

Index

The page numbers in italics refer to figures or tables

- Abies*, 69
Acacia, 38, 109, 151
Acer, 151, 210
 advance regeneration, 220
 Afghanistan, 106
 Africa, 26, 32, 35, 50, 126, 175
 agriculture, 9, 32, 223
 dunes, 117–118
 floodplains, 140, 147
 plowed fields, 185, 200
 slash and burn, 30
 agroecology, 16
 Alaska, 84
 fire, 165
 floodplain, 142, 145, 150
 glacial refugia, 47
 glaciers, 79, 81
 landslides, 130
 Salix, 148
 volcanoes, Plate 10
 Alberta, 148
 Aleutian Islands, 65
 algae, 69
 alien species. *See* invasive alien species
 allelopathy, 112, 175
Alnus, 69, 146, 151, 210
 alpine, 20, 48–50, 233, 240
 dunes, 119
 fire, 160
 floodplains, 154
 glaciers, 78, 80–81
 refugia, 85
 tundra, 46
 volcanoes, 77
 Alps, 42, 82–83, 138, 148
 Amazon, 142, 149, 152, 223
Ammophila, 109–110
 Andes, 50, 79, 82, 186
Andropogon, 245
 angiosperms, 128, 175
 Antarctica, 44–45, 77
 anthropogenic, 233
 aphids, 112
 Arctic, 45, 81, 83, 86, 132
 Argentina, 43, 150, 198,
 Plate 17
 aridlands, 20, 33–35, 237
 distribution, 33
 dunes, 103
 fire, 166
 floodplains, 146, 149
 landslides, 132
 mines, 218
 plowed fields, 185, 190, 195
 volcanoes, 68
 Arizona, 133, Plate 3
Artemisia, 38, 112, 164
 arthropods, 63, 65
 Asia, 23
 dunes, 104, 106, 111
 floodplains, 150
 forests, 40, 44
 aspect, 173
Aster, 149
 Atacama Desert, 33
 Atlantic Ocean, 89
 Australia, 18, 30, 32, 150
 chronosequence, 260
 clearcuts, 178
 Cooloolo Dunes, 108
 cyclones, 91, 96
 dunes, 105
 fire, 169
 floodplains, 149
 model, 12
 plowed fields, 187
 Austria, 154

- Baccharis*, 111
 bacteria, 80, 82, 112
 Baltic Sea, 105
 Bangladesh, 89
 bats, 66
 Bay of Bothnia, 221
 beavers, 123, 152, 221
 belowground processes. *See* soil
Betula, 45, 47, 192, 210
 biodiversity, 2, 26, 27, 239, *see* richness
 alpine, 49
 clearcuts, 182
 cyclones, 95–96
 dunes, 112
 early successional stages, 270
 fire, 160
 landslides, 138
 mines, 216
 regional, 270
 restoration, 271
 steppes, 39
 biological legacy, 53, 64, 75–76, 80
 clearcuts, 178
 cyclones, 94
 disturbance, 246
 fire, 163
 landslides, 127
 mines, 202
 biomes
 abbreviations, 20, 58
 biodiversity, 25
 clearcuts, 176
 climate change, 27
 climatic zones, 24
 cyclones, 98
 distribution, 56
 disturbances, 3
 dunes, 113
 fire, 164
 floodplains, 153
 functional traits, 256
 glaciers, 83
 global trends, 229
 invasive alien species, 243
 landslides, 131
 mines, 208
 plowed fields, 192
 richness, 240
 seasonality, 23
 solar energy, 21
 success of succession, 233
 succession trends, 230
 disturbance, 231
 trajectory, 237
 volcanoes, 71
 bird dispersal. *See* dispersal
 birds, 10
 bulbuls, 66
 crows, 66
 pigeons, 66
 boreal forests, 44, *see* coniferous forests
 clearcuts, 173, 178
 definition, 43
 fire, 160, 163, 165
 floodplains, 147
 Brazil, 105, 175, Plate 2
 landslides, 123
 British Columbia, 67, 172, Plate 19,
 Plate 20
Bromus, 110, 164–165
 bryophytes, 69, 128
Buddleja, 151
 cacti, 68
Calamagrostis, 66, 69
 California, 20, 43
 chaparral, 35, 37
 dunes, 109–110, 113
Calluna, 165
 CAM photosynthesis, 34, 128
 Cameroon, 61
Campanula, 69
 Canada, 45, 109
 clearcuts, 172
 dunes, 109, 114
 floodplains, 148
 glaciers, 79
 lava flow, 67
 mines, 210
 Canary Islands, 61, 110, 193
 canopy, 29, 82, 92–93
 clearcuts, 174
 cyclones, 94
 dunes, 109
 landslides, 127
 tree fall gaps, 220
 carbon, 64, 79, *see* soil
 assimilation, 42
 cyclones, 94
 dunes, 110, 117
 glaciers, 77
 global budgets, 257
 landslides, 126, 132
 mines, 204
 to nitrogen ratio, 252
 carbon sequestration, 88, 126

