2%	
<i>Gamsylella cionopaga</i> (interm.)	3	0.6–1.2%				
<i>Gamsylella cionopaga</i> (c2)	6	0.4–1.2%				

Table S4. Variation in stem-loop B8 semi-conserved region of 5.8S rDNA (pos. 117–138, starting with AAACTTT by omitting rare inserts). The reverse primer Orb28s2R is here given in forward direction (reverse complement) in order to match current sequence databases. Non-orbiliaceous taxa found with BLAST in GenBank as showing the same motif are given in the middle column, indicating independent, convergent mutations at the same loci.

<i>Orbiliomycetes</i>	Other classes of fungi	Stem-loop B8 (pos. 117–138 of 5.8S)
<i>Dactylellina</i> aff. <i>haptotyla</i> BRC 34374, YMF 1.00543		GCCCAACGGTATTCCGGTGGGC
<i>Da. haptospora</i>		GCCCACTGGTATTCCATTGGGC
<i>Orbilina sarothammi</i> , <i>Da. apiculata</i>		GCCCACTGGTATTCCGGTGGGC
<i>oxyspora-heptameres</i> clade, <i>D. cylindrospora</i>		GCCCATAGGTATTCCTTTGGGC
<i>O. bembicodes</i> CCRC 33278 & SG070, <i>O. bomiensis</i> , <i>O. pseudobrevistipitata</i> , uncult. <i>Orbilina</i> sp. (O18 P1G19), <i>O. corculispora</i> G.M. 2018-09-12		GCCCATCGGTATTCCGATGGGC
<i>O.</i> sp. (<i>Acacia Hemiorbilina</i> 8sp. #1123a), uncult. <i>Orbilina</i> sp. (O18 p.p.maj.)		GCCCAACGGTATTCCGATGGGC
<i>O. polyspora</i>		GCCCATCGGTATTCCGGTGGGC
<i>Gamsylella</i> p.p.maj., <i>O. vermiformis</i>		GCCCATCGGTATTCCGTTGGGC
<i>rectispora-beltraniae</i> clade p.p., <i>O. pseudodorsalis</i> , <i>O. cupressi</i> , <i>O. epipora</i> , <i>cladodes-botryosporus</i> clade, <i>Arthrobotrys koreensis</i> , <i>O. aurantiorubra</i> , <i>O. jugulospora</i> (Ethiopia), <i>O.</i> sp. B.L. 4099 (<i>Commatoideae</i>), <i>O. phragmotricha</i>		GCCCATCGGTATTCCTTTGGGC
Uncult. 1045 (Texas, O30)		GCCCATTAGTATTCCTTTGGGC
<i>Da.</i> cf. <i>asthenopaga</i> (BCRC 34369)		GCCCATTGGCATTCCATTGGGC
<i>Orbilina comma</i>		GCCCATTGGTACTCCTTTGGGC
<i>Dr. bembicodes</i> 1045 (Latvia)		GCCCATTGGTATCCCGATGGGC
<i>rhamni-fraxini</i> clade, <i>O. pseudoeuphorbiae</i> , <i>O. atlantis</i> , <i>O.</i> aff. <i>clavispora</i> (BN1-14), <i>Dactylellina</i> p.p.maj., <i>Gamsylella</i> sp. 8178, <i>Drechslerella</i> p.p.maj., <i>O. ovoidea</i>		GCCCATTGGTATTCCATTGGGC
sections <i>Hemiorbilina</i> p.p.maj., <i>Ovoideae</i> p.p., <i>Orbilina</i> p.p., series <i>Xanthoguttulatae</i> , series <i>Regales</i> p.p., <i>Arthrobotrys polycephalus</i> , <i>A. nonseptatus</i> , <i>O. bembicodes</i> H.B. 7165b, <i>Dactylellina</i> aff. <i>phymatopaga</i>		GCCCATTGGTATTCCGATGGGC
