

Species Index

Page numbers in *italic* refer to figures; those in **bold** to tables; Common names are also indexed where available

- abalones (*Haliotis* spp.) 261
Abies ziyuanensis (Ziyuan fir) 358
Abrocoma boliviensis (Bolivian chinchilla rat) 352
Abudefduf abdominalis 216
Abudefduf viagiensis (damsel fish) 216
Acalypha rubrinervis (stringwood) 358–359
Acanthametropus pecatonica (Pecatonica river mayfly) 229–230
Acanthobrama centisquama (long-spine bream) 357–358
Acetes japonicus (Akiami paste shrimp) 254
Achatina fulica (giant African land snail) 298
Achatinella spp. 300
 achatinelline tree snails (various spp.) 304
Acipenser oxyrinchus oxyrinchus (Atlantic sturgeon) 213–214
Acipenser sinensis (Chinese sturgeon) 197
Acrocephalus familiaris (millerbird) 112
Acrocephalus rodericanus (Rodrigues warbler) 126
Acrocephalus sechellensis (Seychelles warbler) 124–126, 360
Acrocephalus vaughani (Pitcairn reed-warbler) 358
Actinonucor elegans 316
 addax (*Addax nasomaculatus*) 355
Aegyptius monachus (red-headed vulture) 372
 African cherry (*Prunus africana*) 27
 African elephants (*Loxodonta* spp.) 68, 74
Agalychnis annae (blue-sided leaf frog) 171
Agapornis spp. (lovebirds) 120
Agelas tubulata (brown tube sponge) 253
 agile frog (*Rana dalmatina*) 168
Agrilus planipennis (emerald ash borer) 29
Agrotis crinigera (Poko noctuid moth) 233, 238
Ailuropoda melanoleuca (giant panda) 71
Aix galericulata (Mandarin duck) 369–370
 Akiami paste shrimp (*Acetes japonicus*) 254
 Alabama sturgeon (*Scaphirhynchus suttkusi*) 197
Alauda arvensis (Eurasian skylark) 119
 albatross (various spp.) 123–124, 128
 Algerian oak (*Quercus canariensis*) 339
 alligator, American (*Alligator mississippiensis*) 145, 149
 alligators (various spp.) 11
Alopecoenas erythropterus (Polynesian ground-dove) 123
 Alpine lady fern (*Athyrium distentifolium*) 56
Alsophila spp. 48
Alsophis antiquae (Antiguan racer snake) 140–141
Alvinella pompejana (pompei worm) 251
Alytes muletensis (midwife toad) 161
Amanita spp. 320
Amazilia boucardi (mangrove hummingbird) 354
Ambystoma mexicanum (axolotl) 159, 163
Ameles fasciipennis (spined dwarf mantis) 235
 American bullfrog (*Lithobates catesbeianus*) 167
 American mink (*Neovison vison*) 371–372
Amphiprion percula (orange clownfish) 214
Anabaena azollae 48
Anas americana (American wigeon) 5
Anas chlorotis (brown teal) 360–361
Anas penelope (European wigeon) 5, 369–370
Anas strepera (gadwall) 369–370
 anchovies (*Engraulis* spp.) 220–221
Ancylastrum cumingianus 289–290
Andreaea (rock mosses) 39, 42–43
Andreaobryum macrosporium 39
Andrias davidianus (giant salamander) 154
Angiopteris evecta 47
 angonoka tortoise (*Astrochelys yniphora*) 149
Anguillidae spp. (freshwater eels) 214–215, 214
Anodorhynchus leari (Lear's macaw) 124
 anoles (various spp.) 144, 146–147
Anolis amplisquamosus (Honduran anole) 147
Anolis cristatellus (Puerto Rican crested anole) 145
Anolis evermanni (emerald anole) 144
Anoplolepis gracilipes (yellow crazy ant) 357
 Antarctic krill (*Euphausia superba*) 251
Antennarius maculatus (warty frogfish) 207–208, 211
Anthoceros neesii (hornwort) 59
Anthochaera phrygia (regent honeyeater) 380
Anthus pratensis (meadow pipit) 119
 Antiguan racer snake (*Alsophis antiquae*) 140–141
 Antioch Dunes shieldback katydid (*Neduba extincta*) 239
 ants (various spp.) 233–234
Apatura iris (purple emperor butterfly) 383

- Apirus indicus* (Malayan tapir) 71
Apogonidae spp. (cardinal fishes) 217
 arboreal alligator lizards (*Abronia* spp.) 149
 arch-leaved whipwort (*Bazzania pearsonii*) 53
 arctic fox (*Vulpes lagopus*) 379
Arctocephalus australis (South American fur seal) 94
 Arrau turtle (*Podocnemis expansa*) 142
Arvicola amphibius (water vole) 371–372
 Ashe's pit viper (*Atheris desaixi*) 143
 Asian carp (*Cyprinus carpio*) 163
 Asian crested ibis (*Nipponia nippon*) 124
Asplenium nidus (bird's nest fern) 47
Astrochelys radiata (radiated tortoise) 143
Astrochelys yniphora (angonoka tortoise/ploughshare tortoise) 143, 149
Atheris desaixi (Ashe's pit viper) 143
Atheris matildae (Matilda's horned viper) 143
