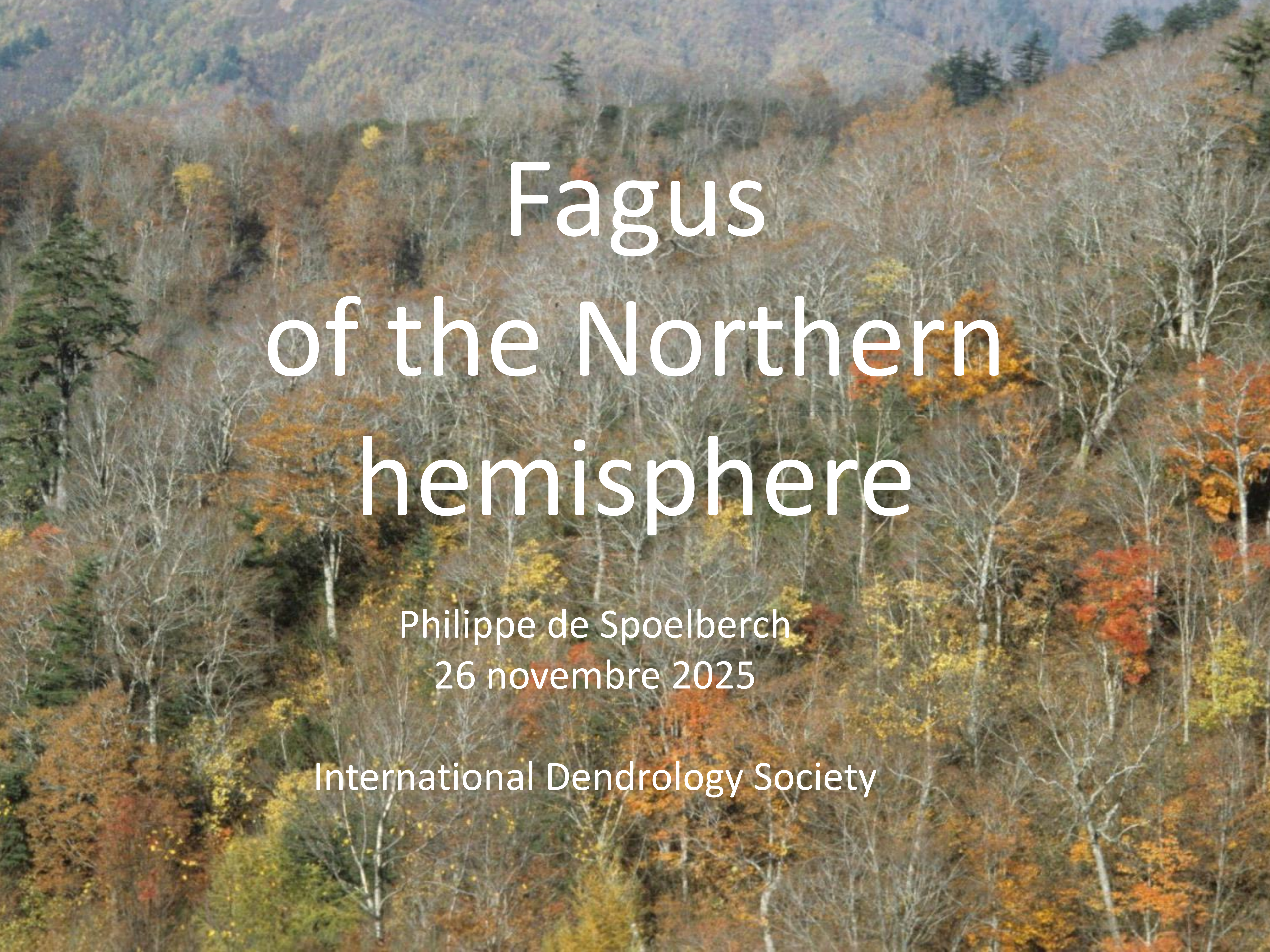
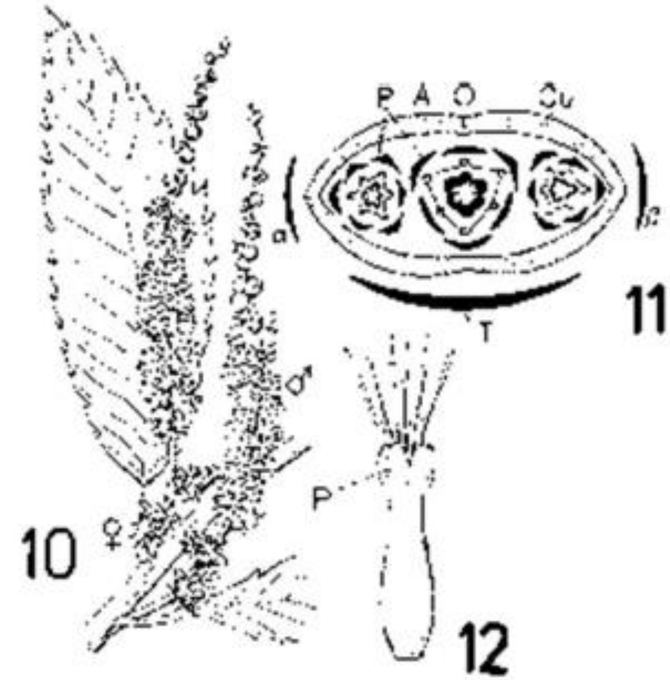


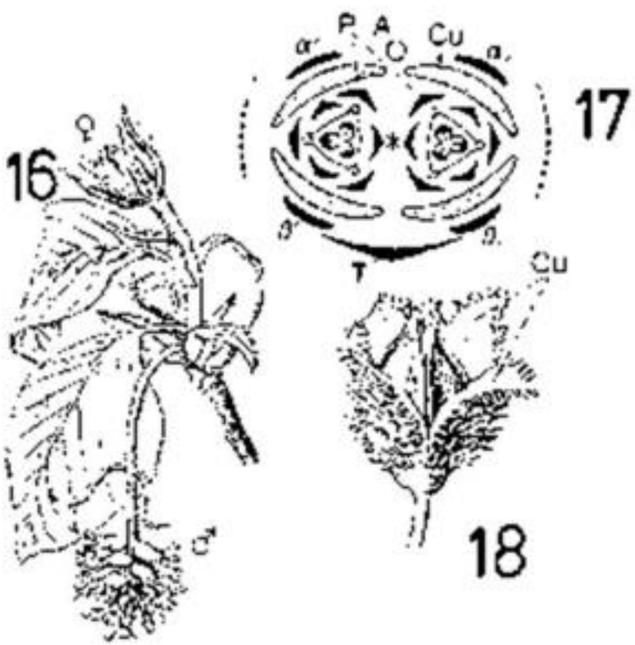
Fagus of the Northern hemisphere

Philippe de Spoelberch

26 novembre 2025

International Dendrology Society


P A O Cu
a
a
11
T
♂
P
10 ♀
12


a P A O Cu a
17
16 ♀
a
a
T
Cu
♂
18


Castanea


Fagus

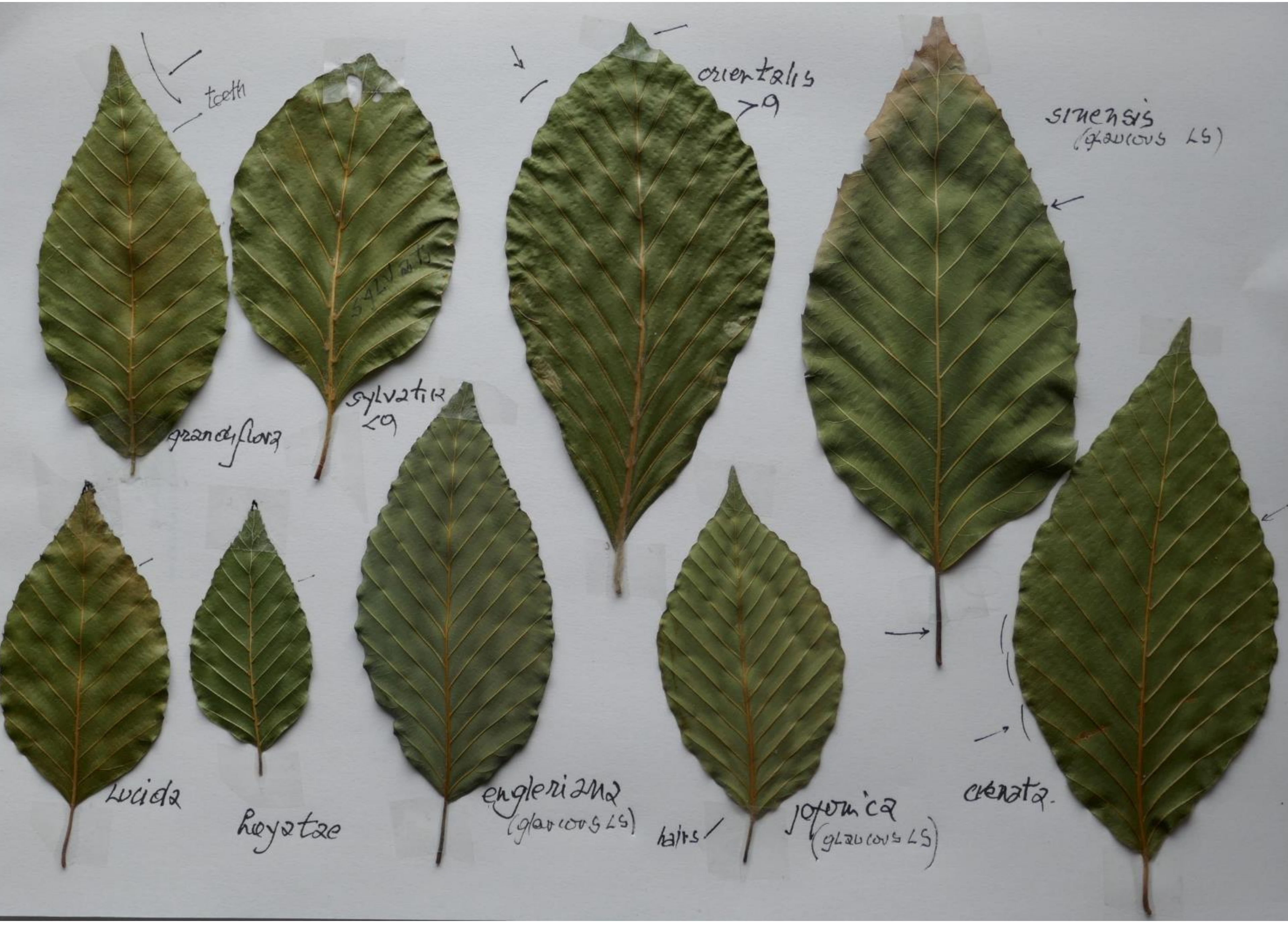

Quercus

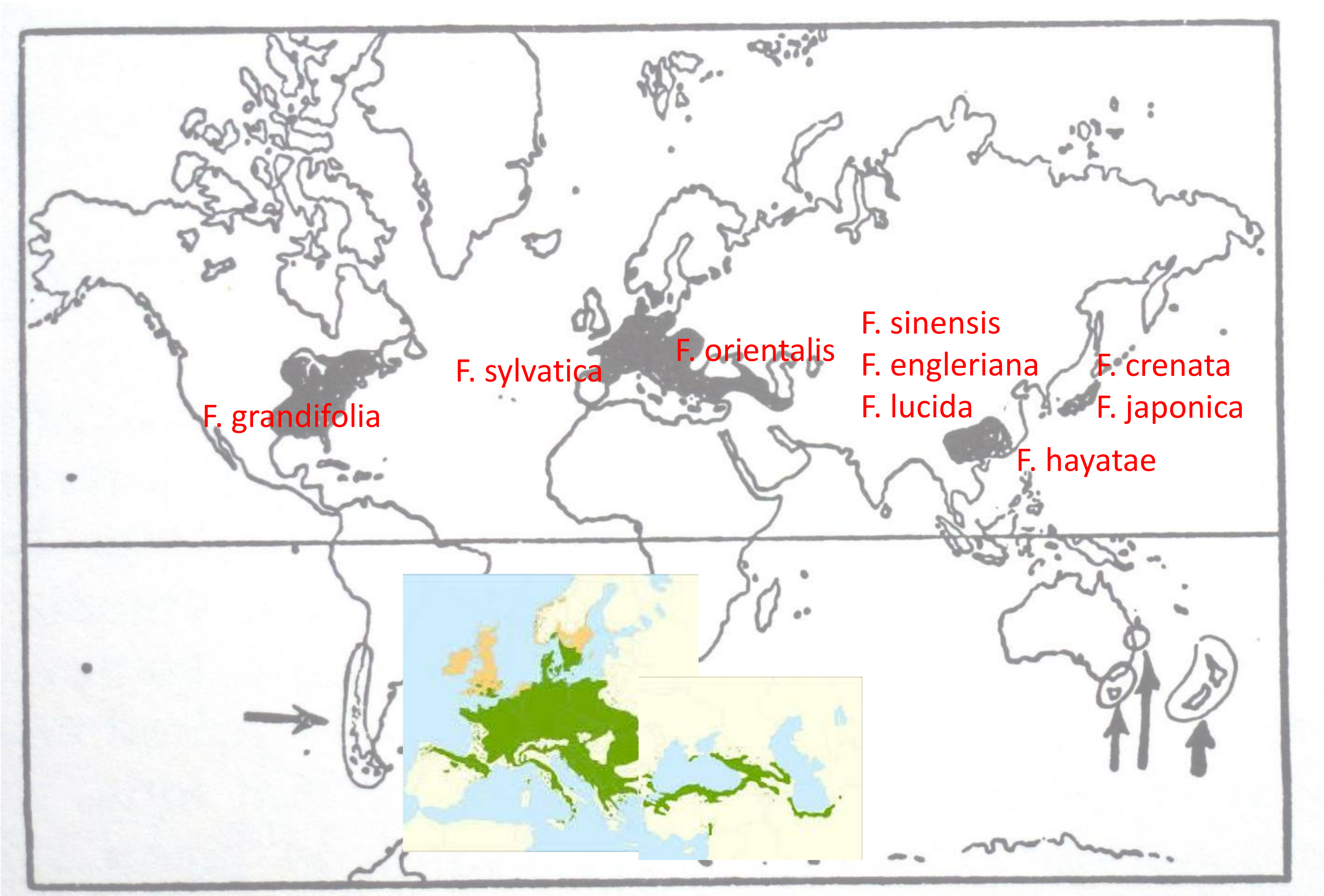
Fagus, the only genus having epigeal germination : the cotyledon appears above ground.
Other Fagaceae (Castanea, Quercus etc): hypogeal germination (underground cotyledon)

Fagus, the only genus having epigeal germination : the cotyledon appears above ground.
Other Fagaceae (Castanea, Quercus etc): hypogeal germination (underground cotyledon)