series <i>Arthrobotrys</i> p.p.maj., <i>rectispora-beltraniae</i> clade p.p., <i>O. jugulospora</i> p.p., <i>O. rubella</i>		GCCCATTGGTATTCCTTTGGGC
<i>O. ungulata</i>		GCCCCATGGTATTCCGTAGGGC
<i>O. lentiformis</i> (H.B. 6569c), <i>O. pluristomachia</i>		GCCCCCTGGCATTCCGGCGGGC
section <i>Lentiformes</i> p.p.maj.		GCCCCCTGGTATTCCGGCGGGC
Uncult. (Italy, U3)		GCCCCCTCGGTATTCCGACGGGC
Uncult. (Madagascar & Panama, B2)		GCCCCCTCGGTGACCGTGGGGC
<i>vinosa-velutina</i> clade p.p.maj.		GCCCCCTCGGTATTCCGGCGGGC
<i>O. subulvinosa</i>		GCCCCCTCGGTATTCCGGCGGGC
Uncult. (Papua New Guinea, B3)		GCCCCCTGGTAGTCTGGGGGGC
<i>Hyalorbilina</i> aff. <i>erythrostigma</i> (Illinois, H29)	various fungi	GCCCCCTGGTATTCCGAGGGGC
series <i>Albovinosae</i> p.p., series <i>Regales</i> p.p., <i>O.</i> cf. <i>caudata</i>		GCCCCCTGGTATTCCGATGGGC
Uncult. (USA & Norway, H28)		GCCCCCTGGTATTCCGGGGGGC
<i>Orbilina guyanensis</i>		GCCCGCCGGCAGTCCGGCGGGC
<i>Orbilina dryadum</i> D.H.P. 107, G.M. 2014-04-23		GCCCGTCCGGCATTCCGACGGGC
<i>Orbilina dryadum</i> p.p., <i>O.</i> sp. B.L. 748		GCCCGTGGGCATTCCGACGGGC
<i>Orbilina</i> aff. <i>dryadum</i> HB. 6876a		GCCCGTCCGTATTCCGACGGGC
series <i>Orbilina</i> p.p.maj., <i>O. mirabilis</i> , <i>O. subovoidea</i> , Uncult. (Guyana O1, Puerto Rico O17, Sweden O16)		GCCCGTGGTATTCCGACGGGC
<i>O. crenatofalcata</i>		GCCCCCTCGGCATTCCGAGGGC
<i>O. scolecospora</i> H.B. 9154, <i>O. laevimarginata</i> p.p.		GCCCCCTCGGTATTCCGAGGGC
<i>O. purshiae</i> , <i>O. scolecospora</i> B.L. 243, <i>O. laevimarginata</i> YMF 1.01833		GCCCCCTGGTATTCCGAGGGC

<i>O. crenatomarginata</i>		GCCCCTTCGGGATTCCGGAGGGC
<i>Hyalorbilia tortuosa</i> , <i>H. hergiswiliana</i> , Uncult. H27		GCCCCTCTGGGATTCCGGGGGGC
<i>H. aff. hergiswiliana</i>		GCCCCTCTGGGATTCCGGAGAGC
Uncult. (Puerto Rico, Papua New Guinea, B5)		GCCCCTTCGGGATTCCGAGGGGC
<i>Serpentinae-Habrostrictis</i> clade p.p., series <i>Abutilones</i> , <i>Poitevinicae</i> , <i>O. cf. paracaudata</i>		GCCCCTTTGGGATTCCGAAGGGC
<i>Serpentinae-Habrostrictis</i> clade p.p., series <i>Piliferae</i> p.p.maj.		GCCCCCTTGGGATTCCGAAGGGC
<i>Dactylella qiluensis</i>		GCCATATAGGTATTCCTTTAGGC
<i>cardui-rhopalota</i> -clade		GCCTATTGGTATTCCATTAGGC
<i>O. gemma</i>		GCCTATTGGTATTCCGATTAGGC
Uncult. (Puerto Rico, H5)		GCCTCCCGGTATTCCGGAGAGC
Uncult. (Brazil, clade H4)		GCCTCCTGGGATTCCGGGAGGC
Uncult. (Netherlands 2330, H3; USA, H4)		GCCTCCTGGGATTCCGGGAGGC
<i>Hyalorbilia</i> p.p.maj.		GCCTCCTGGGATTCCGGGAGGC
