

Index

Page numbers are in normal type for text references, **bold** type for references in Tables, *italic* type for references in Figures, and underlined for references to quotations.

- Abies*, fir trees (Pinaceae), 100, 111, **151**, **152**, **169**
 pollen, 75, 98, 101, 110
Abies balsamea, balsam fir (North America)
 pollen, 112
Abies concolor, white fir (North America),
 120, 122
 macrofossils, 118
Abies lasiocarpa, subalpine fir (North America), 122
Acacia, trees and shrubs (Leguminosae),
 128, 129, 181
 pollen, 130
Acer, sycamore and maple trees (Aceraceae)
 pollen, 114
Acer saccharum, sugar maple (North America), **151**
 acquired characters, 13
 adaptation, 24, 36, 154, 189
Adenostoma, chaparral shrubs (Rosaceae,
 California), 109
Aepyornithiformes, *see* elephant birds
 Africa
 east, 56, 62
 glaciations, **88**
 mammal extinctions, 179
 northwest, 72
 vegetation change
 Holocene, 127–131
 Quaternary, 126–127
Agathis, gymnosperm trees (Araucariaceae,
 Australasia), **151**
 aims, 2–3
 albedo, 51, 85
Alces alces, elk, moose (Cervidae, Eurasia
 and North America), **156**, 157
Alces gallicus, extinct elk (Cervidae), **156**
Alces latifrons, extinct elk (Cervidae), **156**
Alchemilla, herbs (Rosaceae)
 pollen, 128
Alchornea, tropical shrubs (Euphorbiaceae),
 127
 pollen, 128
 alder, *see* *Alnus*
 allelic diversity, 167
Alnus, alder trees (Betulaceae), 96, 100,
 111, 126
 pollen, 97, 109, 110, 125
Alnus glutinosa, alder (Europe), 107, **151**
Alnus jorullensis, aliso (South America)
 pollen, 127
Alnus rubra, red alder (North America), **151**
Alopex lagopus, arctic fox (Canidae), 144
Alternanthera, tropical herbs
 (Amaranthaceae), 122
 pollen, 123
 Amaranthaceae, herbs and shrubs (dicot
 angiosperms)
Ambrosia dumosa, ragweed herbs
 (Compositae), 117
 ammonites
 longevity, **175**
Anemia, tropical ferns (Schizaeaceae)
 pollen, 127
Animal Ecology, 36
 animal ecology, 36
 Antarctica
 glaciations, **88**
 aphelion, 48, 56
Aphodius, beetles (Scarabaeidae)
Aphodius bonvouloiri, 139
Aphodius holdereri, 138
Apodemus sylvaticus, wood mouse (Muridae,
 Europe), 144

Cambridge University Press

0521399211 - Evolution and Ecology: The Pace of Life

K. D. Bennett

Index

[More information](#)

Index · 227

- Araliaceae, trees, shrubs, and climbers
 (dicot angiosperms), 127
 pollen, 128
Araucaria, gymnosperm trees
 (Araucariaceae), 132
 pollen, 131
 Araucariaceae, coniferous trees
 (gymnosperms), 136
 pollen, 136
Arbutus menziesii, Pacific madrone
 (Ericaceae, North America), 109
 Archæan, 4, 88
Arctica islandica, bivalve molluscs, 147
Arctostaphylos, shrubs (Ericaceae), 109
Artemisia, herbs and shrubs (Compositae),
 96, 99, 100, 122
 pollen, 75, 97–99, 101, 110
Artemisia sec. *tridentatae*, sage brush (North
 America), 120
Artemisia tridentata, sage brush (North
 America), 117
Asaphidion yukonense, beetles (Carabidae),
 139
 ash, *see* *Fraxinus*
 Asia
 glaciations, 88
 southeast, 56, 62
 vegetation change
 Quaternary, 136–137
 Asteroideae, *see* Compositae (Tubuliflorae)
Atriplex confertifolia, shadscale
 (Chenopodiaceae, North America),
 117, 120
 macrofossils, 118
 Australasia
 vegetation change
 Quaternary, 131–136
 Bahamas, 162
Balanops, evergreen trees (Balanopaceae,
 southwest Pacific), 151
 Bandung basin, Java, 137
 basswood, *see* *Tilia*
 bear, polar, *see* *Ursus maritimus*
 beech, *see* *Fagus*
 southern, *see* *Nothofagus*
 beetles
 distribution change, 137–139
 evolution, 157–159
 extinction, 179
 longevity, 175
Bellamyia unicolor, prosobranch molluscs, 163
Beloperone, tropical herbs and shrubs
 (Acanthaceae)
 Bermuda
 Quaternary geology, 161
Betula, birch trees (Betulaceae), 100, 104,
 151, 169
 pollen, 109, 124
 biogeographers
 history–orientated, 38
 bioturbation, 67
 birch, *see* *Betula*
 birds
 extinction, 179–181
 blackbrush, *see* *Coleogyne ramosissima*
Blepharis, shrubs (Acanthaceae)
 pollen, 130
 Bogotá, Colombia, 125, 124–126, 127
 Bovidae, African, 32
 BP (before present), 3
 brittle bush, *see* *Encelia farinosa*
 Brunhes Chron, 133
 Brunhes–Matuyama magnetic reversal, 67,
 97, 133
 bryophytes
 longevity, 175
Bufo terrestris, southern toad (Bufonidae,
 North America), 142
Bulinus truncatus, pulmonate molluscs, 163
Byrsonima, tropical trees (Malpighiaceae,
 Americas), 122
 pollen, 123
Caelatura, bivalve molluscs
Caelatura bakeri, 163
Caelatura monceti, 163
Caesalpinia bonduc, shrub (Leguminosae,
 Easter Island), 182
 calcite, 65
 calcium carbonate variations, 72, 74, 74, 76
 calcium sulphate variations, 82, 84
Calosoma reticulatum, beetles (Carabidae),
 138, 139
Camarhynchus, finches (Fringillidae,
 Galápagos)
Camarhynchus crassirostris, 170
Camarhynchus heliobates, 170
Camarhynchus pallidus, 170
Camarhynchus parvulus, 170
Camarhynchus pauper, 170
Camarhynchus psittacula, 170

Cambridge University Press

0521399211 - Evolution and Ecology: The Pace of Life

K. D. Bennett

Index

[More information](#)

