

## Index

- Abies balsamea*. See balsam fir  
*Abies concolor*. See white fir  
*Acacia pulchella*. See prickly Moses  
*Acer saccharum*. See sugar maple  
*Actinostrobus species*. See cypress-pine
- adaptations – animals  
 invertebrates, 113, 117  
 mammals and birds, 114–15, 117, 118  
 reptiles and fish, 113–14
- adaptations – plants  
 avoiding, 111  
 enduring – resprouting, 92–7, 99  
 evading – serotiny, 99–107  
 evading – soil seed bank, 107–10  
 flowering, 97–8  
 invading, 110–11  
 lignotuber, 93  
 resisting – thick bark, 91–2, 99
- Alces alces*. See moose
- Amazon Basin, 11
- arartree, 100
- ash from fire, 30, 33
- ash, mountain, 47, 102, 106, 131
- aspen  
 European, 92, 133  
 North American, 92
- Australia  
 Ash Wednesday, 72, 206, 208  
 Black Thursday, 19, 22  
 February 2009 fires, 176, 208  
 Red Tuesday, 19
- Austrocedrus*. See Chilean incense cedar
- Bambi, 20
- Banff National Park, 23, 202–4
- banksia, 100, 107, 148
- bear, black, 127
- beetle  
 bark, 122  
 mountain pine, 198  
 red pine cone, 142  
 saproxylic, 131  
 southern pine, 70
- Betula platyphylla* var. *japonica*. See Japanese paper-bark birch
- Big Blowup Fires, 183
- bilberry, 93, 128
- birch  
 Japanese paper-bark, 95
- bird dog aircraft, 175
- bison (*Bison bison*), 127
- black carbon, 143
- blueberry, 93
- Borneo, Great Fire, 5
- bracken, 97
- Bryoria capillaris*. See horsehair lichen
- budworm, spruce, 112
- bunchberry, 93
- Burkea africana*. See red syringa
- burnout, 174, 177
- Callitris* species. See cypress-pine
- Calluna vulgaris*, 128
- carbon credits, 197
- caribou, 114, 118, 121
- cedar, Chilean incense, 17
- Cervus canadensis*. See elk
- Chamerion angustifolium*. See fireweed
- charcoal, 9  
 dating, 88  
 germination effects, 103, 110  
 production, 8, 9, 10, 11, 17, 18, 29, 60
- Choristoneura fumiferana*. See spruce budworm
- Cladina* (lichen), 128
- Cladonia* (lichen), 128
- clear cutting, 135–7
- Clethrionomys gapperi*. See red-backed vole
- climate change, 18, 41, 68, 72–3, 197–9
- clubmoss, 10
- coal seam fire, 62
- coarse woody debris. See dead wood
- combustion  
 flaming, 27, 28  
 glowing, 27, 29–30
- Conophthorus resinosa*. See red pine cone beetle
- convection column, 45–7
- Cornus canadensis*. See bunchberry
- cowberry, 128
- Cretaceous–Tertiary (K–T) boundary, 10
- crowberry, 128
- Cupressus forbesii*. See tecate cypress
- cypress  
 African, 100  
 tecate, 100
- cypress-pine, 100
- Cyrtanthus contractus*. See fire lily
- dead wood, 131–2
- deer, mule, 118
- Dendroctonus frontalis*. See southern pine beetle
- Dendroctonus ponderosae*. See mountain pine beetle
- dry slot, 75
- Dryocopus martius*. See black woodpecker
- ecosystem services, 190
- elk, 114, 118, 127
- Empetrum nigrum*. See crowberry
- Empidonax alnorum*. See alder flycatcher
- Erica depressa*, 111
- Erica multiflora*, 124
- Erica sessiliflora*, 100, 112
- Eucalyptus cypellocarpa*. See grey gum
- Eucalyptus diversicolor*, 70
- Eucalyptus marginata*. See jarrah
- Eucalyptus obliqua*. See messmate stringybark
- Eucalyptus regnans*. See mountain ash
- Eucalyptus viminalis*. See manna gum
- fatality fires, 178–9
- fir  
 balsam, 112  
 Douglas, 18, 91, 143  
 white, 105
- fire  
 area burnt, 4, 5, 18–19, 22, 24, 25, 88–9, 183  
 area burnt, causes, 65–6  
 behaviour triangle, 65  
 frequency, 4–5, 18, 21–3, 24–5, 83–5, 124–8  
 intensity, 36–7, 128–9, 161

- fire (cont.)  