Fagus grandifolia (Rice Sanctuary, Peru, MA,USA) - 04286-wld-174 - 2007.0417

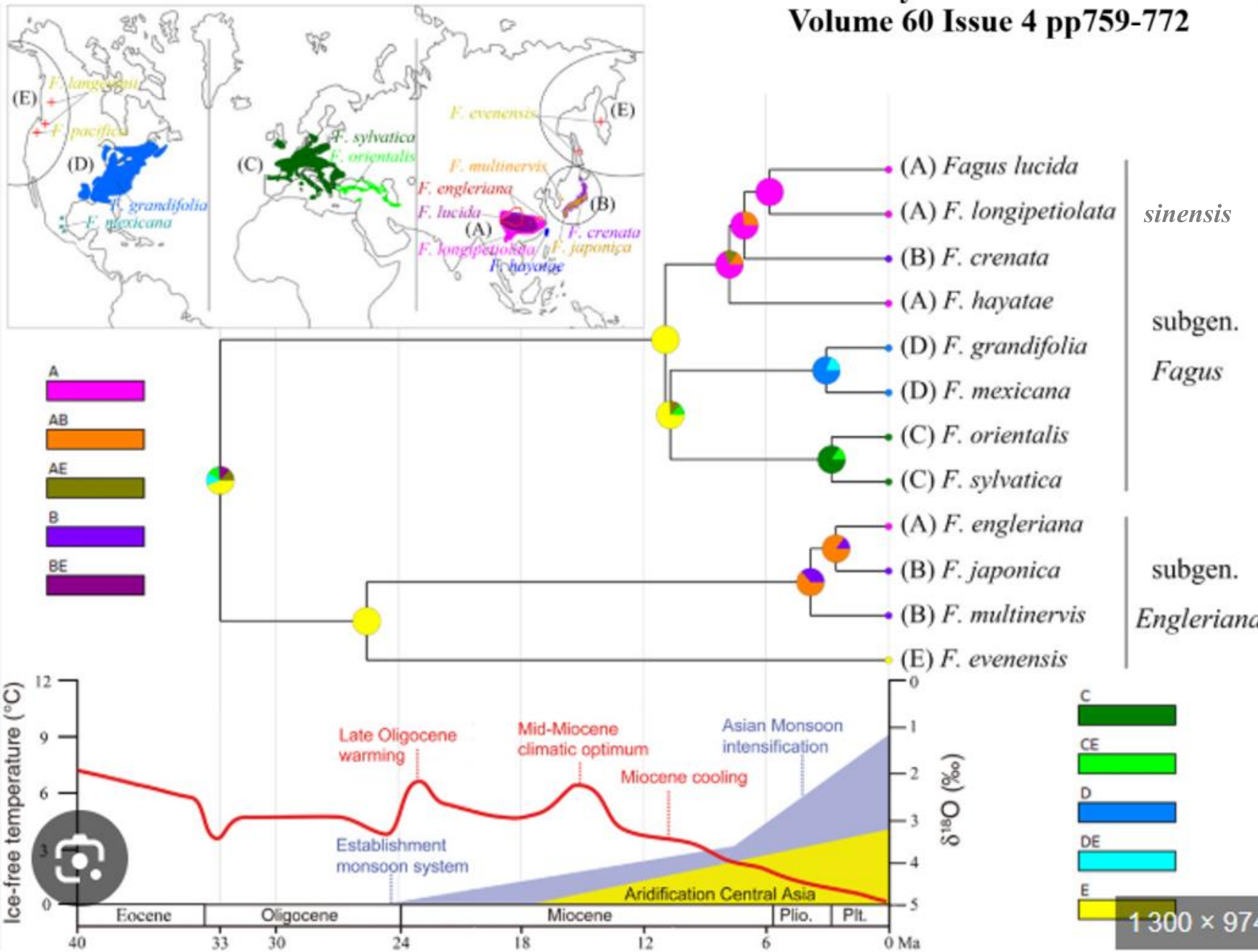
Fagus crenata (Onuma Pk. Hokkaido,Jp) - 94327-wld-pON - 2005.0603

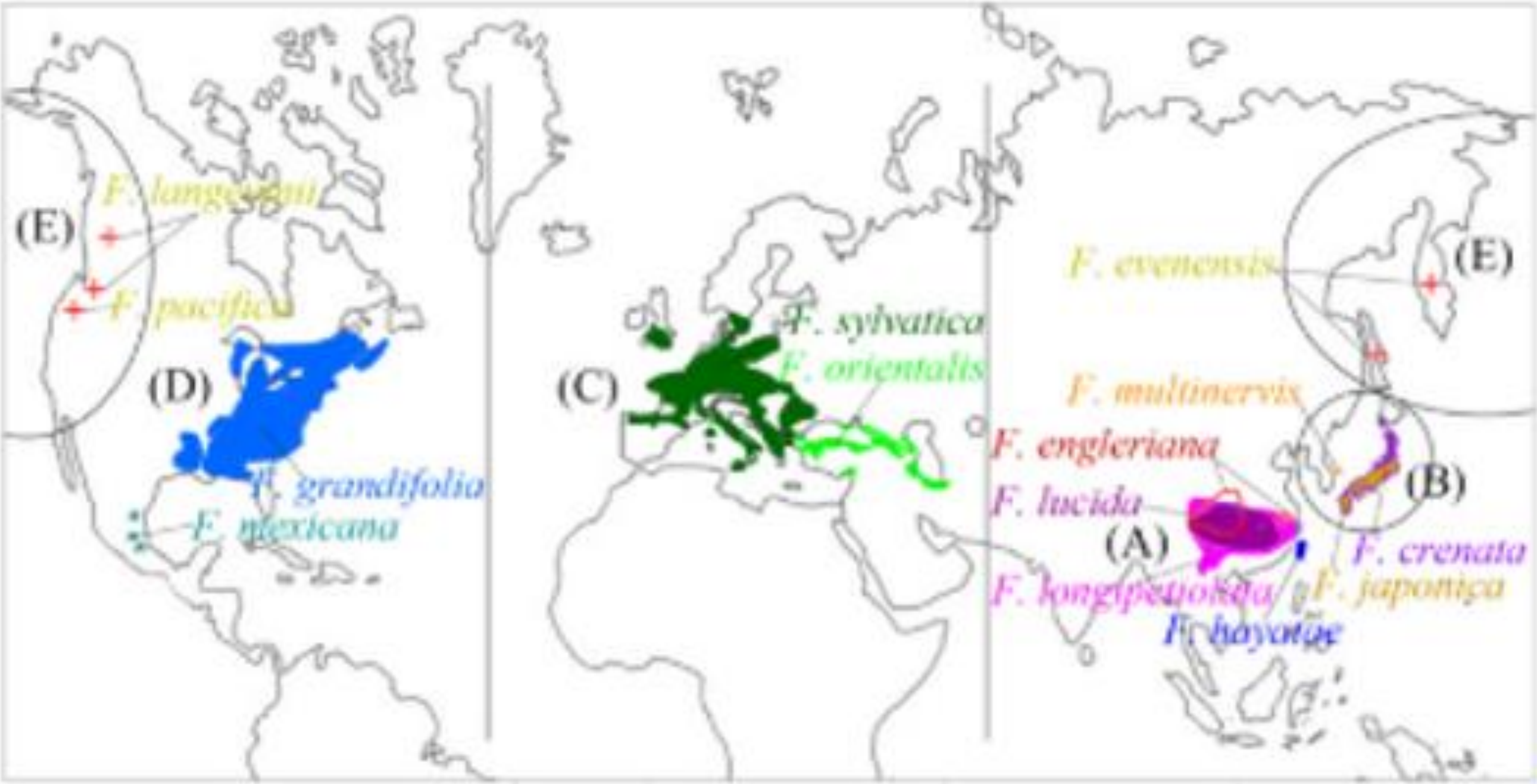

teeth
orientalis
>9
sinensis
(glaucous LS)
sylvatica
<9
grandiflora
lucida
hayatae
engleriana
(glaucous LS)
hairs
japonica
(glaucous LS)
crenata.



F. sinensis
F. engleriana
F. lucida
F. orientalis
F. sylvatica
F. grandifolia
F. crenata
F. japonica
F. hayatae

Journal of Systematics and Evolution
Volume 60 Issue 4 pp759-772





(E)
F. pacifica
(D)
F. grandifolia
F. mexicana
(C)
F. sylvatica
F. orientalis
(E)
F. evenensis
F. multinervis
F. engleriana
F. lucida
(A)
(B)
F. crenata
F. japonica

Fig. 5. Reconstruction of *Fagus langevinii* as it may have appeared in life. Diagram by Johan Gerhard Marx.

margins. Perhaps the wings were variable in their presence or absence as in some modern species (Denk and Meller 2001), or these thin flanges may have been lost to abrasion or rotting. One of the specimens shows a faint halo of mineralization surrounding the nut in the position where the wing might have been (Fig. 1L). The wing is considered to be an important feature separating different species of *Fagus*, but in fossils the loss by abrasion must also be con-

(1984) and Kvaček and Walther (1991*a*, 1991*b*) recognized four groups within the genus. These are partially consistent with a phylogenetic analysis of nine extant species of *Fagus* (Manos and Stanford 2001), based on ITS and cpDNA. Nucleotide variation was relatively low, giving only 24 informative characters. Designating *Trigonobalanus verticillata* as an outgroup, they found a single, well-supported, most parsimonious tree. The results are difficult to compare