Athyrium distentifolium (Alpine lady fern) 56
 Atitlán grebe (*Podilymbus gigas*) 358
 Atlantic bluefin tuna (*Thunnus thynnus*) 208–210, 213
 Atlantic cod (*Gadus morhua*) 220
 Atlantic goliath grouper (*Epinephelus itajara*) 210
 Atlantic halibut (*Hippoglossus hippoglossus*) 208
 Atlantic humpback dolphin (*Sousa teuszii*) 90
 Atlantic salmon (*Salmo salar*) 355
 Attenborough's long-beaked echidna (*Zaglossus attenboroughi*) 70, 72
 auks (various spp.) 371
 Australian earless dragon (*Tympanocryptis centralis*) 136
 avocet (*Recurvirostra avosetta*) 369
 axolotl (*Ambystoma mexicanum*) 159, 163
Aylacostoma spp. 297
Aythya ferina (pochard) 121–122, 369–370
Azolla spp. (aquatic ferns) 48
 Azores bullfinch (*Pyrrhula murina*) 124
- Bahama nuthatch (*Sitta insularis*) 124
 Baird's sandpiper (*Calidris bairdii*) 123
Balaena mysticetus (bowhead whale) 93, 100
Balaenoptera acutorostrata (minke whale) 100
Balaenoptera musculus (blue whale) 95
 baleen whales (various spp.) 95
Banana caymanensis 352
 Banggai cardinalfish (*Pterapogon kauderni*) 206, 214, 217
 Barbary falcon (*Falco peregrinoides*) 372–373
 barred anole 144
Bassaricyon neblina (olinguito) 83
Batrachochytrium dendrobatidis (Bd) 160–162, 316, 357
Batrachochytrium salamandrivorans (Bsal) 161, 357
 bats (various spp.) 73, 79–80
Bazzania pearsonii (arch-leaved whipwort) 53
 bdelloids (various spp.) 283–284
 bedotiidae (Madagascar rainbowfish family) 195–196
 bees (various spp.) 233–234
 beetles (various spp.) 232
 beluga (*Delphinapterus leucas*) 100
 Bewick's swan (*Cygnus columbianus*) 369–370
Bipalium spp. (hammerhead flatworms) 282–283, 282
 bird's nest fern (*Asplenium nidus*) 47
 bison, European (*Bison bonasus*) 362–363
 bittern (*Botaurus stellaris*) 369–370
 bivalves (various spp.) 293, 299, 302
 black-browed albatross (*Thalassarche melanophris*) 128
 blackcap, Eurasian (*Sylvia atricapilla*) 120, 127–128
 black-eared miner (*Manorina melanotis*) 357
 black-faced lion tamarin (*Leontopithecus caissara*) 356
 black-faced spoonbill (*Platalea minor*) 125, 126–127
 black-footed ferret (*Mustela nigripes*) 78
 black-legged kittiwake (*Rissa tridactyla*) 112–113
 black-tailed prairie dog (*Cynomys ludovicianus*) 78
Blattodea spp. (cockroaches) 236
Blechnum (*Lomariocycas palmiforme*) 48, 49
 blue dasher (*Pachydiplax longipennis*) 231
 blue-green algae (cyanobacteria) 145
 blue spiny lizard (*Sceloporus cyanogenys*) 144
 blue whale (*Balaenoptera musculus*) 95
 blue-crowned laughingthrush (*Garrulax courtoisi*) 355
 blue-crowned motmot (*Momotus coeruleiceps*) 368
 blue-sided leaf frog (*Agalychnis annae*) 171
 bluestripe snapper (*Lutjanus kasmira*) 215
 boat-billed heron (*Cochlearius cochlearius*) 368
 bog mosses (*Sphagnum* spp.) 38–39, 43–45, 43–59
Boiga irregularis (brown tree snake) 15, 357
Boletus edulis (porcini) 320
 Bolivian chinchilla rat (*Arocoma boliviensis*) 352
Bombus suckleyi (Suckley's cuckoo bumble bee) 244
Bombus variabilis (variable cuckoo bumble bee) 244
 bone skipper (*Thyreophora cynophila*) 235–236
 Bonin petrel (*Pterodroma hypoleuca*) 123–124
 Bornean orangutan (*Pongo pygmaeus*) 73, 354
Botaurus stellaris (bittern) 369–370
Brachythecium rutabulum (rough-stalked feather-moss) 42
Bradyptes pygmaeus (pygmy sloth) 72
 Bramble Cay melomys (*Melomys rubicola*) 80, 358
Branta ruficollis (red-breasted goose) 355
Branta sandvicensis (Hawaiian goose) 370
 bristlebirds (*Dasyornis* spp.) 380
 bristletails (various spp.) 236
 brittle-bladder fern (*Cystopteris fragilis*) 50
 broad-headed snake (*Hoplocephalus bungaroides*) 139
 brown teal (*Anas chlorotis*) 360–361
 brown tree snake (*Boiga irregularis*) 357
 brown tube sponge (*Agelas tubulata*) 253
Bryum argenteum (silver-thread moss) 50
Bubo scandiacus (snowy owl) 112
Bucephala clangula (goldeneye duck) 369–370
 bugs/plantoppers 234
 bull shark (*Carcharhinus leucas*) 207–208
 bullfrog, American (*Lithobates catesbeianus*) 167
 Burmese python (*Python bivittatus*) 143, 148
 butterflies (various spp.) 232
- cacti (various spp.) 28
 caddisflies (various spp.) 230–231