388 · Index

- Carex*, 110, 151
 Caribbean, 92, 98
 Caribbean Sea, 42
Carmichaelia, 151
Cecropia, 92, 98, 124, 152
Centaurea, 152
 Central America, 92
Chamaecrista, 111
 chaparral, 20, 36, 44, *see* Mediterranean
Chenopodium, 186
 Chile, 20, 35, 41, 43, 73
 volcanoes, 63
 China, 96
 clearcuts, 171
 dunes, 104, 106, 112
 floodplains, 146, 150
 forests, 40
 landslides, 123
 plowed fields, 189
 chronosequence, 17, 54, 106, 248, 255
 Chile, 73
 comparative analyses, 254
 dunes, 105, 116
 glaciers, 85
 Hawaii, 73
 microbial diversity, 260
 mines, 210, 258
Chusquea, 128
 cinder, 60, 63, 75
 circadian pattern, 22
 clearcuts, 181
 success of succession, 179
 Clements, 7–13
 climate change, 15, 48, 247, 250, 263
 biome distributions, 27, 254
 conservation, 16
 cyclones, 90, 96
 desertification, 35, 104
 dunes, 103, 113, 119
 fire, 165
 glaciers, 77
 landslides, 136
 climate diagram, 25
 climatic zones. *See* biomes
 climax stage, 9, 13
 club mosses, 128
Coleogyne, 165
 Colombia, Plate 21
 Colorado, 141
 Colorado River, 142
 community assembly, 13, 15, 75
 comparative analyses, xi, 4, 53, 275–280
 data bases, 257
 fire, 166
 glaciers, 79
 invasive alien species, 242, 266
 mines, 207
 plowed fields, 187
 scarcity, 18
 spatial scales, 254
 trends, 55, 229
 competition, 2, 68, 191
 clearcuts, 175, 193
 Clements, 9
 dunes, 112
 fire, 163
 floodplains, 152
 glaciers, 80, 82
 Grime, 12
 indirect, 70
 Intermediate Disturbance Hypothesis, 247
 invasive alien species, 282
 landslides, 130
 life stages, 69
 light, 29
 models, 13
 nutrients, 29
 plowed fields, 191
 roots, 69
 silviculture, 222
 species richness, 242
 steppes, 39
 volcanoes, 68
 coniferous forests, 20, 43–45, 240, *see* boreal forests
 clearcuts, 175, 177
 cyclones, 99
 definition, 20
 distribution, 43
 fire, 159, 162, 164
 floodplains, 154
 landslides, 133
 mines, 203
 plowed fields, 193
 restoration, 272
 volcanoes, 72
 conservation, 16, 263–265
 early successional stages, 270
 endangered species, 264
 mines, 204, 217

- novel ecosystems, 200
- plowed fields, 188
- convergent. *See* trajectory
- Coriolis forces, 22
- Costa Rica, 131
 - abandoned roads, 224
- Cowles, 10
- crickets, 63
- cryptogams, 81, 164, 208
- cyanobacteria, 64, 128, *see* nitrogen fixation
- cyclone tracks, Plate 12
- cyclones, 100
 - success of succession, 99
- Cyperus*, 110, 160
- Cytisus*, 177
- Czech Republic, 193, 224, Plate 23, Plate 27
 - invasive alien species, 242
 - mines, 264
 - scales, 255
 - traits, 258
- dams, 141, 147
- Death Valley, 34
- debris avalanches, 120, 219
- decomposition, 37, 47, 49
 - cyclones, 93, 97
 - fire, 162
- deer, 70, *see* herbivory
- defoliation, 89
- deforestation, 26, 122
- Denmark, 189
- Deschampsia*, 96
- desertification, 26, 35
 - dunes, 103
- deserts. *See* aridlands
- Dicranopteris*, 245
- disharmony, 68, 73
- dispersal, 1, 35, 64–65
 - anthropogenic, 7, 35
 - bats, 127
 - birds, 66, 69, 94, 127, 161, 192, 223, 272
 - endozoochory, 66, 164, 190, 205
 - epizoochory, 128
 - monkeys, 127
 - rats, 127
 - water, 66
 - wind, 65–67, 127, 205, 272
- disturbance
 - anthropogenic, 53, 171, 202, 225, 233, 247
 - definition, 246
 - feedbacks, 246
 - frequency, 10, 14, 247
 - gradient, 75
 - predictability, 247
 - regime, 70, 246
 - scale, 29
 - severity, 14, 247
 - type, 3–4, 14, 54, 56, 58
- divergent. *See* trajectory
- drones, 254
- Dryas*, 80
- dunes, 111, 116
 - distribution, 104
 - success of succession, 114
- Dysoxylum*, 66
- earthworms, 70
- ecosystem assembly, 9
- ecosystem ecology, 9–10
- ecosystem services, 53, 117, 265, 272
- Ecuador, 122, 130, Plate 1
- Egypt, 151
- Elaeagnus*, 110, 150
- Ellesmere Island, 85
- Elymus*, 111, 113
- England, 112
- environmental gradients, 11, 18, 135
- Epilobium*, 81
- epiphyte, 29, 94
- Equisetum*, 151
- Erica*, 37
- Ericameria*, 111
- erosion, 15, 35, 50, 61
 - clearcuts, 182
 - cyclones, 90
 - dunes, 103, 109, 111, 118
 - floods, 140, 142, 146, 154
 - glaciers, 80, 84
 - landslides, 123, 127, 129
 - mines, 203, 205
 - plowed fields, 185
 - volcanoes, 62, 65, Plate 10
- Espeletia*, 50
- Estonia, 195, 211
- Eucalyptus*, 169
- euphorbs, 68
- Eurasia, 20, 23, 38, 40, 43, 45
- Europe, 18, 40–42
 - clearcuts, 175–176
 - climate, 23