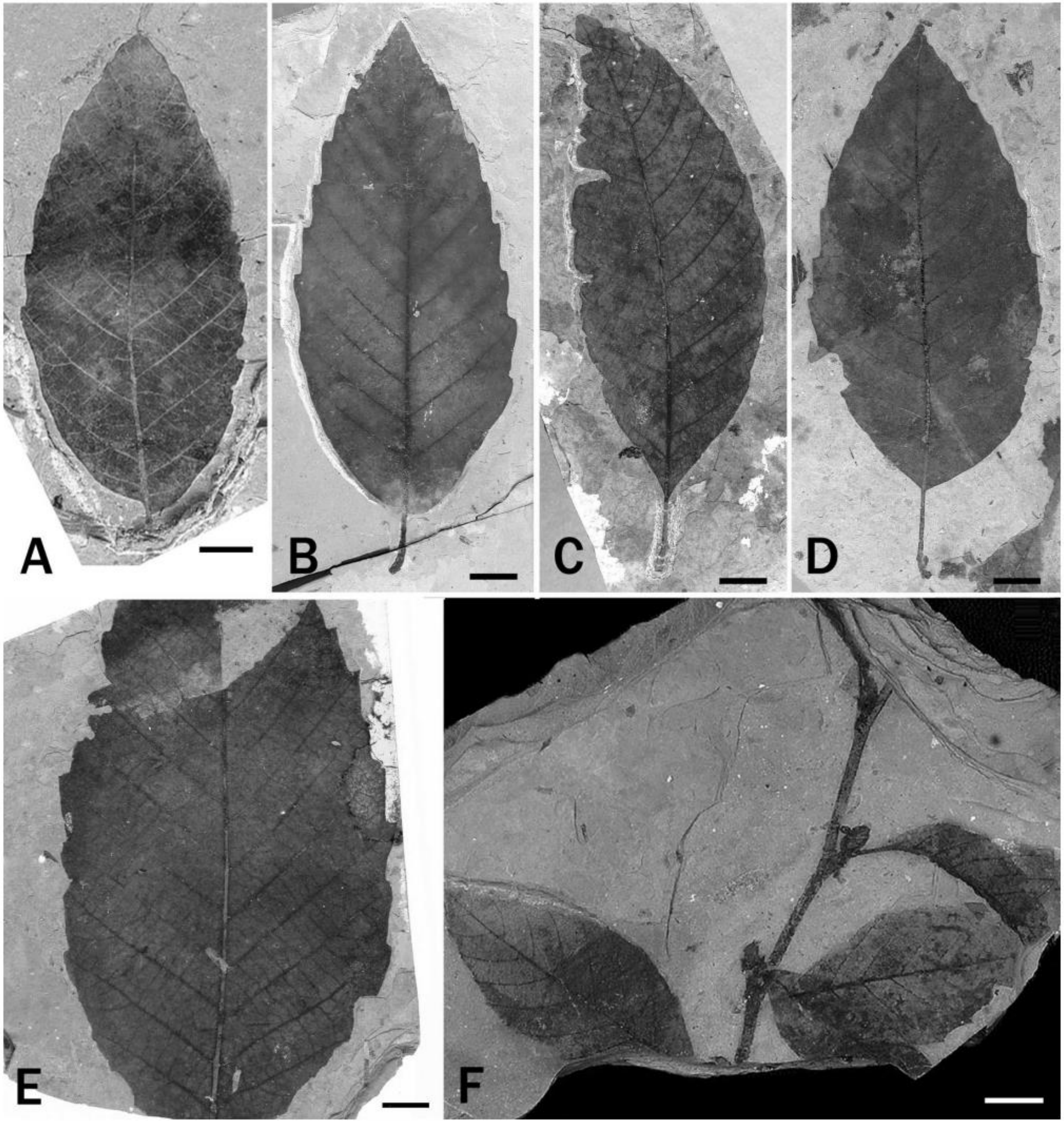
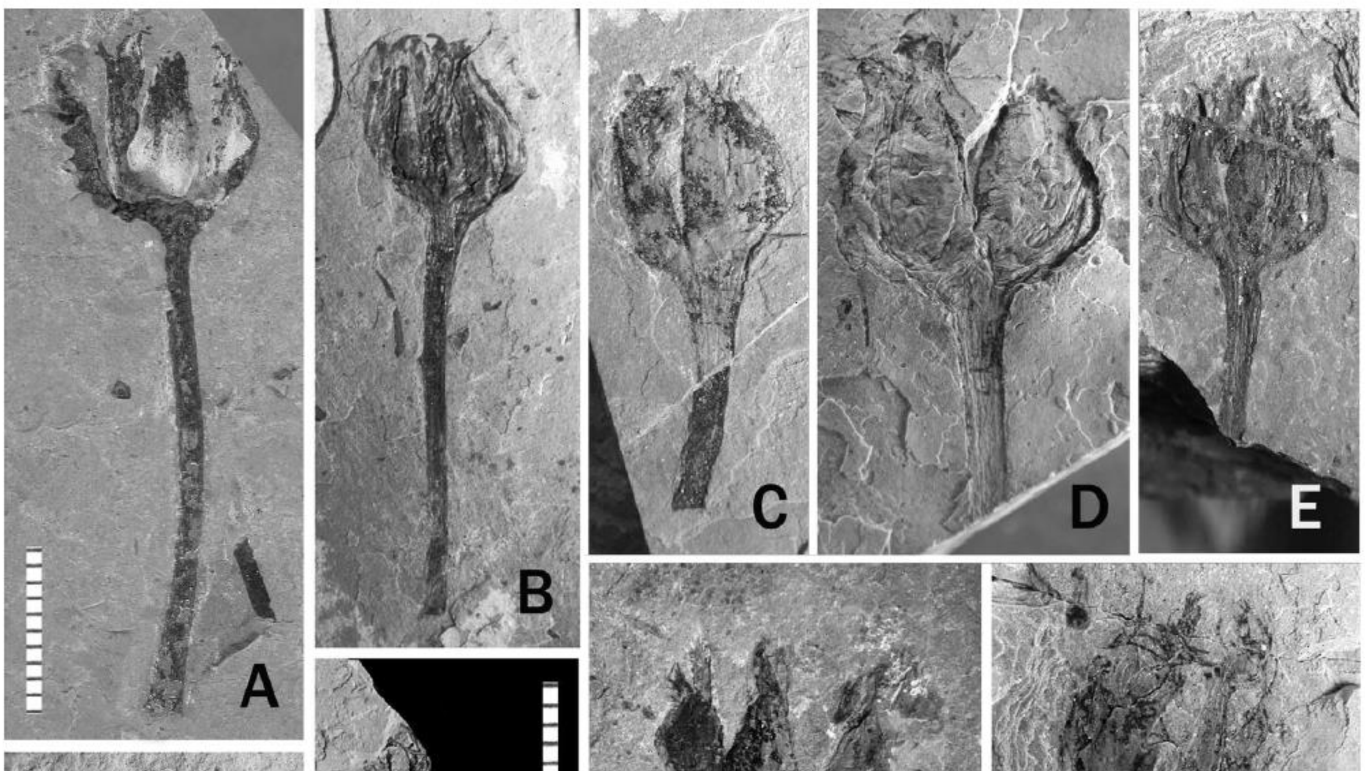
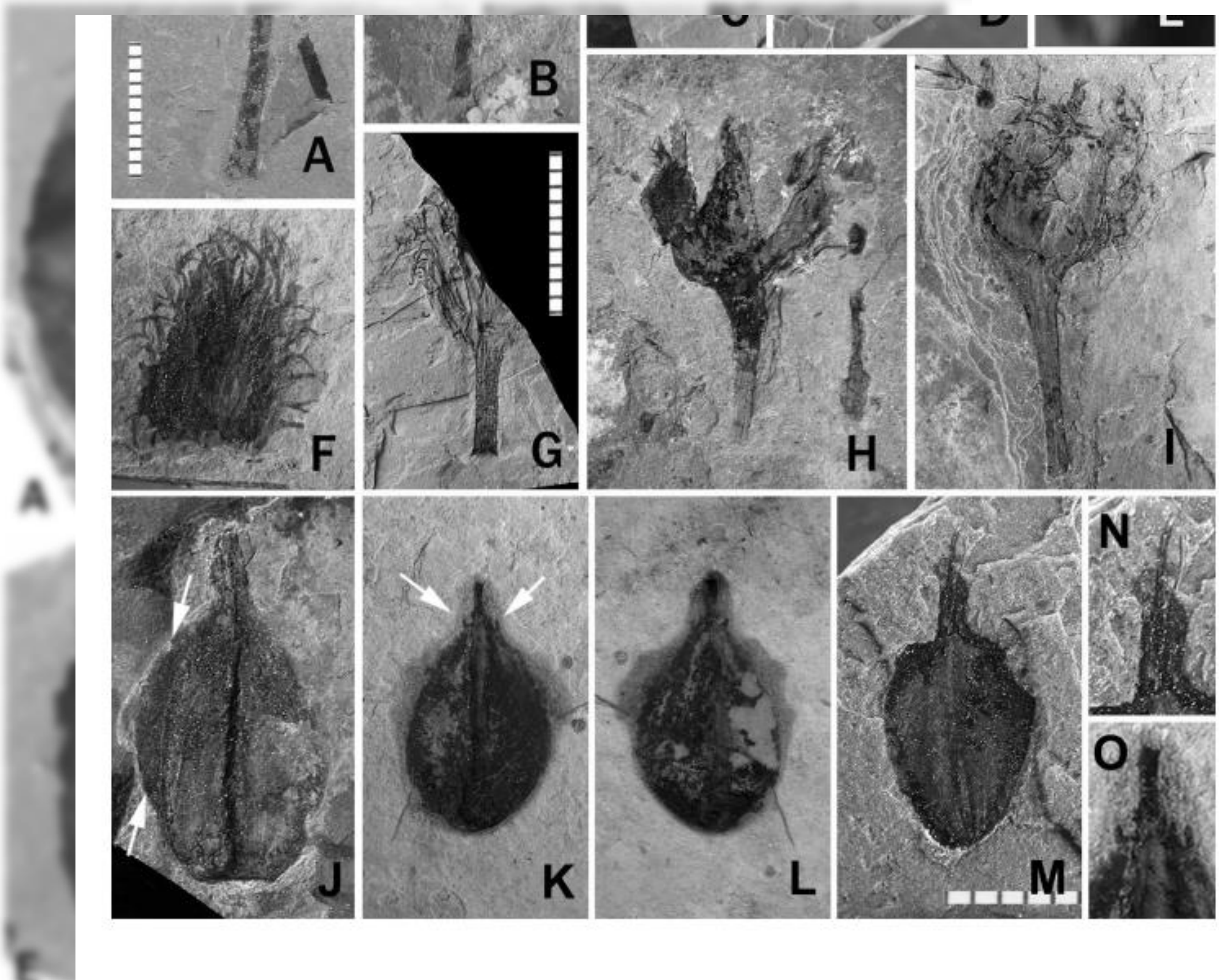
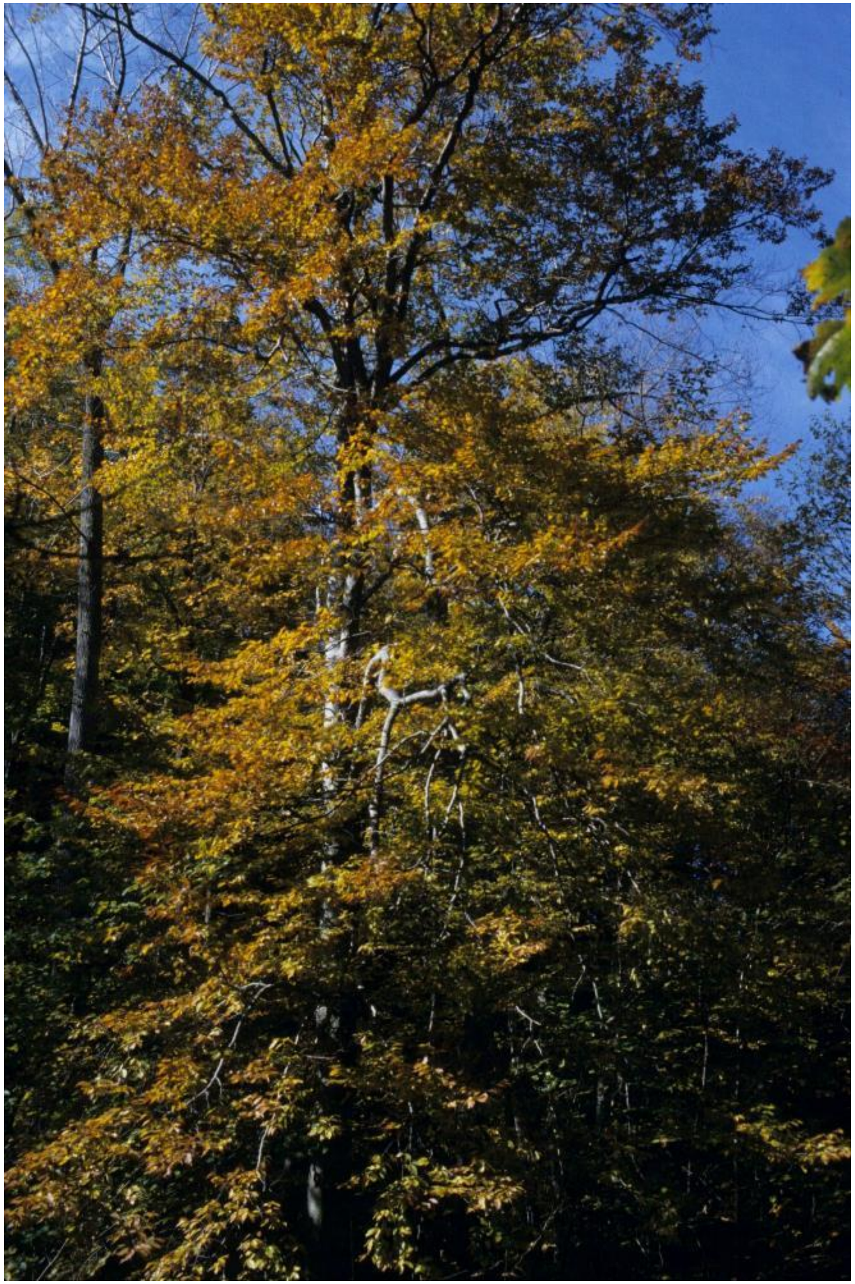
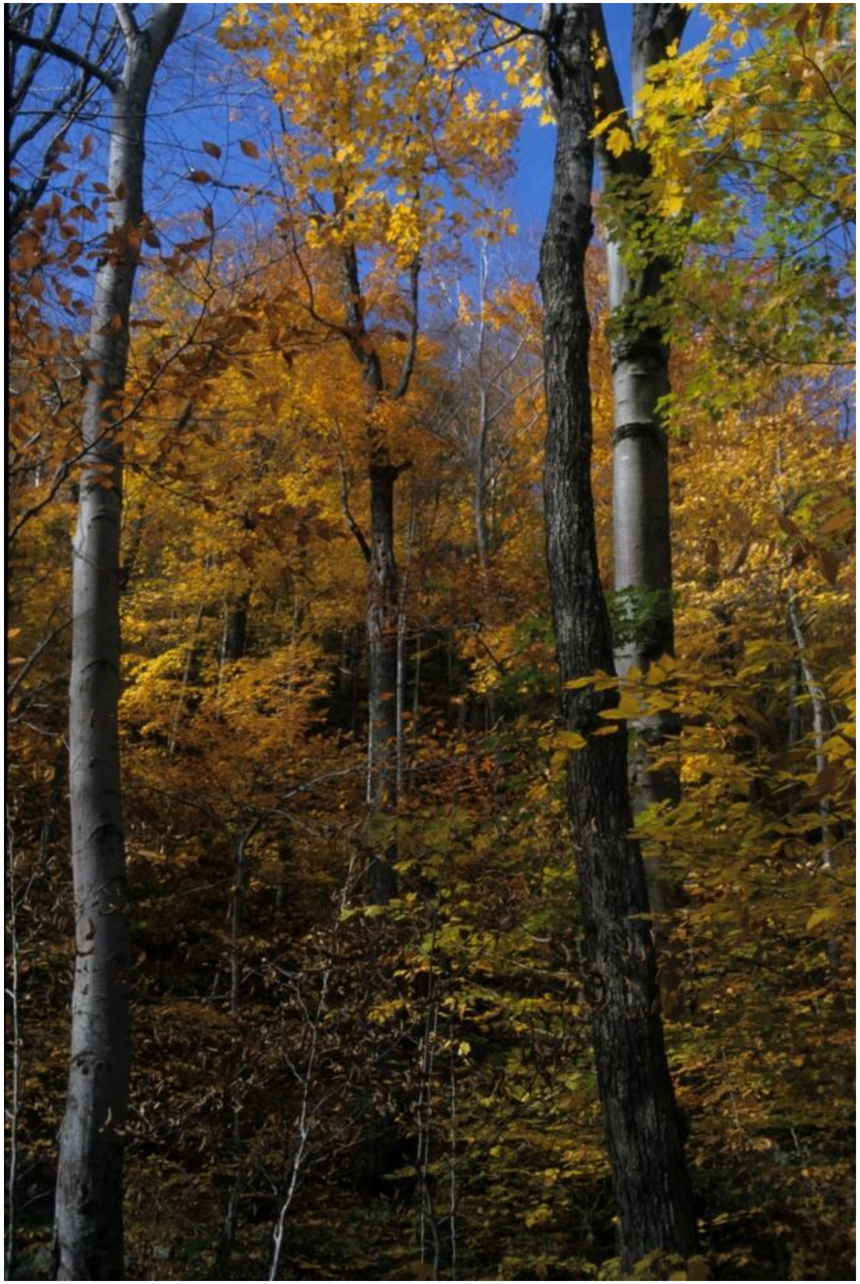

A
B
C
D
E
F

Fig. 1. Fruits of *Fagus langevinii* sp. nov. (A–I) Cupules. (A) Holotype, showing long peduncle and four valves with abaxial spiny ornamentation, UWBM 97583. (B) Specimen with long peduncle and ovate cupule with spines preserved near the apex of the valves, UWBM 97584. (C) Specimen showing the cleft between two adjacent valves, UWBM 97585. (D) Cupule showing two prominent bulges, presumably representing the position of two nuts, UCC F-349. (E) Another cupule showing spiny projections preserved apically, UWBM 97586. (F) A single detached cupule valve showing well preserved spines, some of the which have bifurcate apices, UWBM 97587. (G) Cupule with short (broken?) peduncle, and spiny valves, UWBM 7433. (H) Cupule with spread valves, UWBM 97588, (I) UWBM 97589. (J–O) Beech nuts. (J) Nut showing truncate base, medial keel, and apically protruding perianth. Note also the lateral wing preserved on left side (arrows), UWBM 97603. (K) Smaller ovate nut showing apical style and sepals (arrows), a median keel representing the junction of two lateral faces, UWBM 97590A. (L) Counterpart of the specimen in K. Note that this face lacks a median keel, because it represents a single flat face of the trigonal nut. (M) obovate nut with three styles protruding beyond the apical sepals, UWBM 97591. (N) Detail of styles from Fig. 1M. (O) Detail of perianth and style from Fig. 1K. Scale bars are calibrated in millimeters; scale bar = 10 mm in Fig. 1A and also applies to Figs. 1B–1F, 1H, and 1I; scale bar = 5 mm in Fig. 1M and also applies to Figs. 1J–1L.




