

Index

- Abies* 109, 114, 120
- absorbing hyphae 14–16, 25, 113
- absorptive nutrition 76
- Acaulospora* 64, 153
- achlorophyllous plant 38, 60, 110
- actinomycetes 85, 115, 120
- aggregates 110
- agricultural 5, 7, 34, 50, 147, 150
- Agropyron* 21, 37, 40, 52, 59, 62, 78, 88, 91, 93, 96, 111, 143
- alder, *see* *Alnus*
- allelopathy 76, 82, 83
- Alnus* 68, 69, 78, 105, 116
- alpine 4, 11, 106, 132, 149, 152
- altitude 105
- aluminum (Al) 119
- Amanita* 68, 132
- Amaranthaceae 31, 32
- amensalism 2–3
- amino acids 102, 115
- ammonium, *see* nitrogen
- Ammophila* 68, 77, 78, 130
- anastomosis 13–16, 64
- animal 24, 66, 75, 95, 101, 123–125, 133, 136, 137, 148, 149
- annual 33, 59, 92, 129, 137–138
- antibodies 144–145
- ants 99–100, 125
- aquatic 4
- arbuscule 18–20, 25, 37, 38, 141
- arbutoid mycorrhizae 12, 64, 69, 70, 73, 78, 90, 106, 107, 123, 132
- arctic 11, 106, 109, 152
- Arctostaphylos* 69, 70, 107
- Artemisia* 77, 78, 80, 90, 106, 117
- ascomycetes 13, 16, 17, 30, 31, 44
- asexual 44, 59
- Atriplex* 62, 90
- autosuccession 80, 138
- bacteria 55, 59, 85, 115, 118
- basidiomycetes 13, 16, 17, 30, 31, 44
- Bialowieza 105, 124
- biogeography 5, 152
- biomass 19, 41, 44, 109, 110, 111, 112, 114, 151
- biome 10, 11, 104–108, 131
- black box 108, 112
- Boletus* 69
- bootstrapping 133
- Bouteloua* 21, 22, 40, 51, 62
- Brassica* 37, 92, 142
- Brassicaceae 5, 31, 32, 92, 128, 142
- C₃, C₄ 62, 79, 88
- Calcium (Ca) 21, 49, 94, 103, 119, 120, 122
- canopy 43
- canopy epiphytes 4, 11
- carbohydrates 42, 60, 72
- carbon 4, 10, 11, 19, 27, 35, 41, 42, 48, 51, 53, 60–63, 69, 71, 95–101, 104, 108–113, 134, 138, 151, 152
- carbon allocation 25, 55, 95, 103, 104, 109
- carbon cost (loss, drain) 35, 53, 69
- carbon exchange (transfer) 95, 111
- carbon fixation 47, 50, 51, 95, 111, 112, 151
- carbon flow (movement) 103, 111, 112
- carbon gain 38, 51, 61, 79, 80, 97, 108, 112
- carbon, CO₂ 22, 26, 49, 51, 95, 103, 109, 111, 119, 120, 151, 152
- carbon, δ¹³C 62, 63, 79
- Carboniferous 28, 29
- cell 10, 12, 19, 37, 44
- Chaparral 12, 106, 107
- cheat 39, 41
- Chenopodiaceae 5, 30, 31, 32, 37, 62, 92, 126, 128
- chitin 28
- chlamydospores 17, 44
- clay 23, 49, 119
- climate 78, 105, 151, 152–153
- coal deposits 27

