

Cambridge University Press

978-0-521-54231-9 - Ecology of Woodlands and Forests: Description, Dynamics and Diversity

Peter A. Thomas and John R. Packham

Index

[More information](#)

Index

Bold numbers refer to pages giving a definition of key terms.

Note that members of several groups including the deer, ferns, firs, maples, oaks and sedges are listed together.

- Abies* see firs
- Acacia* wattle ii, 29, 53, 81, 219, 243, 363, 447
- Acer* see maples
- Acid rain 138, 319, 462–5
- Acorns 137, 170, 226
- African geographical patterns 248–50
- Agathis* Kauri pines 252
 - A. australis* Kauri or Cowdie pine 33, 254
 - A. brownii* Kauri of the East Indies 254
 - A. dammara* 254
 - A. jurassica* 251
- Agave americana* 362
- age determination
 - trees **196** (year of death 205)
 - reptiles 355
- agouti *Dasyprocta aguti* 256–7
- agro-forestry 61, **474**–5
- alder *Alnus* 30, 54, 100, 215
 - A. glutinosa* common alder 69, 70
 - A. japonica* Japanese 423
 - A. rubra* red alder 332
- alien species (exotics) 32, 56, 114, 198, 218–19, 381, 421, 434
- allogenic factors **115**
- alluvium **50**
- alternation of generations 352
- Amazonian forest 31, 79, 303, 344, 366, 398, 433
- American sycamore *Platanus occidentalis* 369
- ammonia 332–4
- amphibia 20, 314
- amphotolerant **66**
- ancient woodland **431**
- Ancient Tree Forum (ATF) 139
- Ancient Woodland Vascular Plant Indicators (AWVP) 101, 260–262, 475
- angiosperms 138, 139, 352
- annual increments
 - current (CAI) **402**, 403
 - mean (MAI) **403**, 404
- annual rhythms 107–9
- anthrosols **80**
- antipathetic carnivores 233
- ants 77–8, 477
 - Formica rufa* 477
 - Lasius niger* 477
- antwrens *Myrmotherula* spp. 244
- Araucaria* 252
 - A. bidwillii* Bunya pine 254
 - A. araucana* monkey puzzle 30, 33, 413
 - A. cunninghamii* Moreton Bay or Hoop pine 252
 - A. heterophylla* Norfolk Island pine 254
- Archaeopteryx* 355
- arctic timberlines 126, 127
- Arley Arboretum, Worcs 60
- Armillaria* spp. 204
- arson **220**
- artiodactyls **220**
- ash *Fraxinus* 64, 65
 - common *F. excelsior* 58, 67, 100
 - black *F. nigra* 149
 - white *F. americana* 149, 407
- asian longhorned beetle (ALB) *Anoplophora glabripennis* 197–199
- aspect societies **17**, 107
- aspen: see *Populus*
- aspen flower parasite *Taphrina johannssonii* 260
- aspen hoverfly *Hammerschmidtia ferruginea* 260
- Aspergillus* 282
- auroch *Bos primigenius* 235
- autotrophs **22**
- bacteria 64, 171, 241, 279–281, 283
- badgers *Meles meles* 20, 432, 445
- bamboos 175, 180, 224
- bamboo circle masting hypothesis
- bank vole *Clethrionomys glareolus* 20
- bare half-year **17**
- barren strawberry *Potentilla sterilis* 101
- basifugal mortality **140**

- bats 20, 76, 140
 beak size 244
 bears 188
 American black *Ursus americanus* 22, 181, 234
 Asian black *Ursus thibetanus* 234
 giant panda *Ailuropoda melanoleuca* 180, 445
 grizzly *Ursus arctos horribilis* 181, 234
 Malaysian sun *Helarctos malayanus* 181
 polar *Ursus maritimus* 181
 spectacled *Tremarctos ornatus* 180
 sloth bear *Melursus ursinus* 234
 bearberries *Arctostaphylos* 202
 beaver *Castor*
 European *C. fiber* 227, 229
 North American *C. canadensis* 227
 beech: see *Fagus* and *Nothofagus*
 beech bark disease *Nectria coccinea* 206
 beech continuity 258
 bees 257
 beetles 245–6, 315
 stag *Lucanus cervus* 315
 Białowieża forest 171, 192, 305, 389–93
 Biggin's Wood, Kent 479–80
 biodiversity 241–75, 435–40
 alpha 247
 beta 247
 ecosystem history 248–250
 gamma 247
 temporal 247
 use of remote sensing 266
 biofuel 457
 biogeochemical cycles 328
 biological spectra 84–91
 biomass (standing crop) 79, 318–24
 above and below ground 79
 fate of 290
 biomes (terrestrial) 25, 35, 188
 birch *Betula* 30, 53, 56, 202, 309, 310
 black *B. lenta* 199
 downy *B. pubescens* 68, 70, 90, 122, 196
 dwarf *B. nana* 337
 Erman *B. ermanii* 202, 373
 paper *B. papyrifera* 202, 294, 365
 silver *B. pendula* 13, 68, 70, 372
 yellow *B. alleghaniensis* 298, 319, 449
 yellow *B. lutea* 59, 120
 B. corylifolia 373
 bird cherry *Prunus padus* 100
 birds 16, 20, 140, 154, 230, 272–3, 434, 453
 origin 355
 vertical distribution 16
 bird's-nest orchid *Neottia nidus-avis* 108
 bison *Bison*
 American *B. bison* 233
 European *B. bonasus* 221, 233, 234, 235, 393, 446
 black grouse *Tetrao tetrix* 224
 black locust (= false acacia) *Robinia pseudoacacia* 305, 333
 Blakemore Coppice, Shropshire 474
 bluebead lily *Clintonia borealis* 262
 bluebell *Hyacinthoides non-scripta* 13, 17, 54, 102, 107–10, 148, 251, 413, 414, 473, 475–6
 blue stain fungi 401
 boar, wild *Sus scrofa* 20, 221, 224–5, 262, 432
 bogmoss *Sphagnum* 71, 115
 Bolling 414
 boreal forest 3, 29, 30
 boscobel oak 207
 bottle-brush *Banksia* 383
Brachystegia 28
 bracken *Pteridium aquilinum* 13, 14, 17, 54, 103, 110, 438
 bracket fungi
 bramble *Rubus fruticosus* 13, 68, 148, 370, 438, 468, 472
 brazil nut *Bertholletia excelsa* 6, 255–257
 brimstone butterfly *Gonepteryx rhamni* 454
 bristle-moss *Orthotrichum gymnostomum* 260
 brown earths 44, 47–8
 browseline 233, 229
 bryophytes 13, 18, 36, 75–6, 145, 264–5, 308, 311, 444
 epigaeics 311
 epixylic specialists 311
 facultative epiphytes 311
 opportunistic generalists 311
 life forms 87–8
 on rotting wood 308
 and soil conditions 268
 distribution and zonation 268, 269
 bud
 bank 372
 burst 196
 bulky beech substrata (indicators) 258–260
 bush vetch *Vicia sepium* 100
 buttonwood *Conocarpus erectus* 381
Calamites 353
 calcicoles 65
 calcifuges 65
 calcium 65, 319, 340, 463, 465
Calocedrus decurrens incense-cedar 125
 Cantrey Wood, Bridgnorth 158, 181, 182, 340
 canopy dynamics 93
 canopy gaps 12, 27, 95, 97, 236
 canopy layers 76, 83
 canopy shyness 12, 58
 capercaillie *Tetrao urogallus* 224
 cape sorrel (= Bermuda-buttercup) *Oxalis pes-caprae* 32
 carbon
 balance (NPP) 322
 dioxide 276, 456
 pools 301, 456–60
 /nitrogen (C/N) ratio 41, 52, 285
 sequestration 455–61
 carnivores 22, 187, 189, 230–5
 carnivore antipathies 233
Carya hickories 359
 cassowary *Casuarius* 227, 228
 Castelporziano, Italy 206