A
B
F
G
H
I
J
K
L
M
N
O

Fagus grandifolia forest, North slope - Pinkham Notch, Mt. Washington N.H. USA - 12 Oct 1997

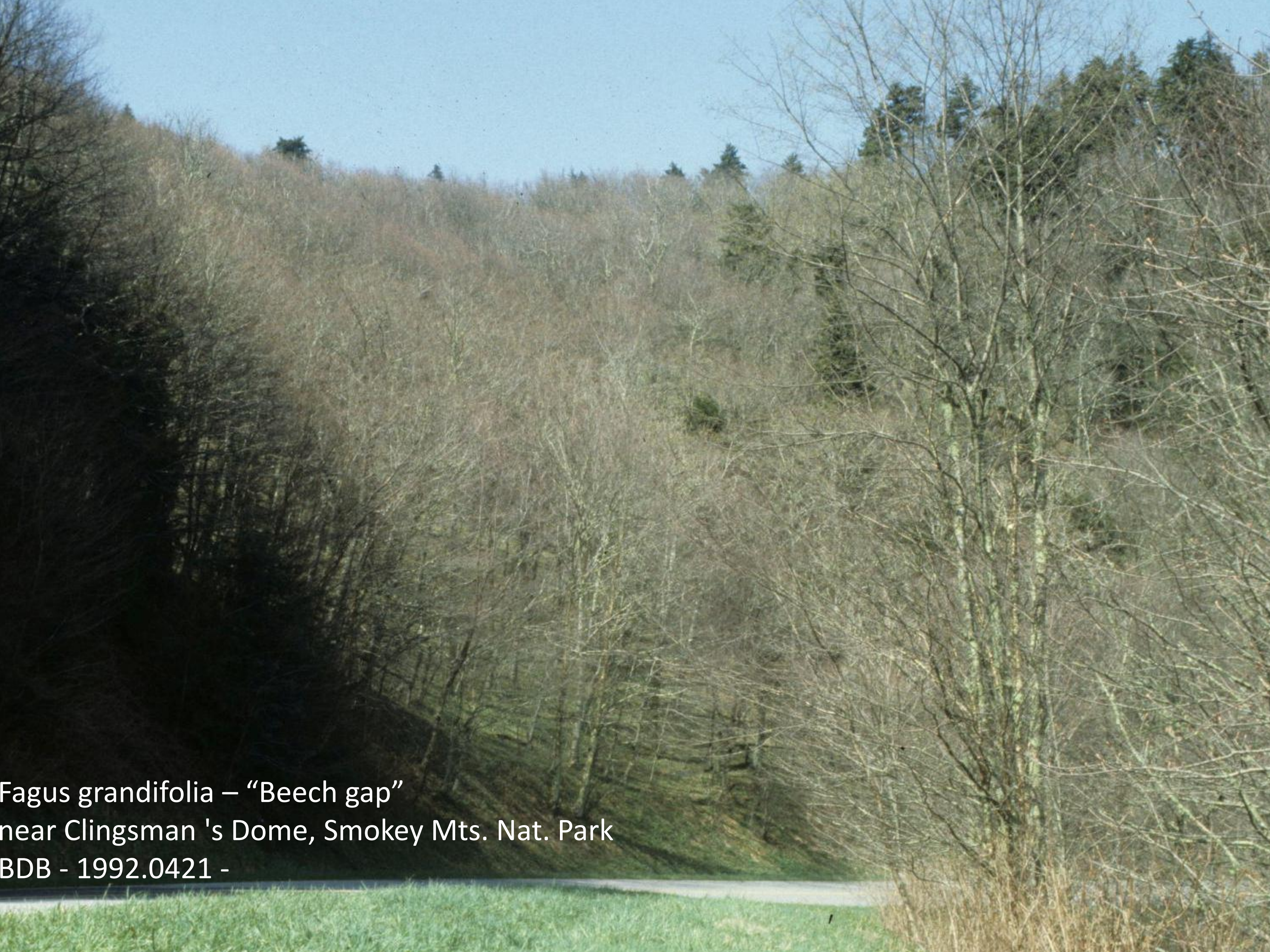
Fagus grandifolia forest, North slope - Pinkham Notch, Mt. Washington N.H . 12 Oct 1997

Fagus grandifolia, suckering - Arnold Arboretum, Boston USA. – 2018.0305_

Woodlands of the Polly Hill Arboretum, Martha's Vineyard, Mass - 2007.0623

Woodlands of the Polly Hill Arboretum, Martha's Vineyard, Mass - 2007.0623

Fagus grandifolia - suckers - Arnold Arboretum Boston Mass. . - 2006.1001



Fagus grandifolia – “Beech gap”
near Clingsman 's Dome, Smokey Mts. Nat. Park
BDB - 1992.0421 -


Fagus grandifolia - Joyce Kilmer Memorial Forest, N.C., USA - BDB- 22 Apr 1992


Fagus grandifolia - Dunbarton Oaks, Washington DC,- BDB - 16 Apr 1992

Unfortunately Fagus grandifolia has been recently attacked by a microscopic nematode damaging buds and leaves,

Litylenchus crenatae *causes BLD disease (Beech leaf disease) : Bud failure and damaged leaves (dark stripes) , followed by dieback on branches.*

Litylenchus crenatae ***ssp. mccannii*** *in USA causes severe damage .*
ssp crenatae *in Japan not lethal to beech trees*

Impacting F. sylvatica in USA

Not in Europe (yet?) ILVO

Pictures : Cornell college of Agriculture and pest Control

Fagus grandifolia (Echo Lake,N Conway,NH) - 02268-wld-243 - 2010.1026

Fagus grandifolia (Echo Lake, N Conway,NH,US) – Arb. Wespelaar - 02268-wld-243 – 2023.1025

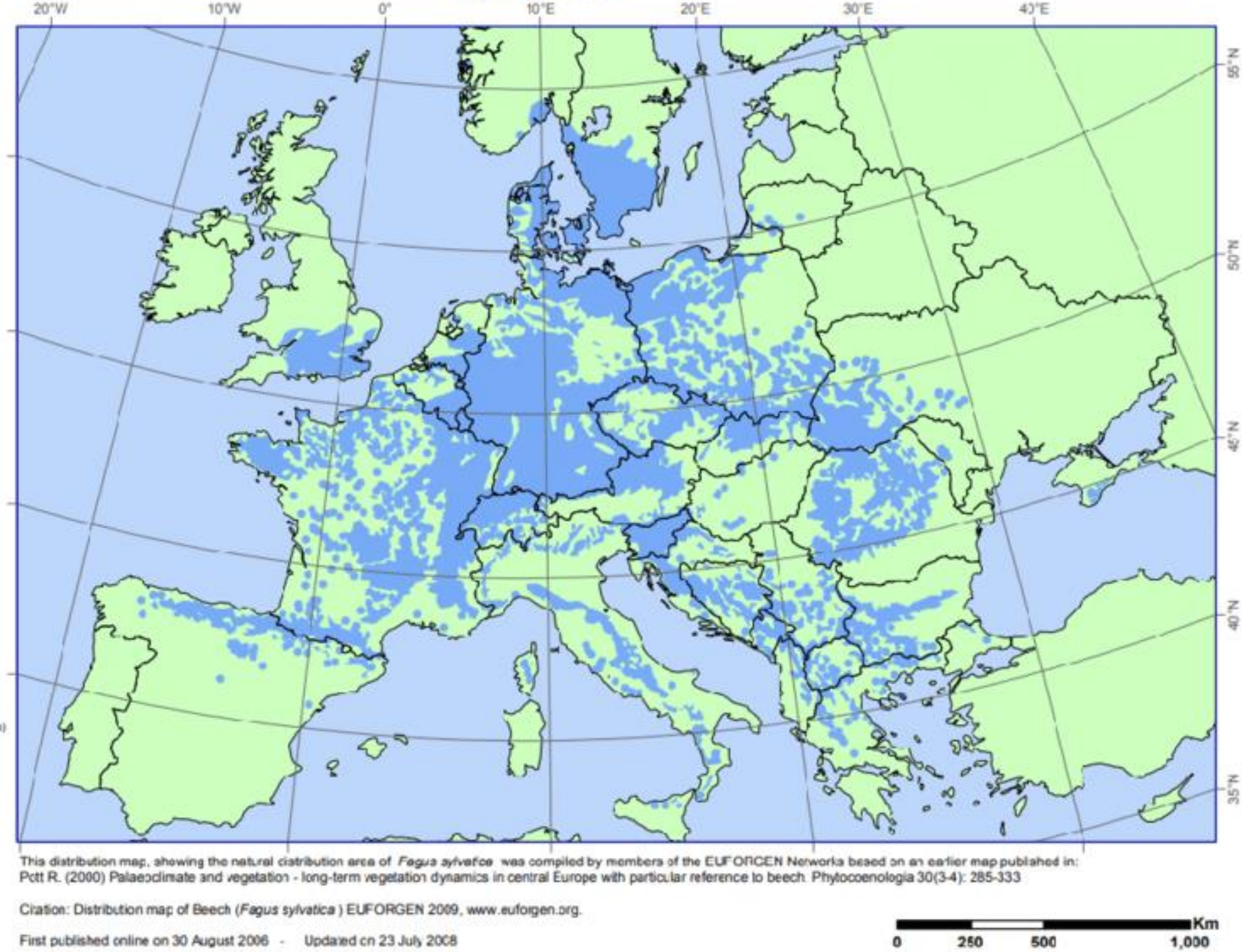
Fagus grandifolia (ex- Rice sanctuary,Mass)- Les Mourgues Var, S. France - LM.296-36 - 2022.1010

Marcescent   Fagus grandifolia – Arboretum Wespelaar 94285-div-254 - 2025.1024

Fagus sylvatica – Norway, Bergen-STORD LEIRVIK-HYSTADM-LYSE - IDS -2002.06

Fagus sylvatica

EUFORGEN



EUFORGEN Secretariat
c/o Bioversity International
Via dei Tre Denari, 472/a
00057 Maccarese (Fiumicino)
Rome, Italy
Tel. (+39)0661182251
Fax: (+39)0661979661
euf_secretariat@cgiar.org
More information, updates and other maps at
www.euforgen.org

This distribution map, showing the natural distribution area of *Fagus sylvatica* was compiled by members of the EUFORGEN Networks based on an earlier map published in:
Pott R. (2000) Palaeoclimate and vegetation - long-term vegetation dynamics in central Europe with particular reference to beech. Phytocoenologia 30(3-4): 285-333

Citation: Distribution map of Beech (*Fagus sylvatica*) EUFORGEN 2009, www.euforgen.org.

First published online on 30 August 2006 - Updated on 23 July 2008


Fagus sylvatica forest, La Saint baume, South of France, 17 April 2011

Fagus sylvatica forest, La Saint baume, South of France, 17 April 2011

Fagus sylvatica – Culzean, Scotland - 2008.0502-

Fagus sylvatica forest - Phalacron above volakas 2015.0427 304

Fagus sylvatica forest - Phalacron above volakas 2015.0427 304

Fagus sylvatica - Elathia forest, Drama pref. IDS in Northern Greece-2015.0428



Herkenrode 2020

Herkenrode 2025

Fagus sylvatica - Beerlegem Parc – 2004.0829


Fagus sylvatica f. purpurea – Arboretum Kalmthout -20240825_

Fagus sylvatica f. purpurea – Arboretum Kalmthout -20240825_

Fagus sylvatica f. purpurea ,   Liriodendron, Parc de Wespelaar – 1989.06

ea ,   Liriodendron, Parc de Wespelaar – 1989.06

Fagus sylvatica 'Asplenifolia' - GB-Wales-Gwysaney - 2000.05 -

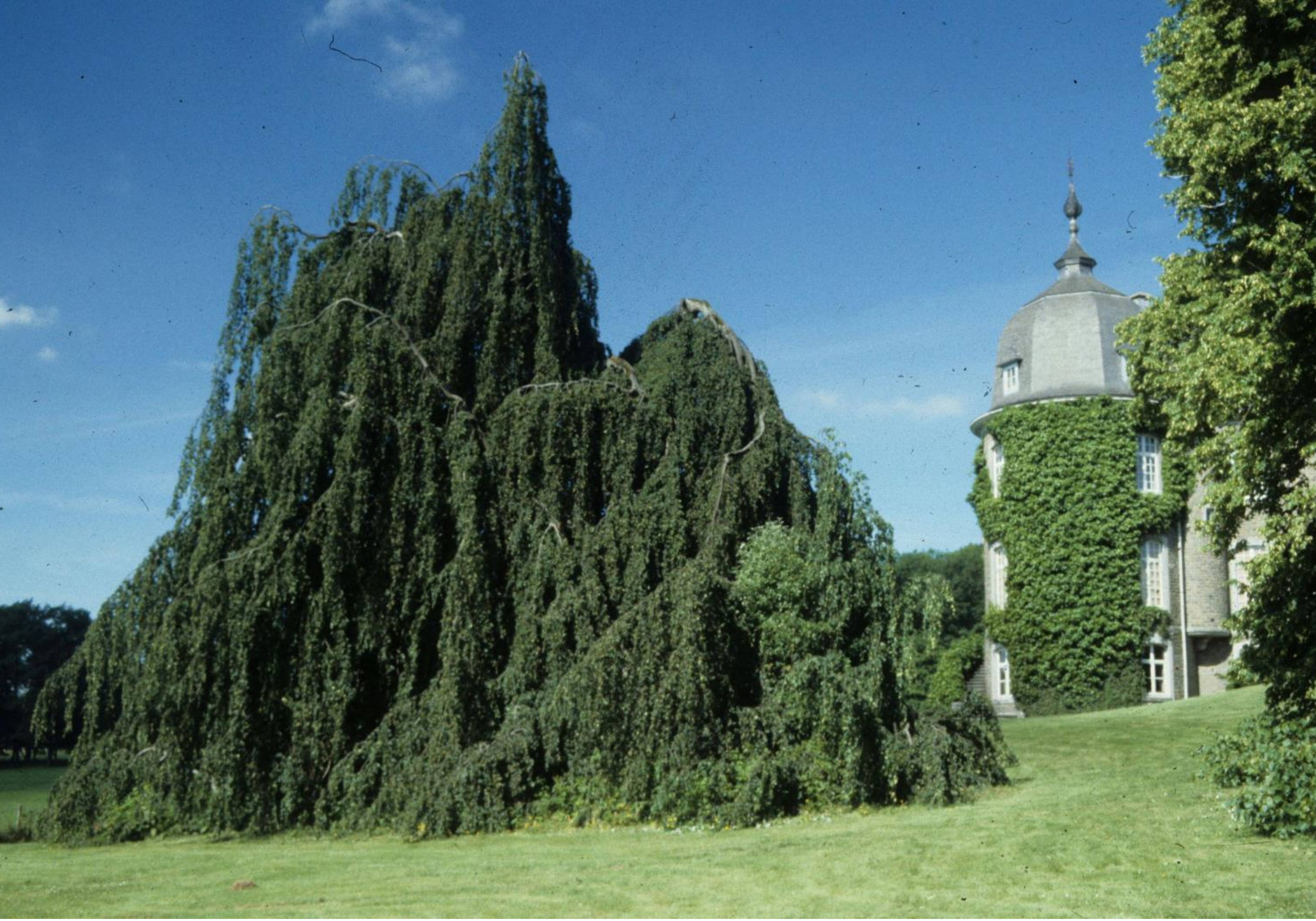
Fagus sylvatica - Douve Sud, Beerlegem – 2004.0829

Fagus sylvatica f. pendula - Hunnewell Estate, near Boston - 1996.0602 -

Fagus sylvatica f. pendula - Morris Arboretum, Philadelphia - 1991.0411 -

Fagus sylvatica f. pendula – Herkenrode - AA108-div- 27 - 2006.1117 -

Fagus sylvatica f. pendula – Les Amerois - BD 15016 - 202cm - 200.08 -



Fagus sylvatica 'Pendula' – Bois Saint Jean, Belgium BD.2229 - 1990.06 -

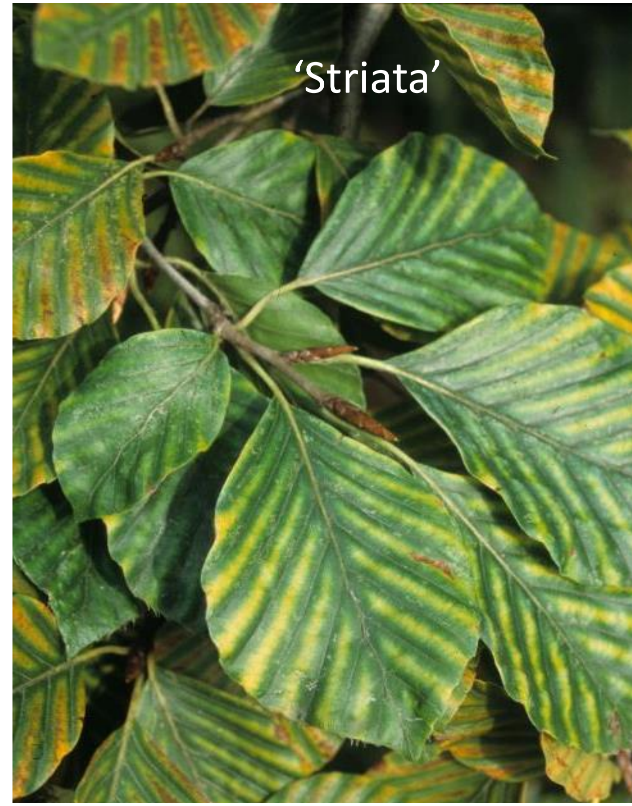
Fagus sylvatica 'Bornyensis'
- HULPE, BD 19193, locNum
7115, 118cm -