<i>Retiarius bovicornutus</i> , uncult. (clades A1–5)		GCCTCCTGGGATTCCGGGGGGC
<i>Bryorbilia arenicola</i> , uncult. 982 (H10)	basidiomycetes	GCCTCTTGGGATTCCGAGAGGC
<i>Retiarius superficialis</i> , <i>R. revayae</i> , uncult. (clades R1, R3), <i>Amphosoma</i> p.p., uncult. (Texas, clade A6)		GCCTCTTGGGATTCCGAGGGGC
uncult. (California, B1)		GCCCTCTGGGAGGACATGGGGC
uncult. <i>Hyalorbilia</i> spp. (V3–6)		GCCTGCTGGGATTCCGGTAGGC
<i>H. berberidis</i> , uncult. (H7–8)		GCCTTCCGGGATTCCGGGAGGC
uncult. BE8 (China, H6)		GCCTTCTGGGATTCCGGTAGGC
<i>H. erythrostigma</i> H.B. 9077a, uncult. G1 FF6 (H8)		GCCTTCTGGGATTCCGGAGAGC
<i>H. fusarioides</i> , <i>H. spermatophaga</i> , <i>H. fusarina</i> , <i>H. leguminacea</i> , <i>H. latispora</i> , uncult. (V1–V2, H4, H9, H30–H32)	<i>Pezizales</i>	GCCCTCTGGGATTCCGGGAGGC
<i>H. rotifera</i> , uncult. (V7–13)		GCCCTCTGGGATTCCGGTAGGC
uncult. (Colombia, U2)		GCCTTGTTGGGATTCCGCAGGGC
series <i>Helicoon</i> , <i>O. tianmushanensis</i> , <i>Orbilina cylindrosoma</i> , <i>O. bannaensis</i> , <i>O. caulicola</i> , <i>Hyalorbilia</i> aff. <i>multiguttulata</i> , <i>H. multiguttulata</i> , <i>Hyalorbilia</i> sp. uncult. (British Guyana, H13)		GCCTTTTGGGATTCCGAAAGGC
<i>Orbilina</i> aff. <i>sinensis</i> CBS 917.72	<i>Septobasidium</i> , <i>Sebacina</i> etc.	ACCPTTTTGGGATTCCGAAAGGT
series <i>Pseudotriporiconidium</i> p.p.maj., <i>O. yuanensis</i>	basidiomycetes, <i>Lecanoromycetes</i> etc.	ACCPTTTTGGGATTCCGAAAGGT
<i>Orbilina sinensis</i> YMF 1.01843	<i>Sebacina</i>	ACCPTTTTGGGATTCCGAAAGGT
<i>Mycoceros</i> , <i>Lilapila</i> , <i>H. erythrostigma</i> p.p.maj., <i>H. orbiliicola</i> , <i>H. fusispora</i> , <i>H. juliae</i> , <i>H. subfusispora</i> incl. H14), <i>H. oviparasitica</i> , <i>H. brevistipitata</i> s.l., <i>H. tenuifusaria</i> (incl. H18–H19), <i>H. ulicicola</i> s.l., uncult. H10 (1168), H11–13, H17, H20–23, H25–26, H33, U1, R4	basidiomycetes	GCCTTTTGGGATTCCGAGAGGC
<i>O. pseudoaristata</i>		GCCPTTTTGGGATTCCGATAGGC
<i>O. myrionamibica</i>	basidiomycetes, <i>Mortierellomycetes</i>	GCCTCTTGGGATTCCGAAAGGC
<i>O. sp.</i> B.L. 6179 (series <i>Orbilina</i>)	–	GCCTGTTGGGATTCCGACAAGC
uncult. (Chile, clade B4)	<i>Wickerhamomyces</i> , ? <i>Mortierellales</i> , ? <i>Eurotiales</i>	GCCTTTTGGGATTCCGGAAGGC
uncult. (Panama, GL28511, U1)	–	GCCTTTTTGTATTCCGAGAGGC
<i>Dactylellina haptotyla</i> (20 sequences)	–	GCTCACC GGATTCCGGTAGC
<i>Lecophagus ellipsoideus</i> , uncult. (L4–5)	uncult. FJ386865 (basidiomycete)	GCTCCCTGGGATTCCATAGGAGC