516

- Castanea*: see chestnuts
 cation exchange capacity (CEC) 46, 49
 cauliflory **78**
Cecropia Amazonian tree 443, 444
 cellulose 283
 centipedes 20, 24
Cervus elaphus red deer (called elk in North America) 20, 221, 222, 331
 Chaddesley oaks, Wors 191, 194
Chamaecyparis false-cypresses 33, 357
C. lawsoniana Port Orford cedar 34, 208
C. nootkatensis yellow cedar 34
C. obtusa Hinoki cypress 34
C. pisifera Sawara cypress 34
C. thyoides Atlantic white cedar 34
 charcoal 80, 313, 388, 440
 chasmogamy 109, **162**, 163
Chaerophyllum temulum rough chervil 100
 chelating mechanisms **65**
 chemoautotrophs **187**
 cherries *Prunus* spp. 185
 bird *P. padus* 100
 wild *P. avium* 100
 chestnut *Castanea* 156
 Japanese *C. crenata* 214
 Chinese *C. mollissima* 214
 American *C. dentata* 213–4
 European or sweet *C. sativa* 213–4, 218, 412
 chestnut or Asiatic blight *Cryphonectria parasitica* (= *Endothia parasitica*) 51, 206, 213–4
 chickweed-wintergreen *Trientalis europaea* 75, 90
 chinquapins *Castanopsis* 156
 chlorophyll content 103, 104
 Chronic Nitrogen Amendment Study 458–60
 chronologies
 Bristlecone pine ring-width 9–11, 121
 cicadas 289
 cleavers *Galium aparine* 100, 147
 cleistogamy 109, **162**, 163
 climate change 66–69
 climatic thresholds 455
 climatic influence on masting 182–184
 climax vegetation **367**
 cloning 103, 105, 422, 423
 clonal forestry **422**
 closed canopy forest 235–240
 cloud forests 26, 31–3
 clubmoss *Lepidodendron* 353–4
 C/N ratio 41, 52, 285
 coachwood *Ceratopetalum apetalum* 251
 coal measure forests 2, 76, 353–4
 coarse woody debris (CWD) 258, 302–17, 324
 coastally restricted forests 29, 30
 cock's foot *Dactylis glomerata* 100
 coefficients of variation (CVs) 174
 cold-blooded (poikilothermous) 356
 colluvial soils **50**
 colonial insects 28, 77, 78, 315
 colt's-foot *Tussilago farfara* 66
 common figwort *Scrophularia nodosa* 101
 common chickweed *Stellaria media* 147, 148

Index

- community assembly **366**–8
 competition 139, **145** (root competition 373)
 competitors (C) **145**, 188
 cones, serotinous **133**
 connectivity in landscape 431, 432
 conservation 273–5, 435–40, 444
 continental drift 81
 conveyor current 451
 coppicing 61, 220, **411**, 413
 coppice-with-standards **411**
 coprophagy **284**
 coralroot orchid *Corallorrhiza trifida* 108
Cordyline rubra 104
 cork cambium 9
 coronet cutting 142, 312
Cornus sanguinea dogwood 100
C. florida 294
 corvids 155, 371
Corydalis cava hollowroot 100, 109
 cougar *Felis concolor* 233
 Covington curve 286, 287
 coupe **424**
 cow-wheats *Melampyrum* 218
 crab apple *Malus sylvestris* 480
 creeping soft-grass *Holcus mollis* 13, 14, 17, 36, 54, 438
 Crete 361, 363
Croton megalobotrys 243
 cryptogams **71**, 72
 cryptogamic mats **71**, 263–5
 cryptogamic soil crusts **263**
 CSR strategies 144–7, 477
 cumulative number curves **122**
 current annual increment (CAI) 402, 403
 cyanophyta (blue-green algae) 2
 cyclical turnover (cyclic change) 235–7, 238–40, 368
Cydia fagiglandana 156, 166, 168, 176
 cypress *Cupressus*
 Mexican *C. lusitanica* 241
 Italian *C. sempervirens* 361
 cypress aphid *Cinaria cupressi* 241
 cypresses *Taxodium* spp.
T. distichum bald cypress 31, 64
T. mucronatum Mexican swamp cypress 127
 Cyprus 361, 363
Dactylopsida trivirgata striped marsupial possum 315
 Dalby Söderskog, Sweden 238
 dark phase **17**
Dasyprocta aguti (an agouti) 256
 Darwin, C. 144, 250, 343
 dead wood 302–8
 death-watch beetle *Xestobium rufovillosum* 246
 decay 276–88
 decay detection (non-destructive) 142, 143
 decay rate of Norway spruce logs 309, 310
 decay rates of wood 317
 deciduous strategies and forests 12, 17, 26, 29, 127–31
 decomposition **276**–317
 decomposition rate constant **299**

- DECORANA ordination 149
 decomposers 22, 23, 188, 189
 fungal 188, 278, 281, 282
 deer 29, 220–5, 243, 445
 black-tailed deer *Odocoileus columbianus* 223
 O. virginianus white-tailed 171, 223
 caribou and reindeer *Rangifer tarandus* 221, 223
 Chinese water-deer *Hydropotes inermis*
 fallow *Dama dama* 20, 222
 impala *Aepyceros melampus* 243
 moose (sometimes called elk) *Alces alces*
 221, 222
 muntjac *Muntiacus*
 Indian *M. muntjak* 223
 Chinese *M. reevesi* 223
 red (called elk or wapiti in North America)
 Cervus elaphus 20, 221, 222, 331
 roe *Capreolus capreolus* 20, 221, 222
 Siberian roe *C. pygargus* 223
 sika *Cervus nippon* 223
 deer control 230
 defoliation 190, 191
 by insects 190–200, 289
 deforestation 4, 443
 Defra (Department of Environment, Food and Rural Affairs) 207
 degradative stages 285–8
 dendrochronology 9–11, 120–3, 196
Deschampsia cespitosa tufted hair-grass 54, 101, 145
D. flexuosa wavy hair-grass 53, 66–9, 73, 264
 desertification 445–447
 detection of trunk decay 142, 143
 detritivores 24, 278, 279, 285
 ‘detritus’ 288, 291
 ‘devils’ gardens’ 78
 dewberry *Rubus pubescens* 100
 d-factors (myco-viruses) 212
 diameter at breast height (dbh) 363, 404
 reversed J-curve 238
 diaspores 160
 diffuse-porous trees 209
 dinosaurs 230, 231, 353, 355
Dilwynites pollen 253
 diplochory 154
Diprotodon optatum marsupial 357
 dipterocarps 26, 55, 77, 203, 268, 348, 398
 Shorea quadrinervis 95, 96
 disease 60
 risks 197–201, 422, 424–6
 long distance transport 197–201
 dissolved organic matter (DOM) 277, 335, 339
 dissolved organic nitrogen (DON) 277, 335–6,
 334, 336–9, 341
 disturbance 120, 145
 diversity 62
 dog’s mercury *Mercurialis perennis* 18, 54, 67–8,
 100, 107, 148, 212, 261, 274, 479
 dogwood *Cornus sanguinea* 100
 Doñana National Park, Spain 432
 dormouse *Muscardinus avellanarius* 445
Dothistroma pini needle-blight 208
 Douglas fir *Pseudotsuga menziesii* 57, 60, 124–5,
 165, 169–70, 174, 202, 218, 274, 305, 307, 318,
 357, 404, 418, 438
 drought 382
 drumlins 364
Duroia hirsuta Amazonian tree 78
 Dutch elm disease *Ophiostoma novo-ulmi*, *O. ulmi* 9,
 60, 190, 199, 201, 206, 209–13, 426
 dwarf mistletoe *Arceuthobium americanum* 216, 217
 dwarf trees 123, 153, 309, 379, 380
 dystrophic 72
 early dog-violet *Viola reichenbachiana* 101
 earthworms 23–5, 48, 52, 56
 earthquakes 374–5
 eastern spruce budworm *Choristoneura fumiferana* 193
 echidnas 356
 long-beaked echidna *Zaglossus bruijni* 357
 spiny anteater *Tachyglossus aculeatus* 357
 ecoclimatic stability 266
 ecological amplitude 137
 economy of scale (EOS) masting hypotheses
 175, 176
 ecosystem
 function 353
 productivity 325
 resilience 461
 resistance 461
 ecotone 117
 ecotron 395
 ectomycorrhizas (ECM) 202–4
 edge effects 431–5
 edible dormouse *Glis glis* 178, 179, 381
 elaiosome 156, 477
 elder *Sambucus nigra* 100
 elfin woods 119
 elephants
 African *Loxodonta africana* 156, 219
 forest African *L. cyclotis* ii
 Asiatic *Elephas maximus* 219
 extinct *Palaeoloxodon antiquus* 71
 interglacial destruction of trees 219
 elm *Ulmus* 31, 64, 86, 411
 American *U. americana* 149
 Asian *U. parviflora*, *U. pumila* 213
 Atinian 426
 English *U. procera* 210, 241
 smooth-leaved *U. minor* ssp. *carpinifolia* 210, 479
 wyck *U. glabra* 72, 210, 390, 412
 elm bark beetles *Scolytus*
 large European *S. multistriatus* 210
 small European *S. scolytus* 210
 emergents 83
 enchanter’s-nightshade *Circaeae lutetiana* 54, 101,
 148, 154, 477, 479
 endemics 249, 250
 eluviation 40
 energy budgets 327
 energy flow 19, 326–8
 English Nature 349