Fagus sylvatica 'Purpurea Pendula'

Fagus sylvatica 'Dawyck' – Arboretum Wespelaar 86278-esv-212   -   2002.1107

Fagus sylvatica ‘Rohanii’

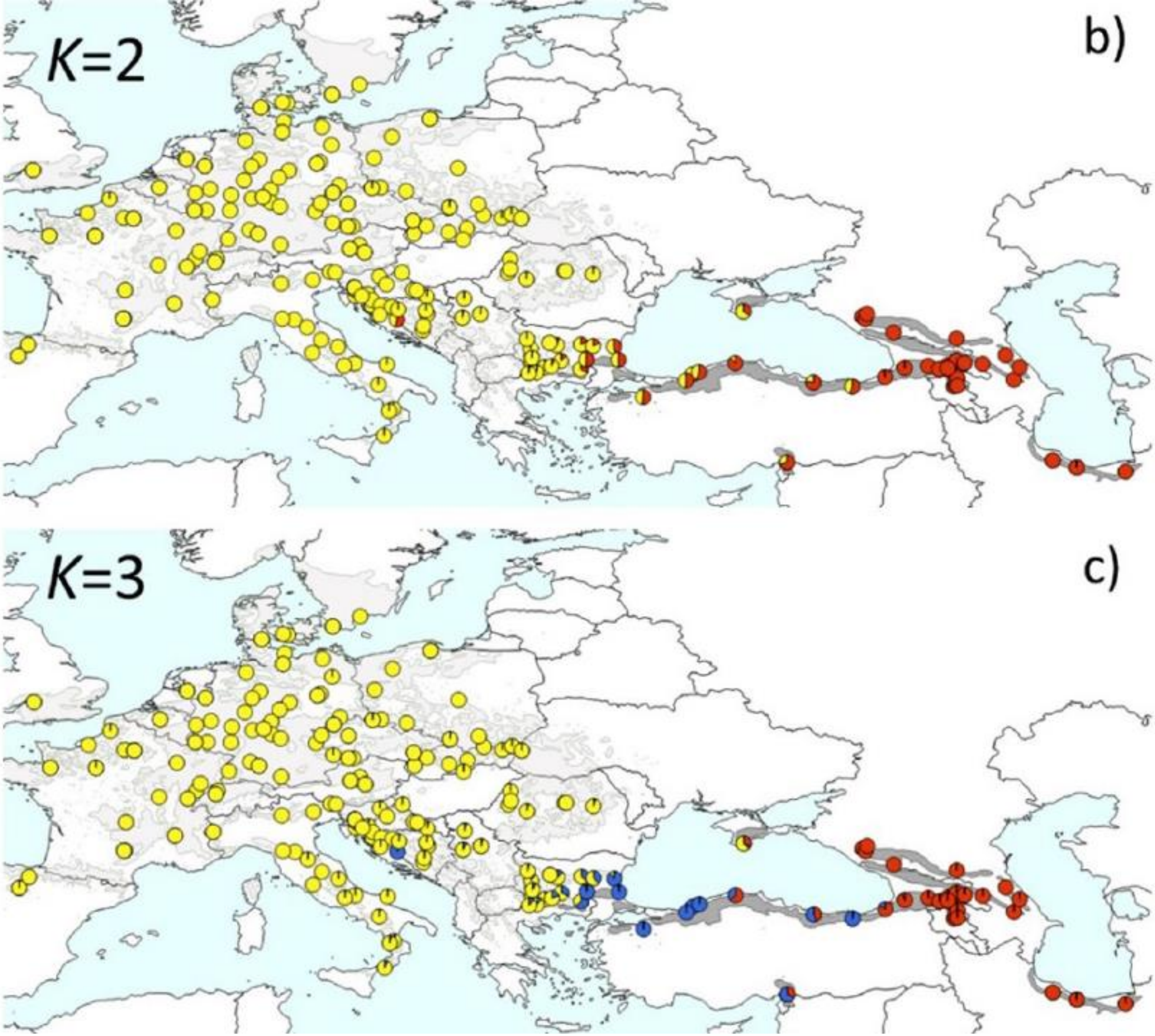

‘Luteovariegata’


‘Rotundifolia’

‘Striata’

‘Roseomarginata’
Syn. ‘Purpurea Tricolor’

‘Quercifolia’

Mount Olympos, Greece - IDS in Grece : May 1994



European Journal of Forest Research (2024) 143:451–464

Fagus sylvatica var. moesiaca, Mount Olympos, Grèce, 1994


Fagus sylvatica var. moesiaca - Prioni - Mount Olympos, IDS in Greece -
1994.0524

Fagus sylvatica var. moesica - Stavros - above Enipeus Gorge, Mt Olympos - IDS in Greece - 23 May 1994

Fagus sylvatica var. moesiaca - (browsed by cattle) Metsovo to Katara pass, Grece, 27 May 1994

Fagus orientalis - Ditgori, Trialeti Mountains - Georgia - DDG - 19 Aug 2001

Fagus orientalis - Ditgori, Trialeti Mountains - Georgia - DDG - 19 Aug 2001

Fagus orientalis

UFORGEN Secretariat
o Bioversity International
ia dei Tre Denari, 472/a
0057 Maccarese (Fiumicino)
ome, Italy
el. (+39)066118251
ax: (+39)0661979661
uf_secretariat@cgiar.org
lore information
nd other maps at:
www.euforgen.org

This distribution map, showing the natural distribution area of *Fagus orientalis* was compiled by members of the EUFORGEN Networks

Citation: Distribution map of oriental beech (*Fagus orientalis*) EUFORGEN 2009, www.euforgen.org

First published online on 10 December 2009

0 125 250 500 Km

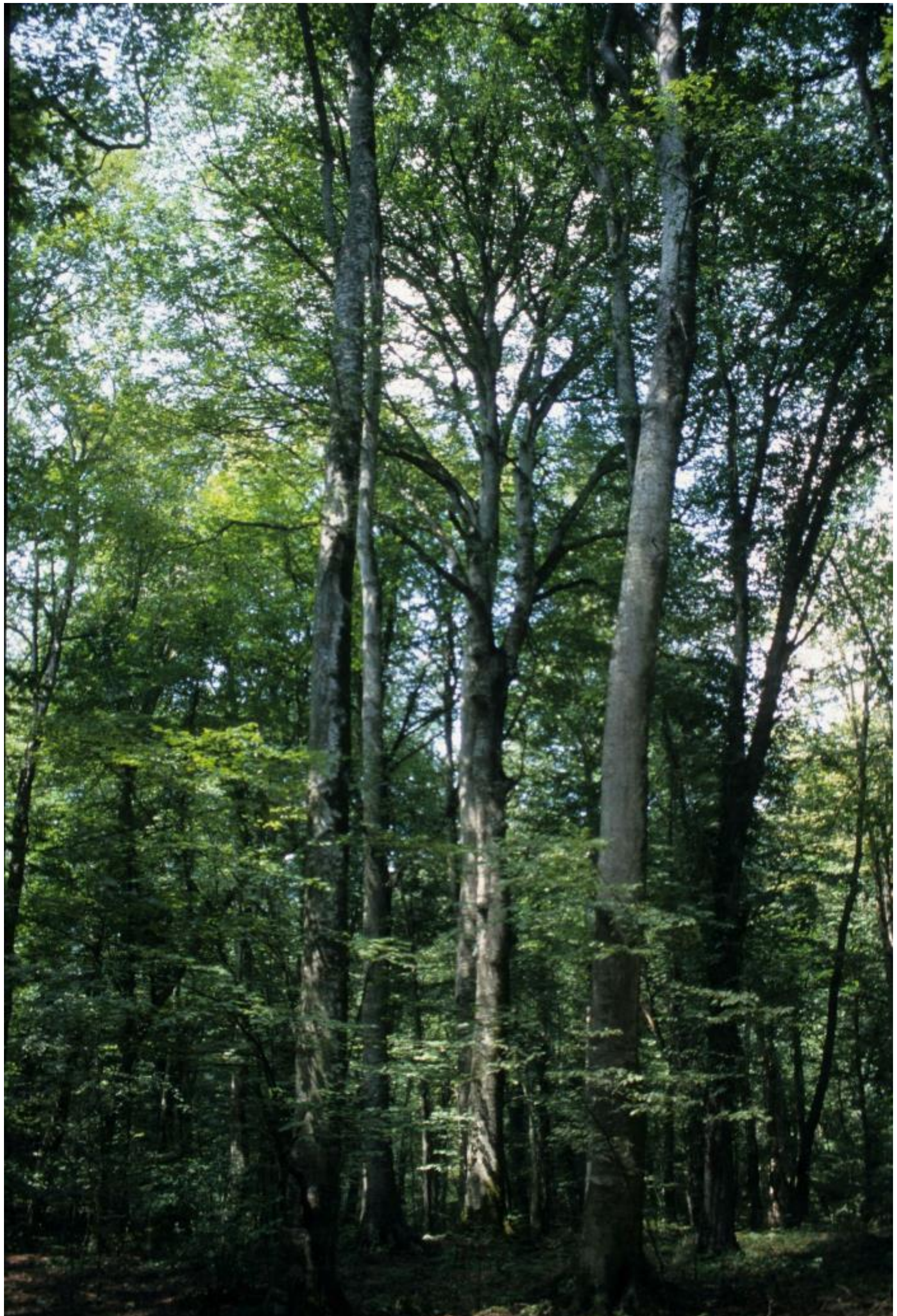
Fagus orientalis - Kamar Poscht, North of Teheran Iran – IDS tour, 2017.0413

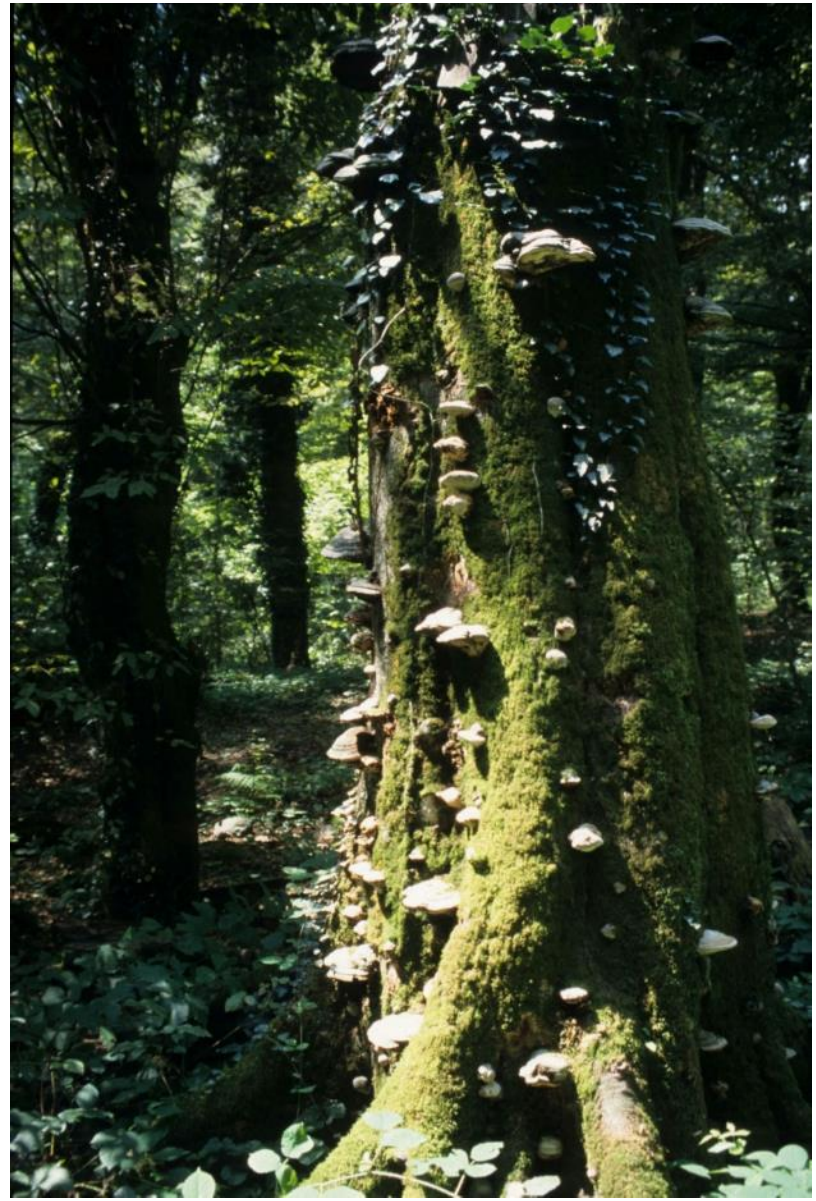
Fagus orientalis - Kamar Poscht, IDS in Hyrcanian Forest, Iran - 2017.0413

Fagus orientalis - Tozkoi, Ikizdere –IDS in Turkey 2024.1024


Fagus orientalis – IDS in Pontic Alps, Aralik road to Camili (Georgia border) 1200m - 2024.1028

Fagus orientalis - Sari, IDS in Iran – (13 -14 nerves) - 2017.0414 240





Fagus orientalis - Lagodechi, 290 cm (between Carpinus and Populus) - DDG in Georgia - 20 Aug 2001


Fagus orientalis – Geographical arboretum Tervuren, Brussels


Fagus grandifolia (Echo Lake,N Conway,NH,US) - 09171-wld-181
Fagus orientalis (Georgia) - 07128-wld-181 - 2022.0430