<i>L. muscicola</i> , <i>L. longisporus</i> , <i>L. vermicola</i> , uncult. (L1–3)	mainly <i>Exobasidiomycetidae</i>	GCTCCCTGGGATTCCATAGGAGC

Table S6. Species of *Orbiliomycetes* from Macaronesia, observed on branches and logs or rarely herbaceous stems of identified hosts from remnants of the (sub)humid laurel (*Lauro-novocanariensis-Perseetum indicae*) and ridge-crest forest (*Ilici canariensis-Ericetum platycodonis*) or fayal-brezal (*Myrica fayae-Ericetum arboreae*) of Tenerife (Canary Islands) and Madeira, mainly based on collections and studies by L. Quijada, E. Beltrán-Tejera, and J.P. Priou. * = from Quijada et al. (2016). ? = identity uncertain.

Species	Substrate	Humidity	Wood/bark
<i>Hyalorbilia berberidis</i>	<i>Ilex canariensis</i>	hygric	wood
<i>Hyalorbilia brevistipitata</i>	<i>Ocotea foetens</i>	hygric	wood
<i>Hyalorbilia erythrostigma</i>	<i>Prunus lusitanica</i> var. <i>hixa</i>	hygric	pyrenomycete on bark
<i>Hyalorbilia inflatula</i>	<i>Apollonias barbujaana</i> *, <i>Ilex canariensis</i> *, <i>Laurus novocanariensis</i> *, <i>Ocotea foetens</i>	hygric	wood & bark
<i>Hyalorbilia lunata</i>	<i>Erica arborea</i> , <i>Ilex canariensis</i> , <i>Laurus novocanariensis</i> , <i>Myrica fayae</i> , <i>Ocotea foetens</i> , <i>Picconia excelsa</i>	hygric	wood & bark
<i>Hyalorbilia polypori</i>	<i>Erica arborea</i> , <i>Laurus novocanariensis</i> , <i>Myrica fayae</i> , <i>Ocotea foetens</i> , <i>Picconia excelsa</i> , <i>Prunus lusitanica</i> var. <i>hixa</i>	hygric	wood, also <i>Phellinus</i>
<i>Hyalorbilia tortuosa</i>	<i>Erica arborea</i> , <i>Myrica fayae</i>	hygric	wood
<i>Orbilia dryadum</i>	<i>Erica platycodon</i> , <i>Myrica fayae</i> , <i>Ocotea foetens</i>	hygric	wood
<i>Orbilia caulicola</i>	<i>Rubus grandifolius</i>	xeric	herbaceous
<i>Orbilia eucalypti</i>	<i>Laurus novocanariensis</i> *	?hygric	wood
<i>Orbilia leucostigma</i> s.l.	<i>Ocotea foetens</i>	hygric	wood
<i>Orbilia rubrovacuolata</i>	<i>Laurus novocanariensis</i>	hygric	wood & bark
<i>Orbilia ?tenuissima</i>	<i>Laurus novocanariensis</i>	hygric	wood
<i>Orbilia vibrioides</i>	<i>Erica</i> sp., <i>Laurus novocanariensis</i>	xeric	wood & bark
<i>Orbilia xanthostigma</i> s.l.	<i>Apollonias barbujaana</i> *, <i>Erica arborea</i> *, <i>Ilex canariensis</i> *, <i>Myrica fayae</i> *, <i>Laurus novocanariensis</i> *, <i>Ocotea foetens</i> , <i>Persea indica</i> *, <i>Prunus lusitanica</i> *	hygric	wood (& bark)