- Enoicyla pusilla* terrestrial caddis 439
 environmental prediction masting hypothesis 175
 epiphytes 76, 86, 214–6, 275, 345
 ercall soils 53–4, 476
Erinaceus europaeus hedgehog 20, 472
Erythronium americanum yellow trout lily 334
 ethical problems 481
 eucalypts *Eucalyptus* gum trees 7, 8, 81, 203, 218, 229, 255, 362, 384
 climatic adaptation 7, 8
 relationships with fire 8
 size 7
 water losses in intense heat 92
E. camaldulensis red river gum 7, 317, 447
E. globulus Tasmanian blue gum 7
E. marginata jarrah 8
E. obliqua 303
E. orientalis 84
E. papuana ghost gum 8
E. pauciflora snow gum 8, 121
E. siberiana silvertop ash 413
 E. regnans mountain ash 7, 8, 92, 317
Eucryphia cordifolia 375
 eutrophication 349, 407, 475
 eutrophic lakes 114
 evapo-transpiration 82, 111, 113
 even-aged single-species stands 409
 evergreen forests and strategies 12, 25, 26, 29, 33, 127–131
 facilitation 202, 367
Fagus beech 135–8, 284
 F. grandifolia American beech 120, 137, 148, 168, 206, 294, 319, 388, 411–13, 449
 F. sylvatica common beech 59, 67, 91, 96, 100, 120, 128–32, 136, 156, 163–8, 206, 257, 306, 323, 370, 424, 449, 450
 false acacia (= black locust) *Robinia pseudoacacia* 305, 333
 false-brome *Brachypodium sylvaticum* 101
 felted beech coccus *Cryptococcus fagisuga* 206
 ferns
 broad buckler *Dryopteris dilatata* 101, 468
 lady *Athyrium filix-femina* 101, 151, 349
 Hart's tongue *Phyllitis scolopendrium* 69
 male *Dryopteris filix-mas* 54, 101, 148
 narrow buckler *D. carthusiana* 264
 oak *Gymnocarpium dryopteris* 90, 101
 ferns from New Zealand (all on p.162)
 Blechnum discolor Piupiu crown fern
 B. procerum hard water fern
 Cyathea smithii Katote soft tree fern
 Dicksonia squarrosa Wheki rough tree fern
 Gleichenia dicarpa Waewaekaka tangle fern
 Grammitis billardierei Paretao strap fern
 Hymenophyllum multifidum Mauku filmy fern
 Schizaea fistulosa
 ferrous wheel hypothesis 336
 fertilizers 55, 62, 294, 338, 347–9, 407
 Fiby urskog 69–76, 89–91, 122–3, 264, 309–11, 378–80
 field mushroom *Agaricus campestris* 201
 figwort, common *Scrophularia nodosa* 101
 firs *Abies*
 alpine or sub-alpine *A. lasiocarpa* 124, 386
 balsam *A. balsamea* 120, 128, 149, 365
 grand *Abies grandis* 125, 404
 Marie's *A. mariesii* 373, 376
 Nikko *A. homolepis* 224
 noble *A. procera* Rehd. Syn. *A. nobilis* Lindl. 154
 Pacific silver *A. amabilis* 290, 300
 silver *A. alba* 58, 135, 359, 384
 Veitch *A. veitchii* 373, 378
 fire 8, 27, 80, 133, 255, 277, 303, 313, 382–6
 canopy 383
 ground 383
 surface 382
 Flandrian 358
 flood control 114
 flushing 107
 fly honeysuckle *Lonicera xylosteum* 100
 foetid laurel *Ocotea foetens* 32
 fog-drip 112
 foliovore 398
Fomes fomentarius hoof or tinder bracket fungus 271
Fomes root rot *Heterobasidion* 205–6
Fomitopsis pinicola 270
F. rosea bracket fungus 270
 food chains 187
 food niche differentiation 284
 food webs 19, 21, 187, 284
 foraging 105, 317
 by modular herbs 102, 105
 root 61
 forbs 477
 forest 4
 -adapted African species 248–50
 area 1, 3
 clearance 4, 345–7
 closed canopy 4
 decline 462–5
 degradation 460
 interior species 432
 mensuration 406
 multiuse 409
 practices 424–7
 stability 395
 stands 4
 systems: see sylvicultural systems
 types 25–34
 values and products 5, 6
 wetlands 31
 Forest Stewardship Council (FSC) 428
 Forester's maturity 403
 forestry 345–7, 393
 fox *Vulpes vulpes* 20, 233
 foxglove *Digitalis purpurea* 476
 fragmentation and connectivity 430–5
Frankia alni 215
 frass 19, 192
Fraxinus: see ash
 freshwater coastal forests 33
 fresh weight/dry weight ratios 106