 prescribed, 129, 134, 141–2, 145–8  
 scars, 85–8  
 severity, 37, 128  
 temperatures, 35, 39, 90, 142, 143  
 triangle, 28, 167  
 whirl, 49, 50
- fire behaviour  
 chance effects, 79  
 climate effects, 72–3  
 fuel quality and amount, 79  
 humidity, 78  
 precipitation, 73–4  
 prediction, 152  
 season, 78–9, 129  
 temperature, air, 77–8  
 topography, 77, 79–81  
 wind, 74–6
- Fire Danger Rating, 150
- fire detection, 154  
 aerial, 158–60  
 fixed, 156–8  
 organised, 155–6  
 passive, 154–5
- fire suppression  
 aerial, 164–8  
 changes in, 21, 23, 83, 133, 149  
 cost, 195  
 direct attack, 172–3  
 drop footprint, 166  
 effects of, 18, 25, 127, 129  
 firefighting crews, 163–4, 172–3, 188, 191–2  
 fire line, 161, 167, 172  
 fuel break, 173  
 ground based, 164  
 indirect attack, 172, 173–4  
 methods, 88, 167–76  
 new technology, 160, 185–7  
 non-governmental, 193–4  
 sharing resources, 192–3
- fire type  
 crown, 42–4, 98  
 extreme, 45, 176–7  
 ground, 38–42, 98  
 surface, 42, 43, 90
- Fire Weather Index, 36, 150, 151
- Firewise, 147, 209
- fire-management information system, 153
- firestick, 15
- fireweed, 110, 111
- flammability, 32
- flycatcher, alder, 118, 121
- foam, 171
- Fomitopsis pinicola*, 122
- Forest Stewardship Certificate, 133
- fuel. *See also* fire behaviour  
 arrangement, 68–9  
 available, 70–1  
 composition, 33
- fine fuel, 66, 69–70, 75, 150  
 ladder, 45, 104, 105  
 moisture, 26, 32, 39, 42, 62, 66–8, 73, 151  
 quantity, 69–70  
 size, 34–5
- fusain, 8, 9, 11
- Gaultheria procumbens*. *See* wintergreen
- Glacier National Park, 126, 186, 203
- Glossina morsitans*. *See* tsetse fly
- grass tree, 96, 98
- grevillea, 110
- gum  
 grey, 91  
 manna, 48
- Hakea*, 33
- heather, 64, 109, 111, 112, 124, 126, 128
- Heimo culicidae*. *See* mosquito
- hemlock, western, 18
- horizontal roll vortex, 49
- horsetails, 10
- human-caused fires, 60–1
- Hylecommium splendens*, 129
- ignition  
 delay time, 32  
 piloted, 28  
 unpiloted, 28
- intermediate disturbance hypothesis, 120
- jarrah, 128
- Jasper National Park, 23, 40
- juniper (*Juniperus* sp.), 128
- koala, 115, 116
- Labrador tea, 128
- landslides, 61
- Ledum*. *See* Labrador tea
- Letharia* species. *See* wolf lichen
- Leucadendron argenteum*. *See* silver tree
- lichen  
 horsehair, 122  
 wolf, 105
- lightning, 13, 54–8, 60, 62, 64, 156  
 detector, 156  
 negative strike, 56  
 positive strike, 57
- lily, fire, 98
- Little Ice Age, 12
- macroecology, 137
- mallee eucalypt, 93
- Mann Gulch Fire, 49
- maple, sugar, 17
- Medieval Warm Period, 12
- Melanophila* species. *See* smoke-flies
- mesquite, 93
- meteor impact, 10, 62
- mice, deer, 118, 121
- Miombo forest, 119
- Miramichi fire, 18
- moa, 17
- moose, 118, 127
- mosquito, 121
- natural disturbance hypothesis, 135
- nutrients, 98, 103, 142–3
- oak, 17  
 cork, 91, 95  
 holm, 91  
 kermes, 124, 126  
 Mongolian, 96  
 red, 96
- Odocoileus hemionus*. *See* mule deer
- Olea africana*. *See* South African olive
- Olea europaea*. *See* European olive
- olive  
 European, 111  
 South African, 111
- Ovis canadensis*. *See* bighorn sheep
- oxidation, 326
- oxygen in atmosphere, 8, 10, 39
- Peromyscus maniculatus*. *See* deer mice
- Phascolarctos cinereus*. *See* koala
- photosynthesis, 3
- Phytophthora cinnamomi*, 128
- Picea abies*. *See* Norway spruce
- Picea mariana*. *See* black spruce
- Picoides trydactylus*. *See* three-toed woodpecker