228 · Index

- Cambrian, 4, 88
Capparis, shrubs and trees (Capparidaceae), 129
Capparis decidua, 128
Capreolus capreolus, roe deer (Cervidae), 145, 156
 carbon dioxide, atmospheric, 51, 89
 carbonate-dissolution oscillations, 72
 Carboniferous, 4, 82, 83, 88, 197
Carphoborus andersoni, beetles (Scolytidae), 139, 140
Carpinus, hornbeam trees (Betulaceae), *see also* *Carpinus/Ostrya*, 100, 152, 169
 pollen, 98, 99, 124
Carpinus betulus, hornbeam (Betulaceae, Europe), 100–102
 pollen, 97, 98, 101
Carpinus/Ostrya, *see also* *Carpinus* and *Ostrya*, 151
 pollen, 97, 101
Carya, hickory trees (Juglandaceae), 100, 111, 181
 pollen, 114
Carychium bermudense, pulmonate molluscs, 162
 Caryophyllaceae, mostly herbs (dicot angiosperms), 127
 pollen, 97, 128
Castanea, chestnut trees (Fagaceae), 100, 111
Castanea dentata, American chestnut (Fagaceae, North America)
 pollen, 114
Castanopsis, 'chestnut' trees (Fagaceae)
 pollen, 136
Castela emoryi, trees and shrubs (Simaroubaceae), 117
Casuarina, sclerophyll trees (Casuarinaceae), 132, 133, 181
 pollen, 131, 134
Cathormiocerus, beetles (Curculionidae)
Cathormiocerus curviscapus, 138, 139
Cathormiocerus validiscapus, 139
 CCM, 51, 56, 61, 62, 87
Ceanothus, shrubs (Rhamnaceae), 109, 111
Cecropia, tropical pioneer trees (Cecropiaceae), 122
 pollen, 123, 127
 cedar, *see* *Cedrus*
Cedrela, tropical American trees (Meliaceae)
 pollen, 127
Cedrus, cedar trees (Pinaceae), 100
Celtis, trees (Ulmaceae), 100
 Cenozoic, 4, 66, 72, 85, 87, 88, 92, 126
 Central America
 vegetation change
 Quaternary, 122–124
Cerion, pulmonate molluscs
Cerion agassizi, 162
Cerion spp., 162–163
Certhidea olivacea, finch, Galápagos (Fringillidae), 170
Cervus elaphus, red deer (Cervidae), 145, 155, 155, 156
Cervus sp., 156
 chapparal, 111
 charcoal, 131, 132, 133, 134
 Chenopodiaceae, herbs and shrubs (dicot angiosperms), 96, 99, 100, 122
 pollen, 75, 97, 101, 123, 134
 Chenopodiaceae–Amaranthaceae, 130
 pollen, 123, 124
 Chenopodiineae, *see* Chenopodiaceae
 chestnut, *see* *Castanea*
 chipmunk
 eastern, *see* *Tamias striatus*
Chlamys, bivalve molluscs
Chlamys flexuosa, 148
Chlamys glabra, 148
 chronology, 41, 66, 71
Chrysolepis, 'chestnut' trees (Fagaceae), 111
 pollen, 110
 Cichorioidideae, *see* Compositae (Liguliflorae)
Cionichthys, redfieldiids (chondrosteian fishes), 80
 classes, 30, 185
 Clear Lake, California, USA, 110, 109–111
Clemmys insculpta, wood turtle (Emydidae, North America), 142
Cleome, tropical herbs (Capparidaceae)
 pollen, 127
Cleopatra ferruginea, prosobranch molluscs, 163
Cliffortia, tropical shrubs (Rosaceae, Africa), 127
Cliffortia nitidula
 pollen, 128
 climate
 Galápagos, 171
 glacial, 123
 interglacial, 101

Cambridge University Press

0521399211 - Evolution and Ecology: The Pace of Life

K. D. Bennett

Index

[More information](#)

Index · 229

- models, 51–64, 87–89
 - Cretaceous, 61–62
 - Holocene, 51–56
 - Permian, 56
- modern, 52, 57
- reconstruction
 - 18 ka, 52
 - 9 ka, 57
 - Cretaceous, 63, 64
 - Pangaea, 61
- climatic change, 185, 188, 191, 196
 - and vegetation change, 42
 - astronomical forcing, 185
 - astronomical-forcing, 9, 10, 90
 - biotic response, 8, 32, 33, 111, 113, 121, 124, 127, 131, 135, 138, 139, 144, 145, 147, 148, 150, 152, 154, 158, 160, 175, 183–184, 191, 194, 197
 - cause, 2, 65
 - evolutionary change, 24, 31, 35, 43, 154
 - frequency, 191
 - Holocene, 56, 140
 - Permian, 82
 - pre-Quaternary, 185
 - Quaternary, 22, 24, 32, 40, 43, 66, 70, 71, 145, 184
 - speciation, 194
 - throughout Earth history, 185
 - Triassic, 81
 - tropical, 56, 131, 185
- climatic oscillations, 78, 94, 125, 131, 132, 164, 174, 176, 185, 189, 190
 - biotic response, 3, 197
 - Cretaceous, 62
 - pre-Quaternary, 47, 62, 185
 - Quaternary, 18
- climatic record
 - independence, 51
- coccolithophores, minute calcareous
 - marine planktonic algae, 146, 146, 147
 - distribution change, 146
- Coccolithus pelagicus*, coccolithophores, 146, 147
- Coleogyne ramosissima*, blackbrush shrubs (Rosaceae), 120
- Commiphora*, trees and shrubs (Burseraceae), 129
 - pollen, 130
- communities
 - as classes, *see* classes
 - concepts, 37
 - development, 95, 103, 116–119, 120
 - disruption, 185
 - recurrence, 96, 195–196
 - stability, 150
 - temporary, 103, 113, 117, 142, 148, 150, 185
- Community Climate Model, *see* CCM
- competition, 18, 29, 36, 183, 185, 187, 195
- Compositae, herbs and shrubs (dicot angiosperms)
 - (Liguliflorae)
 - pollen, 97
 - (Tubuliflorae)
 - pollen, 75, 97, 123, 134, 182
 - pollen, 128
- Coprosma*, trees and shrubs (Rubiaceae), 182
 - pollen, 182
- corals
 - distribution change, 148
 - evolution, 164
- Corbicula consobrina*, bivalve molluscs, 163
- Coriaria ruscifolia*, trees and shrubs (Coriariaceae)
 - pollen, 127
- Cornus*, trees and shrubs (Cornaceae)
 - pollen, 124
- Corylus*, hazel trees (Betulaceae), 100, 104, 152
 - pollen, 97, 98, 101, 109
- Corylus avellana*, hazel (Europe), 151
- creosote bush, *see* *Larrea divaricata*
- Cretaceous, 4, 61, 62, 63, 72, 74, 76, 76, 77, 78, 88, 92, 126, 181, 198
- Croll, James, 10, 14, 41
- Croton*, trees, shrubs, and herbs (Euphorbiaceae, tropical)
 - pollen, 127
- Croton bogotense*
 - pollen, 127
- Cruciferae, herbs (dicot angiosperms), 127
 - pollen, 128
- Cryptomeria japonica*, Japanese cedar (Taxodiaceae, east Asia), 137
- Cunoniaceae, southern hemisphere trees and shrubs (monocot angiosperms), 132, 151
 - pollen, 131, 136
- Cupressaceae, coniferous trees (gymnosperms), 74
 - pollen, 75

Cambridge University Press

0521399211 - Evolution and Ecology: The Pace of Life

K. D. Bennett

Index

[More information](#)