- frugivores **398**
FST Formosan subterranean termite *Coptotermes formosanus* **315**
 fuel ladder **384**
 functional redundancy **255, 395**
 fungi **41, 55, 64, 78, 188, 201–14, 281–4, 439**
 blue stain **401**
 bracket **270, 271**
 brown rots **316**
 edible **6, 201**
 ectomycorrhizal (**ECM**) species **330**
 endomycorrhizal (arbuscular) **330**
 ericaceous **330**
 hotspots of insect diversity **269–272**
 indicators **258–260**
 white rots **316**
 fungivores **271**
 funnel cells **102**
 Gadgil effect **283**
 gametophyte **352**
Ganoderma root and butt rot **208, 271**
 gap-phase succession **371**
Garcinia livingstonei **343**
 genetic drift **242**
 genetic engineering **422**
 genome **252**
 genotypes **407**
 geological periods **2, 350–63**
 geometrid caterpillars **191, 194–5, 224**
 giant bellflower *Campanula latifolia* **101**
 giant fescue *Festuca gigantea* **101**
 giant sequoia (or Big tree) *Sequoiadendron giganteum* **8, 61, 203**
 glacial till (drift deposits) **51**
 Glen Affric **444**
 gley soils **47**
Glis glis edible dormouse **178, 179, 381**
 global dimming **451–2**
 globalization **226**
 global warming **195, 398, 423, 447–52**
 change in tree planting policy **452**
 resultant sea level rise **418**
Glossopteris fossil tree **80**
 Goldilocks buttercup *Ranunculus auricomus* **100**
 Gondwanaland **81, 250–55, 431**
 gooseberry *Ribes uva-crispa* **100**
 goosegrass (cleavers) *Galium aparine* **100, 147**
 grass trees *Xanthorrhoea* spp. ‘black boys’ **255**
 grazing chain (herbivore subsystem) **21, 36, 187**
 greater stitchwort *Stellaria holostea* **48, 477**
 green anaconda *Eunectes murinus* **231**
 griffenflies **354**
 ground-elder *Aegopodium podagraria* **100**
 ground ivy *Glechoma hederacea* **101, 105**
 grove phase **237**
 growth of forests **318–24**
 growth analysis **98, 99, 102, 103–7**
 growth rings (annual)
 trees **309**
 reptiles **355**
 guilds **244**
 gymnosperms **138, 139, 352**
 gypsy moth *Lymantra dispar* **70, 425**
 Gyttja (lake deposits) **115, 116**
 Haast eagle **482**
 habitat creation **475–481**
 hair-grass, tufted *Deschampsia cespitosa* **54, 101, 145**
 D. flexuosa wavy hair-grass **53, 66–9, 73, 264**
 hairy wood-rush *Luzula pilosa* **68, 75, 101**
Hakea spp. **63, 424**
Hamamelis virginiana American witch hazel **51**
 Harvard Forest **304, 306, 458–60**
 harvest mouse *Micromys minutus* **445**
 haustoria **216**
 hawthorns *Crataegus* spp. **100, 393, 454**
 Hayley Wood, Cambs **48**
 hazel *Corylus avellana* **13, 100, 156, 392, 411**
 heather *Calluna vulgaris* **13, 53–4, 66, 72, 148, 264, 273, 372**
 heavy metal pollution **469–71**
 hedgehog *Echinaceus europaeus* **20, 472**
 hedge woundwort *Stachys sylvatica* **100**
 height-light trajectories **97, 98**
 helical roll vortices **377**
 hemicelluloses **312, 316**
 hemiparasites **216–218**
 hemlocks *Tsuga*
 Carolina *T. caroliniana* **199**
 Eastern *T. canadensis* **51, 115, 120, 149, 199, 224, 449**
 Japanese *T. diversifolia* **373**
 Mountain *T. mertensiana* **300**
 Western *T. heterophylla* **16, 125, 135, 322, 337**
 hemlock woolly adelgid (HWA) *Adelges tsugae* **199–201**
 herbicides **7, 319, 347**
 herbivores **36, 187, 189**
 herbivore/carnivore subsystem **22**
 herbivore–plant interactions **189**
 herbivore/hunter balance **232–5**
 herbivory **18, 22, 95, 97**
 herb layer **13, 100–2**
 herb paris *Paris quadrifolia* **100, 261**
 herb robert *Geranium robertianum* **153**
Heterobasidion annosum Fomes root rot **205, 206**
Heterohyus nanus fossil mammal **315**
 heterotrophs **22, 187, 201, 215, 367**
Hevea brasiliensis rubber tree **424**
 hickories *Carya* **359, 369**
 hollow corydalis (= Hollowroot) *Corydalis cava* **100, 109**
 holly *Ilex aquifolium* **233, 291**
 holocene **234, 360**
 pollen record **30**
 homoeothermic **327, 356**
 honey fungus *Armillaria mellea* and *A. gallica* **204–5, 317, 425, 428, 439**
 honeysuckle *Lonicera paericylmenum* **13**
 L. xylosteum fly honeysuckle **100**

- hoof fungus *Fomes fomentarius* 270, 271
Hookeria lucens 269
hop *Humulus lupulus* 100
hornbeam *Carpinus betulus* 56, 100, 107, 323
horsechestnuts *Aesculus* 156, 419
host resistance 425
‘hotspots’ of diversity 266
Hubbard Brook, New Hampshire 286, 287, 318–20, 340, 342, 346, 347
Hubbard Brook Experimental Forest HBEF 318–320, 463, 464
hulks (= snags) 165, 275, 303, 307
humification 276
Humulus lupulus hop 100
humus 41–3, 45, 48, 52, 276, 301–2
hunting 243, 393, 446
Hurricane Georges 469
Hurricane Mitch 380
Hutchinson’s ‘Law of limiting similarity’ 244
Hyacinthoides non-scripta (= *Endymion non-scriptus*) bluebell 13, 14, 17, 54, 102, 107–10, 148, 261, 413, 414, 473, 475–6
H. hispanica Spanish bluebell 218
hybrid vigour 423
hydraulic lifting 14, 17
hydrological studies 112–14
hydrometeorological teleconnections 111, 112
Hylobius abietis large pine weevil 197
hypostomatus leaves 99
hypovirulence 214
Hypsipyla spp. shoot borers 428
- ice ages 3, 357–8
ice storm 342
illuviation 40
index of similarity 90
Indian paintbrushes *Castilleja* spp. 218
indicator species 149
environmental 62
ancient woodland vascular plant (AWVP) 101
slow spread AWVP to secondary woodland 262–3
infiltration 113
insects 244–7, 269–72, 313, 428
colonial 270, 315
succession on fallen wood 313
interception storage capacity 113
interglacial periods 359
Cromerian 359
Hoxnian 359
Ipswichian 359
Flandrian 358
intermediate disturbance 448
IPM (Integrated Pest Management) 428
invertebrates 20, 23
island biogeographical theory 462
isolated faunas 356
iteroparous breeding 177
ivy *Hedera helix* 36, 54, 85, 100, 108, 223
Ixodes scapularis black-legged tick 171
- Janzen–Connell hypothesis 158, 159
Japanese chinquapin *Castanopsis cuspidata* 93
jay *Garrulus glandarius* 155, 157
junipers *Juniperus*
common *J. communis* 53, 68, 274, 393
maritime *J. oxycedrus* ssp. *macrocarpa* 432
Eastern red cedar *J. virginiana* 53, 389
Utah *J. osteosperma* 123
- kampfzone 117, 119
kauri pines see *Agathis*
keratin 283
kestrel *Falco tinnunculus* 481
keystone species 223, 255
koala *Phascolarctos cinereus* 8, 30, 229
krummholz 118–9, 123, 126, 128
k decomposition rate constant 299
Krakatoa 351
- Labrador tea *Ledum palustre* 70, 337
L. decumbens Narrow leaf Labrador tea 127
Laccaria bicolor symbiotic agaric 204
lammas growth 190
landscape ecology 436
LAR (leaf area ratio) 104
larch *Larix* 30, 56, 85, 127, 439
Japanese *L. kaempferi* 202
tall alpine *L. lyallii* 123
Eastern larch, tamarack *L. laricina* 30, 149, 365
laurel forests (*Laurissylva*) 31–3
leaf canopy 17
leaf litter 12, 138, 268, 269, 278
leaves 86
deciduous 128–31, 296
drip tips 78, 87
evergreen 128–31, 296
semi-evergreen 137
sizes 86
leaf size spectrum 87
Lepidodendron clubmoss 353–4
lesser celandine *Ranunculus ficaria* 100, 102, 107–9, 148, 212
lianas 32, 85, 435
lichens 36, 71, 145, 257–8, 264, 329, 379
Allotropa spp. 300
Lobaria pulmonaria 257, 379, 444
Nephroma lusitacum 379
Ramalina menziesii 329
Rhizocarpon geographicum 265
life forms of bryophytes 87, 88
life forms of flowering plants 25, 84–91
light 17, 76, 91–110
compensation point 92
saturation point 92
light phase 17
lignin 283, 297, 316
lignin/N ratio 293–5
lignotuber 8
lime *Tilia*
small-leaved *T. cordata* 72, 100

- litter 12, 278, 288–91
 fall 12, 288–91
 mixes 298
 Little Ice Age 124, 360, 448
 littoral rain forests **83**
 liverleaf *Hepatica nobilis* 90, 101
Lobariion assemblage 258
Lomandria longifolia 104
 Long Mynd Hills, Shropshire 273–4
 Lords-and-ladies *Arum maculatum* 100
 LTER project 458
 lungwort *Pulmonaria officinalis* 100
Lycopsis 2, 352
Lymantria dispar gypsy moth 170
 Lyme disease 171, 224

