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### Supplementary materials

**Table S1.** Synoptic table of taxa relative frequencies in the five vegetation assemblages of *Fagus sylvatica* on Mt. Menikio (A to E). Relative frequencies with bold typescript indicate that taxa differentiate positively the corresponding vegetation assemblages, with italic typescript that they differentiate them negatively and with regular typescript that they do not differentiate the corresponding vegetation groups. Taxa with relative frequency smaller than 20% in any column have been omitted.

Species assemblage	Species	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
No of plots	abbrev.	10	22	9	7	12
<u>Diagnostic taxa of assemblage A (calcicolous and thermophilous species)</u>						
<i>Epipactis helleborine</i>	EpipHel	<b>90</b>	36	11	29	17
<i>Epipactis microphylla</i>	EpipMic	<b>40</b>	9	11	0	0
<i>Hypopitys monotropa</i>	HypoMon	<b>60</b>	9	11	29	<b>50</b>
<i>Brachypodium sylvaticum</i> ssp. <i>sylvaticum</i>	BracS-S	<b>30</b>	14	11	0	0
<u>Diagnostic taxa of assemblages A and C (calcicolous species)</u>						
<i>Cephalanthera rubra</i>	CephRub	<b>90</b>	23	<b>67</b>	14	0
<i>Lilium martagon</i>	LiliMar	<b>30</b>	0	<b>67</b>	0	0
<i>Cephalanthera damasonium</i>	CephDam	<b>80</b>	18	<b>56</b>	14	0
<i>Helleborus odorus</i> ssp. <i>cyclophyllus</i>	HellO-C	<b>50</b>	27	<b>56</b>	14	0
<i>Lonicera xylosteum</i>	LoniXyl	<b>20</b>	5	<b>22</b>	0	0
<u>Diagnostic taxa of assemblage B (thermophilous, nitrophilous species)</u>						
<i>Pteridium aquilinum</i>	PterAqu	30	<b>95</b>	44	<b>86</b>	17
<i>Rubus hirtus</i>	RubuHir	20	<b>95</b>	11	57	25
<i>Carex sylvatica</i>	CareSyl	0	<b>32</b>	0	0	0
<i>Sambucus nigra</i>	SambNig	0	<b>36</b>	11	0	0

<i>Urtica dioica</i>	UrtiDio	10	<b>27</b>	0	0	0
<i>Epilobium lanceolatum</i>	EpilLan	0	<b>27</b>	11	0	8
<i>Carpinus orientalis</i>	CarpOri	0	<b>23</b>	0	14	0

Diagnostic taxa of assemblages B and C (mostly species of beech forests)

<i>Actaea spicata</i>	ActaSpi	10	<b>32</b>	<b>56</b>	0	0
<i>Rosa canina</i>	RosaCan	0	<b>45</b>	<b>33</b>	0	8
<i>Fragaria vesca</i>	FragVes	10	<b>36</b>	<b>22</b>	0	0
<i>Geranium robertianum</i>	GeraRob	10	<b>32</b>	<b>22</b>	0	0
<i>Epilobium montanum</i>	EpilMon	0	<b>32</b>	<b>22</b>	0	17
<i>Galium odoratum</i>	GaliOdo	10	<b>41</b>	<b>44</b>	29	8

Diagnostic taxa of assemblage C (mostly species of ravine forests, calcicolous, oceanic and moist indicator species)