390 · Index

- Europe (cont.)
 data bases, 257
 dunes, 105–106, 111, 114
 human impact, 37
 mines, 205, 207–208, 212
 plowed fields, 187, 189–190, 193
 road banks, 225
 temporal scale, 248
 eutrophication, 15
 evolution, 16, 32, 61, 252
 experimental approach, 12, 17, 82
- facilitation, 2, 11, 68
 clearcuts, 175
 Clements, 9
 dunes, 111
 floodplains, 151–152
 glaciers, 82
 invasive alien species, 281
 landslides, 130
 life stages, 69
 models, 13
 nonvascular plants, 69
 plowed fields, 191
 soil organisms, 111
 volcanoes, 69
- Fagus*, 210
Falcataria, 68
Fallopia, 69, 149
- feedbacks
 disturbances, 282
 plant–plant, 262–263
 plant–soil, 246, 252, 260
 fire, 165
 plowed fields, 192
 plant–soil–animal, 261, 283
 restoration, 266
- ferns, 67, 69, 93, 96, 128, *see* tree ferns
- Ficus*, 66
- Finland
 dunes, 105, 111–113
 plowed fields, 193, 194
- fire, 168
 biological legacy, 163
 boreal forest, 160
 causes, 159–160
 clearcuts, 177
 climate change, 136
 cyclones, 91
 decomposition, 162
 dunes, 105
 floodplains, 143
 frequency, 31–32, 35, 38, 164–165
 germination, 162
 heterogeneity, 159
 human activities, 160, 282
 human history, 7
 invasive alien species, 164
 landslides, 124, 128
 nitrogen, 162
 peatlands, 160
 plowed fields, 187
 resprouting, 163
 return interval, 37, 161
 salvage logging, 160
 serotiny, 163
 severity, 162, 165
 soil nutrients, 162
 success of succession, 166
 triggers, 91
 volcanoes, 63
- fire ecology, 9
- floods, 157
 success of succession, 155
- forbs, 67
 cyclones, 97
 floodplains, 149
 landslides, 128, 130
 mines, 210
 plowed fields, 192
 temperate grasslands, 38
- France, 149, 153, Plate 6
- Frankia*, 80, 151
- Fraxinus*, 152
- frogs, 97
- frost, 7, 24, 33, 36, 39, 41, 50
- functional traits. *See* traits
- fungal pathogens, 97
- fungi, 69, 112, 128, 131, 152, *see*
 mycorrhizae
 dunes, 112
- fynbos, 20, 37, *see* Mediterranean
- Galápagos Islands, 61
 gap dynamics, 29
Gaultheria, 69
 geomorphology, 153
 Germany, 205, 209, 224, Plate 28
 glacial refugia, 44, 47
 Glacier Bay, 85
 glaciers, 86
 success of succession, 85