 Ma (millions of years ago) 80
 macrobiota **23**
 macronutrient elements 45, **328**
 Madeira 31–3, 218–19
 mahogany 428
 maiden trees **411**
 Malaysian Uniform Scheme (MUS) **410**, 411
 Mallee 255
 mammals 20
 marsupials 229, 230, 357
 monotremes 356
 placentals 230, 356, 357
 Mammal Society surveys 445
 mammoths 235, 356, 359
 mangroves 31, 64, 159–61, 381
 black *Avicennia germinans* 381
 red *Rhizophora mangle* 381
 white *Laguncularia racemosa* 381
 manuka *Leptospermum scoparium* 57
 maple syrup 199, 474
 maples *Acer* 226
 field *A. campestre* 68, 100
 Norway *A. platanoides* 359, 390, 477
 red *A. rubrum* 51, 115, 149, 199, 294, 389, 458
 sugar *A. saccharum* 17, 96, 99, 120, 149, 294–5,
 298, 305, 319, 388, 449
 silver *A. saccharinum* 99
 striped *A. pensylvanicum* 149
 sycamore *A. pseudoplatanus* 28, 100, 154, 274
 maquis **27**
 marginal thinning intensity **417**
 marsh hawk's-beard *Crepis paludosa* 101
 marula plum *Sclerocarya birrea* 53
 mass extinctions 350, 351
 masting 165–79
 causes and extent 173–7
 in ash 172, 173
 in beech 163–8
 in dipterocarps 173
 in Douglas fir 165, 169, 170
 in dying trees 163, 164
 mastodons 359
 Maunder minimum 402
 may lily *Maianthemum bifolium* 90
 meadowsweet *Filipendula ulmaria* 101, 122, 479

 Mean annual increment (**MAI**) 403–4
 mean residence time (1/k) 300
 mega-fauna corridors **482**
 megaherbivores 220–5, 243
 Meliaceae 428
 mesobiota **22**–**3**
 ‘Mesozoic dogs’ *Repanomamus* 231
 metal-tolerant ecotypes **470**
 metapopulations **429**–**30**
Metasequoia glyptostroboides dawn redwood 127
 methane 455
MHB, mycorrhizal-helper-bacteria 215
 mice, white-footed *Peromyscus leucopus* 225
 microarthropods **24**
 microbial nitrogen loop 285
 microbiota **22**, 23, 280
 micronutrient elements 45, **328**
Microraptor gui 355
 microsites **374**
 millipedes 20, 23, 24
 mineralization 385, 386
 mink *Mustela vison* 445
 miombo savanna **28**
 mistletoes 216, 217
 mites 20, 24, 280
 oribatids 24
 moder humus **52**
 mole *Talpa europaea* 20, 52
 monkey puzzle and relatives: see *Araucaria*
 monocarpic trees **175**, 177–8
 monocultures **409**
 moose (=elk) *Alces alces* 221, 222
 mopane savanna **28**
 mor humus 24, **52**, 277
 morphological inversion surface **14**, 15
 mosaics 18, 32, 61, 72, 91, 263
 Moschatel *Adoxa moschatellina* 100, 261
 mottled umber *Erannis defoliaria* 191, 192
 E. aurantica moth 92
 mountain barriers 358
 Mount Mandalagan, Philippines 183
 mud slides **114**
 Mull humus **52**, 277
 Mull, Isle of 444
 multi-use forests **409**, 410
 mutualistic frugivores **176**
 mycelial cords **317**
 myco-heterotrophy 201
 mycorrhizas 52, 66, 121, 138, 201, 203, 215,
 281, 320, 330
 ericaceous 203, **330**
 networks **202**
 myrmecophilous (ant) plants **77**, 78
 myrmecophily 77, 269

 narrow genetic base **241**
 National Forest, England 473
 National Vegetation Classification (NVC)
 35–6, 67–8
 natural (=old growth) forest **397**
 Natural England 349

necromass 21, **24**, 278, 288
 quality 293–8
 necrotization classes 309
 neem tree *Azadirachta indica* 246, 420–1, 474
 neoendemics **249**
 neophytes **218**
Nestor meridionalis (kaka parrot) 316
 net primary productivity (NPP) 290, 318, 321, 323
 nettle-leaved bellflower *Campanula trachelium*
 101, 349
 neutral theory of biodiversity **268**
 New Biggins Wood, Kent 480
 New England forests 35–8, 388–9
 New Zealand 273–5
 niche **284**
 nitrogen 114, 117, 215, 286, 296, 330–9, 435
 amendment 458–60
 ammonium 65, 332–4
 cascade **466**
 fixation 332, 333
 nitrate 65, 332, 334, 336
 nitrite 332, 336
 nitrophilic **468**
 reversed nitrogen cascade **468**
 dissolved organic (DON) 334, 335–8, 460
 pollution 465–9
 non-equilibrium mechanisms **267**
 normal forest **410**
 normal spectrum **88**, 91
 northern rata *Metrosideros robusta* 60
Nothofagus southern beeches 33, 80, 82, 165, 201,
 274, 374–5, 409
N. alpina Reuli 375
N. cunninghamii myrtle beech 82
N. dombeyi Coigue 375
N. gunnii deciduous beech 82
N. moorei Antarctic beech 82
N. obliqua Hualle 375
N. pumilio Lenga 119
N. solandri black beech 121
 nurse logs **14**, 16, 308
 nutcracker *Nucifraga caryocatactes* 151
 Clark's nutcracker *N. columbianus* 151
 nutrients
 above and below ground 78, 79, 340
 atmospheric deposition 328, 329
 availability **288**
 budgets **349**
 capital 78
 cycling 78, 242, 329, 330, 344
 deficiencies 330, 331, 338–42
 dynamics in different forests 341–5
 loss 25, **329**
 macro- and micronutrient elements 45, **328**
 ratios (stoichiometry) 331, 338
Nyassa aquatica water tupelo 31
N. sylvatica black gum 305
N. sylvatica var. *biflora* Swamp tupelo
 oak fern *Gymnocarpium dryopteris* 90, 101
 oak decline **207**

oaks *Quercus* 58, 100–2, 135–8, 156, 165, 170, 204,
 268, 323, 387, 404
Q. brachyphylla 360
 blackjack *Q. marilandica* 268
 blue *Q. douglasii* 125–6, 329
 black *Q. velutina* 268, 458
 blackjack *Q. marilandica* 268
 cork *Q. suber* 9
 Gambel *Q. gambelii* 137
 holm *Q. ilex* 17, 128, 137, 360, 291
 Japanese evergreen *Q. acuta* 93, 132
 Kermes *Q. coccifera* 360
 laurel *Q. laurifolia* 268
 northern pin *Q. ellipsoidalis* 204
 Oregon white *Q. garryana* 137
 pedunculate *Q. robur* 13, 36, 53, 100, 132, 136–7,
 170, 190, 195, 207, 370, 390
 red *Q. rubra* 51, 149, 170, 298, 305, 407, 458
 sessile *Q. petraea* 13, 36, 53, 130, 132, 170, 207, 438
 southern red *Q. falcata* var. *falcata* 207, 455
 Turkey *Q. cerris* 360
 Turner's *Q. x turneri* (*Q. robur* x *Q. ilex*) 137
 Vallonia *Q. macrolepis* 360
 water *Q. nigra* 268
 white *Q. alba* 268, 407
 willow *Q. phellos* 268
 seedling 136
 Ochils Hills, Scotland 481
 old growth forests 368
 olive *Olea europaea* 362, 422
 Olmstead, F.L. 473
 Olokomeji Forest, Nigeria 27
 orchids 203, 257
 oribatid mites (Cryptostigmata) 24
 origin of tree stock 420
 otters *Lutra lutra* 445
 overbrowsing 242
 overstorey 411
 oxlip *Primula elatior* 100
 ozone (O_3) 117, 469
 palm trees 8, 255, 361–2
 Phoenix dactylifera date palm 362
 P. theophrastii Cretan palm 361–2
 paludification **115**
 pan evaporation 452
 Pangaea 30, 357
 pannage 179
 parasites 188, **201**
Parus major great tit 196, 463
 parrots 7, 8, 76, 244, 316
 green-rumped parrotlet *Forpus passerinus* 244
 kaka and kakapo *Strigops habroptilus* 177
 kokako *Callaeas cinerea* 275
 macaws 244
 pathology 241
 pathogenic biodiversity 241
 peatland development 48
Penicillium 282–3
 perhumid (aseasonal) tropics **49**
 perissodactyls **220**