- pine. *See also* Boxes 5.2 and 5.4  
 aleppo, 102, 105, 108, 128  
 big cone, 108  
 canary, 95  
 eastern white, 17, 110  
 jack, 36, 89, 101, 102, 103  
 Japanese red, 130  
 lodgepole, 70, 101, 105, 106, 127, 198  
 longleaf, 96, 97, 131, 142  
 Monterey, 106  
 pitch, 102, 105, 112  
 ponderosa, 87, 126  
 red, 68, 142  
 Scots, 86, 108, 111, 123, 130  
 whitebark, 107
- Pinus albicaulis*. *See* whitebark pine
- Pinus banksiana*. *See* jack pine
- Pinus canariensis*. *See* canary pine
- Pinus contorta*. *See* lodgepole pine
- Pinus coulteri*. *See* big cone pine
- Pinus densiflora*. *See* Japanese red pine
- Pinus halepensis*. *See* aleppo pine
- Pinus palustris*. *See* longleaf pine
- Pinus ponderosa*. *See* ponderosa pine
- Pinus radiata*. *See* Monterey pine

- Pinus resinosa*. See red pine  
*Pinus rigida*. See pitch pine  
*Pinus strobus*. See eastern white pine  
*Pinus sylvestris*. See Scots pine  
*Pleurozium schreberii*, 128, 129  
*Podocarpus*, 33  
*Populus tremula*. See European aspen  
*Populus tremuloides*. See North American aspen  
 powerlines, 62  
 precipitation. See fire behaviour  
 prickly Moses, 128  
*Prosopis glandulosa*. See mesquite  
 protea, 95, 100, 105, 112  
*Pseudotsuga menziesii*. See Douglas fir  
*Pteridium aquilinum*. See bracken  
 pyrocumulus, 58, 78  
 pyrolysis, 26, 34, 39
- Quercus coccifera*. See kermes oak  
*Quercus ilex*. See holm oak  
*Quercus mongolica*. See Mongolian oak  
*Quercus rubra*. See red oak  
*Quercus suber*. See cork oak
- Rangifer tarandus*. See caribou  
 rate of spread  
   crown fire, 42  
   ground fire, 39  
 reaction zone of a flame, 28  
 red-data book, 137  
 redwood, coastal, 18, 93, 94  
 resilience, ecosystem, 124, 137  
 retardant, 171  
 rowan, 129
- Scirrhia acicola*, 142  
*Scolytus ratzeburgi*. See bark beetle  
 seedbed, 103  
*Sequoia sempervirens*. See coastal redwood  
 sequoia, giant, 82, 87, 91, 92, 105  
*Sequoiadendron giganteum*. See giant sequoia  
 sheep, bighorn, 118  
 silver tree, 95, 100  
 slow match, 15  
 smoke  
   germination, 109  
   in the atmosphere, 50–3, 59, 145  
   insect attraction, 117  
   production, 28, 29  
 smoke-flies, 117  
 smokejumpers, 164  
 Smokey Bear, 21  
 soil, 32, 37, 39, 40, 92, 97, 142  
*Sorbus aucuparia*. See rowan  
 sparrow, white-crowned, 118, 121  
 spatial heterogeneity, 82, 115, 118, 120, 121, 129–30, 148  
 spontaneous combustion, 62  
 spot fire, 47–9  
 spruce  
   black, 89  
   Norway, 130  
 starflower, 97  
 State Farm Insurance, 204–6  
 stay and defend, 176, 206–8  
 stringybark, messmate, 47, 102  
 syringa, red, 92  
 systems design, 202–4
- Tetraclinis species*. See arartree  
 topography. See fire behaviour  
*Trientalis borealis*. See starflower  
 tsetse fly, 121  
*Tsuga heterophylla*. See western hemlock
- Ursus americanus*. See black bear
- Vaccinium myrtillus*. See bilberry  
*Vaccinium species*. See blueberry  
   or bilberry  
*Vaccinium vitis-idaea*. See cowberry  
 values, 153, 162, 177, 196  
 volcanoes, 58, 60  
 vole, red-backed, 118, 121
- Widdringtonia species*. See African cypress  
 wildland fire, definition, 1  
 wildland–urban interface, 143–7, 187, 196, 204–8  
   Firewise, 147, 209  
 wind. See fire behaviour  
 wintergreen, 97  
 woodpecker  
   black, 122  
   three-toed, 123
- Xanthorrhoea species*. See grass tree
- Yellowstone National Park, 12, 25, 61, 114, 127, 203
- Zonotrichia leucophrys*. See white-crowned sparrow