- Gleason, 10, 13
Glinus, 151
 global air circulation, 22
 Gobi Desert, 33
 Grand Canyon, 142
 grasses
 cyclones, 96
 dunes, 106, 109–111, 113
 fire, 161, 164, 246
 floodplains, 149, 152
 landslides, 128, 130
 mines, 208, 210
 plowed fields, 191
 volcanoes, 66–67, 69
 grasslands
 alpine, 48
 experiment, 257
 facilitation, 260
 fire, 164–165
 forest encroachment, 7
 landslides, 132
 mines, 211
 plowed fields, 188–189, 198
 restoration, 272
 species richness, 240
 temperate, 38–40, 38
 tropical. *See* savannas
 grazing, 37, 40, 42, 50
 Africa, 32
 arrested succession, 263
 dunes, 103, 106, 111
 fire, 161, 177
 landslides, 122, 137
 plowed fields, 187
 temporal scale, 252
 Great Basin, 164
 Greece, 189, Plate 4
 Greenland, 47, 77, 186
Guapira, 111
 Gulf Stream, 40, 84
 gymnosperms, 128, 175, 208
Gynerium, 152
 gypsum, 204

 habitat islands, 65
 hares, 110, 152
 Harper, 11
 Hawaii, 61
 ferns, 69, 129
 fire, 164
 invasive alien species, 2

 landslides, 128
 nitrogen fixation, 68–69, 72
 plowed fields, Plate 22
 soil enrichment, 104
 volcanoes, 60–62, 64, 66
 herbivory, 15, 32, 37, 44, 70, 97
 deer, 187, 222
 elk, 222
 insects, 40, 97, 131, 172, 175
 pioneer plants, 97
 vertebrates, 131
 wireworms, 208
 herbs, 257, 262
 dunes, 109, 111
 floodplains, 146, 149, 151
 glaciers, 81
 volcanoes, 69
 Himalayas, 23, 50, 77, 129, 186
Hippophaë, 109, 112
 holism, 8–10
Honckenya, 66, 111
 horsetails, 128
 Hungary, 189, 211
 hurricanes. *See* cyclones
Hypochaeris, 68

 Iceland, 61, 66, 83, 186
Imperata, 67
 India, 123, 171
 plowed fields, 185
 Indian Ocean, 89
 individualistic concept, 10
 Indonesia, 30, 32
 landslides, 123
 thickets, 69
 volcanoes, 61
 inhibition. *See* competition
 Initial Species Composition, 190
 insects, 45, 65, 92, *see* herbivory
 interactions. *See* feedbacks
 Intermediate Disturbance Hypothesis, 50,
 247, *see* disturbance
 International Biological Program, 11
 invasive alien species, 2–3, 38, 59, 242–246,
 243–244
 arrested succession, 55
 clearcuts, 181
 comparative analyses, 53
 competition, 282
 cyclones, 96
 dunes, 114

392 · Index

- invasive alien species (cont.)
 early successional stages, 16
 facilitation, 281
 fire, 35, 164, 166
 floodplains, 150
 future challenges, 280
 glaciers, 85
 Hawaii, 129
 human activity, 271
 land management, 14
 landslides, 124, 132
 late successional stages, 244
 latitude, 269, 278
 mines, 207, 216
 nutrients, 282
 plowed fields, 191
 success of succession, 236
 temporal scales, 248
 tropical dry forests, 32
 volcanoes, 68
- Iran, 106
- Ireland, 203
- island biogeography, theory of, 12
- islands
 cyclones, 91
 invasive alien species, 96
 monsoons, 23
 speciation, 50
 volcanoes, 61
- Italy, 61, 148, 150
- Jamaica, 95, 132
- Japan, 65–66, 69
 cyclones, 91, 97
 floodplains, 149–150
 landslides, 129
 volcanoes, 64, 66, 68
- jarrah, 20, *see* Mediterranean
- Kalahari Desert, 33
- Kamchatka, 71, 79, 147
- karri, 20, *see* Mediterranean
- Kasatochi, 65, Plate 10
- keystone species, 10, 146
- Kilauea, 62
- kipuka, 65
- Korea
 cyclones, 91
 floodplains, 144
 plowed fields, 186
- Krakatau, 61, 66
- lahar, 61–62, 71, 219
- lakes, 71, 103–104
 floodplains, 123,
 141–142
 reservoirs, 221
- land management, 16
- landslides, 135
 classification, 121
 climate change, 137
 distribution, Plate 15
 success of succession, 133
- Lantana*, 245
- Larix*, 45, 83
- Larrea*, 165
- Lathyrus*, 109
- Latin America, 30
- latitude
 aridity, 33
 atmospheric pressure, 23, 36
 biodiversity, 26
 cyclones, 90
 divergent trajectories, 86
 effect on solar energy, 21
 glaciers, 88
 growing season, 46
 permafrost, 44
 precipitation, 36
 seasonality, 28, 31, 49
 species richness, 240
 success of succession, 235
 trajectory, 239
 tree line, 48
- lava, 67, *see* cinder, magma, tephra
 colonization, 69
 Hawaii, 60
 kipukas, 65
 nutrients, 64
 types, 60, 63
- laws of thermodynamics, 9
- leaf litter, 93, 112, 130
- Leymus*, 109, 111
- lianas, 29, 96
- lichens, 67
- life strategies, 191
- liverworts, 67
- lizards, 97
- Lobelia*, 50
- Lophochloa*, 112
- Lotus*, 150
- Louisiana, 91, 96, 154
- Lupinus*, 69–70, 109, 111