- persimmon *Diospyros virginiana* 455
 pests
 exotic 218–19, 425
 phanerophyte trunk forms 86
 pH 24, 41, 43, 45, 52, 56, 62, 64, 65, 334, 340,
 348, 463, 479
 phenology 100, 101, 107–10, 181–4, 452–4
 foliage-feeding insects
 phenological groups 100, 101, 107
 phenotypic plasticity 102, 103
 pheromones 212
 phoenix regeneration 11, 141–2
Phomopsis fungus 210
 phosphorus 65–6, 69, 81, 114, 296, 330, 338–42
 budget 340
 photoautotrophs 187
 photosynthetic activity 99
 photosynthetically active radiation (PAR) 99
 phylloplane 215
 physiognomy 25
 phyoclimate 88
 phytomediation 471
 phytometer 116
Phytophthora lateralis root disease 208
P. ramorum (sudden oak death) 214
Phytophthora spp. 207, 281
 pigs 52, 221, 409
 pignut *Conopodium majus* 107, 108
Picea see spruce
 Pines *Pinus* 131–5, 355
 Aleppo *P. halepensis* 17, 85, 186, 360
 Arolla *P. cembra* 118, 121, 155
 Austrian or black *P. nigra* 17, 186, 295, 363
 bristlecone *P. aristata* 10, 11, 121
 Calabrian *P. brutia* 360, 363
 Canary *P. canariensis* 133, 412
 Caribbean *P. caribea* 29
 Cooper *P. cooperi* 131
 Coulter *P. coulteri* 134, 154
 digger *P. sabiniana* 125, 134
 dwarf mountain *P. mugo* 132, 134, 205
 Jack *P. banksiana* 30, 134, 149, 174, 185, 294,
 365, 383
 Jeffrey *P. jeffreyi* 125, 135
 knobcone *P. attenuata* 133
 limber *P. flexilis* 121, 133
 Loblolly *P. taeda* 455
 lodgepole *P. contorta* 49, 121, 125, 133, 185,
 274, 383, 386
 maritime *P. pinaster* 185, 186
 Masson (=Chinese red) *P. massoniana* 247
 Mediterranean stone *P. pinea* 192, 123, 135, 186, 206
 Mexican mountain *P. hartwegii* 121
 Monterey
 see Radiata pine
 pinyon *P. edulis* 92, 123, 133
 pitch *P. rigida* 389
 pond *P. serotina* 31
 ponderosa *P. ponderosa* 19, 124–6, 133, 266
 radiata (=Monterey) *P. radiata* 7, 55, 57, 134,
 138, 241, 349, 421
 red *P. resinosa* 149, 363, 365, 458
 Scots *P. sylvestris* 53, 58, 68, 70, 71, 84, 91, 109,
 124, 131, 136, 173, 309, 379, 393, 403, 405
 Siberian dwarf (=dwarf stone) *P. pumila* 30, 133
 singleleaf pinon *P. monophylla* 125, 131, 133, 176
 slash *P. elliottii* 247
 stone *P. pinea* 361, 432
 sugar *P. lambertiana* 125, 132, 134, 154, 369
 Western white *P. monticola* 125
 white *P. strobus* 51, 149, 204, 294, 332, 363,
 365, 388–9
 whitebark *P. albicaulis* 30, 133, 155
Piptoporus betulinus Birch polypore 270
Pistacia lentiscus shrub 17
 Plantations 3, 275, 407–9
 Plant life forms 84–91
Platanus x acerifolia London plane 208
P. occidentalis American sycamore 369
 plate tectonics 81
Pleurozium schreberi 150, 151, 264, 265
 pneumatophores (breathing roots) 64
 podzols 34, 46–8, 56
 poikilothermic 328, 356
 polecat *Mustela putorius* 20, 445
 pollarding 142, 220, 413, 414
 pollination 152, 153
 pollution 135, 138
 polyphenols 297
 polyphenol-protein complexes (PPC) 297, 298
 polyploids 423
Polyptorellus squamosus 270
Populus poplars 30–1, 57, 404
 P. balsamifera balsam poplar 317
 P. deltoides Eastern cottonwood 31, 116
 P. grandidentata 149
 P. tremula Aspen 30, 130, 260, 309–10, 411
 P. tremuloides trembling or quaking aspen
 149, 386, 407
 possum *Trichosurus vulpecula*
 predator-prey interactions 189
 predator satiation (seeds) 166
 predator satiation masting hypothesis 176
 presettlement forests 363–6
 Pride of Bolivia *Tipuana tipu* 154
 'primer effect' 279
 Prince Edward Island; ground flora analysis
 147, 149–52
 production 128, 187, 325
 primary 22, 187
 secondary 187
 productivity 318–26
 gross primary (GPP) 321–2, 326
 net primary (NPP) 318, 321–6
 provenance 420
 pruning 78
Pseudoscymnus tsugae ladybird 201
 Psilosida 1, 2, 352
 Pteridophyta 352
Pterocarya wingnuts 359
 Pteropsida 352
Ptilidium ciliare (liverwort) 76, 265

524

Index

P. pulcherrimum 311
Ptilium crista-castrensis 310
 pulverized fuel ash (pfa) 426
 pulsed resources **289**
 quarantine 424–5
 Queensland 81–2
Quercus (see oaks)
 rabbit *Oryctolagus cuniculus* 432, 445
Racomitrium 265
 radioactive isotopes 17, 115, 344
 radioactive labelling 155
 rain forests 15, 25, 27, 76–83, 182–4,
 344, 442–4
 ramets **105**
 ramiflory **78**
 ramsons *Allium ursinum* 100, 109, 261, 474
 rankers 54, 68
Ranunculus auricomus goldilocks buttercup 100
Ranunculus ficaria lesser celandine 102, 100,
 107–9, 148, 212
Ranunculus lanuginosus downy buttercup 100
 raspberry *Rubus idaeus* 73, 75, 100, 372
 reclamation of disturbed land 426–7
 red campion *Silene dioica* 100, 476
 redwoods 8, 34, 61, 207
 regeneration
 gap-phase 373
 phoenix 141–2
 strategies 153–150
 tree 415
 waves 375
 regional ensembles **429**
 relevé **90**
 remote sensing 266
Repenomamus giganticus ‘Mesozoic dog’ 231
 reproduction and fruiting 162–164
 reproductive capacity of plants 153
 reptiles 231–2
RGR (relative growth rate) **104**, 106, 145, 191
RLGR (Relative leaf growth Rate) **104**
 resilience **461**
 resistance **461**
 resource matching hypothesis (RM) **174**
 rhinoceros 28, 29
Rhizina undulata root rot 206
Rhizobium 215, 332
 rhizomorphs **206**, 212, 317
 rhizoplane 214
 rhizosphere **64**, 65
 rimu (= red pine) *Dacrydium cupressinum* 165, 174
 ring-porous trees 209
 riparian buffer strips **114**
 roots 11, 51, 57, 159
 adventitious 59
 aeration 31
 buttress 57, 77–8
 canopy **60**
 competition 14, 58, 61–3
 extensive/intensive **58**, 59