Calidris bairdii (Baird's sandpiper) 123
Calidris pygmaea (spoon-billed sandpiper) 370
 California condor (*Gymnogyps californianus*) 124, 370
 California grizzly bear (*Ursus arctos californicus*) 75
 California roach (*Hesperoleucus symmetricus*) 183
Callaëa cinereus (kokako) 370
Calypogeia arguta 49

- Calyptorhynchus lathamii* (glossy black cockatoo) 380
 camel (*Camelus dromedarius*) 370
Campsicnemus mirabilis (dolichopodid fly) 240–241
 cane toad (*Rhinella marina*) 141, 370
Canis lupus (grey wolf) 369
Canis lupus dingo (dingo) 78
Canis lupus hattai (Hokkaido wolf) 75
Canis simensis (Ethiopian wolf) 78
 Cape seahorse (*Hippocampus capensis*) 216–217
 Cape vulture (*Gyps coprotheres*) 113
Carcharhinus leucas (bull shark) 207–208
 cardinalsfishes (*Apogonidae* spp.) 217
Carduelis carduelis (goldfinch, European) 385
Carelia turricula 289–290
 Caribbean monk seal (*Monachus tropicalis/Neomonachus tropicalis*) 90, 91, 93
 caribou (*Rangifer* spp.) 80, 317
Carinaria lamarcki 252
 carp (various spp.) 182, 190–193
 caterpillar fungus (*Ophiocordyceps sinensis*) 318–319
 catfish (various spp.) 182
Catlocarpio siamensis (giant barb) 190
Caulerpa taxifolia (seaweed species) 357
 cavernicolous velvet worm (*Peripatopsis alba*) 281, 282
Cebus kaapori (Ka'apor capuchin monkey) 354
 cedar-apple rust (*Gymnosporangium juniperi-virginianae*) 319
 cellular slime moulds (*Dictyostelium* spp.) 327, 330
Centrocercus minimus (Gunnison grouse) 355
Centropyge resplendens (resplendent angelfish) 206, 214, 215
Cepaea nemoralis (grove snail) 5
Cephalopholus argus (peacock grouper) 215
Cephalorhynchus hectori (Hector's dolphin) 97
Ceratotherium simum (southern white rhinoceros) 362–363
 cereal rust (*Puccinia graminis*) 319
 cerulean paradise-flycatcher (*Eutrichomyias rowleyi*) 112
Cervus nippon (sika deer) 76, 77
 cetacean marine mammals 88
Cetradonia linearis (rock gnome lichen) 319
Chaetodon auriga (threadfin butterflyfish) 214, 215
 chaffinch (*Fringilla coelebs*) 120
 chameleons (various spp.) 142
 chanterelles (various spp.) 320
Charadrius vociferus (killdeer plover) 385
Charmia masoni 10
Charopa lafargei 297
Chelonia mydas (green sea turtle) 146
Chelonoidis niger (Galapagos tortoise) 140
Chelonoidis niger duncanensis (Pinzon giant tortoise) 149
 chestnut blight (*Cryphonectria parasitica*) 317
 chimpanzee (*Pan troglodytes*) 79
Chinchilla chinchilla (short-tailed chinchilla) 83
 Chinese crocodile lizard (*Shinisaurus crocodilurus*) 147
 Chinese paddlefish (*Psephurus gladius*) 197
 Chinese sturgeon (*Acipenser sinensis*) 197
 Chinook salmon (*Oncorhynchus tshawytscha*) 198, 200
Chiroderma improvisum (Guadeloupean big-eyed bat) 358
Chlamydia spp. 9, 328
Chloris chloris (greenfinch, European) 385
Chloropsis sonnerati (greater green leafbird) 120
Chordeiles minor (nighthawk) 385
 Christmas Island blue-tailed skink (*Cryptoblepharus egeriae*) 149
 Christmas Island frigatebird (*Fregata andrewsi*) 355
 Christmas Island rat (*Rattus macleari*) 78
 Christmas Island whiptail skink (*Emoia nativitatis*) 135–136, 140
Chrysochloris spp. (golden mole species) 73
Chrysomallon squamiferum (scaly-foot snail) 261
Cibotium barometz (Golden Chicken fern) 58
 cichlids (various spp.) 193–195
Ciconia ciconia (white stork) 383
Cinclidium spp. 45
 Cirrate octopuses (*Cirrata* spp.) 261
Claviceps purpurea (ergot) 317
Claviccoccus erinaceus 234
Climacium dendroides (tree moss) 40–41
Clitellata spp. (clitellates) 283
 clubmosses (*Huperzia* spp.) 46, 46, 54
Cnemaspis retigalensis (Retigala day gecko) 144
 cockroach (*Blattodea* spp.) 236, 383
 coelacanth (*Latimeria chalumnae*) 207, 211, 217
Coleoptera spp. (beetles) 232
 Columbia river sockeye salmon (*Oncorhynchus nerka*) 198, 200, 209
 common frog (*Rana temporaria*) 160
 cone snails (*Conus* spp.) 258–261
 coniferous trees (various spp.) 19
Conolophus subcristatus (Galapagos land iguana) 149
Contomastix vittata (whiptail lizard) 138
Conus spp. (cone snails) 258–261
Conus ventricosus 260
Cooksonia spp. 38
Copsychus saularis (Oriental magpie-robin) 120
Copsychus sechellarum (Seychelles magpie-robin) 126