230 • Index

- Cupressus arizonica*, Arizona cypress (Cupressaceae, North America), 117
- Cyathea*, tree ferns (Cyatheaceae), 122
spores, 134, 136
- Cycladophora davisiana*, radiolaria, 67, 70, 147
- cycles, 5
- Cyclococcolithus leptoporus*, coccolithophores, 146, 147
- Cymindis unicolor*, beetles (Carabidae), 140
- Cynomys ludovicianus*, blacktail prairie dog (Sciuridae), 143
- Cyperaceae, sedges (monocot angiosperms), 128
pollen, 75, 130
- $\delta^{18}\text{O}$ (oxygen isotopic ratios), 5, 65, 67, 69–73, 75, 94, 109, 125, 132, 133, 155, 185
- Dacrycarpus*, gymnosperm trees (Podocarpaceae), 136
pollen, 136
- Dacrydium*, gymnosperm trees and small shrubs (Podocarpaceae), 132, 133, 181
pollen, 131
- Dama dama*, fallow deer (Cervidae), 145, 156
- Daphnopsis*, tropical American trees (Thymelaeaceae)
pollen, 125
- Darwin, Charles, 6, 9–15, 18, 22, 25, 35, 36, 40, 42, 169, 187
- Dasyercus cristicauda*, mulgara, marsupial (Dasyuridae, Australia), 144
- de Vries, Hugo, 14–15
- Deep Sea Drilling Project, 72
- deer
distribution change, 144–145
evolution, 155, 156, 155–156
fallow, *see* *Dama dama*
red, *see* *Cervus elaphus*
roe, *see* *Capreolus capreolus*
- Denticulopsis seminae*, marine diatoms, 147
- descent with modification, 12
- desert vegetation, 100
- desman
Russian, *see* *Desmana moschata*
Desmana moschata, Russian desman (Talpidae), 144
- Devils Hole, Nevada, 65
- Devonian, 4, 82, 88
- diatoms, golden-brown unicellular algae, 147, 167
marine
longevity, 175
- Dicliptera*, tropical herbs (Acanthaceae)
- Dicliptera–Beloperone*
pollen, 127
- Dicrostonyx hudsonius*, Hudson Bay collared lemming (Arvicolidae, North America), 143
- Dicrostonyx torquatus*, collared lemming (Arvicolidae, North America), 143, 144
- Dinornithiformes, *see* moas
- Diplurus*, coelacanth (sarcopterygian fishes), 80, 81
- Diplurus longicaudatus*, 81
- Discus nuderatus*, gastropod molluscs, 141
- dissimilarity mapping, 103, 115, 116
- distribution change, 2, 3, 7, 33, 92–154, 194
altitude, 118
beetle subspecies, 158
cause, 8, 22
European trees, 169
frequency, 184
genetic consequences, 168, 193
interglacial, 168
late–Quaternary
deer, 156
European *Quercus*, 104
European *Tilia*, 105
process, 193
speciation, 176
species, 150
time-scales, 42
- disturbance, pollen indicators, 136
- DNA, 144
- Dobzhansky, Theodosius, 16, 25
- Dodonaea viscosa*, tropical trees and shrubs (Sapindaceae)
pollen, 127
- Drimys*, evergreen trees and shrubs (Winteraceae)
pollen, 125, 134
- Drimys granadensis*
pollen, 127
- dwarfing, 155
- Earth, age, 40, 41
- Earth, orbital parameters, *see* orbital parameters, Earth

Cambridge University Press

0521399211 - Evolution and Ecology: The Pace of Life

K. D. Bennett

Index

[More information](#)

Index · 231

- Earth–Moon distance, 47
- Easter Island, 182
 - extinction, plant, 181–183
- Echinocactus horizontalis*, cacti (Cactaceae), 117
- ecological interactions, 13
- ecological moments, 29, 190
- ecological process, 35–39
- ecological theory, 43
- ecologists, 1, 150
 - and Quaternary time-scales, 41
 - machinery-orientated, 38
- ecology, 2
 - and evolution, 3
 - and evolutionary change, 36, 38
 - and palaeontology, 3
 - definition, 35, 36
 - evolutionary, 38
 - evolutionary change, 37
 - problems, 36
 - scope, 36
- El Valle, Panama, 123, 122–123
- Elaeocarpus*, tropical trees (Elaeocarpaceae), 132, 151
 - pollen, 131
- Eldredge, Niles, 26
- elephant birds, extinct Madagascan birds (Aepyornithiformes), 180
- elm, *see Ulmus*
- Encelia farinosa*, brittle bush (Compositae), 120
- environmental change, 90, 175, 176, 183, 185, 187, 191
 - and evolutionary change, 43
 - biotic response, 8, 16, 24, 32, 33, 103, 186
 - evolutionary change, 24, 31
 - speciation, 176
- environmental tracking, 196–197
- Eocene, 4, 72, 88
- Ephedra*, evergreen, shrubby switch plants (gymnosperms, Ephedraceae), 74
 - pollen, 75
- Ephedra viridis*, 117
- equinox, 49
- Ericaceae, trees and shrubs (dicot angiosperms), 127, 128
- Eriocaulon*, mostly tropical herbs (Eriocaulaceae)
- Eriosema*, herbs (Leguminosae)
- Eriosema* (cf.)
 - pollen, 127
- Eucalyptus*, Australasian sclerophyll trees (Myrtaceae), 131–133, 181
 - pollen, 134
- Eucalyptus*-type
 - pollen, 131
- Eucladoceros*, comb-antlered deer, extinct (Cervidae)
 - Eucladoceros ctenoides*, 156
 - Eucladoceros falconeri*, 156
 - Eucladoceros sedgwicki*, 156
 - Eucladoceros tetracerus*, 156
- Eucommia*, tree, known only from east Asia today (Eucommiaceae), 100, 181
- Eugenia*, tropical trees (Myrtaceae), 151
- Eugenia*-type
 - pollen, 136
- Eupera ferruginea*, bivalve molluscs, 163
- Europe
 - extinction, plants, 181
 - glaciations, 88
 - vegetation change
 - Holocene, 102–107
 - Quaternary, 96–102
- evolution, *see* evolutionary change
 - and ecology, 3
 - gradual, 175
- Evolution: the Modern Synthesis*, 22
- evolutionary change, 2, 3, 29, 32, 154–177, 195
 - above species level, 24
 - and ecology, 36, 38
 - and environmental change, 43
 - climatic change, 24, 31, 35, 43, 154
 - constraint, 186
 - ecology, 37
 - environmental change, 24, 31
 - equilibrium, 186
 - fact of, 35, 38
 - frequency, 184
 - gradual, 15, 32
 - Holocene, 173
 - modes, 20, 23
 - phyletic, 22, 23
 - plants, 22, 24
 - process, 26, 38
 - quality of evidence, 154
 - quantum, 22, 23
 - Quaternary, 173
 - random, 186
 - rates, 20, 24, 34, 40, 43

Cambridge University Press

0521399211 - Evolution and Ecology: The Pace of Life

K. D. Bennett

Index

[More information](#)