<i>Mercurialis perennis</i>	MercPer	40	5	<b>100</b>	0	0
<i>Lathyrus venetus</i>	LathVen	10	9	<b>78</b>	14	0
<i>Tilia platyphyllos</i>	TiliPla	0	0	<b>44</b>	0	0
<i>Ilex aquifolium</i>	IlexAqu	0	5	<b>44</b>	0	0
<i>Acer platanoides</i>	AcerPla	0	9	<b>44</b>	0	0
<i>Aquilegia vulgaris</i>	AquiVul	0	0	<b>33</b>	0	0
<i>Fritillaria pontica</i>	FritPon	0	0	<b>33</b>	0	0
<i>Euonymus latifolius</i>	EuonLat	20	68	<b>100</b>	29	25
<i>Acer hyrcanum</i>	AcerHyr	30	9	<b>78</b>	29	8
<i>Viola sieheana</i>	ViolSie	0	14	<b>44</b>	0	0
<i>Asplenium adiantum-nigrum</i>	AsplAdi	0	5	<b>67</b>	14	<b>33</b>
<i>Epipactis leptochila</i> ssp. <i>naousaensis</i>	EpipL-N	0	5	<b>33</b>	0	0
<i>Fraxinus ornus</i>	FraxOrn	20	55	<b>100</b>	43	<b>75</b>
<i>Platanthera chlorantha</i>	PlatChl	0	5	<b>44</b>	14	0
<i>Acer campestre</i>	AcerCam	0	9	<b>44</b>	14	0
<i>Ajuga reptans</i>	AjugRep	0	14	<b>44</b>	0	8
<i>Heracleum sphondylium</i>	HeraSph	20	5	<b>44</b>	0	0
<i>Milium effusum</i>	MiliEff	0	18	<b>33</b>	0	0
<i>Euonymus europaeus</i>	EuonEur	0	9	<b>22</b>	0	0
<i>Malus sylvestris</i>	MaluSyl	0	9	<b>22</b>	0	0

Diagnostic taxa of assemblages A, B and C (oceanic, thermophilous and moist indicator species)

<i>Hedera helix</i>	HedeHel	<b>40</b>	<b>73</b>	<b>100</b>	<b>0</b>	<b>17</b>
<i>Daphne laureola</i>	DaphLau	<b>60</b>	<b>36</b>	<b>78</b>	<b>0</b>	<b>0</b>
<i>Clematis vitalba</i>	ClemVit	<b>20</b>	<b>45</b>	<b>67</b>	<b>0</b>	<b>0</b>

Diagnostic taxa of assemblages A, B, C and D (species of deciduous broadleaved forests; mainly beech forests)

<i>Aremonia agrimonoides</i> ssp. <i>agrimonoides</i>	AremA-A	<b>80</b>	<b>64</b>	<b>89</b>	<b>71</b>	<b>0</b>
<i>Viola riviniana</i>	ViolRiv	<b>80</b>	<b>86</b>	<b>100</b>	<b>86</b>	<b>25</b>
<i>Physospermum cornubiense</i>	PhysCor	<b>40</b>	<b>23</b>	<b>89</b>	<b>86</b>	<b>0</b>
<i>Rosa arvensis</i>	RosaArv	<b>60</b>	<b>59</b>	<b>67</b>	<b>100</b>	<b>0</b>
<i>Euphorbia amygdaloides</i> ssp. <i>amygdaloides</i>	EuphA-A	<b>30</b>	<b>59</b>	<b>56</b>	<b>100</b>	<b>0</b>
<i>Polygonatum odoratum</i>	PolyOdo	<b>40</b>	<b>41</b>	<b>78</b>	<b>71</b>	<b>0</b>
<i>Cardamine bulbifera</i>	CardBul	<b>40</b>	<b>82</b>	<b>67</b>	<b>43</b>	<b>8</b>
<i>Sanicula europaea</i>	SaniEur	<b>20</b>	<b>50</b>	<b>44</b>	<b>57</b>	<b>0</b>

Diagnostic taxa of assemblages B, C and D (species of deciduous broadleaved forests; mainly oak forests)

<i>Melica uniflora</i>	MeliUni	<b>10</b>	<b>32</b>	<b>67</b>	<b>100</b>	<b>0</b>
<i>Prunus avium</i>	PrunAvi	<b>0</b>	<b>50</b>	<b>56</b>	<b>57</b>	<b>17</b>
<i>Lathyrus laxiflorus</i>	LathLax	<b>10</b>	<b>41</b>	<b>67</b>	<b>57</b>	<b>8</b>
<i>Veronica chamaedrys</i> ssp. <i>chamaedrys</i>	VeroC-C	<b>0</b>	<b>32</b>	<b>33</b>	<b>29</b>	<b>8</b>
<i>Viola alba et odorata</i>	Viola#O	<b>20</b>	<b>36</b>	<b>56</b>	<b>43</b>	<b>8</b>