Coracornis sanghirensis (Sangihe whistler) 112
 corals (various spp.) 220–221, 265
 corn rust (*Ustilago maydis*) 320
Cornu aspersum 299
 corroboree frogs (*Pseudophryne* spp.) 380
 Corsican land snail (*Tyrrhenaria ceratina*) 304
 cougar (*Puma concolor*) 83, 339, 342–343
 crab-eating macaque (*Macaca fascicularis*) 110
 crane (*Grus grus*) 369–370
 crayfish (*Omrastacoides parvicaudatus*) 275–276, 355
 crazy ants (various spp.) 140–141
 crickets (Orthoptera) 232–233
Crocodyrus jenkinsi (Jenkin's shrew) 73
 crocodiles (*Crocodylus* spp.) 11, 141–142, 385
Crocodylus niloticus (Nile crocodile) 145
Crocodylus porosus (saltwater crocodile) 371
Crotalus adamanteus (Florida rattlesnake) 146
Crotalus horridus (timber rattlesnake) 146
Cryphonectria parasitica (chestnut blight) 317
Cryptoblepharus egeriae (Christmas Island blue-tailed skink) 149
Cryptotis nelsoni (Nelson's small-eared shrew) 73

- Ctenomys sociabilis* (social tuco-tuco) 68, 72
 cuckoo (*Cuculus canorus*) 123
Cuscomys oblativus (Machu Picchu arboreal tree rat) 83
 cyanobacteria 145
Cyathea australis 55
Cyathea dealbata (silver fern) 58
Cyathea spp. 48, 58
 cycad species 19
Cyclomorpha flava 300
Cyclopes spp. (silky anteaters) 80
Cygnus columbianus (Bewick's swan) 369–370
Cygnus cygnus (whooper swan) 369–370
Cynomys ludovicianus (black-tailed prairie dog) 78
 cyprinidae, freshwater fish species **190–191**, 190–193
Cyprinus carpio (Asian carp) 163
Cystopteris fragilis (brittle-bladder fern) 50
- Dalbergia* spp. 26
 damselfish (*Abudefduf viagiensis*) 216
 damselflies (Odonata) 231–232
Danaus plexippus (monarch butterfly) 382
Darcrymyces spp. 320
Dasyornis spp. (bristlebirds) 380
Deinococcus radiodurans 4
Deloneura immaculata (Mbashe River buff) 233
Delonix velutina 354
Delphinapterus leucas (beluga) 100
Dendrocerus japonicus 59
Dendrocopos major (great-spotted woodpecker) 385
Dermaptera spp. (earwigs) 236–237
Desmana moschata (Russian desman) 74
 Desmoulin's whorl snail (*Vertigo moulinsiana*) 289–290, 305
Dicksonia antarctica 55, 58
Dicksonia spp. 48, 58
 Dictyostellids (slime moulds) 315
Dictyostelium discoideum 315, 330, 331
Dictyostelium spp. (cellular slime moulds) 327, 329–330
Didelphis virginiana (Virginia opossum) 70
 dingo (*Canis lupus dingo*) 78
Diospyros spp. (ebony) 26
Discus macclintocki 303
 dodo (*Raphus cucullatus*) 110
 dolichopodid fly (*Campsicnemus mirabilis*) 240–241
 dolphins (various spp.) 383–384
Dosidicus gigas (Humboldt squid) 253–254
Dracaena spp. (dragon trees) 21
 dragonflies (Odonata) 231–232
Dreissena bugensis (quagga mussel) 298
Dreissena polymorpha (zebra mussel) 297
Drepanocladus spp. 45
Dryococelus australis (Lord Howe Island phasmid) 241, 241
Dryopteris cognata (large kidney fern) 339
 ducks (various spp.) 5
 dugong (*Dugong dugon*) 88, 96
 dunes sagebrush lizard (*Sceloporus arenicolus*) 139
Dusicyon australis (Falkland Islands wolf) 75
 dwarf minnow (*Paedocypris progenetica*) 190
- earthworms (various spp.) 283
 earwig, European (*Focticula auricularia*) 236
 earwigs (*Dermaptera* spp.) 236–237
 eastern gorilla (*Gorilla beringei*) 68
 ebony (*Diospyros* spp.) 26
 echo parakeet (*Psittacula eques*) 126
Ectopistes migratorius (passenger pigeon) 110–111
 eels (*Anguillidae* spp.) 214–215, 214
Eidhornia crassipes (water hyacinth) 371, 385
Elaphoglossum hybridum 50
Elaphurus davidianus (Père David's deer) 81–82
 elephants (various spp.) 68, 74, 77
Eleutherodactylus spp. (robber frogs) 161
Elliptio complanata 303
Emberiza aureola (yellow-breasted bunting) 112
Emberiza hortulana (ortolan bunting) 120
Emberiza jankowskii (Jankowski's bunting) 354
Emberiza schoeniclus (reed bunting) 385
 emerald anole (*Anolis evermanni*) 144
 emerald ash borer (*Agilus planipennis*) 29
Emoia nativitatis (Christmas Island whiptail skink) 135–136, 140, 357
Endeavouria septemlineata 283
Engraulis spp. (anchovies) 220–221
Enhydra lutris (sea otter) 89–91, 92, 95–96, 102
Epinephelus itajara (Atlantic goliath grouper) 210, 212
Eptatretus polytrema (fourteen-gill hagfish) 211
Equisetum myriochaetum (Mexican giant horsetail) 47