232 · Index

- selection, 186
- theory of, 10
- evolutionary ecology, 38
- evolutionary hierarchy, 29, **189**, 189–190
- evolutionary progress, 19, **29**, 38, 190
- evolutionary synthesis
 - modern, *see* modern synthesis
 - post-modern, 184–195
- evolutionary theory, 43
- exaptation, 189
- extinction, 2, 3, 7, **21**, **32**, **33**, 154,
 - 178–183, 188
 - birds, 180–181
 - cause, 31
 - frequency, 183, 184
 - mammals, 179, **180**
 - mass, *see* mass extinctions
 - plants, 96, 100, 117, 119, 132, 133, 137
 - rates, 8, 178
- extrapolation, 19, 26, **33**, **35**, 38, 154
- Fagus*, beech trees (Fagaceae), 100–102,
 - 111, 114, **151**, **152**
 - pollen, 97, **101**, **109**
- Fagus grandifolia*, American beech
 - (Fagaceae, North America), **151**
 - pollen, **114**
- Fallugia paradoxa*, shrubs (Rosaceae), 117
- macrofossils, **118**
- fauna
 - disharmonious, 141
 - intermingled, 142
 - beetles, European, **139**
 - beetles, North American, **140**
 - mammals, Australian, **144**
 - mammals, Eurasian, **144**
 - mammals, North American, **143**
 - molluscs, European, **141**
 - vertebrates, North American, **142**
- FAUNMAP, 141
- Ficalhoa*, tropical African shrubs (Theaceae),
 - 127
 - pollen, **128**
- Filicales, ferns (Filicopsida)
 - spores, **182**
- finches, Darwin's, 169, 170, **170**, 171, 172,
 - 172, 173, 175–177
- fir, *see* *Abies*
 - Douglas, *see* *Pseudotsuga*
- fishes
 - evolution, 157
 - fossil, 79, **80**, **81**
 - freshwater
 - longevity, **175**
- foraminifera, testate protozoans, 147
 - benthic
 - longevity, **175**
 - planktonic
 - longevity, **175**
- forest
 - development, 104, 111, 115
 - Holocene, 42, 123, 127, 137
 - Holocene spread, 42, 103, **109**, 111, 112,
 - 112–114
 - interglacial, 96, 99, 100, 102, 122, 125,
 - 133, 135
 - modern, 103, 111
 - Quaternary, 126
 - rates of spread, 114
- fossil record, 20, **27**, 34, 35, 43
 - ignored, 34
 - interpretation, 26, 31
 - Quaternary, 194
 - use, 34, 38
- founder effect, 168
- fox, arctic, *see* *Alopex lagopus*
- Fraxinus*, ash trees (Oleaceae)
 - pollen, **109**, **124**
- Fraxinus anomala*, single-leaved ash
 - (Oleaceae, North America), **120**
- Fraxinus excelsior*, ash (Oleaceae, Europe),
 - 100
 - pollen, **98**
- Fraxinus nigra*, black ash (Oleaceae, North America), **151**
- future change, 185
- Gabbiella senaariensis*, prosobranch molluscs,
 - 163
- Galápagos, 169, 171, 173, 176
- Gastrocopta rupicola*, gastropod molluscs, 140
- GCM, 51, 52, 57, 89
- general circulation model, *see* GCM
- generation times, 20, 174, 176
- geneticists, **35**
- genetics, 1, 3, 14–16, 19, **29**, 36
- Genetics and the Origin of Species*, 16
- geological record
 - imperfect, 13
- geologists
 - and Quaternary time-scales, 41
- Geospiza*, finches (Fringillidae, Galápagos)

Cambridge University Press

0521399211 - Evolution and Ecology: The Pace of Life

K. D. Bennett

Index

[More information](#)

Index · 233

- Geospiza conirostris*, 170, 172
Geospiza difficilis, 170
Geospiza fortis, 170, 171, 172
Geospiza fuligosa, 170
Geospiza magnirostris, 170
Geospiza scandens, 170
Gephyrocapaea caribbeanica, coccolithophores, 146, 147
Gilia, herbs (Polemoniaceae, North America)
Gilia-type
 pollen, 75
 glacial, 94, 132
 glacial period, 9, 13, 15, 40, 41, 85, 89, 96, 122, 135
 species altered, 14, 21
 species persistence, 9, 15, 15
 glacial, last, 40, 51, 102, 103, 117, 123, 135, 137, 138, 146, 162, 178, 181
 definition, 5
 glacial–Holocene transition, 20, 41, 94, 178, 179, 181
 glacial–interglacial oscillations, 40, 95, 101, 122, 133, 137, 138, 150, 156, 161, 163, 191, 193
 glaciations, 1, 2, 14, 18, 24, 39, 93, 92–94, 185, 197
 and species formation, 18
 causes, 31, 85–89
 north–south contrasts, 14, 70
 pre–Quaternary, 10, 88
 Quaternary, 66
Globigerina bulloides, foraminifera, 67
Globoconella, foraminifera, 165, 165
Globoconella conomiozea terminalis, 165, 165
Globoconella pliozea, 165, 165
Globoconella sphericomiozea, 165
 Gould, John, 169
 Gould, Stephen Jay, 26
 Gramineae, grasses (monocot angiosperms), 96, 99, 100, 127, 128
 pollen, 75, 97–99, 101, 110, 123, 125, 128, 130, 134, 182
 Grande Pile, France, 102
 graptolites
 longevity, 175
 grasses, *see* Gramineae
 grassland, 135
Grewia tenax, tree (Tiliaceae, Africa), 128, 129
 Haeckel, Ernst, 35
Hagenia abyssinica, east African shrub (Rosaceae), 127
 pollen, 128
 hazel, *see* *Corylus*
Hedyosmum, tropical plants (Chloranthaceae)
 pollen, 123–125
Helicospaera carteri, coccolithophores, 146
Helophorus, beetles (Hydrophilidae)
Helophorus aquaticus, 158, 158
Helophorus arcticus, 140
Helophorus aspericollis, 138
Helophorus brevipalpis, 138
 hemlock, *see* *Tsuga*
 herbs
 pollen, *see also* individual taxa, 75, 123, 124
 heredity, 14
Hermanites transoceanica, marine ostracodes (Crustacea), 160
 heterozygosity, 24
Histiopteris, tropical ferns (Dennstaedtiaceae)
Histiopteris incisa-type
 spores, 127
 Holocene, 4, 71
 climate, 41
 forest, *see* forest, Holocene
 status, 5
 usage, 4
 vegetation change, *see* vegetation change, Holocene
 Hooker, Joseph, 9
 hornbeam, *see* *Carpinus*
 hop, *see* *Ostrya*
Hura, tropical trees (Euphorbiaceae), 122
 Huxley, Julian, 25, 187
 hybridization, 24
Hymenophyllum, filmy ferns (Hymenophyllaceae)
Hymenophyllum myriocarpum-type
 spores, 127
Hypericum, trees, shrubs and herbs (Guttiferae)
 pollen, 125
 ice-ages, *see* glaciations
 ice-sheets, continental, 4, 50, 51, 56, 67, 70, 85, 183, 185
Ilex, holly trees and shrubs (Aquifoliaceae)
 pollen, 124, 136