Diagnostic taxon of assemblages B, C, D and E

(indicator species of oak and thermophilous beech forests)

<i>Luzula forsteri</i>	LuzuFor	<b>0</b>	<b>32</b>	<b>33</b>	<b>71</b>	<b>42</b>
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Diagnostic taxa of assemblages C and D (species of oak and thermophilous ravine forests, mostly moist indicator species)

<i>Sorbus torminalis</i>	SorbTor	<b>10</b>	<b>5</b>	<b>100</b>	<b>86</b>	<b>0</b>
<i>Primula vulgaris</i>	PrimVul	<b>0</b>	<b>18</b>	<b>67</b>	<b>86</b>	<b>0</b>
<i>Cornus mas</i>	CornMas	<b>30</b>	<b>41</b>	<b>100</b>	<b>71</b>	<b>8</b>
<i>Lathyrus niger</i>	LathNig	<b>0</b>	<b>5</b>	<b>33</b>	<b>71</b>	<b>8</b>

<i>Carpinus betulus</i>	CarpBet	10	5	<b>33</b>	<b>71</b>	0
<i>Dioscorea communis</i>	DiosCom	0	5	<b>56</b>	<b>29</b>	0
<i>Corylus avellana</i>	CoryAve	50	82	<b>100</b>	<b>100</b>	33
<i>Campanula trachelium</i> ssp. <i>athoa</i>	CampT-A	0	9	<b>33</b>	<b>43</b>	0
<i>Scutellaria columnae</i> ssp. <i>columnae</i>	ScutC-C	0	5	<b>33</b>	<b>29</b>	0
<i>Tilia tomentosa</i>	TiliTom	10	5	<b>33</b>	<b>43</b>	0
<i>Aegopodium podagraria</i>	AegoPod	0	9	<b>33</b>	<b>29</b>	0
<i>Campanula rapunculoides</i>	CampRap	20	9	<b>44</b>	<b>43</b>	0
<i>Cyclamen hederifolium</i>	CyclHed	0	14	<b>33</b>	<b>29</b>	0
<i>Bromus benekenii</i>	BromBen	0	14	<b>33</b>	<b>29</b>	0

Diagnostic taxa of the assemblage D (indicator species of mesic and thermophilous beech forests mainly of NE Greece)

<i>Pulmonaria rubra</i>	PulmRub	0	5	0	<b>71</b>	0
<i>Melittis melissophyllum</i>	MeliMel	0	0	22	<b>71</b>	0
<i>Quercus petraea</i> ssp. <i>polycarpa</i>	QuerP-P	10	23	11	<b>100</b>	42
<i>Potentilla micrantha</i>	PoteMic	10	59	44	<b>100</b>	33
<i>Symphytum tuberosum</i>	SympTub	0	18	0	<b>43</b>	0
<i>Festuca heterophylla</i>	FestHet	<b>30</b>	5	11	<b>43</b>	0
<i>Sedum cepaea</i>	SeduCep	0	5	0	<b>29</b>	8
<i>Lathyrus vernus</i>	LathVer	0	5	11	<b>29</b>	0

Diagnostic taxon of assemblages D and E (diagnostic taxon of beech forests of NE Greece)

<i>Carex digitata</i>	CareDig	50	50	22	<b>86</b>	<b>92</b>
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Diagnostic taxa of assemblage E (acidic or thermophilous species)

<i>Avenella flexuosa</i>	AvenFle	0	0	0	0	<b>50</b>
<i>Hieracium transiens</i> ssp. <i>erythrocarpum</i> et <i>H. rechingerorum</i>	HierE#R	0	0	0	0	<b>50</b>
<i>Luzula luzuloides</i>	LuzuLuz	20	<b>55</b>	11	14	<b>83</b>
<i>Veronica officinalis</i>	VeroOff	0	<b>36</b>	0	0	<b>42</b>
<i>Polypodium vulgare</i>	PolyVul	30	14	<b>56</b>	14	<b>83</b>
<i>Campanula persicifolia</i>	CampPer	0	0	0	14	<b>42</b>
<i>Hieracium olympicum</i> et <i>racemosum</i>	HierR#O	10	5	11	0	<b>50</b>
<i>Viscaria atropurpurea</i>	ViscAtr	0	5	0	0	<b>33</b>