182 *Index*

- coenocytic 44
- coevolve 2, 10, 20, 26, 141, 142, 143
- collembola 98
- colonizing 41, 68, 81, 82, 94, 108, 128–140
- commensalism 2–3
- community 6, 7, 30, 39, 40, 69, 72–101, 144
 - community composition 72, 74, 86, 90, 92
 - community structure 39, 72, 86, 88, 90, 93
 - compatible 14, 15, 36, 38, 45, 48, 54, 68, 69, 87, 94, 143
 - compensatory response 97, 112
 - competition 39–41, 55, 64, 69–74, 82–94, 95, 122
 - compensatory response 96, 112
 - competition 39–41, 55, 65, 69–74, 82–94, 95, 122
 - conifer 6, 11, 37, 60, 69, 83
 - cooperate 87, 94
 - Cretaceous 30
 - crop 34, 35, 50, 55, 116
 - crowding coefficients 93
 - dark-septate fungi 106
 - decompose 25, 27, 33, 95, 103, 109, 110, 113, 117
 - decomposition 84, 110, 111, 117, 126
 - depletion zone 9, 74, 76, 88, 116, 117
 - depletion, resource 70, 87, 96
 - desert 4, 41, 105, 106, 115, 135–140
 - Devonian 27
 - dikaryon 63
 - dispersal 24, 66–68, 69, 82, 86, 99, 108, 123–140, 148, 149, 153
 - distribution 75, 78, 80, 86, 87, 88, 104–108
 - disturbance 24, 32, 66–68, 69, 82, 86, 99, 108, 123–140, 148, 149, 153
 - diversity, *see* plant or fungal
 - dominance 4, 69, 72, 73, 130
 - Douglas Fir, *see* *Pseudotsuga*
 - drought 6, 35, 53, 54, 77
 - E-strain fungus, *see* ectendomycorrhiza
 - ecological crunch 25, 35, 41, 51, 53, 57
 - ecosystem 7, 10, 11, 14, 102–126
 - ectendomycorrhiza 10, 12, 31, 81, 125, 134
 - elicitor 37, 142, 143
 - Endogone* 28, 63
 - endomycorrhiza 10, 12, 19, 36, 81
 - energy 39–42, 75, 96, 108, 110, 121, 148
 - enzymes 26, 75, 113
 - Equisetum* 5, 30, 32
 - Ericaceae 12, 31, 69, 79, 90
 - ericoid mycorrhiza 11, 12, 13, 31, 32, 33, 46, 69, 87, 106, 112
 - erosion 68, 90, 93, 130
 - evenness 93
 - evolution 1, 5, 10, 21, 26–42, 71
 - exotic 5, 6
 - facultative, *see* mycotrophic
 - faeces 98, 100
 - fairy ring 15, 16, 63, 80
 - Fe, *see* iron
 - fertilization (fertility) 35, 58, 59, 82, 84, 86, 93, 109, 147, 151
 - fire 24, 64, 66, 133
 - fitness 5, 6, 35, 41–45, 50–54, 56–66, 69–71, 142, 148
 - forest 1, 5, 11, 67, 69, 82, 85, 104–109, 114, 131
 - forest decline (dieback) 149, 150
 - forestry 5, 108
 - fossil 5, 27, 36
 - Frankia* 55, 85
 - funal biomass 19
 - funal diversity 54, 77, 79, 131, 132, 139, 151
 - gene 7, 44, 45, 56, 71
 - Gigaspora* 70, 78, 108, 109, 152
 - global 151
 - Glomus* 28, 53, 60, 62, 64, 68, 75, 77, 80, 83, 108, 109, 111, 131, 133, 152
 - glucose 19
 - Goodyera* 10, 48, 106
 - gopher 24, 66, 98, 101, 125–126, 133
 - grassland 4, 6, 11, 24, 63, 105, 131
 - grazing 86, 93, 95–97, 102, 112, 113
 - growth 5, 40, 50–55, 71, 92, 115
 - Hartig net 18, 19, 141
 - heathland 11, 80
 - heavy metal 151
 - Hedysarum* 55, 59, 85, 116
 - hemiparasites 5, 32
 - heterokaryon 44, 63
 - hierarchical 7
 - high tide 33, 130
 - homokaryon 44, 63
 - hormones 20, 50, 115, 147
 - humus 102
 - hyphae, absorbing 16, 17, 19, 25, 74, 138
 - hyphae, extramatrical 9, 15, 85, 109, 114
 - hyphae, runner 16, 17, 74, 88
 - hyphae, external 12, 13, 19, 37, 54, 110
 - hyphal connection 39, 61, 62, 94, 95, 111, 116, 117, 139
 - hyphal length 25, 49, 77, 110
 - hyphal transport 13, 49, 94, 95, 102, 114, 117, 121
 - hypogeous fungi 67, 68, 98, 124