234 · Index

- individualistic behaviour, 37, 42, 103, 113, 121, 139, 150, 185, 188, 194, 196
- individuals, 30–31, 150, 185, 196
- inheritance
 - blending, 16
 - particulate, 16
- insolation, 44, 50, 48–51, 61, 69, 124
- interglacial, 40, 41, 94, 99, 132, 135, 147
 - distribution change, 168
 - last, 40, 71, 101, 102, 110, 122, 155, 158, 162
 - definition, 5
 - present, *see* Holocene
- interstadial, 94
- Ioannina, Greece, 101, 100–101
- isolation, 19, 20, 22, 24, 27, 160, 173
 - geographic, 15, 18, 27, 164, 171, 189, 191
- reproductive, 26, 32
- Jubaea chilensis*, Chilean wine-palm (Palmae), 182
- Juglans*, walnut trees (Juglandaceae)
 - pollen, 124, 125
- Juniperus*, juniper shrubs (Cupressaceae), 116, 119, 120, 152
 - pollen, 97, 124
- Juniperus osteosperma*, Utah juniper (Cupressaceae, North America), 117, 122
 - macrofossils, 118
- Juniperus osteosperma/monosperma*, Utah and one-seed junipers (Cupressaceae, North America), 122
- Juniperus scopulorum*, Rocky Mountain juniper (Cupressaceae, North America), 117, 119, 122
- Jupiter, 45
- Jurassic, 4, 78, 88, 157, 191
- Kashiru, Burundi, 126–127, 128
- koala, *see* *Phascolarctos cinereus*
- Kochia*, desert shrubs (Chenopodiaceae), 99
- Krascheninnikovia*, desert shrubs (Chenopodiaceae), 99
- Lake Biwa, Japan, 137
- Lake George, Australia, 134, 133–135
- Lake Hordorli, New Guinea, 135, 136
- Lake Quexil, Guatemala, 124, 123–124
- larch, *see* *Larix*
- Larix*, larch trees (Pinaceae), 100
- Larix gmelinii*, Dahurian larch (Pinaceae, Asia), 137
- Larix laricina*, tamarack (Pinaceae, North America), 111
 - pollen, 112
- Larrea divaricata*, creosote bush (Zygophyllaceae, North America), 117, 120
- Lathyrus*, herbs (peas) (Leguminosae)
 - pollen, 127
- Lauria cylindracea*, gastropod molluscs, 141
- lemming
 - collared, *see* *Dicrostonyx torquatus*
 - Hudson Bay collared, *see* *Dicrostonyx hudsonius*
 - northern bog, *see* *Synaptomys borealis*
 - Norway, *see* *Lemmus lemmus*
- Lemmus lemmus*, Norway lemming (Arvicolidae), 144
- Les Echets, France, 102
- lime, *see* *Tilia*
- limnology, 36
- Linnean Society, 10, 11
- Liomys irroratus*, Mexican pocket mouse (Heteromyidae), 143
- Liquidambar*, deciduous trees (Hamamelidaceae), 100, 181
- Lycium carolinianum*, shrub (Solanaceae, Easter Island), 182
- Lycopodium*, club-mosses (Lycopodiaceae)
 - spores, 134
- Lyell, Charles, 6–10, 15, 35, 39, 40, 42, 43
 - letter to Darwin, 9
 - views on species, 7–9
- Lynch's Crater, Australia, 131, 131–133
- Lysipomia*, Andean herbs (Campanulaceae)
 - pollen, 127
- Macaranga*, tropical trees and shrubs (Euphorbiaceae), 126, 127
 - pollen, 128
- macroevolution, 13, 16, 19, 26, 29, 35, 188, 191
- Madagascar, 180
 - extinction, mammals, 181
- Maerua*, shrubs and trees (Capparidaceae)
 - pollen, 130
- Maerua crassifolia*, 128
- mammals
 - evolution, 155–157
 - extinction, 178–181

Cambridge University Press

0521399211 - Evolution and Ecology: The Pace of Life

K. D. Bennett

Index

[More information](#)

Index · 235

- longevity, **175**
- marine microfossils
 - distribution change, 145–147
- mass extinctions, 29–30, 72, 176, 189, **189**, 190, 191, 194
- mathematical ecology, 36
- Mayr, Ernst, 18–20, 24, 25, 27, 43, 164, 187
- mega-evolution, 22
- Megaceros*, giant deer, extinct (Cervidae)
- Megaceros dawkinsi*, **156**
- Megaceros giganteus*, **156**
- Megaceros savini*, **156**
- Megaceros verticornis*, **156**
- Melanoides tuberculata*, prosobranch molluscs, **163**
- Melastomataceae, herbs and shrubs (dicot angiosperms), 122
 - pollen, 123–125
- Meliaceae, tropical trees (dicot angiosperms)
 - pollen, 123
- Mendel, Gregor, 14, 16
- Mesozoic, **4**, 157
- Miconia*, trees and shrubs (Melastomataceae)
 - pollen, 125
- Microcachrys*, gymnosperm trees
 - (Podocarpaceae, Tasmania), 133, 181
- microevolution, 26, 29, **35**, 37, 190
- Microstrobos*, gymnosperm trees
 - (Podocarpaceae, Australia), 181
- Microtus pennsylvanicus*, meadow vole
 - (Cricetidae, North America), 157
- Milankovitch hypothesis, 65
- Milankovitch oscillations, 48
- Milankovitch, Milutin, 48
- Miocene, **4**, 72, 73, 93
- moas, extinct New Zealand birds
 - (Dinornithiformes), 180
- modern synthesis, 15–26, 34–35, 42, 173, 191
- molecular biology, **29**
- molluscs
 - marine, 148
 - bivalves, longevity, **175**
 - bivalves, Lyellian percentages, 174
 - distribution change, 147–148
 - gastropods, longevity, **175**
 - non-marine
 - distribution change, 139–140
 - evolution, 163, 161–164
- Tertiary, 9
- monsoons, 56, 129–131
- Moon, 44
- Moraceae, herbs, shrubs, and trees (dicot angiosperms), 123
- Mougeotia*, trees and shrubs (Sterculiaceae)
- Mougeotia laetevirens*-type
 - pollen, 127
- mouse
 - grasshopper, *see Onchymys leucogaster*
 - Mexican pocket, *see Liomys irroratus*
 - wood, *see Apodemus sylvaticus*
- Muelenbeckia*, climbers and creepers
 - (Polygonaceae)
 - pollen, 127
- mulgara, *see Dasycercus cinereus*
- mutation, 14, **15**, 20, 26, 28, 186
- Mutela nilotica*, bivalve molluscs, **163**
- Myrica*, shrubs (Myricaceae)
 - pollen, 123, 125
- Myrtaceae, trees and shrubs (dicot angiosperms), 122, 132
 - pollen, 123, 125, 134
- Myrtaceae (*Eugenia*-group)
 - pollen, 131
- natural selection, *see* selection, natural
- Neotoma*, packrats and woodrats
 - (Cricetidae), 115, 118, 119, 121
- Neotoma floridana*, 143
- New Zealand, 181
 - extinction, plants, 181
- North America, 62, 87
 - glaciations, **88**
 - vegetation change
 - Holocene, 111–115
 - Quaternary, 108–121
- Nothofagus*, southern beech trees
 - (Fagaceae), 132, 133, 135, 136, 181
 - pollen, 136
- Nothofagus brassii*-type
 - pollen, 134
- oak, *see Quercus*
- oceanography, 36
- Oenothera*, evening primroses (Onagraceae), 14
- Okhotsk, Sea of, 147
- Olea*, olive trees (Oleaceae), 96, 102, 127, **152**
 - pollen, 97, 128
- Oligocene, **4**, 72, **88**, 93, 126

Cambridge University Press

0521399211 - Evolution and Ecology: The Pace of Life

K. D. Bennett

Index

[More information](#)