Fagus orientalis (Georgia) - 07128-wld-181 - 2022.0430

Fagus orientalis 'Iskander'
ARCIT, BD.32989, n° 57
2025.0819

Fagus orientalis 'Iskander’
ARCIT, BD.32989, n° 57
2025.0819


Fagus orientalis
WGOLF, BD.46876,
n°89083, en S
2013.0820

Fagus orientalis – Georgia, Native forest- (PROP 6617a) - 28 mai 2005

Fagus orientalis aff. – Arboretum Wespelaar 92516-waa-406 - 2007.0425 - 033

Fagus orientalis – Herkenrode 92516-waa-406 - 2006.0817

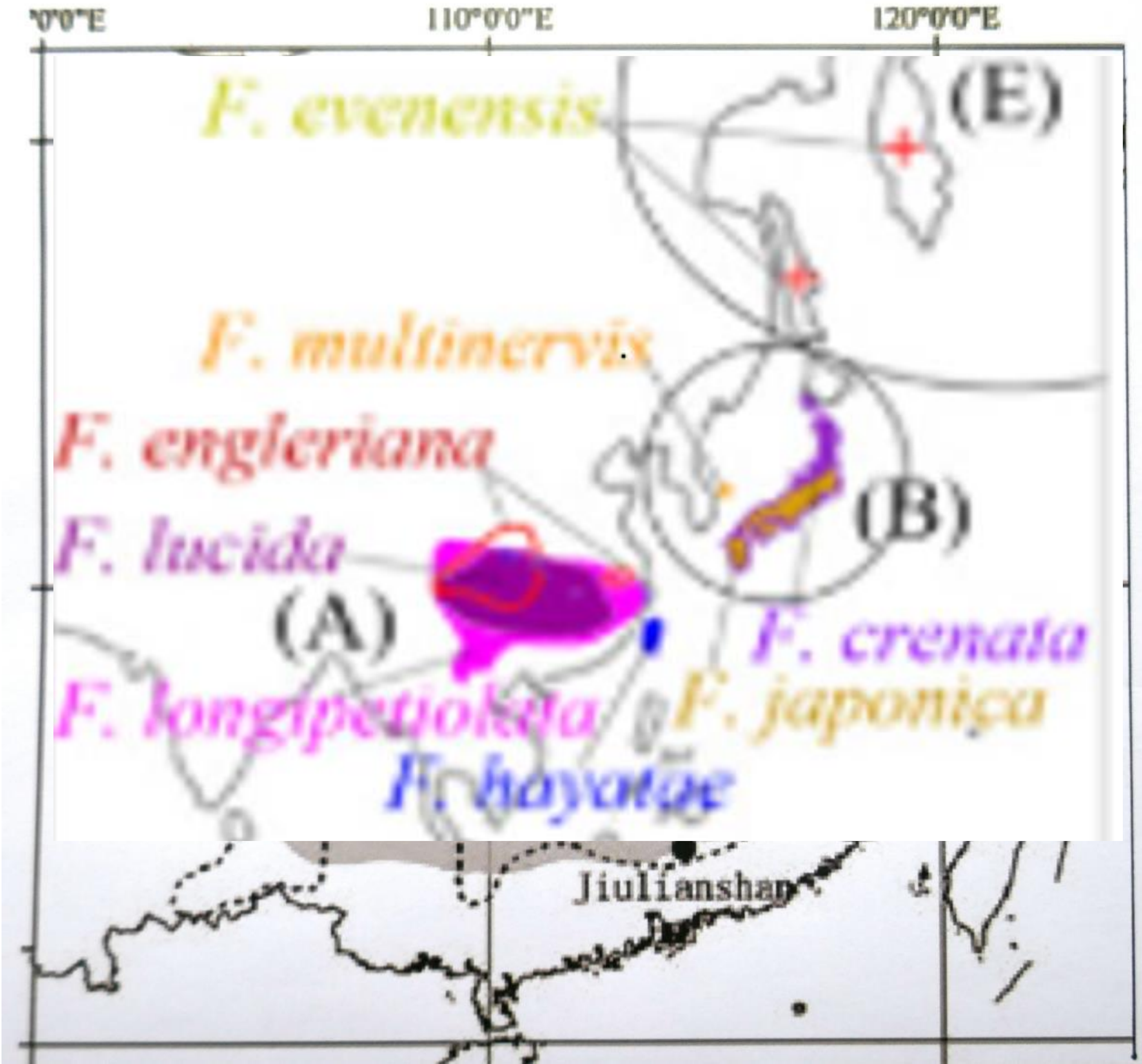
Fagus orientalis (ex Domanis Develi, Turkey.) – Arb. Wespelaar 98008-wld-274 - 2006.1115

Fagus orientalis (ex Domanis Develi, Turkie.) – Arb. Wespelaar 98008-wld-274 - 2006.1115

Fagus orientalis – Arboretum de Tervuren - Parcelle 33 - 2009.1031 011

Fagus lucida -
91401-waa-275 -

Fagus orientalis (Domanis Develi, TR) -
98008-wld-275 -



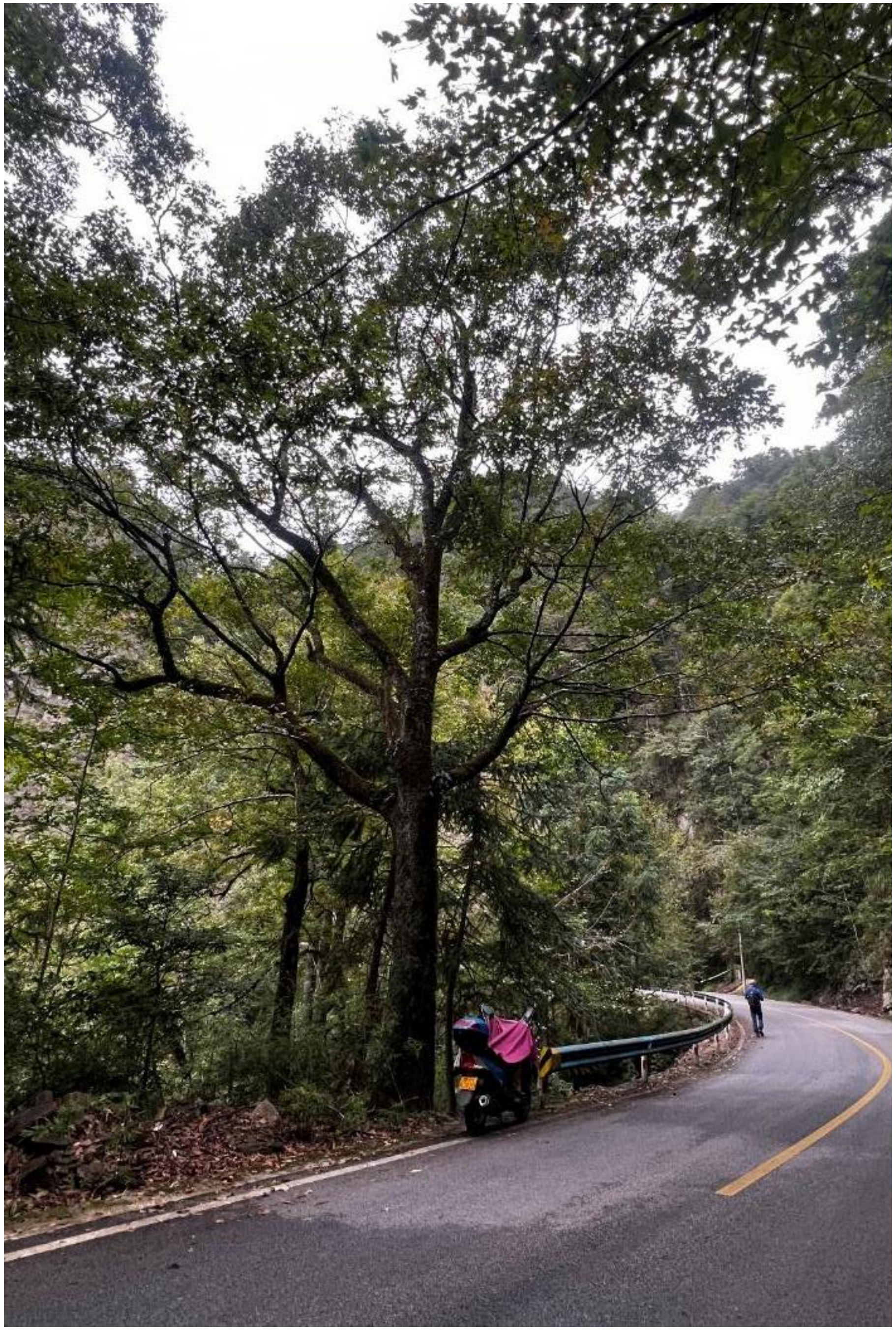
°0'0"E
110°0'0"E
120°0'0"E
F. evenensis
(E)
F. multinervis
F. engleriana
F. lucida
(A)
(B)
F. crenata
F. japonica
F. longipetiolata
F. hayatae
Jiulianshan

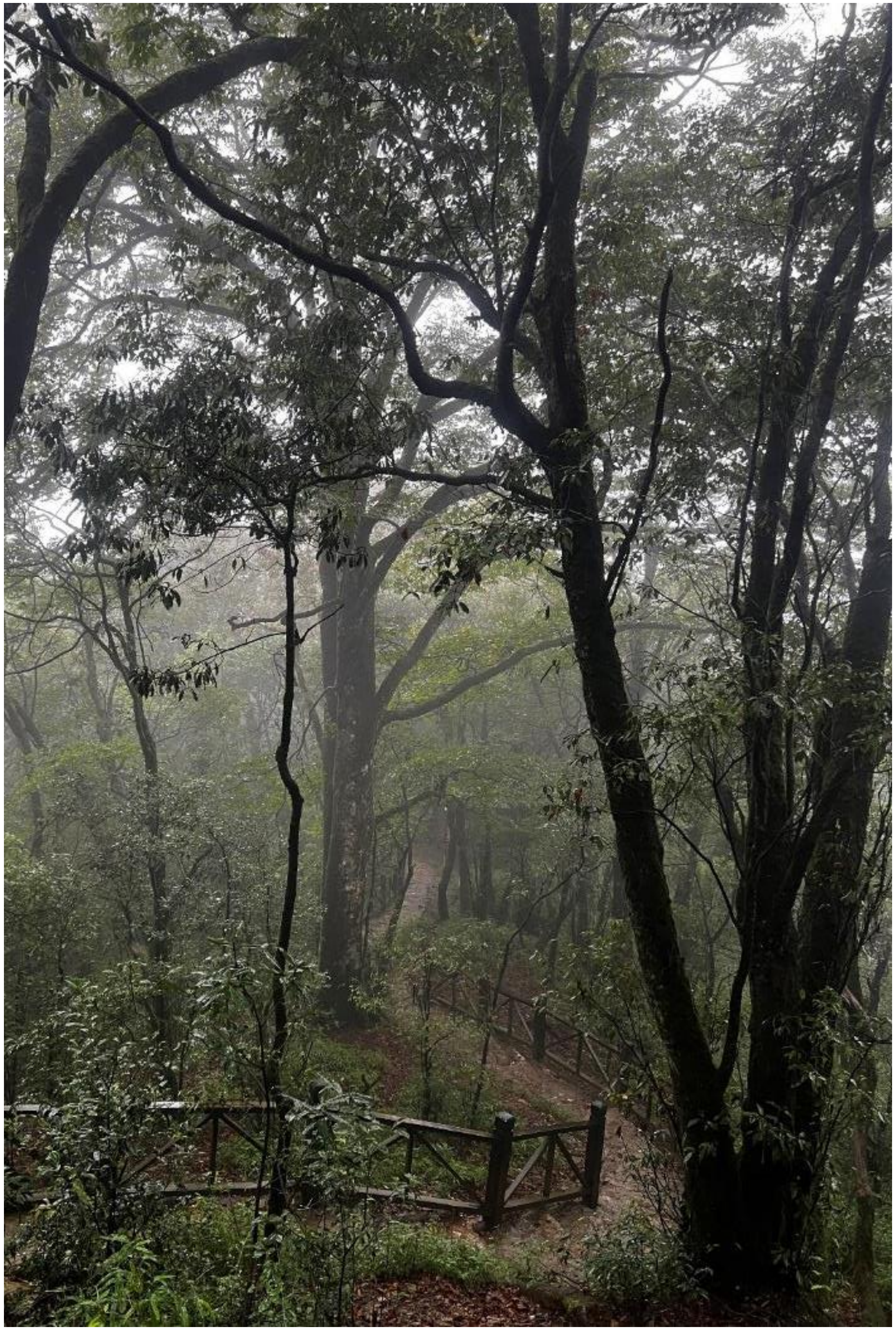

Fagus lucida
Fagus lucida – Arb. Wespelaar 91401-waa-275 - 2006.0521 -BD.30152

Fagus lucida – Arboretum Wespelaar 91655-waa-263 - 8 May 2005 (toothed leaves)

Fagus lucida – Arboretum Wespelaar
91655-waa-263 - 2009.1030

Fagus lucida – Arboretum Wespelaar 91655-waa-263 - 2011.0902 (Short peduncle)



Pictures by Christophe Crock: F. lucida in Fanjingshan (2025.0925) and Leigongshan SE.Guizhou

Pictures by Christophe Crock: F. lucida in Fanjingshan (2025.0925) and Leigongshan SE.Guizhou

Fagus lucida – Arb. Wespelaar 91401-waa-275 - 2021.1031

Fagus lucida and Nyssa sinensis ‘Jim Russell’ – Arboretum Wespelaar, 7 November 2015


Fagus sinensis
(Syn. longipetiolata)


Fagus sinensis - 19004-pav-248 - 2025.0722

Fagus sinensis - 19004-pav-248 - 2025.0722

Fagus sinensis - 19004-pav-248 - 2023.1128

Fagus sinensis - 19004-pav-248 - 2023.1128

Fagus sinensis: North of Tram Tau, Nghia Lo, Nth Vietnam, 2200m Tom HUDSON cll. - AW24302

Fagus engleriana

Fagus engleriana – Arboretum Wespelaar 83173-hil-214 - 7 May 2005 -

Fagus engleriana – Arboretum Wespelaar - 74105-hil- 91 - 2006.0416 -

Fagus engleriana – Arboretum Wespelaar - 74105-hil- 91 - 2006.0615 -

Fagus engleriana – Arboretum Wespelaar - 91403-waa-289 - 2025.1

Fagus engleriana - Arnold Arboretum Boston mass. 7417-A - 2006.1001

Fagus engleriana – Herkenrodr 74105-hil- 91 - 2011.0525

Fagus engleriana - 74105 - hil - 91 - 2000.0402 – Magnolia 'Wada's Memory' behind -

Fagus engleriana – Arboretum Wespelaar 83173-hil-214 - 7 may 2005 -

Fagus engleriana – Arboretum Wespelaar - 83173 - hil - 214 - 2001.1128 -

Fagus engleriana – Les Mourgues, Var, France - LM.68-35 2025 1118
Fagus grandifolia (Rice sanctuary,Mass) - LM.296-36 -(left) Nyssa sinensis (Jim Russell' (right)

Fagus japonica var multinervis - Seongin-bong - Ulleungdo - KR – 2023.0425 (Photo C. Crock)

Fagus multinervis Nakai (1918)