Equisetum spp. (horsetails) 9, 38, 46–47
Equus przewalskii (Przewalski's horse) 80
 ergot (*Claviceps purpurea*) 317
Erinaceus europaeus (hedgehog, European) 6
Eschrichtius robustus (grey whale) 93–94, 102, 369, 385
 Ethiopian wolf (*Canis simensis*) 78
Eua zebрина 300
Eubalaena glacialis (North Atlantic right whale) 90, 97
Eubalaena spp. (right whales) 93–94
Eucalyptus spp. 21
Eugenia spp. 21
Euglandina rosea 298
Eumetopias jubatus (Steller sea lion) 95
Euphausia superba (Antarctic krill) 251
 Eurasian griffon vulture (*Gyps fulvus*) 372
 Eurasian nuthatch (*Sitta europaea*) 385
 Eurasian skylark (*Alauda arvensis*) 119
 European hedgehog (*Erinaceus europaeus*) 6
 European herring gull (*Larus argentatus*) 383, 385
 European red fox (*Vulpes vulpes*) 356, 379
Eutrichomyias rowleyi (cerulean paradise-flycatcher) 112
- Falco peregrinus* (peregrine falcon) 372–373, 385–386
Falco peregrinoides (Barbary falcon) 372–373
Falco punctatus (Mauritius kestrel) 126
 Falkland Islands wolf (*Dusicyon australis*) 75
Fallopia japonica (Japanese knotweed) 371, 383
 fat-headed minnow (*Pimephales promelas*) 358
 feather-moss 42
 ferns
Azolla spp. 48
 life forms 47, 47–49, 49
 finless porpoise (*Neophocaena phocaenoides*) 97–98

- fir clubmoss (*Huperzia selago*) 46
 fire ants (various spp.) 141
 fire coral (*Millepora boschma*) 358
 fire salamander (*Salamandra salamandra*) 160–161
 flat-headed cat (*Prionailurus planiceps*) 73
 flatback sea turtle (*Natator depressus*) 146
 flies (various spp.) 235–236
 Floreana mockingbird (*Mimus trifasciatus*) 112
 Florida rattlesnake (*Crotalus adamanteus*) 146
Fontinalis antipyretica 49
Foficula auricularia (European earwig) 236
Foudia flavicans (Rodriguez fody) 126
 fourteen-gill hagfish (*Eptatretus polytrema*) 211
 Franklin's bumble bee (*Bombus franklini*) 233
Fratercula spp. (puffins) 112–113, 371
Fraxinus spp. (ash trees) 29–30
Fregata andrewsi (Christmas Island frigatebird) 355
Fringilla coelebs (common chaffinch) 120
 frogs (various spp.) 146

Gadus morhua (Atlantic cod) 220
 gadwall (*Anas strepera*) 369–370
 Galapagos land iguana (*Conolophus subcristatus*) 149
 Galápagos petrel (*Pterodroma phaeopygia*) 122
 Galapagos tortoise (*Chelonoidis niger*) 140
Galaxias olidus (mountain galaxias) 171
Galerina spp. 320
Garrulax courtouisi (blue-crowned laughingthrush) 355
Garrulax rufifrons (rufous-fronted laughingthrush) 120
 gastropods (various spp.) 302
Gavialis gangeticus (gharial) 145
 Gazami crab (*Portunus trituberculatus*) 254
 geckos (various spp.) 138, 140–142
Gekko gekko (tokay gecko) 143
Geonemertes pelaensis 282, 282
Geonemertes rodericana 282
 gharial (*Gavialis gangeticus*) 145
 giant African land snail (*Achatina fulica*) 298
 giant barb (*Catlocarpio siamensis*) 190
 giant panda (*Ailuropoda melanoleuca*) 71
 giant salamander (*Andrias davidianus*) 154
Gigantopelta chessoia 252
 Gingko biloba 19
 ginseng (*Panax* spp.) 26–27
Giraffa camelopardalis (giraffe) 68, 74
Glaucopteryx xerces (Xerces blue butterfly) 233, 239
 glossy black cockatoo (*Calyptorhynchus lathami*) 380
Gnathophausia spp. 252
 gobies (*Gobiidae* spp.) 208
 Golden Chicken fern (*Cibotium barometz*) 58
 golden moles (*Chrysochloris* spp.) 73
 golden toad (*Incilius periglenes*) 165
 goldeneye duck (*Bucephala clangula*) 369–370
 golden-rumped sengi (*Rhynchocyon chrysopygus*) 73
 goldfinch, European (*Carduelis carduelis*) 385
 gopher tortoise (*Gopherus polyphemus*) 141
Gorilla beringei (eastern gorilla) 68
Gorilla gorilla (western gorilla) 79
 gorse (*Ulex europaeus*) 371
 grasshoppers (Orthoptera) 232
 great bustard (*Otis tarda*) 371–372

 great crested newt (*Triturus cristatus*) 158–159
 great desert skink (*Liopholis kintorei*) 147
 great hairy screw-moss (*Syntrichia ruralis*) 42–43, 42
 greater glider (*Petauroides* spp.) 380
 greater green leafbird (*Chloropsis sonnerati*) 120
 great-spotted woodpecker (*Dendrocopos major*) 385
 green moray eel (*Gymnothorax funebris*) 211
 green sea turtle (*Chelonia mydas*) 146
 greenfinch, European (*Chloris chloris*) 385
 greenish warbler (*Phylloscopus trochiloides*) 6