Index

183

- immobilize 90, 104, 111, 113, 114, 116, 120, 121, 123, 126
- importance value 4
- incompatible 36, 37, 38, 53, 92, 143
- indirect effects 55, 74
- individual 7, 12, 15, 22, 25, 35, 39, 41–45, 52, 53, 56, 59, 63, 71, 72, 73, 78, 79, 84, 94
- inoculum 24, 31, 65, 66, 80, 86, 98–101, 122–126, 133, 136–138, 149
- inoculum density 19, 24, 66, 98–101, 124, 135
- inoculum potential 19, 68, 128–129
- inorganic 4, 10, 12
- invasion 27, 28, 55, 81–82, 132, 142
- invertebrate 81, 97, 98
- iron (Fe) 120, 122
- island 79, 80, 106, 108, 117, 125, 133, 134, 139
- islands of fertility 117
- Jurassic 29
- landscape 6–7, 141, 144–147
- leaf area 97
- leaf mortality 51
- lectin 36
- light 109, 121
- lignin 110
- litter 83–87, 102, 104, 108–110
- mammals 67
- mannitol 19
- mantle 18, 19
- manzanita, *see Arctostaphylos*
- marsh 11, 33
- mats 1, 2, 15, 16, 54, 109
- Mesozoic 30
- mining 6, 57, 65, 93, 101, 128, 135–139
- mites 98
- models 27, 39–42
- moisture 43
- molecular biology 7, 13, 27, 35–39, 55, 142–145
- Monotropa*, *see* monotropoid mycorrhizae
- monotropoid mycorrhizae 3, 4, 6, 12, 31, 32, 47, 49, 60
- morphology 21, 50, 143
- Mount St. Helens 6, 65, 68, 82, 93, 99–101, 125, 130, 133, 134, 149
- mutualism 1–3
- mycelium 13–16, 19, 23, 51, 53, 64, 73, 87, 94, 95, 98, 103, 117, 123, 124, 134
- mycotrophy 30–39, 42, 53, 89–92, 119, 123, 124, 128, 129–132, 137, 142–143
- mycotrophy, facultative 30, 33, 41, 89–93, 125, 129–132
- mycotrophy, non 4, 5, 30–39, 53, 86, 88–92, 119, 123, 124, 128, 129–132, 137, 142–143
- mycotrophy, obligate 30, 40, 42, 89, 129–132
- N, *see* nitrogen
- natural selection 25, 35
- nematode 40, 75, 96–98
- net primary production (or NPP) 97, 102, 103, 109–111
- neutralism 2–3
- niche 56–58, 86
- nitrate, *see* nitrogen
- nitrogen 2, 46, 47, 49, 102, 104, 105, 111, 112–116, 136, 147
- nitrogen, ammonium 115, 147
- nitrogen, immobilize 104, 111, 114
- nitrogen, nitrate 114–115
- nitrogen, uptake 112–116
- nitrogen, organic 46, 47, 60, 112–116
- nitrogen, fixation 41, 55, 85, 102, 114–116
- nonmycotrophy, *see* mycotrophy, non
- nutrient cycling 4, 16, 102, 104, 112, 126, 152
- nutrient immobilization 102, 126
- oak, *see* *Quercus*
- obligate, *see* mycotrophy, obligate
- orchid 3, 4, 5, 10, 12, 30–35, 46–49, 59–61, 68, 106
- organic acids 118
- organic matter 11, 13, 14, 24–28, 47, 72, 73, 83–84, 103, 106, 109, 110, 117, 128, 136
- organic nutrients 10, 12, 13, 85, 103, 110
- oxalate 49, 85, 119, 120
- P, *see* phosphate
- paleobiology 27–30
- parasitism 2–3, 26, 35–39, 40, 55, 56, 74, 89, 90, 96, 141–143
- patch 22, 24, 25, 30, 33, 52, 89, 94, 99, 109, 110, 115, 117, 122–126, 133, 138–139, 149
- peltons 18, 19
- phenology 51, 62
- phosphatase 20, 47, 118–119
- phosphate 2, 5, 10, 11, 13, 20, 25, 35, 36, 48, 49, 52, 56, 71, 75, 84, 85, 88, 93, 103, 109, 111, 116–120, 138, 147–148
- phosphate, organic 11, 20, 21, 25, 46, 49, 118–120
- phosphate, pool 47, 49, 118–120
- phosphate, uptake 13, 16, 35, 46, 49, 50, 92, 94, 103