236 · Index

- olive, *see* *Olea*
- On the Origin of Species*, 1, 9, 11, 14, 16, 19, 36, 39, 40
- Onagraceae, herbs and shrubs (dicot angiosperms)
 - pollen, 124
- Onchymys leucogaster*, grasshopper mouse (Cricetidae, North America), 144
- Onthophagus gibbulus*, beetles (Scarabaeidae), 139
- Opetiopalpus scutellaris*, beetles (Cleridae), 139
- Opisthius richardsoni*, beetles (Carabidae), 140
- orbital change hypothesis, 66
- orbital parameters
 - Earth, 9
- orbital parameters, Earth, 44–51, 96, 125
 - eccentricity, 45, 46, 48–50, 56, 62, 70–72, 75, 82, 84
 - obliquity, 45, 46, 46, 47, 48, 50, 56, 61, 62, 70, 71, 78, 81, 82, 84
 - precession, 45, 46, 46, 47, 48, 49, 50, 56, 62, 70, 78, 82, 84, 96
- orbital parameters, Mars, 48
- orbital variations, 10, 14, 47, 48, 51, 62, 67, 69, 71, 90, 132, 185, 187
 - Cretaceous, 76
- Ordovician, 4, 82, 87, 88, 197
- ostracodes, Crustacea
 - evolution, 159–160
- Ostrya*, hop hornbeam trees (Betulaceae), *see also* *Carpinus/Ostrya*
 - pollen, 98, 124
- overkill, 181
- oxygen isotopic ratios, *see* $\delta^{18}\text{O}$
- packrat, *see* *Neotoma*
- packrat middens, 115–121
- Paepalanthus*, tropical herbs (Eriocaulaceae)
- Paepalanthus-Eriocaulon*
 - pollen, 127
- palaeomagnetism, 73, 133
- palaeontologists, 1
 - history-orientated, 38
- palaeontology, 1, 15
 - and ecology, 3
- Paleocene, 4
- Paleozoic, 4
- Palmae, palms (monocot angiosperms)
 - pollen, 182
- Panama, Isthmus of
 - formation, 126, 159
- Pangaea, 56, 61
- paradox of the first tier, 29, 30
- Parrotia*, trees (Hamamelidaceae), 100
- peacock's tail, 192
- Pecten jacobaeus*, bivalve molluscs, 148
- periglacial processes, 94
- perihelion, 14, 45, 48, 56
- Permian, 4, 56, 82, 84, 88
- Perspectives in Ecological Theory*, 1
- Phanerozoic, 4, 197
- Phascolarctos cinereus*, koala (Phascolarctidae, Australia), 144
- phyletic gradualism, 27, 34, 43, 154, 166
- Phyllocladus*, gymnosperm trees (Phyllocladaceae), 132, 133, 136, 181
 - pollen, 134, 136
- Picea*, spruce trees (Pinaceae), 102, 111, 120, 151
 - pollen, 75, 110, 112
- Picea engelmannii*, Engelmann spruce (Pinaceae, North America), 122
- Picea glauca*, white spruce (Pinaceae, North America), 115, 151
- Picea pungens*, Colorado spruce (Pinaceae, North America), 122
- Piliostigma*, usually climbers (Leguminosae), 128, 129
- Pinaceae, coniferous trees (gymnosperms)
- Pinaroloxias inornata*, Cocos Island finch (Fringillidae), 170
- pine, *see* *Pinus*
- Pinus*, pine trees (Pinaceae), 99, 100, 110, 111, 119, 120, 152, 169
 - pollen, 75, 97–99, 101, 109, 110, 124
- Pinus banksiana/resinosa*, jack pine/red pine (Pinaceae, North America), 111
 - pollen, 112
- Pinus contorta*, lodgepole pine (Pinaceae, North America), 151, 167
- Pinus edulis*, pinyon (Pinaceae, North America), 122
- Pinus flexilis*, limber pine (Pinaceae, North America), 117, 119, 120, 122
 - macrofossils, 118
- Pinus longaeva*, Great Basin bristlecone pine (Pinaceae, North America)
 - macrofossils, 118
- Pinus monophylla*, single-leaf pinyon (Pinaceae, North America), 117

Cambridge University Press

0521399211 - Evolution and Ecology: The Pace of Life

K. D. Bennett

Index

[More information](#)

Index · 237

- macrofossils, 118
- Pinus ponderosa*, Ponderosa pine (Pinaceae, North America), 119, 120, 120, 122
 - macrofossils, 118
- Pinus remota*, papershell pinyon (Pinaceae, North America), 116
- Pinus sabiniana*, digger pine (Pinaceae, North America), 109
- Pinus strobus*, white pine (Pinaceae, North America), 151
 - pollen, 113
- Pinus sylvestris*, Scots pine (Pinaceae, western Eurasia), 151
- plant ecology, 36
- plants
 - distribution change, 95–137
 - evolution, 167–168
 - evolutionary change, 22, 24
 - extinction, 96, 100, 117, 119, 132, 133, 137, 181–183
 - longevity, 175
- plate tectonics, 85, 187
- Pleiodon*, bivalve molluscs, 163
- Pleistocene, 4, 4
- Pliocene, 4, 93
- Poaceae, *see* Gramineae
- Podocarpaceae, coniferous trees
 - (gymnosperms), 133
- Podocarpus*, gymnosperm trees
 - (Podocarpaceae), 126, 127, 132, 133, 151
 - pollen, 125, 128, 131, 134, 136
- Poecilozonites*, pulmonate molluscs
- Poecilozonites bermudensis*, 161
- Poecilozonites* spp., 161–162
- pollen
 - analysis, 41
 - resolution, 95
 - stratigraphy, 41
- pollen data
 - Holocene
 - Africa, 127–131
 - Europe, 102–107
 - North America, 111–115, 167–168
 - Sahara, 129
 - Miocene, 73–75
 - proxy for past climate, 42
 - Quaternary
 - Africa, 126–127
 - Asia, 136, 137
 - Australasia, 131–136
 - Central America, 122–124
 - Easter Island, 181–183
 - Europe, 96–102
 - North America, 109–111
 - South America, 124–126
- Polynesian colonization, 135, 180, 182
- polyploidy, 24, 192
- population
 - density, 183
 - ecology, 37
 - global change, 147
 - increase, 10, 21, 25, 36, 101, 102, 107, 115, 150, 151, 152, 153, 154, 187, 188
 - interaction, 190
 - persistence, 168
 - size, 16, 20, 36, 145, 151, 176, 186
 - splitting, 22
 - stability, 11, 21, 25, 187, 194
 - structure, 24, 183
- population-thinking, 18
- prairie dog
 - blacktail, *see* *Gymnomys ludovicianus*
- preadaptation, 22, 24, 189
- Principles of Geology*, 7, 9, 10
- Priscoan, 4
- Proterozoic, 4, 84, 85, 87, 88
- Protista
 - evolution, 165–167
- Pseudobovaria*, bivalve molluscs, 163
- Pseudotsuga*, Douglas fir trees (Pinaceae), 111, 122
 - pollen, 110
- Pseudotsuga menziesii*, Douglas fir (Pinaceae, North America), 109, 120, 151
- Pteris*, ferns (Adiantaceae)
- Pteris grandifolia*-type
 - spores, 127
- Pterocanium*, radiolaria
- Pterocanium charybdeum*, 166
- Pterocanium prismatium*, 166
- Pterocanium* spp., 166
- Pterocarya*, wing nut trees (Juglandaceae), 96, 100
 - pollen, 99
- Pterostichus punctatissimus*, beetles
 - (Carabidae), 140
- Punctuated Aggradation Cycle, 89
- punctuated equilibria, 15, 19, 26–31, 31, 34–35, 43, 166, 167, 188, 190
- Puriana*, marine ostracodes (Crustacea)