 grey jay (*Perisoreus canadensis*) 123
 grey parrot (*Psittacus erithacus*) 112
 grey partridge (*Perdix perdix*) 119
 grey seal (*Haliochoerus grypus*) 212–213
 grey whale (*Eschrichtius robustus*) 93–94, 102, 369, 385
 grey wolf (*Canis lupus*) 369
 grizzly bear (*Ursus arctos californicus*) 75
 grove snail (*Cepaea nemoralis*) 5
Grus grus (crane) 369–370
Grylloblattodea spp. (ice crawlers) 235
 Guadeloupean big-eyed bat (*Chiroderma improvisum*) 358
 gulls (various spp.) 383
 Gunnison grouse (*Centrocercus minimus*) 355
 Günther's dwarf burrowing skink (*Scelotes guentheri*) 135–136
Gymnogyps californianus (California condor) 124, 370
Gymnothorax funebris (green moray eel) 211
Gyps bengalensis (white-rumped vulture) 113, 372
Gyps coprotheres (Cape vulture) 113
Gyps fulvus (Eurasian griffon vulture) 372
Gyps himalayensis (Himalayan griffon vulture) 372
Gyps indicus (long-billed vulture) 372

Haematopinus oliveri (pygmy hog-sucking louse) 237
 hagfishes (*Myxiniidae* spp.) 207
 hair-cap mosses (*Polytrichum* spp.) 42
Haliaeetus albicilla (white-tailed sea eagle) 371–372
Halichoeres burekai (Mardi Gras wrasse) 206, 215–216
Halichoeres socialis (social wrasse) 214, 215–216
Haliochoerus grypus (grey seal) 212–213
Haliotis spp. (abalones) 261
Halobacterium volcanii 4
Hamiota altilis 289–290
 hammerhead flatworm (*Bipalium* spp.) 282–283, 282
 harbour seal (*Phoca vitulina*) 92, 95
 Hastings River mouse (*Pseudomys oralis*) 380
 Hawaiian goose (*Branta sandvicensis*) 370
 Hector's dolphin (*Cephalorhynchus hectori*) 97
 hedgehog, European (*Erinaceus europaeus*) 6
 hedgehog tenrecs (various spp.) 6
Hedychium gardenerianum (Kahili ginger) 231
Helicostoa sinensis 297
Helix lucorum 299
Helix pomatia 299
 helmeted hornbill (*Rhinoplax vigil*) 120
Herbertus borealis (northern prongwort) 53–54
 herring gull, European (*Larus argentatus*) 383, 385
Hesperoleucus symmetricus (California roach) 183
Heterodon simus (southern hognose snake) 141
Heteromys nelsoni (Nelson's spiny pocket mouse) 83

- Himalayan balsam (*Impatiens glandulifera*) 371
 Himalayan griffon vulture (*Gyps himalayensis*) 372
Hippoglossus hippoglossus (Atlantic halibut) 208, 212
Hirudo medicinalis (European medicinal leech) 283
Hispaniolan hutia 77
 Hispaniolan solenodon (*Solenodon paradoxus*) 76, 77
 hitch (*Lavinia exilicauda*) 183
 Hokkaido wolf (*Canis lupus hattai*) 75
Holothuria cf. *arguinensis* 253
Holothuroidea spp. (sea cucumbers) 261–262
Homo sapiens (human) 6, 349–350; *see also* human entries in subject index
 honeycreeper bird 370
Hoolock tianxing (skywalker gibbon) 83
Hoplocephalus bungaroides (broad-headed snake) 139
Hoplostethus atlanticus (orange roughy) 210, 212
 hornwort (*Anthoceros nesii*) 59
 horsetails (*Equisetum* spp.) 9, 38, 46–47
 house rat (*Rattus rattus*) 371
 house sparrow (*Passer domesticus*) 109, 120
 howler moneys (various spp.) 80
Hucho bleekeri (Sichuan taimen) 356
 human *see* *Homo sapiens*
 Humboldt squid (*Dosidicus gigas*) 253–254
 humpback whale (*Megaptera novaeangliae*) 92, 93, 100, 385
Huperzia selago (fir clubmoss) 46
Huperzia spp. (clubmosses) 54
Huso huso (European sturgeon) 209, 209
Hydrodamalis gigas (Steller's sea cow) 90, 91, 92
Hydrodynastes melanogigas (South American water snake) 138
Hydropsyche tobiasi (Tobias' caddisfly) 242
Hylocomium splendens 45
 Hymenoptera (bees, wasps and ants) 233–234
- Iberian lynx (*Lynx pardinus*) 360
Iberus gualtieranus 289–290, 299
 ice crawlers (*Grylloblattodea* spp.) 235
 iguanas (various spp.) 141, 149
Impatiens glandulifera (Himalayan balsam) 371
 Indian leopard (*Panthera pardus fusca*) 386
 Indian rhinoceros (*Rhinoceros unicornis*) 385
 Indochinese water dragon 143
 interrupted clubmoss (*Lycopodium annotinum*) 46, 46
 island canary (*Serinus canaria* var. *domestica*) 120
 island-shrews (various spp.) 77
Isoetes spp. (quillworts) 46, 54
Isopterygium elegans 49
 Italian sparrow (*Passer italiae*) 109–110
 Itambé's bromeliad frog (*Crossodactylodes itambe*) 159
- jaguars (various spp.) 75
 Jamaican flower bat (*Phyllonycteris aphylla*) 68, 73