184 *Index*

- photosynthesis 21, 46, 50–51, 62, 97, 111, 121
- physiology, fungus 13, 59–63, 77
- physiology, plant 2, 4, 5, 26, 41, 45–56, 77, 88, 91, 141–143
- pine, *see Pinus*
- Pinus* 30, 79, 81–84, 90, 105, 111, 125, 130, 134, 146
- Pisolithus* 69, 83, 111
- plant composition 86
- plant density 70
- plant diversity 86, 93
- polar regions 106
- pollution 149–151
- population 2, 6, 7, 41, 43–71, 79, 84, 143, 144
- Populus* 81, 105, 146
- production, *see* net primary production
- production, fungal 114
- production, plant 5, 25, 26, 40, 43, 45, 50, 59, 83, 102, 103
- production, stand 5, 7, 50, 85, 96, 98, 104, 109
- propagules 19, 43, 75, 123, 144
- protocorm 4, 10
- Pseudotsuga* 30, 70, 77, 109
- Quercus* 18, 29, 81, 106, 107
- r & K 82
- reproduction, fungal 17, 43, 63–66, 73
- reproduction, plant 5, 39–42, 43, 51, 56–59, 73
- respiration, fungal 49, 111
- respiration, plant 111
- restoration 147–149
- restriction fragment length polymorphism (RFLPs) 144
- Rhizobium* 55, 59, 85, 116
- rhizomorphs 14, 88
- Rhizophagus* 69
- rhizosphere 62, 134
- rodent 98, 101, 133, 134
- root architecture 21, 80
- root branching 21
- root browning 37–38, 53
- root distribution 86, 87, 88
- root hair 20–21, 25, 55, 88
- root mats, *see* mats
- root penetration 16, 69
- root structure 8, 9, 20, 21
- root system 4, 55, 87, 112
- root/shoot ratio 21
- ruderal 86
- Salix* 81
- Salsola* 37, 40, 91, 92, 128, 129, 142, 143
- saprophytic 24, 28, 45, 46, 56, 60, 62, 72, 74, 80, 84, 109, 110, 114
- scale 6, 7, 41, 43, 51, 52, 66, 73, 74, 83
- seed 19
- seedling 41, 51, 53, 61, 80, 95, 138, 147
- serpentine 24, 66, 125
- siderophores 122
- Silurian 28
- soil aggregates 17, 110
- soil structure 81
- somatic incompatibility 44, 45
- spatial 8, 73, 80, 81, 85, 88, 103, 136–139
- specificity 36–37, 68, 77, 141–143
- spores 17, 19, 27, 32, 63, 66, 67, 79, 99, 100, 109, 125, 129, 133, 137–139, 148–149
- sporocarp 17, 67, 104
- steppes 24, 73, 124, 135–139
- stomata 51, 53, 121
- succession 32, 39, 41, 42, 64, 70, 71, 78, 79, 80, 83, 91, 103, 104, 123, 127–140
- sucrose 19
- surface area 2, 19, 50, 113, 118
- surface-to-volume ratio 26
- tectonic activity 30
- temperate 1, 41, 105
- temperature 43, 119
- termite 115
- Thelephora* 67, 82
- tilling 21
- trehalose 19
- Triassic 30
- Triticum* 51, 53, 59, 77, 111
- tropic 1, 4, 85, 91, 104, 105, 108, 129
- truffles 1, 68, 153
- tundra 73
- turbulence 67, 137
- turnover 110, 114, 120, 125, 126
- Ulmus* 105, 106
- unavailable resources 46–49, 71
- Uniola* 77
- vertical distribution 8, 17, 24, 25, 80, 88
- vesicles 18, 19
- volatile 36, 70
- water 3, 15, 17, 22, 25, 49, 51, 52, 54, 77, 87, 120–121, 147, 152
- weed 42, 119, 128–138, 143
- wheat, *see* *Triticum*
- wind 17, 123, 124, 136–139, 148, 149
- Zygomycetes 13, 16, 28, 29