Cambridge University Press

0521399211 - Evolution and Ecology: The Pace of Life

K. D. Bennett

Index

[More information](#)

238 · Index

- Puriana* aff. *elongonigata*, 159
Puriana carolinensis, 160
Puriana floridana, 159, 160
Puriana mesacostalis, 159, 160
Puriana minuta, 160
Puriana rugipunctata, 159
- Quaternary, 4
 chronology, 66
 chronostratigraphy, 71
 climatic change, 22, 24, 32, 43, 66, 70, 71
 climatic oscillations, 18
 environmental dynamics, 184
 fossil record, 2
 glaciations, 66, 71
 history, 184
 history of attitudes, 2
 palaeoecologists, 1, 39, 42
 palaeoecology, 3, 41, 120
 ignored, 1
 paradox, 197
 representativity, 185, 197–198
 research, 39–42
 usage, 4
 vegetation change, *see* vegetation change, Quaternary
- Quercus*, oak trees, deciduous and evergreen (Fagaceae), 96, 99, 100, 103, 109–111, 122, 123, 126, 151, 169
 pollen, 98, 99, 101, 104, 109, 110, 113, 123–125
- Quercus* (deciduous), 152
 pollen, 97
- Quercus douglasii*, blue oak (Fagaceae, North America), 109
- Quercus gambelii*, Gambel oak (Fagaceae, North America), 120
- Quercus ilex*-type, evergreen oaks (Fagaceae, Europe)
 pollen, 97
- radiocarbon ages, 41, 42, 67, 96, 97, 109, 115, 122, 132, 133, 148, 182
- radiocarbon years
 calibration, 4
- radiolaria, marine planktonic protozoans, 67, 147
- radiometric ages, 125
- Rangifer tarandus*, reindeer, caribou (Cervidae, Eurasia and North America), 145, 156
- Ranunculaceae, mostly herbs (dicot angiosperms)
 pollen, 97
- Ranunculus*, herbs, buttercups (Ranunculaceae), 127
 pollen, 128
- Rapanea*, trees and shrubs (Myrsinaceae), 151
 pollen, 124
- recombination, 15, 26, 186
- Red Queen hypothesis, 26
- redox variations, 74, 76
- refugia, glacial, 42, 100, 103, 105, 123, 135, 168
- reindeer, *see* *Rangifer tarandus*
- reptiles
 fossil, 79, 80
- Rhabdosphaera styliifera*, coccolithophores, 146
- Rhamnaceae, trees and shrubs (dicot angiosperms), 111
 pollen, 110
- Rhamnus*, shrubs (Rhamnaceae), 111
- Rhizosolenia*, marine diatoms
- Rhizosolenia bergonii*, 167
- Rhizosolenia praebergonii*, 167
- Rhizosolenia* spp., 166–167
- Ribes*, low shrubs (Grossulariaceae)
- Ribes* cf. *velutinum*
 macrofossils, 118
- sagebrush, *see* *Artemisia* sec. *tridentata*
- Sahara, lakes, 127, 129
- saiga, *see* *Saiga tatarica*
- Saiga tatarica*, saiga (Bovidae, Eurasia), 144
- Salix*, willow trees, (Salicaceae), 151
 pollen, 75
- Salvadora*, trees and shrubs (Salvadoraceae), 128
 pollen, 130
- Samerberg, Germany, 102
- Sapotaceae, trees and shrubs (dicot angiosperms)
 pollen, 123
- Sarcobatus*, greasewood, shrub (Chenopodiaceae), 74
 pollen, 75
- Satureja*, herbs (Labiatae)
- Satureja nubigena*-type
 pollen, 127
- savanna, 128, 129

Cambridge University Press

0521399211 - Evolution and Ecology: The Pace of Life

K. D. Bennett

Index

[More information](#)

Index · 239

- sea-level change, 51, 90, 135, 148, 149, 155, 162, 164, 175, 191
 Carboniferous, 82, 83
 Proterozoic, 85, 87
 Quaternary, 94, 148, 161
 Triassic, 78
- sea-surface temperatures, 67
- secondary contact hypothesis, 25
- sedges, *see* Cyperaceae
- sediment
 deep-sea, 5, 40, 65, 67, 68, 71, 72
 laminated, 65, 73, 79, 82, 96, 157
 periodicity, 72, 73, 75, 78, 79, 82, 84, 85
- sedimentary variations
 Cenozoic, 66–74
 Mesozoic, 74–82
 Paleozoic, 82–84
 Proterozoic, 84–85
- Selaginella*, club-mosses (Selaginellaceae)
- Selaginella sellowii*-type
 spores, 127
- selection, 20, 187
 artificial, 12
 natural, 9–14, 16, 16, 20, 21, 22, 25, 25, 26, 28, 35, 36, 38, 38, 154, 168–169, 171–173, 175, 186–187, 187, 188, 189, 190
 Darwin's finches, 169–173
 sexual, 192
 species, 29
- Semionotus*, semionotids (neopterygian fishes), 80, 81, 157
- sexual selection, *see* selection, sexual
- shadscale, *see* *Atriplex confertifolia*
- shrew
 masked, *see* *Sorex cinereus*
 smoky, *see* *Sorex fumeus*
- Siberia, 137
- Silurian, 4, 82, 87, 88
- Simpson, George, 20–22, 25
- snakes
 longevity, 175
- Solar System, 44–47, 89
- solstice, 49, 56
- Sophora toromiro*, tree (Leguminosae, Easter Island), 182
 pollen, 182
- Sorex*, shrews (Soricidae)
- Sorex cinereus*, masked shrew (Soricidae, North America), 143
- Sorex fumeus*, smoky shrew (Soricidae, North America), 143
- South America, 62
 glaciations, 88
 vegetation change
 Quaternary, 124–126
- speciation, 15, 16, 18, 19, 19, 22, 23, 23, 26, 27, 27, 28, 28, 28, 31, 31, 32, 33, 34, 43, 152, 156, 157, 159, 175, 176, 189, 195
 allopatric, 18, 19, 24, 27, 154, 188, 191, 193
 climatic change, 194
 corals, 173
 distribution change, 176
 environmental change, 176
 frequency, 191
 geographic, 17, 18, 19, 27, 164, 165, 187
 peripatric, 27, 32
 plant, 22
 rate, 18, 173
 sympatric, 18, 19, 24, 191
- species
 as individuals, *see* individuals, 191
 as interactors, 152
 biological, 18, 24
 constant, 31
 duration, 40, 157, 174, 174, 175
 emergent characters, 176, 183
 evolutionary role, 19
 nature of, 175, 188
 origin, 8, 9, 14, 153
 mammals, 180
 rates, 178
 sorting, 176, 183
 spatiotemporally-bounded, 31, 191, 194
 stability of, 8
- species selection, *see* selection, species
- spectral analysis, 67, 68, 69, 72, 73, 73, 77, 78, 84, 86
- Spermophilus tridecemlineatus*, thirteen-lined ground squirrel (Sciuridae, North America), 143
- Spondylus gaederopus*, bivalve molluscs, 148
- squirrel
 ground, thirteen-lined, *see* *Spermophilus tridecemlineatus*
- stadial, 94
- stasis, 26, 154, 159, 165, 167, 175, 184, 188, 189
- steppe vegetation, 96, 99, 100