- magma, 60–61, *see* lava
 magnesium, 92, 132
 Malaysia, 30, 32
 Mali, 106
 mallee, 20, *see* Mediterranean
 maquis, 20, *see* Mediterranean
 Massachusetts, 111
 matorral, 20, *see* Mediterranean
 Mauna Loa, 62
Medicago, 112, 150
 Mediterranean, 20, 35–38
 biodiversity, 26
 clearcuts, 177
 distribution, 36
 dunes, 110
 fire, 160, 163–164, 166
 human history, 171
 mines, 212, 223
 plowed fields, 187, 189, 191, 196
 richness, 240
 voles, 188
 Mediterranean Sea, 42
Melilotus, 150
 metapopulations, 12
Metrosideros, 70
 Mexico, 91, 97, 111
 dunes, 113, 118
 floodplains, 148
 microbes. *See* soil organisms
Mimosa, 245
 mines, 216
 rare species, 264
 success of succession, 214
 vegetation, 206
 Minnesota, 187
 Mississippi, 152–153
 models, 12–13, 18, 146, 214, 262–263
 clearcuts, 178
 Connell & Slatyer, 12
 cyclones, 98
 dynamic vegetation, 146
 floodplains, 153
 forest gaps, 16
 individual based, 262
 landslides, 121, 138
 predictability, 262
 simulations, 262
 stochastic, 146
 structured populations, 146
 Mojave Desert, 34, 225
 Mongolia, 190
 monkeys, 97
 monsoon, 23, 34, 36
 Montana, 154
 moose, 152
Morella, 68–69, 109, 111
 morphology, 15, 162
 mosses, 67, 164, 208
 moths, 70
 Motmot, 66
 Mount St. Helens, 64, 71, 71
 biological legacies, 65
 dispersal, 65
 floods, 149
 rate of succession, 248
 soil nitrogen, 68
 soil nutrients, 70
 tephra depth, 62
 Mount Usu, 65, 70
 Mt. Etna, 62
 Mt. Fuji, 69
 Mt. Kenya, 81
 Mt. Koma, 66
 Mt. Pinatubo, 61, 68
 mycorrhizae, 29, 64, 258, 260
 ectomycorrhizae, 44, 129
 Ericaceae, 47
 floodplains, 152
 mines, 208
 mutualism, 175
 trees, 175
 trophic interactions, 82, 112
 Namib Desert, 33
 nematodes, 112
 dunes, 112
 neutral theory, 236
 Nevada, 34, 161, Plate 24, Plate 26
 New England, 95
 New Guinea, 10, 50
 New Hampshire, 172
 New Hebrides, 67
 New Zealand, 39
 chronosequence, 85, 104
 dunes, 107, 112
 floodplains, 150–152
 glaciers, 80
 herbivore exclusion, 222
 herbivory, 70
 invasive grasses, 164
 landslides, 129