foraging 61
 grafts 60, 309
 internal 59, 60
 layering **60**, 61
 mat **341**
 pegs or knees 159
 plate 52, 59, 60
 prop 64
 root/shoot ratios 95, 106, 320, 321
 stilt 159
 vertical zonation 61
 rots (fungal) **316**
 brown 316
 by stain fungi 316
 soft 316
 white 316
 rough chervil *Chaerophyllum temulentum* 100
 rowan *Sorbus aucuparia* 273, 274
 rubber tree *Hevea brasiliensis* 424
Rubus chamaemorus cloudberry 127
Rubus fruticosus bramble 13, 68, 148, 370, 438,
 468, 472, 480
Rubus idaeus raspberry 73, 75, 100, 372
Rubus pubescens dewberry 100
 ruderals (**R**) **145**, 188, 262
 ruminants 220, 335
 runoff (water yield) 111
 R-zones **208**
 sabre-tooth tiger *Smilodon* 230
Thylacosmilus (marsupial equivalent) 230
 Sahel, W. Africa 446, 447, 452
Salal *Gaultheria shallon* 337
 salamanders 327, 328, 314
 Salisbury Cathedral 398
 sap stain fungi 401
 Alternaria alternata 401
 Ceratocystis 401
 Cladosporium spp. 401
 Hormonema dematioides 401
 Leptographium 401
 Ophiostoma 401
 Phialophora spp. 401
 saprophytes 258–60
 saprotrophs **201**
 saproxyllic habitat **139**, 308
 satellite photographs 266
 sausage tree *Kigelia africana* 28
 savanna **27**–9
 scarcity-accessibility hypothesis **18**
 sclerophylls 27, 81, 87, 255, 321
 scolytid beetles *Scolytus* 9, 210
 Scottish rain forests 444
 scrub 27
 sedges *Carex*
 bigelow *C. bigelowii* 337
 glaucous *C. flacca* 274
 remote *C. remota* 100
 tufted *C. elata* 90
 wood *C. sylvatica* 101
 pendulous *C. pendula* 479

- seed 160, 422, 423
 abundance in soil 372
 banks 153, 184–6, 371–2
 caching 155
 collection of tree seeds 419
 dispersal 77, 153–9, 176, 226, 227
 dormancy 184–6
 dust 76
 longevity 372, 419
 orchards **422**
 orthodox **419**
 rain 371
 recalcitrant **419**
 seedlings 87, 94, 136, 225
 bank 92, 153, 372
 selective logging **398**
 self-incompatibility **242**
 self/non-self root discrimination **62**
 semelparous breeding **177**
 Sernander, R. 309
 serotiny **133**, 185, 186, 383
 sesquioxides 46
Sequoiadendron giganteum big tree, giant sequoia, Wellingtonia 8, 61, 126, 383
Sequoia sempervirens coastal redwood 8, 34, 61, 92, 318, 384
 sewage sludge 426
 shade 91–99, 102, 103, 104, 416
 shade evasion **102**
 shade tolerance **102**
SHIFT 455, 466
 shoot systems 13
 shoot thrust 147
 shredding **414**
 shrews 327, 328
 shrubs 13, 27, 72
Sigillaria 2, 353, 354
 silviculture **410**
 silvicultural systems **410–11**, 415–17
 clear cutting **415**
 Continuous Cover Forestry **416**
 coppicing **411**
 coppice-with-standards **411**
 high forest with reserves **415**
 pollarding **414**
 seed tree **415**
 selection **416**
 shelterwood **415**
 successive regeneration (uniform, group, strip, or wedge) **415**
 two-storied high forest **415**
 sleeping sickness *Trypanosoma* 28
 small balsam *Impatiens parviflora* 106
 small-leaved lime *Tilia cordata* 100
 snags (= hulks) **275**, 303, 305, 306
 snakes 231
 adder *Vipera berus* 20
 black mamba *Dendroaspis polylepis* 231
 garter *Thamnophis* 232
 soil 39–83, 138
 aeration 63, 64
 bacteria 64, 280, 281
 chronosequence **161**
 clay minerals 46, 49
 compaction 56
 deterioration 55, 56, 349
 erosion 39, 56, 349
 fertility 55, 61, 65, 69
 formation **39**
 international equivalent names 44
 moisture 40, 46, 48
 nitrogen 41
 nutrients 45, 62, 66, 478
 organic matter 39–43, 45, 48, 288
 organisms 41
 perhumid (aseasonal) tropics **49**, 50
 pH 24, 41, 43, 45, 52, 56, 62, 64, 65, 334,
 340, 348
 phosphate 62
 profiles 40–3
 reaction 41
 surface acidification **48**
 texture 46
 Solomon's seal *Polygonatum multiflorum* 100, 261
 somatic embryogenesis **423**
 SoundWood (for music) 402
 sourwood *Oxydendrum arboreum* 455
 southern rata *Metrosideros umbellata* 165
 soya bean *Glycine max* 62, 398
 spalting **402**
 spatially extended populations **429**
 species co-existence 266–8
 specific leaf area (SLA) **104**, 106
Sphagnum bogmoss 71, 115
 Sphenopsida 352
 spindle *Euonymus europaeus* 100, 261, 370, 480
 sporophyte 352
 spotted cuscus *Phalangista maculata* 227
 spotted dead-nettle *Lamium maculatum* 101
 spring snowflake *Leucojum vernum* 100
 spruce budworm *Choristoneura fumiferana* 120
 spruce bark beetle *Ips typographus* 246
 spruce *Picea* 30, 165
 black *P. mariana* 30, 127, 149, 363, 365
 Engelmann *P. engelmannii* 121, 124, 386, 402
 hondo *P. jezoensis* var. *hondoensis* 373
 Norway *P. abies* 58–9, 70, 90–1, 118, 121, 128–31,
 135, 153, 289, 309–10, 317, 379, 380, 390, 291,
 402, 404
 red *P. rubens* 115, 120, 149
 sitka *P. sitchensis* 48–9, 402, 405
 white *P. glauca* 121, 127, 128, 149, 363
 squirrels 226
 Abbot 266, 267
 grey *Sciurus carolinensis* 226, 381, 430
 red *Sciurus vulgaris* 20, 226, 430
 North American red *Tamiasciurus* 430
 spiked rampion *Phyteuma spicatum* 100
 stability **461**
 stag beetle *Lucanus cervus* 315
 starflower *Tribulus borealis* 151
 steady state **376**