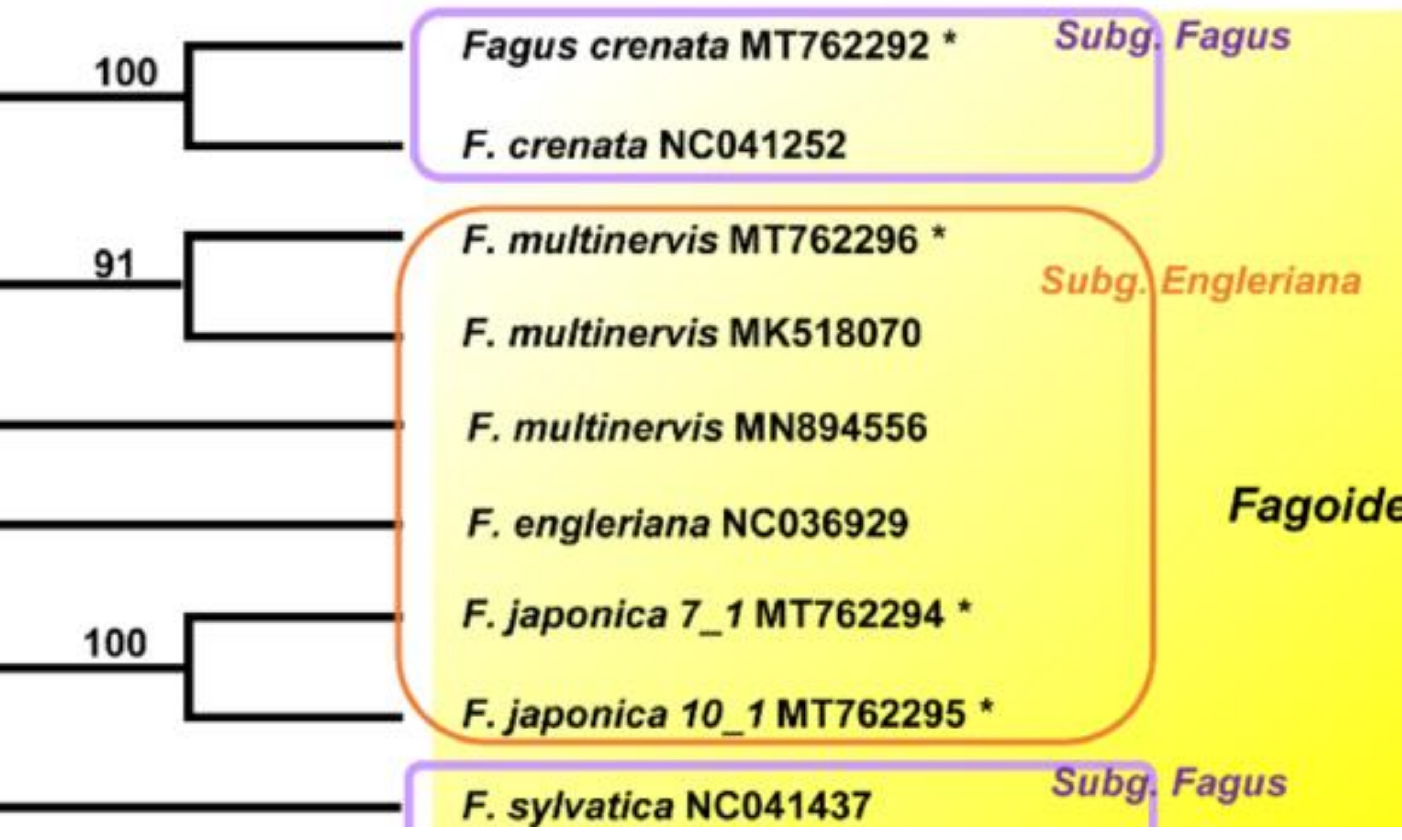
Fagus crenata **var.** ***multinervis***

Fagus japonica **var.** ***multinervis*** on the basis of leaf, anther, and pollen characteristics (Lee, Y.N. Taxonomic studies on the Fagus multinervis, Fagus japonica and Fagus crenata. *Bull. Korean Inst. Cult. Res.* **1967**, *10*, 373–377.

Fagus engleriana **x** ***japonica*** Oh et al (Syst. Bot. **2016**, 41, 617–625).

Fagus engleriana synonym or ***Fagus engleriana var multinervis*** on the basis of cupule similitudes leafy spines (Many authors cited in Genes 2020, 11,1338)

Fagus multinervis a distinct species endemic to Ulleungdo (Plastome characteristics and Phylogenomics of East Asian Beeches JiYoung Yang et al, Genes 2020 11, 1338)



Fagus multinervis a distinct species endemic to Ulleungdo (Plastome characteristics and Phylogenomics of East Asian Beeches, JiYoung Yang et al, Genes 2020 11, 1338)

Fagus engleriana vs Fagus japonica both in subgenus engleriana

Fagus engleriana - 18158-div-288 - vs F. japonica – Arb. Wespelaar 2025.0722 853

E.H.Wilson 8487 Dagelet isl., Herbarium Arnold A. Fagus multinervis (revised F.engleriana 1991)

Fagus crenata var. multinervis (Nakai) T.Lee Arnold AA 429-87 A

Fagus engleriana var. multinervis (Ullongdo) 94-061 D - Morris Arb. - 2011.0403

Fagus japonica var multinervis - Ulleungdo (1989) photo Paul Meyer


Fagus japonica var multinervis - Ulleungdo (1989) photo Paul Meyer

Fagus japonica var multinervis - Ulleungdo – 2023.0425 (Photo C.Crock)

Fagus japonica var multinervis - Ulleungdo – 2023.0425 (Photo C.Crock)

Fagus japonica var multinervis - Ulleungdo – 2023.0425 (Photo C.Crock)


Fagus hayatae
Fagus hayatae - Taipingshan Villa, IDS in Taiwan - 2012.1110 751

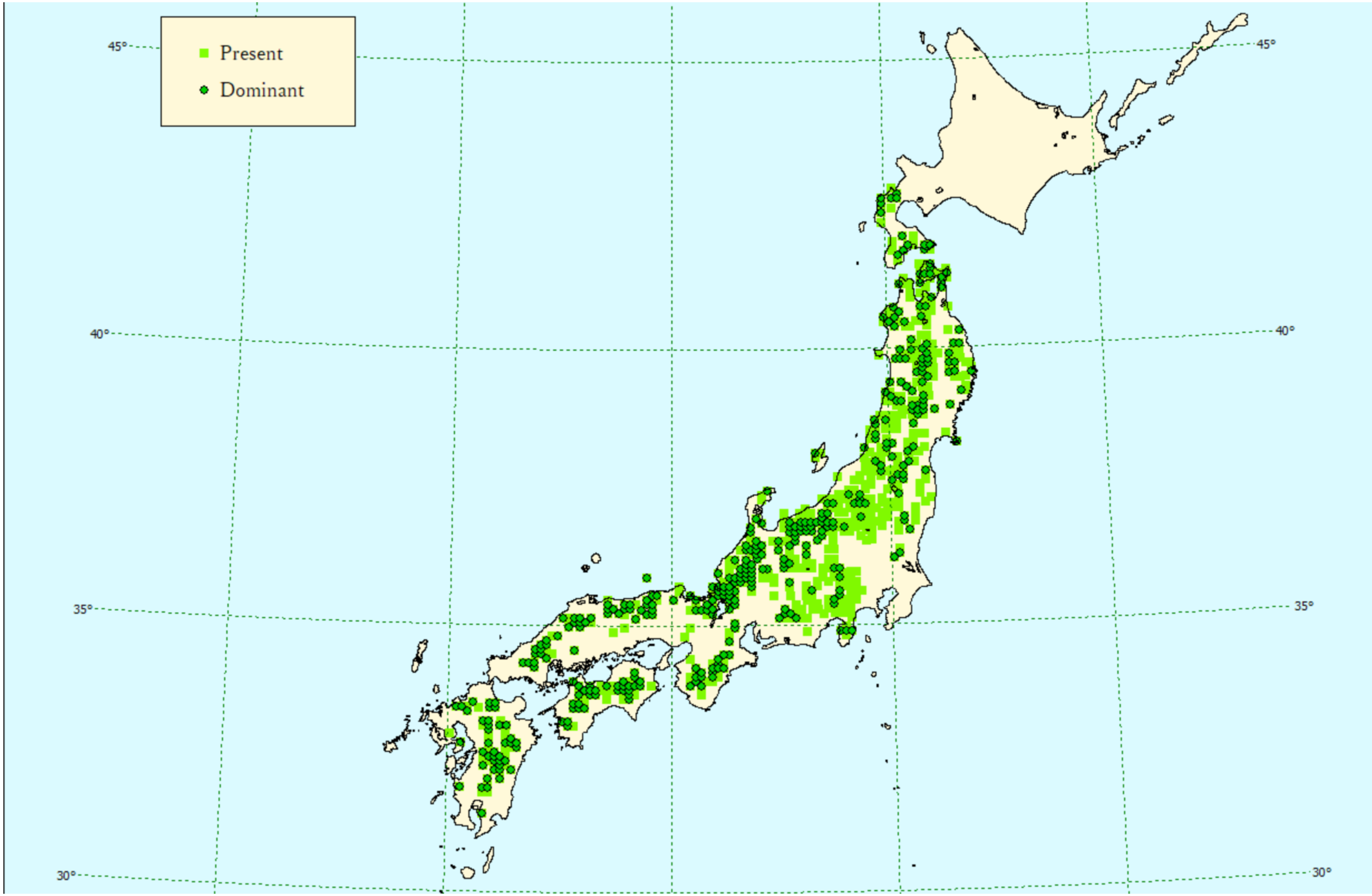

Fagus hayatae (PdS,TW) - 20117-wld- 56 - 2025.0614 550


Fagus hayatae
22131-wld-176-
2023.1225
Fagus hayatae - Herkenrode - 20117-wld- 56 - 2024.1108

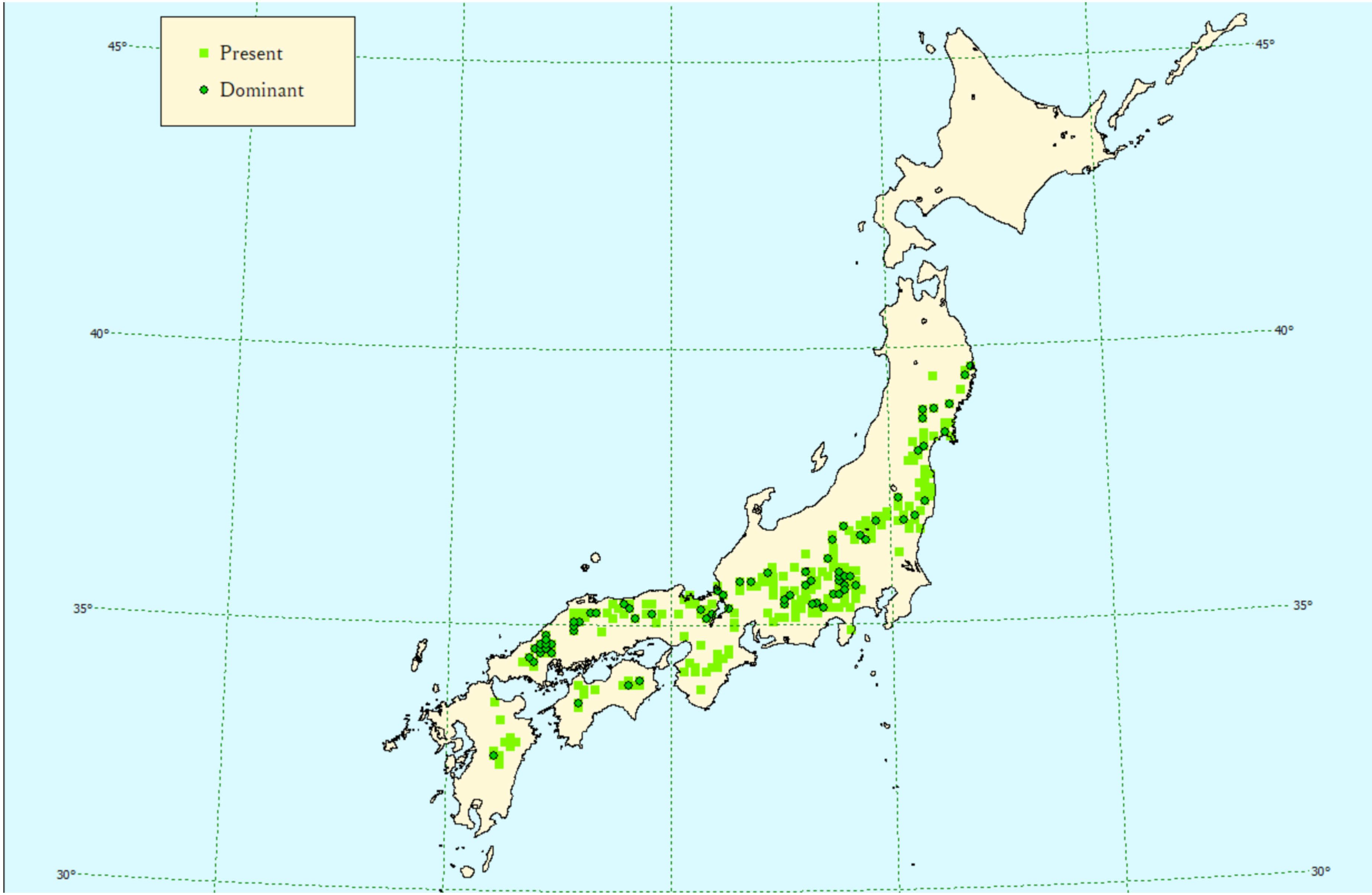
Fagus hayatae
22131-wld-176-
2023.1225

Fagus hayatae - Herkenrode - 20117-wld- 56 - 2024.1108


Fagus hayatae vs. Fagus japonica (Ashiu,Kyoto,JP,355-959m) - 14007-wld- 53 - 2025.0616



Distribution of ***Fagus crenata*** mostly Japan-Sea side, (more humid and snow)