Cambridge University Press

0521399211 - Evolution and Ecology: The Pace of Life

K. D. Bennett

Index

[More information](#)

240 · Index

- Stipagrostis*, desert grasses (Gramineae), 128
 stratigraphic units
 usage, 3
 struggle for existence, **21**, **25**, **187**
Styloceras, Andean trees (Buxaceae)
 pollen, 125
 Sun, 44
Symphoricarpos, deciduous shrubs
 (Caprifoliaceae), 117
Symphoricarpos cf. *longiflorus*
 macrofossils, 118
Symplocos, tropical trees (Symplocaceae)
 pollen, 125
Synaptomys borealis, northern bog lemming
 (Arvicolidae), 143
Synorichthys, redfieldiids (chondrosteian
 fishes), 80, 81
Syracosphaera pulchra, coccolithophores, 146
Systematics and the Origin of Species, 18
 systematics, animal, 15
 systematics, plant, 15
Syzygium, tropical trees and shrubs
 (Myrtaceae), 127
 pollen, 128
 Sørensen's index of similarity, 119, 121
- Tachinus apterus*, beetles (Staphylinidae), 159
Tamias striatus, eastern chipmunk
 (Sciuridae, North America), 143
Tanytrachelus, small reptile (protorosaur), 80
 Taxaceae, coniferous trees (gymnosperms)
 Taxodiaceae, coniferous trees
 (gymnosperms)
 TCT, coniferous trees (Taxodiaceae,
 Cupressaceae, Taxaceae), 110, 111
 pollen, 110
 tectonic uplift, 87–89
Tellina, bivalve molluscs
Tellina compressa, 148
Tellina pulchella, 148
Tempo and Mode in Evolution, 20
 Tenaghi Philippon, Greece, 98, 99, 96–102
 Tertiary, **4**, 10, 61, 72–74, **88**, 179
 Tethyan Ocean, 76
Thalassiosira graviola, marine diatoms, 147
Thelypteris, ferns (Thelypteridaceae)
 spores, 127
Thuja plicata, western red cedar
 (Cupressaceae, North America), **151**
Thysanophora hypolepta, pulmonate
 molluscs, 140, 162
- Tibet, 87, 137
Tilia, lime and basswood trees (Tiliaceae),
 103, 105, **152**
 pollen, *105*, *109*
Tilia cordata, small-leaved lime (Tiliaceae,
 Europe), **151**
 time-scale
 geological, **4**, 41, 71
 radiocarbon, 42
 radiometric, 79, 82
 time-scales
 ecological, 2, 38, 168–173, 188–190
 geological, 1, 2, 24, 27, 38, 152, 190,
 191, 195
 Holocene, 42
 human, 1
 Milankovitch, 2, 4, 66, 72, 75, 85, 90, 92,
 98, 102, 126, 154, 158, 173, 175,
 176, 184, 188, 189, 191, 194–197
 Quaternary, 1, 41–43, 188
 time-series, 65, 98, *108*
 geological, 67, 68
 toads, *see* *Bufo*
 transmutation, 7
 trees
 pollen, *see also* individual taxa, 97, 123,
 124, 130
Trema, tropical pioneer trees (Ulmaceae),
 151
 trends, evolutionary, 27, 28, 29, 31, **33**, 191
 Triassic, **4**, 78, 79, 79–81, **88**
Tribulus, usually shrubs (Zygophyllaceae)
 pollen, 130
 trilobites
 longevity, **175**
Triumfetta semitriloba, tree (Tiliaceae, Easter
 Island), 182
 pollen, 182
Tsuga, hemlock trees (Pinaceae), 100, 111,
 114, 181
 pollen, 99, 110
Tsuga canadensis, eastern hemlock
 (Pinaceae, North America), **151**
 pollen, 113
Tsuga mertensiana, mountain hemlock
 (Pinaceae, North America), **151**
 Turkana Basin, Kenya, 163–164
 turnover-pulse, 31–33, 194–195
Turseodus, palaeoniscoids (chondrosteian
 fishes), 80, 81

Cambridge University Press

0521399211 - Evolution and Ecology: The Pace of Life

K. D. Bennett

Index

[More information](#)

Index · 241

- turtles, *see Clemmys*
- TWINSPAN, 106
- Typha*, perennial marshland herbs
(Typhaceae)
pollen, 130
- Ukraine, 159
- Ulmaceae, tropical and temperate trees and shrubs (dicot angiosperms), 100
pollen, 99
- Ulmus*, elm trees (Ulmaceae), *see also*
Ulmus/Zelkova, 96, 137, **151**, **152**, 169
pollen, 97, 99, 109, 113
- Ulmus/Zelkova*, *see also Ulmus* and *Zelkova*
pollen, 75, 101
- ultra-Darwinians, 26
- Umbelliferae, herbs (dicot angiosperms)
pollen, 128
- Umbellosphaera irregularis*, coccolithophores, 146
- uniformitarianism, 26, 34, 35, 38, 154
- Ursus maritimus*, polar bear (Ursidae), 157
- Urticaceae, herbs, shrubs, and trees (dicot angiosperms)
- Urticaceae/Moraceae
pollen, 123
- Uvigerina peregrina*, benthic foraminifera, 147
- Valle di Castiglione, Italy, 96, 97, 101, 102, **152**
- Vállea*, trees (Elaeocarpaceae)
- Vállea*-type
pollen, 125
- Valvata*, prosobranch molluscs, 163
- Variation and Evolution in Plants*, 22
- Vauquelinia californica*, desert plants
(Rosaceae, North America), 117
- vegetation
Miocene, 74
vegetation change, 127
- and climatic change, 42
- anthropogenic, 132, 136, 182
- Holocene
British Isles, 103–107
Europe, 102–103, 106
North America, 111–115
Sahara, 130, 127–131
- late-Quaternary
Easter Island, 182
Japan, 137
New Zealand, 135
North America, 119, 121, 122
- Quaternary
Africa, 126–127, 128
Asia, 136–137
Australasia, 131–136
Australia, 131, 134
Central America, 122–124
Europe, 101–102
Greece, 96–101
Italy, 96
New Guinea, 136
North America, 108–121
South America, 125, 124–126, 127
- vegetation, past
modern analogues, 103, 108, 115, 122, 132
- Venus, 45
- vertebrates
distribution change, 141–145
- Vrba, Elisabeth, 31
- Wallace, Alfred, 6, 10–11
- Weinmannia*, trees (Cunoniaceae)
pollen, 125
- woodrat
eastern, *see Neotoma floridana*
- Zelkova*, shrubs and trees (Ulmaceae), *see also Ulmus/Zelkova*, 96, 100, 102, **152**
pollen, 97