<i>Hypericum cerastioides</i>	HypeCer	0	0	0	0	<b>25</b>
<i>Hieracium murorum</i>	HierMur	10	9	22	14	<b>58</b>
<i>Campanula patula</i> ssp. <i>patula</i>	CampP-P	0	18	11	14	<b>50</b>
<i>Quercus coccifera</i>	QuerCoc	10	9	0	0	<b>33</b>
<i>Juniperus communis</i>	JuniCom	0	9	0	14	<b>33</b>
<i>Orthilia secunda</i>	OrthSec	<b>20</b>	9	0	0	<b>25</b>
<i>Prunus cerasifera</i>	PrunCer	0	23	11	14	<b>42</b>
<u>Companion and common species</u>						
<i>Fagus sylvatica</i>	FaguSyl	100	100	100	100	100
<i>Neottia nidus-avis</i>	NeotNid	80	77	67	57	58
<i>Poa nemoralis</i>	Poa Nem	30	73	78	57	83
<i>Lactuca muralis</i>	LactMur	10	55	67	29	42
<i>Castanea sativa</i>	CastSat	10	32	33	29	33
<i>Dryopteris filix-mas</i>	DryoFil	20	36	33	14	8
<i>Moehringia trinervia</i>	MoehTri	0	18	33	43	42
<i>Euonymus verrucosus</i>	EuonVer	40	23	22	0	17
<i>Populus tremula</i>	PopuTre	30	18	0	43	8
<i>Asplenium trichomanes</i>	AsplTri	10	14	22	29	17
<i>Ligustrum vulgare</i>	LiguVul	20	18	22	0	0
<i>Acer pseudoplatanus</i>	AcerPse	10	9	33	14	0
<i>Dactylis glomerata</i>	DactGlo	0	18	22	0	8
<i>Crataegus monogyna</i>	CratMon	0	14	11	29	0
<i>Lamium maculatum</i>	LamiMac	10	9	22	0	0
<i>Ostrya carpinifolia</i>	OstrCar	20	9	11	0	0
<i>Cystopteris fragilis</i>	CystFra	0	0	22	14	0
<i>Luzula sylvatica</i>	LuzuSyl	20	0	11	0	0

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**Table S2:** Fragments' length (in base pairs), assignment and frequencies of the *Fagus sylvatica* haplotypes identified by three polymorphic microsatellites (ccmp10, ccmp7, ccmp4) on Mt. Menikio.

Haplotype	ccmp 10	ccmp 7	ccmp 4	Observations	%
h1	110	148	114	3	1.7
h2	115	146	115	9	5.1
h3	110	147	115	10	5.6
h4	110	148	115	129	72.6
h5	110	149	115	14	7.8
h6	110	150	115	8	4.5
h7	110	151	115	1	0.5
h8	110	148	116	2	1.1
h9	115	147	115	2	1.1
Total				178	100

**Table S3:** Analysis of Molecular Variance (AMOVA) for geographic groups (GGs) of *Fagus sylvatica* on Mt. Menikio using haplotype distance based on fragment length differences.

Partition of diversity (%)	Distance between haplotypes	
	Differences in fragment length	
Among GGs	35.22	
Among plots within GGs	20.92	
Within plots	43.86	
$\Phi_{st}$ (p-value)	0.352 (0.000)	

**Table S4:** Analysis of Molecular Variance (AMOVA) for plant assemblages of *Fagus sylvatica* on Mt. Menikio using haplotype distance based on fragment length differences.

Partition of diversity (%)	Distance between haplotypes	
	Differences in fragment length	
Among assemblages	42.72	
Among plots within assemblages	20.07	
Within plots	37.21	
$\Phi_{st}$ (p-value)	0.427 (0.000)	