Distribution of ***Fagus japonica***, Pacific-sea-side


Fagus japonica
Honshu, Japan

Fagus japonica (rough bark) - Lake Chuzenji , Nikko, Honshu Japan - 2008.1008

Fagus japonica - Lake Chuzenji, Nikko - 2008.1009 052

Fagus japonica - Lake Chuzenji, Nikko - 2008.1009 052

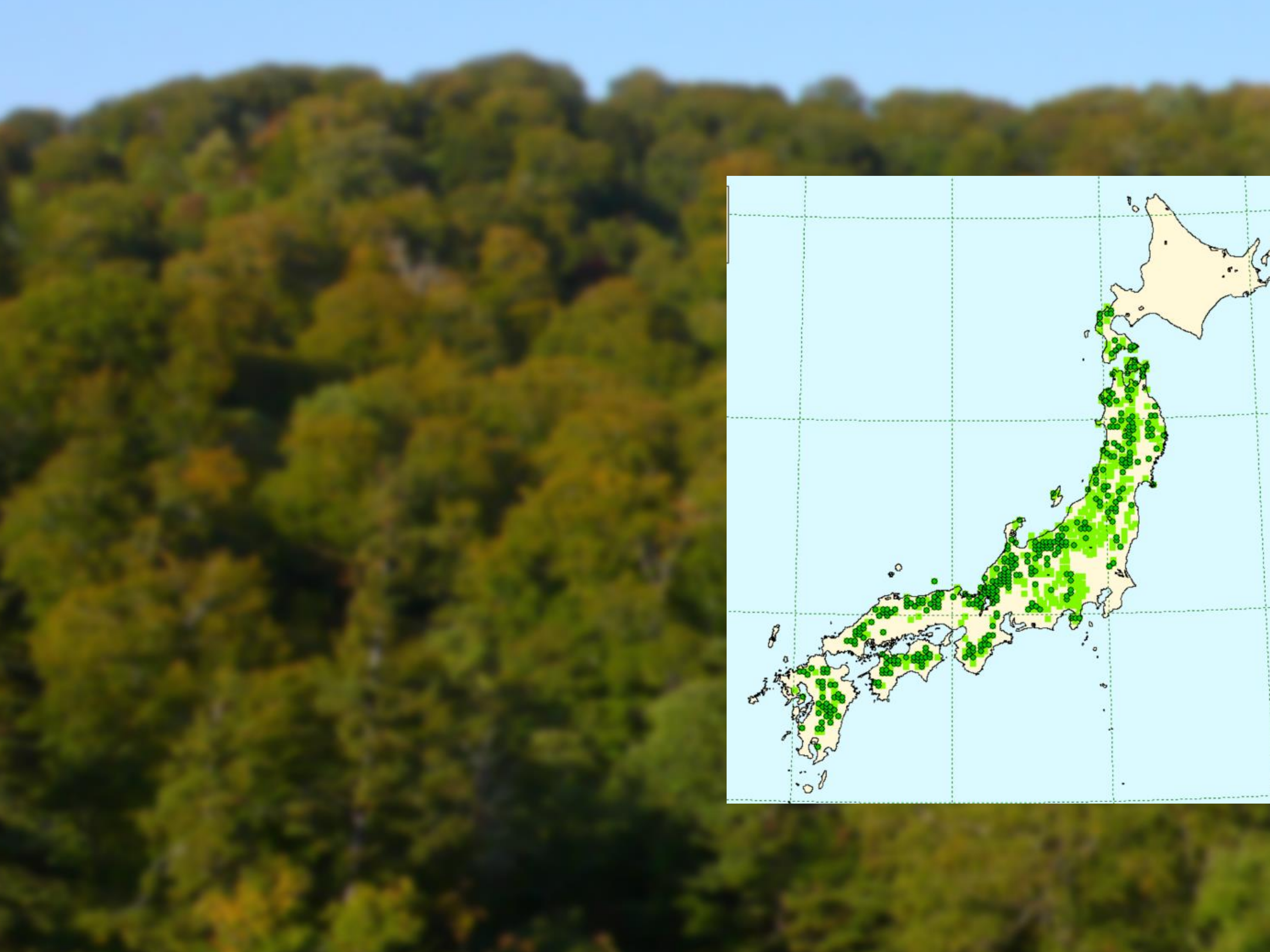
Fagus japonica – Arboretum Kalmthout, Belgium - BD.22743 - 2013.0519 028

Fagus japonica – Arboretum Kalmthout, Belgium - BD.22743 - 2013.0519 028


20
19
18
17
16
15

Fagus japonica (PdS,Lake Chuzenji,Honshu,JP) – Arb. Wespelaar 13021-wld-153 - 2023.1117


Fagus crenata



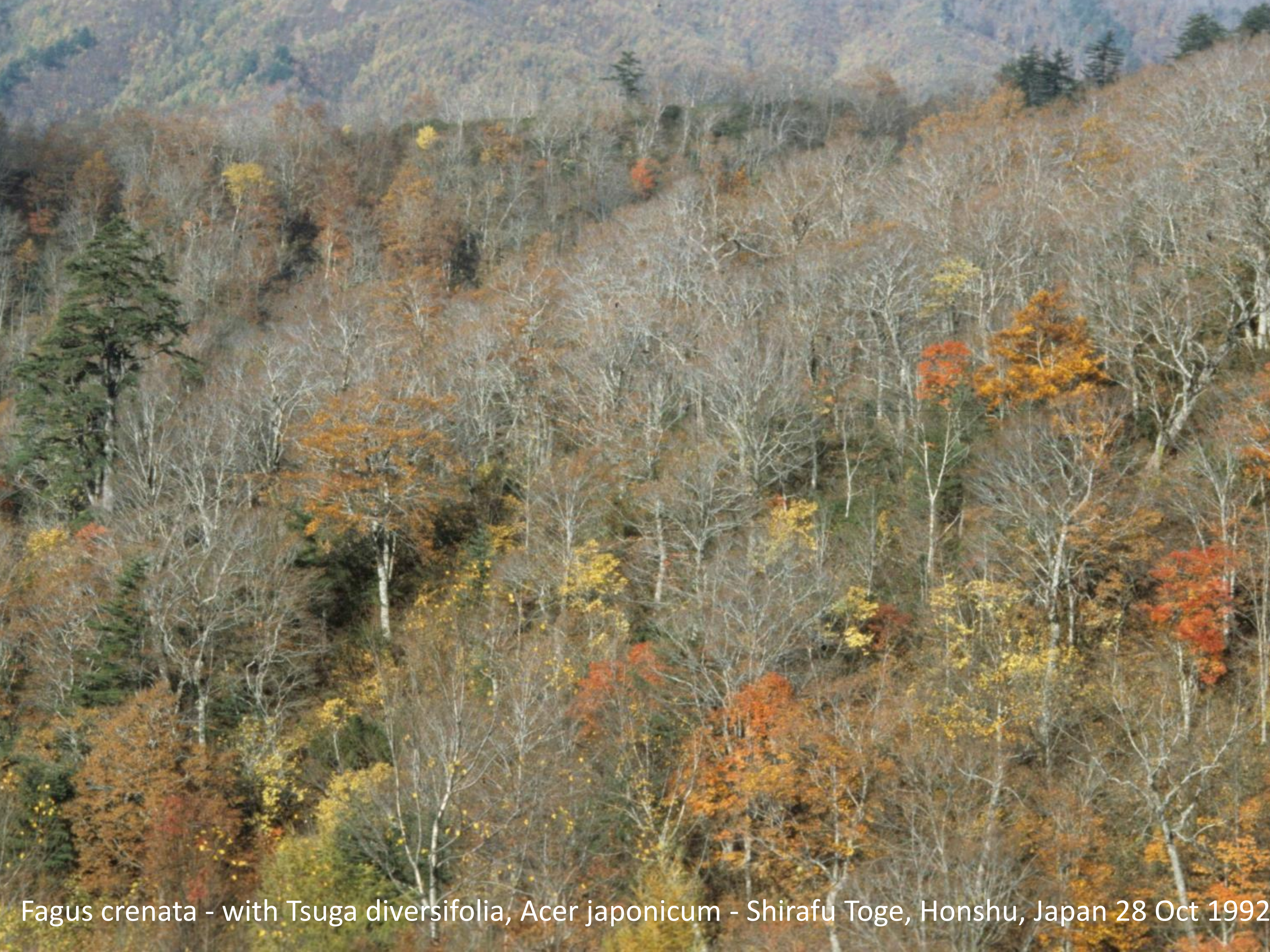
Fagus crenata (Onuma park,Hokkaido) Arboretum Wespelaar - 94309-wld-138 - Crenate leaf

Fagus crenata - Lake Chuzenji, Nikko, Honshu Japan - 2008.


Fagus crenata - Lake Chuzenji, Nikko,
Honshu Japan - 2008.1009

Fagus crenata, Abies mariesii – Mount Sanpokojin 1340m, Zao Onsen , Honshu, Japan – 2008.10

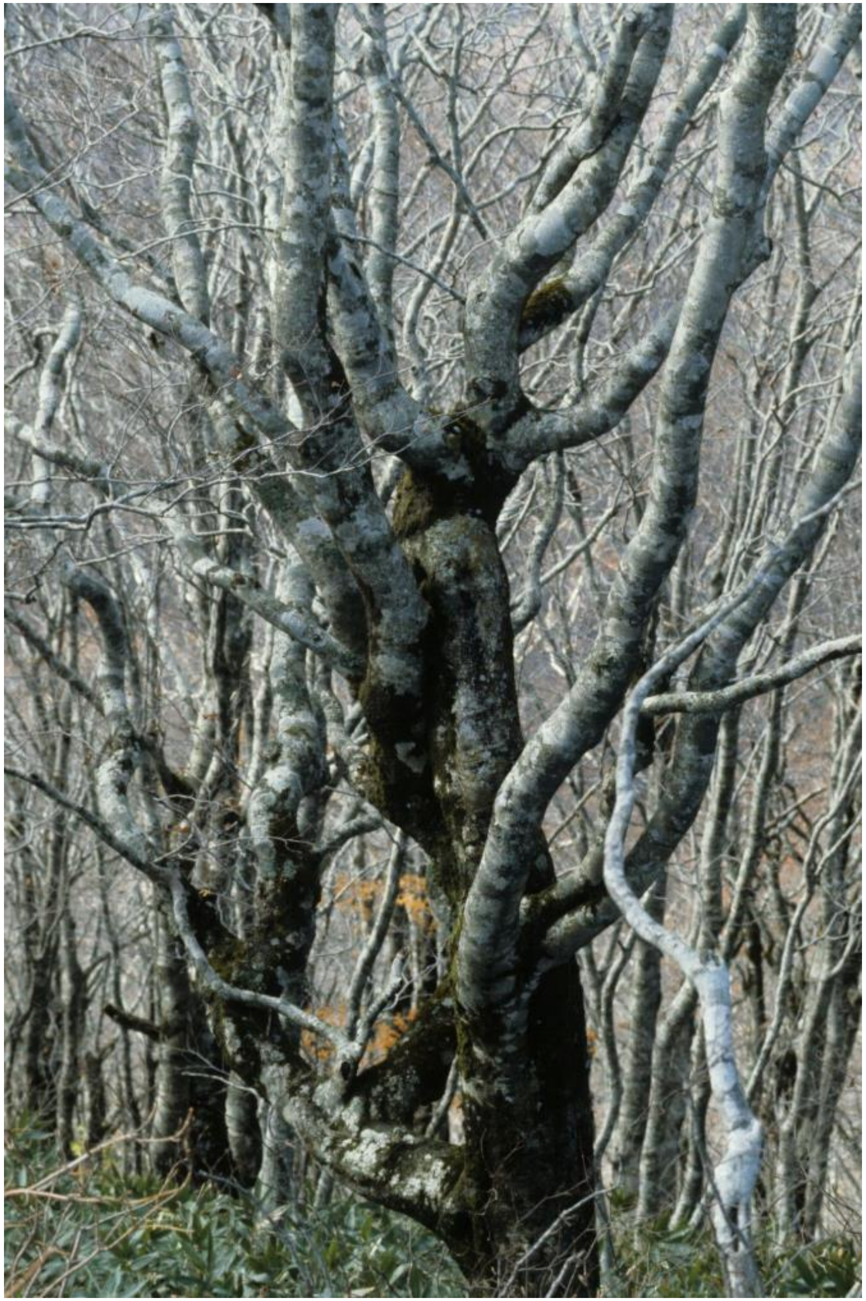
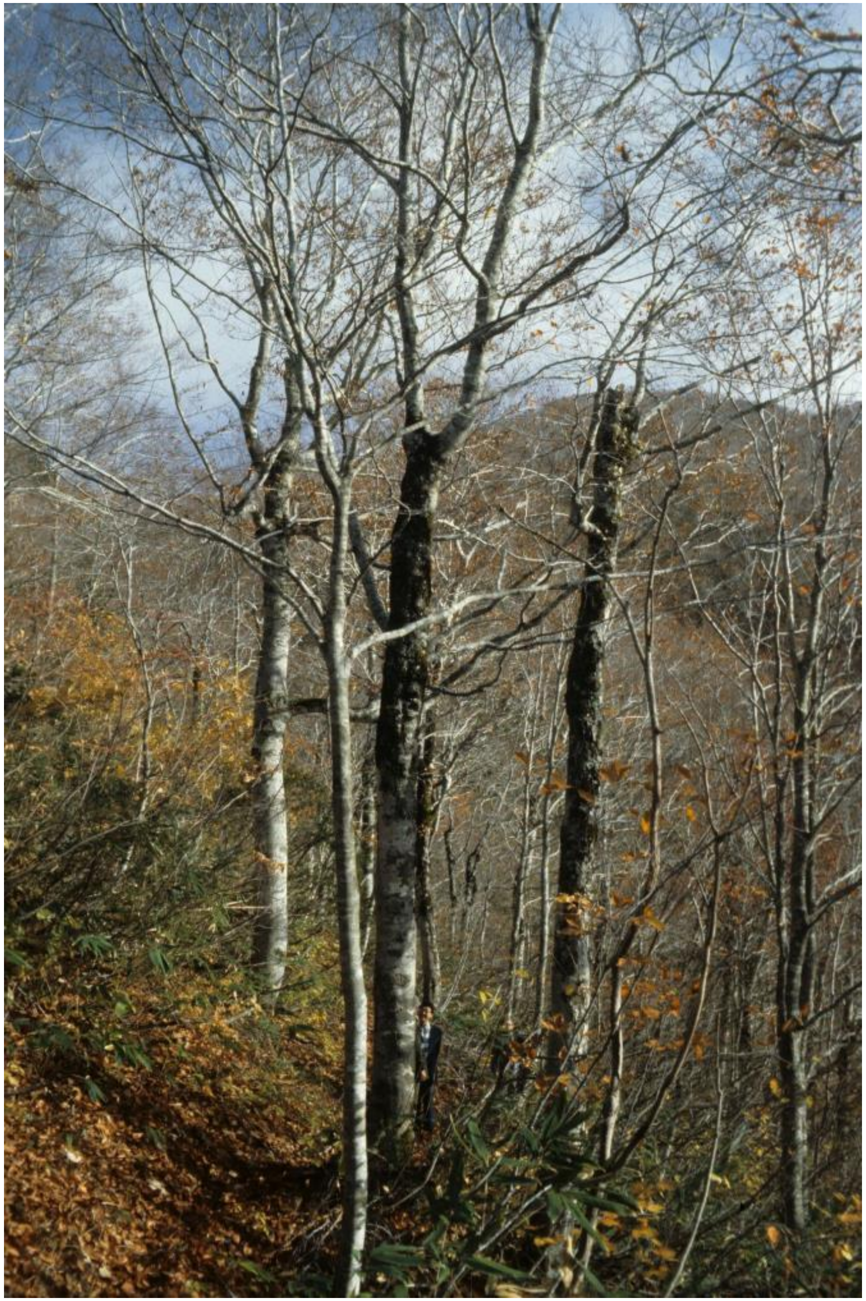
Fagus crenata – Mount Sanpokojin Ski slope, 1340m, Zao Onsen , Honshu Japan – 2008.1006



Fagus crenata - with Tsuga diversifolia, Acer japonicum - Shirafu Toge, Honshu, Japan 28 Oct 1992

Fagus crenata - Shirafu Toge at the pass 1350m, Mount Azuma Region - View to the North, Honshu, Japan - IDS- 28 Oct 1992b

Fagus crenata - Shirafu Toge at the pass 1350m, Mount Azuma Region - View to the North, Honshu, Japan - IDS- 28 Oct 1992b

Fagus crenata - Shirafu Toge above and below pass 1350m, pure stand - Honshu, IDS 1992


Fagus crenata - Onuma Park, Hokkaido, Japan – IDS - 25 October 1992

Fagus crenata - Sapporo Botanic Garden, Sapporo, Hokkaido, JP -2010.1102

Fagus crenata (ex Onuma Park. Hokkaido, Japan) - 94309-wld-138 - 2016.1030 __BD.30145


The end