 Jamaican greater funnel-eared bat 73
 Jankowski's bunting (*Emberiza jankowskii*) 354
 Japanese knotweed (*Fallopia japonica*) 371, 383
 Japanese sea lion (*Zalophus japonicus*) 90
 Javan lapwing (*Vanellus macropterus*) 356
 Javan slow loris (*Nycticebus javanicus*) 75
 jelly fungi (various spp.) 320
- Jenkin's shrew (*Crocidura jenkinsi*) 73
- Kaala* spp. 298
 Ka'apor capuchin monkey (*Cebus kaaponi*) 354
 Kahili ginger (*Hedychium gardenerianum*) 231
 kakapo (*Strigops habroptilus*) 370
 Kangaroo Island dunnart (*Sminthopsis aitkeni*) 380
 kangaroos (various spp.) 70
 killdeer plover (*Charadrius vociferus*) 385
 killer whale (*Orcinus orca*) 95
 king cobra (*Ophiophagus hannah*) 142–143
Kittacincla malabarica (white-rumped shama) 120
Kiua tyleri (yeti crab) 252
 koalas (various spp.) 70, 380
 kokako (*Callaeas cinereus*) 370
 kudzu vine (*Pueraria montana* var. *lobata*) 385
- Labidura herculeana* (Saint Helena earwig) 236
 Lake Prespa mudsnail (*Vinodolia lacustris*) 297
 lampreys (various spp.) 207
 land snails (various spp.) 295–296
 lantana (*Lantana camara*) 371, 385
 large blue butterfly (*Maculinea arion*) 371
 large blue lake mayfly (*Tasmanophlebi lacuscoerulei*) 230
 large kidney fern (*Dryopteris cognata*) 339
Larus argentatus (European herring gull) 383, 385
Larus fuscus (lesser black-backed gull) 383
Lates niloticus (Nile perch) 295, 357
Latimeria chalumnae (coelacanth) 211, 217
Lavinia exilicauda (hitch) 183
 Laysan albatross (*Phoebastria immutabilis*) 123–124
 leafy sea dragon (*Phycodurus eques*) 211
 Lear's macaw (*Anodorhynchus leari*) 124
 leeches (various spp.) 282
Leiopelma spp. (New Zealand primitive frogs) 163
 lemurs (various spp.) 73
Leontopithecus caissara (black-faced lion tamarin) 356
 leopard, Indian (*Panthera pardus fusca*) 386
Lepidochrysopteryx hypopolia (Morant's blue) 233
Lepidodactylus listeri (Lister's gecko) 149
 Lepidoptera (moths and butterflies) 232
Leptogryllus deceptor (Oahu deceptor bush cricket) 229, 232
- Lerista storri* (Storr's lerista) 136
 lesser bilby (*Macrotis leucura*) 77
 lesser black-backed gull (*Larus fuscus*) 383
Leucoraja ocellate (winter skate) 212–213
Levuana iridescens (Levuana moth) 238
 lice (*Phthiraptera* spp.) 237
 lichens (various spp.) 317
Limnephilus atlanticus 231
Limnoperna fortunei 298
 lionfish (*Pterois* spp.) 206, 215–216
 lions (various spp.) 75
Liopholis kintorei (great desert skink) 147
Lipotes vexillifer (Yangtze River dolphin) 90, 92, 93
 Lister's gecko (*Lepidodactylus listeri*) 149
 little spotted kiwi (*Kiwi pakupuka*) 370
 liverworts (various spp.) 39, 46, 53
 lobsters (various spp.) 253
 long-billed vulture (*Gyps indicus*) 372

- long-spine bream (*Acanthobrama centisquama*) 357–358
Lontra felina (marine otter) 89–91
 Lord Howe Island phasmid (*Dryococelus australis*) 241, 241
 lovebird (*Agapornis* spp.) 120
Loxodonta spp. (African elephants) 68, 74
 lungfishes (various spp.) 207
Lutjanus kasmira (bluestripe snapper) 215
Lycodon capuci (Oriental wolf snake) 140
Lycopodium annotinum (interrupted clubmoss) 46, 46
Lycopodium clavatum (stag's-horn clubmoss) 46
Lygodactylus williamsi (turquoise dwarf gecko) 142
Lynx pardinus (Iberian lynx) 360
- Macaca fascicularis* (crab-eating macaque) 110
Maccullochella macquariensis (trout cod) 356
 Machu Picchu arboreal tree rat (*Cuscomys oblativus*) 83
Macrotis leucura (lesser bilby) 77
Macrovipera lebetinus schweizeri (Milos viper) 140
Maculinea arion (large blue butterfly) 371
 Madagascar rainbowfishes (various spp.) 195
 mahogany trees (*Swietenia* spp.) 26
Malassezia spp. 319–320
 Malayan tapir (*Apinus indicus*) 71
 manatees (*Trichechus* spp.) 88
 Mandarin duck (*Aix galericulata*) 369–370
Mandarina spp. 304
 mangrove hummingbird (*Amazilia boucardi*) 354
 mangroves (various spp.) 13, 354
 Manipur brow-antlered deer (*Rucervus eldii eldii*) 354
Manorina flavigula (yellow-throated miner) 357
Manorina melanotis (black-eared miner) 357
Mantodea spp. (praying mantids) 235
Marchantia polymorpha (common liverwort) 46
 Mardi Gras wrasse (*Halichoeres burekai*) 206, 215–216