- stinking iris *Iris foetidissima* 108
 stinging nettle *Urtica dioica* 62, 69, 86, 101, 145, 147, 148, 192, 212, 349, 475
 stoat *Mustela erminea* 20
 stomatal index 104, 106
 storing 411
 storm gaps 309, 378
Stradivarius 402
 strategies CSR
 primary and secondary 146–148
 r-K 144
 stress-tolerators 144, 145, 188
 reproductive of plants 144–86
 stratification
 buds 196
 seeds 185
 stratigraphic column 1, 2
 strawberry tree *Arbutus unedo* 363
Strix occidentalis Northern spotted owl 436
 stress 144
 stubs 414
 substrate-microbe complex 286
 subsystems 22, 187, 188
 succession 366, 367
 allogenic dynamics 368
 autogenic dynamics 368
 primary 366
 secondary 366
 insects on fallen wood 313, 315, 316
 suckers 74, 210, 412
 sudden oak death *Phytophthora ramorum* 207
Suillus spp. mycorrhizal fungi 470
 sundew *Drosera rotundifolia* 438
 sunflecks 92
 sustainable forest management 427–9
 sustainable yield 428
 supervolcanoes 350
 survivorship curves 123
 swamp forests 115
 sweetgum *Liquidambar styraciflua* 31, 298, 455, 468
 synergistic effects 387
- Tachyglossus auleatus* spiny anteater 357
Tachigali vasquesii 177, 178
T. versicolor 177
 taiga 30, 115, 223, 324
 tall trees 7, 8
 tamarack, American larch *L. laricina* 30, 149, 365
Tamarix spp. tamarisks (= saltcedars) 159
 tannins 137, 193, 297, 335
 tanbark oak *Lithocarpus densiflorus* 137, 156, 202, 207
 tarpan *Equus przewalski gmelini* 235
Taxodium distichum bald cypress 31, 64
T. mucronatum Mexican swamp cypress 127
Taxus baccata yew 18, 68, 226, 393–5, 399
 T. brevifolia Pacific yew 369
 tawa *Beilschmiedia tawa* 165
 teak *Tectona grandis* 412
 tectonic plate theory 81, 350–3, 358
 termites 28, 78, 315
 temperate deciduous forest 29
Terra preta dos Indios soils 79, 80
 terrestrial caddis *Enoicyla pusilla* 439
 tertiary forest 32–3, 78, 357–9
 thinning 417–19
 cycle 417
 intensity 417
 regime 417
 yield 417
 three-veined sandwort *Moehringia trinervia* 349
Tilia spp. limes and basswoods
 T. americana Basswood 407
 T. cordata small-leaved lime 100, 171, 261, 390
 timber crops 397–407
 harvesting 345–7
 increasing demand 441–2
 profitability 399
 quality 399
 timberlines 67, 117–24
 tolerance 470
 tolerance classes (shading) 368–9
Tomicus piniperda pine-shoot beetle 197
 toothwort *Lathraea squamaria* 108, 240, 261
 topography 421
 top height 404, 405
 topophysis 423
 top-soil inversion 69
 tracheophyta 352
 trampling 189
 transpiration 17, 113, 407
 tree
 age 9, 10
 altitudinal distribution 124–6
 annual increment (trunk) 403
 basal area 406
 breeding 422
 choice of species 420–4
 co-dominant 418
 determining year of death 205
 dominant 418
 intermediate 418
 limit 118
 phoenix regeneration 11, 141, 142
 plus 422
 spacing 405, 406
 suppressed 418
 trunk cross-section 9, 401
 tree-ring growth 196
 veteran 141, 142
 wolf 418
 tree of heaven *Ailanthus altissima* 434
Tricholoma cingulatum 109
T. terreum 109
Trichosurus volpecula marsupial possum 421
 trophic cascade 224
Trypanosoma sleeping sickness 28
 tsunami 351, 448
 tulip tree *Liriodendron* 305, 407, 412

- tundra 223, 337
 turnover of vegetation **371**
 twinflower *Linnaea borealis* 73, 75
 TWINSPLAN classification 149–51
 two-lined chestnut borer *Agrilus bilineatus* 213
Tyrannosaurus rex tyrant reptile 355
- Ulmus* see elm
 ULR (unit leaf rate) 104, 106
 understorey plants 17, 18, 72
 ungulates **220**, 243
 urban forests 471–4
 urwald 165
- Vaccinium* spp. 300
V. angustifolium blueberry 149
V. cassinoides wild raisin 149
V. myrtillus bilberry 13, 72, 73, 224, 264
V. vitis-idaea Cranberry/cowberry 71, 73, 127, 264, 337
V. uliginosum bog blueberry 127
 Vallibacken Forest, North Sweden 122, 123
 vectors of disease 196
 velamen 60
 Vera, F. 235–240
Veronica hederifolia ivy-leaved speedwell 100
V. montana wood speedwell 101
 vernal dam hypothesis 319, **334**
 virgin forests 258
Viola odorata sweet violet 349
V. reichenbachiana early dog violet 349
V. riviniana common dog violet 148
Vismia Amazonian tree 444
 visual landscaping **436**
 viviparous species **160**
Volaticotherium antiquus ancient gliding beast 356
 volatile organic compounds (VOCs) 468
 voles, meadow *Microtus pennsylvanicus* 225
- Waitutu, New Zealand 161
 Waldsterben 264
 Wallace, A.R. 343
 wapiti (North American name for Red deer)
 Cervus elaphus 20, 221, 222, 331
 waratahs *Telopea* spp. 81
 warm-blooded (homoeothermous) **356**
 water 17, 24, 25, 92, 110–15
 cycle 57, 111
 quality 111–14
 stress and fungal infection 205
 yield (runoff) 111–14
 watersheds **111**, 319
 wave forests 375–7
 wave regeneration **375–7**
 wavy hair-grass *Deschampsia flexuosa* 66
 wax myrtle *Myrica faya* 219
 weathering 328
Weinmannia trichospermia 375
 Wenlock Edge, Shropshire 473
 western hemlock *Tsuga heterophylla* 16, 125, 135, 322, 337
 western red cedar *Thuja plicata* 305, 337
 white-footed mice *Peromyscus leucopus* 225
 wild boar *Sus scrofa* 20, 179, 224, 225, 391
 wild cat *Felis silvestris* 445
 wild cherry *Prunus avium* 100, 156, 480
 wild daffodil *Narcissus pseudonarcissus* 110
 wild ginger *Asarum canadense* 156
 wild service tree *Sorbus torminalis* 261
 wildwood 239
 wilding trees **274**
 willows *Salix* 64, 70
 creeping *S. repens* 69, 109
 goat *S. caprea* 374
 downy *S. lapponum* 75
 diamondleaf *S. planifera* 293
 S. reinii (pioneer sp.) 202
 Windsor Great Park, England 140
 wind damage 72, 74, 82, 304, 305
 wind-pollination 18, 152, 153
 wind storms 72, 82, 141
 winter moth *Operophtera brumata* 191–3, 195, 387–8
 Wistman's Wood 36, 67, 124, 387–8
 wolf *Canis lupus* 222, 232, 233
 wolf tree **418**
 Wollemi pine *Wollemia nobilis* 250–3
Wollumnia 251
 wolverine *Gulo gulo* 233
 wood
 chemical composition 312
 decomposition 297, 305–12
 diffuse-porous **399**
 hard **399**
 musical instruments 402
 predicted demand 441
 preparation of 400
 ring-porous **399**
 soft **399**
 wood anemone *Anemone nemorosa* 73, 75, 90, 101, 102, 107–8, 261–2, 274, 454
 wood avens *Geum urbanum* 100
 wood barley *Hordelymus europaeus* 101
 wood bedstraw *Galium sylvaticum* 101
 wood meadow-grass *Poa nemoralis* 100
 wood melick *Melica uniflora* 100, 148, 261
 wood millet *Milium effusum* 101, 477
 wood sage *Teucrium scorodonia* 13, 18, 438
 wood sanicle *Sanicula europaea* 18, 54, 101, 148, 261
 wood speedwell *Veronica montana* 101, 479
 wood sorrel *Oxalis acetosella* 54, 68, 87, 90, 99, 102, 101–3, 108, 148, 162–3, 261, 274, 349, 370–1, 438, 475–6
 wood spurge *Euphorbia amygdaloides* 13, 438
 wood stitchwort *Stellaria nemorum* 100
 woodland **4**
 ancient 360, 409, 430
 key habitats 258, **408**
 natural 407–9, 411
 old-growth 360
 recent 360
 secondary 262–3

Cambridge University Press

978-0-521-54231-9 - Ecology of Woodlands and Forests: Description, Dynamics and Diversity

Peter A. Thomas and John R. Packham

Index

[More information](#)

528

Index

- woodland (cont.)
 semi-natural 3, 360
 types 479
- woodland Trust, Scotland 481
- Wood mice *Apodemus sylvaticus* 172
- World Agroforestry Centre, Nairobi 474
- Wyre Forest 13, 14, 17, 59, 437–8
- Wytham Wood 20, 192, 194
- Xanthorrhoea australis* grass tree ‘black boys’ 255
- Xylaria* spp. ‘Dead men’s fingers’ 282
- yellow archangel *Lamiastrum galeobdolon* 54, 87, 99, 102, 101, 108, 148, 218, 261, 475–6, 478
- yellow bird’s-nest *Monotropa hypopitys* 108, 109
- yellow star of Bethlehem *Gagea lutea* 100, 261
- Yellowstone National Park, USA 233, 313, 350
- yellow trout lily *Erythronium americanum* 334
- yew *Taxus baccata* 18, 68, 226, 393–5, 399
 T. brevifolia Pacific yew 369
- yield class 402, 403–7
- Yosemite National Park, USA 384
- zonation 67, 69–76, 120, 268