394 · Index

- New Zealand (cont.)
 plowed fields, 187
 volcanoes, 68
- Nicaragua, 130
- Nigeria, 106
- Nile, 142
- nitrogen, 29
 clearcuts, 173
 competition, 69
 dunes, 106, 110
 enrichment, 118, 280
 fire, 162
 floodplains, 147, 151
 glaciers, 79–80
 landslides, 127, 132
Lupinus, 70
 mines, 204
 plowed fields, 189
 to phosphorus ratios, 116
 volcanoes, 60, 63, 68, 76
- nitrogen fixation, 47, 64, 68–69, 80
 dunes, 112
 floodplains, 146, 151
 landslides, 124
Robinia, 110
 trees, 129
- nitrogen volatilization, 162
- North Africa, 104, 150, *see* Africa
- North America, 20, 33, 39–40, 43, 80, 106
 dunes, 113
 fire, 160, 165
 floodplains, 150
 plowed fields, 187
- North Carolina, 97
- Norway, 165
- Nothofagus*, 84, 210
- nutrient use efficiency, 64, 68, *see* soil
- ordination, 11, 213, 255, 264
- Oregon, 110, 129, 142
- overgrazing. *See* grazing
- Pacific Ocean, 61, 89, 91, 123
- paleoecology, 252
- palm oil, 30
- pampas, 20, 39–40, 185, 198, *see* grasslands
- Papua New Guinea, 66, *see* New Guinea
- páramo, 20, 50, *see* alpine
- Parasponia*, 68
- Patagonia, 164
- patch dynamics, 11
- pathway. *See* trajectory
- peatlands, 160, 203–206, 208–211
 fire, 160
- permafrost, 44, 47, 147
- permanent plots, 17, 79, 254, 261
- Philippines, 61, 67, 91
- phosphorus, 29, 64, 114, 260
 dunes, 105
 fire, 162
 floodplains, 147, 151
 glaciers, 80
 landslides, 124, 132
 mines, 204
 occlusion, 80
 plowed fields, 189, 192
 volcanoes, 60, 70, 72
- Phragmites*, 207
- Picea*, 46, 110, 149, 152, 176
- pigs, 70
- Pinus*, 208
 clearcuts, 177
 dunes, 109–110, 112
 fire, 165
 floodplains, 150
 mines, 208
 plantings, 38
- Pittosporum*, 96
- plowed fields, 195
 distribution, 186
 success of succession, 196
- Poland, 96, 112
- pollination, 191, 223, 258
- Populus*
 beavers, 221
 dunes, 110
 fire, 165
 floodplains, 148, 150–151
 mines, 210
 plowed fields, 192
 volcanoes, 70
- Portugal, 154
- possums, 70
- potassium, 29, 79, 127
 cyclones, 92
 landslides, 124, 132
- potential natural vegetation, 57, 249
 clearcuts, 174, 177, 179
 definition, 53
 fire, 166
 glaciers, 85
 landslides, 133

- plowed fields, 196
 - success of succession, 55, 233
- prairies, 20, 39–40, 185, 189, 191, *see* grasslands
- precipitation, average annual, 24
- predictability, 13, 250, 261–263, 283
 - clearcuts, 179
 - community assembly, 15
 - cyclones, 90
 - trajectory, 237
- primary succession. *See* succession
- priority effects, 68, 76, 82, 148, 257
- Prosopis*, 34
- Prunus*, 149
- Psidium*, 70
- Pteridium*, 128
- Puerto Rico, 92, 95–96
 - abandoned roads, 224
 - cyclones, 93
 - landslides, 121, 125, 130–131
- puna, 20, *see* alpine
- pyroclastic flow, 60, 62, 71, 219

- Quaternary Period, 42, 50
- Quebec, 109, 111
- Queensland, 105
- Quercus*, 37, 109, 111, 177, 210

- rabbits, 70
- radiation, 21, 23, 34, 39, 48
 - Chernobyl, 223
- Raoulia*, 151
- reductionism, 8, 10–11
- remote sensing, 254
- renosterveld, 20, *see* Mediterranean
- resilience, 14, 97, 178
- resistance, 14, 38, 148
- resprouting. *See* sprouting
- restoration, 14–15, 57, 267, 267–268, 273, *see* succession
 - dunes, 113
 - early successional stages, 270–271
 - ecology, 16, 217
 - fire, 170
 - floodplains, 157
 - landscape context, 271–273
 - landslides, 136
 - mines, 205
 - plowed fields, 200
 - stress productivity gradient, 268–270, 269
 - success of succession, 53
- Retama*, 110
- retrogression. *See* succession
- Réunion, 61, 177
- Rhamnus*, 109
- Rhus*, 66
- richness, 26, 239–242, 241, 278, *see* biodiversity
 - clearcuts, 174, 177, 179
 - coniferous forest, 44
 - cyclones, 96, 99
 - dunes, 109, 113–114
 - fire, 166
 - floodplains, 153
 - Intermediate Disturbance Hypothesis, 247
 - landslides, 132
 - Mediterranean, 37
 - mines, 212
 - plowed fields, 193, 198
 - tropical rain forests, 29
 - volcanoes, 79
- Ring of Fire, 61, 123
- rivers
 - dunes, 103
 - floods, 142
 - human alterations, 158
 - invasive alien species, 150
 - landslides, 123
 - log transport, 147
 - seed dispersal, 148
 - volcanoes, 63
- Robinia*, 110
- Rubus*, 97
- Russia, 147
- Rwanda, 61

- Sahara Desert, 33, 35, 103
- Sahel region, 35, 103
- Salix*, 47, 152, 154
 - beavers, 221
 - dispersal, 66
 - dunes, 110
 - floodplains, 148, 150
 - herbivory, 70
 - invasive alien species, 152
 - plowed fields, 192
 - volcanoes, 69
- Samoa, 96
- Sasa*, 97
- savannas, 30, 32, 39, 160, 164, 192, *see* tropical dry forests
 - herbivory, 32

396 · Index

- Scotland, 119
 seasonality, 21, 24
 alpine, 49
 aridlands, 33
 clearcuts, 178
 coniferous forests, 44
 fire, 162
 Mediterranean, 36
 temperate broadleaf forests, 41
 temperate grasslands, 39
 tropical dry forests, 30
 tropical rain forests, 28
 tundra, 46
 secondary succession. *See* succession
 sedges, 110
 seed bank, 198, 240, 247–248, 261
 annuals, 34
 clearcuts, 174
 cyclones, 94
 fire, 163–164
 floodplains, 148, 150
 glaciers, 80
 plowed fields, 184, 190
 volcanoes, 65
 seed mass, 259
Senecio, 50, 81
 serotiny. *See* fire
 shrublands
 arrested succession, 263
 fire, 164
 floodplains, 157
 landslides, 132
 mines, 208
 shrubs
 clearcuts, 184
 cyclones, 97
 dunes, 109, 111
 fire, 164–165
 floodplains, 146, 149, 151
 glaciers, 81
 landslides, 129
 Mediterranean, 35
 mines, 210
 plowed fields, 192
 temperate grasslands, 38
 tundra, 45
 volcanoes, 67, 69
 Siberia, 23, 44–45
 Sicily, 62, 104
 silviculture, 220, 222–223
Smilax, 128
 snakes, 97
 soil. *See* topsoil
 age, 31
 carbon, 259, 269
 crust, 29, 31, 103, 106, 110
 development, 9, 63, 76, 146
 disturbance, 94, 102
 fertility, 7, 29, 42, 63, 224
 clearcuts, 173, 181
 floodplains, 143, 147, 151
 plowed fields, 185, 190
 retrogression, 107
 horizons, 44
 moisture, 36, 44
 clearcuts, 173
 cyclones, 89
 dunes, 110
 fire, 162
 floodplains, 147
 landslides, 122
 plowed fields, 188
 nutrients, 29, 34, 49, 252, 260
 clearcuts, 173
 cyclones, 93
 dunes, 104
 fire, 162
 floods, 143, 150
 landslides, 126, 131
 mines, 204
 nurse plants, 69
 plowed fields, 189
 volcanoes, 70
 organic matter, 39, 131
 pH, 39, 41, 49
 fire, 162
 landslides, 124
 mines, 202, 207
 volcanoes, 72
 profile, 146
 salinity, 34, 38
 dunes, 106–107
 floodplains, 146, 150
 plowed fields, 185
 temperature, 132, 220
 texture, 146, 190
 soil erosion. *See* erosion
 soil organisms, 15, 18, 260, 283
 clearcuts, 172
 dunes, 111, 116
 early successional stages, 257
 glaciers, 82

- interactions, 283
- invertebrates, 222
- landslides, 127
- nutrients, 252
- plowed fields, 208
- temperate grasslands, 39
- volcanoes, 64
- solar energy, 21
- Sonoran Desert, Plate 3
- South Africa, 20, 37, 39, 107, 118, 150,
 - see* Africa
- South America, 32, 39–40, 46, 50, 187
- South Carolina, 91
- South Orkney Islands, 85
- Soviet Union, 186
- Spain, 110, 154
- spatial scale, 1, 3, 13–15, 17, 250, 253–256
 - biomes, 27
 - clearcuts, 177
 - comparison, 282
 - fire, 166
 - floods, 140
 - plowed fields, 187, 193
 - steppes, 39
- Sphagnum*, 208
- spiders, 63
- sprouting, 94, 98, 175
- stability, 94, 151, 225, 262
 - ecosystem, 14
 - floodplains, 143
 - floods, 141
 - substrate, 63, 79, 124, 128, 138
- steppe, 20, 38, 40, 130, *see* grasslands,
 - pampas, prairies
 - definition, 185
 - mines, 207, 210
 - plowed fields, 189, 192
- stochasticity, 2, 154, 239, 257, 261, *see*
 - models
 - dunes, 109
 - floodplains, 153
 - reductionism, 11
 - volcanoes, 68
- stress-gradient hypothesis, 130
- succession
 - definition, 1, 7, 10
 - deflected, 182
 - directed, 82, 175, 187, 267
 - drivers, 1, 13, 17, 260
 - Clements, 9
 - floodplains, 154
 - mines, 211
 - models, 12
 - heterotrophic, 1
 - history of concepts, 8
 - manipulation, 14, *see* restoration
 - models. *See* models
 - primary, 48, 248, 259
 - dunes, 103, 114
 - fire, 159
 - floods, 140
 - glaciers, 77, 86
 - mines, 202
 - restoration, 271
 - volcanoes, 60
 - rate of, 14, 132
 - research gaps, 276
 - restoration, 265
 - retrogressive, 107, 147, 176, 263
 - reversed, 80, 113
 - scientific approach, 273
 - secondary, 248, 271
 - clearcuts, 30
 - cyclones, 94
 - fire, 159, 171
 - floods, 140
 - grasslands, 40
 - plowed fields, 184
 - volcanoes, 60
 - spontaneous, 219, 233, 268
 - clearcuts, 171, 179
 - cyclones, 102
 - definition, 267
 - fire, 161
 - mines, 202, 212
 - plowed fields, 196
 - predictability, 261
 - silviculture, 222
 - success of, 53–55, 154, 233, 234, 250, 279,
 - 281
 - disturbance, 235
 - latitude, 236
 - latitude and humans, 280
 - temporal scale, 250
 - trajectory. *See* trajectory
- succulence, 109
- Surtsey, 66
- Svalbard, 47, 84, Plate 8
- Sweden, 147, 153, Plate 7, Plate 9
- taiga. *See* boreal forests, coniferous forests
- Taiwan, 91, 94, 133

398 · Index

- Tamarix*
 dunes, 110
 floodplains, 150–151
- Tanzania, 109
- temperate broadleaf forests, 20, 40–43, 248, 254
 cyclones, 95, 99
 distribution, 41
 fire, 164, 166
 glaciers, 78
 landslides, 132
 mines, 208
 plowed fields, 189, 191–192, 196
 volcanoes, 72
- temperate grasslands, 20
 distribution, 38
- temperature, mean annual, 24, 55
- temporal scale, 1, 14–15, 17, 187, 229, 248–253, 251
 comparison, 282
- tephra, 60, 65, 75, 149, 219
- Tertiary Period, 31
- Tessaria*, 152
- Texas, 91, 151
- The Netherlands, 112, 114, Plate 14
- Theophrastus, 8
- thickets, 64, 69, 96, 111, 128, 130, 220
- Thomomys*, 70
- Thoreau, 8
- Tibet, 123
- Tithonia*, 152
- tolerance, 82
- toposequence, 106, 149
- topsoil, 202, 205, 269, *see* soil
- tourism, 63, 75, 118
- Trachypogon*, 111
- trade winds, 22, 36, 90
- Traganum*, 110
- traits, 56, 178
 functional, 13, 250
 predictability, 261
 succession role, 282
- trajectory, 151, 208, 238, 245
 arrested, 166, 263
 clearcuts, 181
 dunes, 105, 113
 fire, 164, 187
 herbivores, 70
 invasive alien species, 236
 plowed fields, 192, 196
 Connell & Slatyer, 12
 convergent, 2, 56, 72, 166, 237
 clearcuts, 179
 cyclic, 95, 154
 cyclones, 94, 98
 directional, 2
 divergent, 2, 56, 212, 236–237
 clearcuts, 177
 fire, 165–166
 plowed fields, 187, 196
 volcanoes, 72
 fire, 162, 164
 floodplains, 152
 glaciers, 80
 landslides, 131
 predictability, 18, 261
- tree ferns, 105, 128–129, *see* ferns
- Triadica*, 96
- Trifolium*, 150
- trophic interactions, 131
- tropical dry forests, 20, 30–33, 57, 229
 cyclones, 92, 97
 fire, 164
 floodplains, 148
 volcanoes, 68
- tropical rain forests, 20, 28–30, 57, 235, 270
 clearcuts, 175
 cyclones, 96
 distribution, 28
 divergence, 237
 floodplains, 148
 invasive alien species, 243
 landslides, 131
 plowed fields, 191–192, 196
 roads, 224
 volcanoes, 72
- tundra, 20, 28, 43, 45–48, 233
 alpine, 48
 distribution, 46
 fire, 160, 165, 170
 floodplains, 148
 glaciers, 84
 landslides, 132
 trajectory, 237
- Typha*, 207
- typhoon. *See* cyclones
- Ukraine, Plate 5
- Ulex*, 150
- urbanization, 141, 147, 185

Index · 399

- Vicia*, 150
vines, 96, 128, 130, 191
Vismia, 223
vivipary, 47
volcanic gas, 60
volcanoes, 73
 success of succession, 72
- Warming, 8, 10
Washington, 71, 126, 131, 149,
 Plate 25
- Web of Science, 54, 171, 184, 290
Weinmannia, 70
westerlies, 22, 34
Whittaker, 11, 25
Whittaker biomes, 26, *see* biomes
wolves, 152
Wyoming, 170, 222
- Yangtze, 142
Yellowstone, 170
yuccas, 68