Margatteoidea amoena (wood cockroach) 236
 marine otter (*Lontra felina*) 89–91
Marsilea fern spp. 59
 Matilda's horned viper (*Atheris matildae*) 143
 Maui upland damselfly (*Megalagrion jugorum*) 231–232
 Mauritius kestrel (*Falco punctatus*) 126
 mayflies (various spp.) 230
 Mbashe River buff (*Deloneura immaculata*) 233
 meadow pipit (*Anthus pratensis*) 119
 mealybugs (various spp.) 234
 medicinal leech, European (*Hirudo medicinalis*) 283
Megachile pluto (Wallace's giant bee) 371
Megalagrion jugorum (Maui upland damselfly) 231–232
Megaptera novaengliae (humpback whale) 92, 93, 100, 385
Melanitta fusca (velvet scoter) 121–122
Melanoides agglutinans 297
Melanoplus spretus (Rocky Mountain locust) 238, 238
Melanopsis parreyssii 296
Melomys rubicola (Bramble Cay melomys) 80, 358
 Mertens' water monitor (*Varanus mertensi*) 141
Mesobdella gemmata 282
 Mexican giant horsetail (*Equisetum myriochaetum*) 47
- mice (various spp.) 371
 midwife toad (*Alytes muletensis*) 161
Millepora boschmai (fire coral) 358
 millerbird (*Acrocephalus familiaris*) 112
 millipedes (various spp.) 273–275
 Milos viper (*Macrovipera lebetinus schweizeri*) 140
Milvus milvus (red kite) 371, 385
Mimus trifasciatus (Floreana mockingbird) 112
 minnows (various spp.) 182, 190–193
Mirounga angustirostris (northern elephant seal) 94, 102
Mirounga leonina (southern elephant seal) 99
 Mitchell's water monitor (*Varanus mitchelli*) 141
Mola mola (ocean sunfish) 207–208, 211
Monachus tropicalis (Caribbean monk seal) 90, 91
 monarch butterfly (*Danaus plexippus*) 382
 mongoose (unspecified) 140–141
Monodon monoceros (narwhal) 100
 Morant's blue (*Lepidochryps hypopolia*) 233
 moray eels (*Muraenidae* spp.) 207
Morchella spp. (morels) 317–318
 mosses (various spp.) 37–38
 life forms 42–43, 42–43, 43–59
 taxonomic diversity 39
 moths (various spp.) 232
 Mount Donna Buang wingless stonefly (*Riekoperla darlingtoni*) 231
 mountain chicken frog (*Leptodactylus fallax*) 161
 mountain galaxias (*Galaxias olidus*) 171
 mudfishes (*Neochanna* spp.) 190
Muraenidae spp. (moray eels) 207
Mustela nigripes (black-footed ferret) 78
Mymecobius fasciatus (numbat) 77–78
Myxiniidae spp. (hagfishes) 207
 myxomycetes (slime moulds) 315
- narwhal (*Monodon monoceros*) 100
Nasalis larvatus (proboscis monkey) 13
Natator depressus (flatback sea turtle) 146
Neduba extincta (Antioch Dunes shieldback katydid) 239
 Nelson's small-eared shrew (*Cryptotis nelsoni*) 73
 Nelson's spiny pocket mouse (*Heteromys nelsoni*) 83
Neochanna spp. (mudfishes) 190
Neophocaena phocaenoides (finless porpoise) 98
Neovison macrodon (sea mink) 89–92, 91
Neovison vison (American mink) 371–372
Nesoenas mayeri (pink pigeon) 126
Nesoropupa spp. 300
 New Guinea flatworm (*Platydemus manokwari*) 298
 New Zealand grayling (*Prototroctes oxyrhynchus*) 209, 209
 New Zealand primitive frogs (*Leiopelma* spp.) 163
 New Zealand speckled skink (*Oligosoma infrapunctatum*) 136
 Nicobar tree shrew (*Tupaia nicobarica*) 72
 nighthawk (*Chordeiles minor*) 385
 nihoa finch (*Telespiza ultima*) 112
 Nile crocodile (*Crocodylus niloticus*) 145
 Nile perch (*Lates niloticus*) 195, 357
 Nile tilapia (*Oreochromis nilotica*) 163, 195
Nipponia nippon (Asian crested ibis) 124

- northern elephant seal (*Mirounga angustirostris*) 94, 102
 northern prongwort (*Herbertus borealis*) 53–54
 northern tamandua (*Tamandua mexicana*) 76
 numbat (*Myrmecobius fasciatus*) 77–78
 nuthatch, Eurasian (*Sitta europaea*) 385
Nycticebus javanicus (Javan slow loris) 75
- Oahu deceptor bush cricket (*Leptogryllus deceptor*) 229, 232
 ocean sunfish (*Mola mola*) 207–208, 211
 ocellated mountain viper (*Vipera wagneri*) 143
Ochotona roylei (pika) 76
Odobenus rosmarus (walrus) 89, 101, 379, 384
 Odonata (dragonflies and damselflies) 231–232
Oligosoma infrapunctatum (New Zealand speckled skink) 136
 olinguito (*Bassaricyon neblina*) 83
Ombrastacoides parvicaudatus (crayfish) 355
Oncorhynchus m. irideus (steelhead) 200
Oncorhynchus nerka (sockeye salmon) 198, 200, 209
Oncorhynchus tshawytscha (Chinook salmon) 198, 200
 Onychophora (velvet worms) 10–11
 oomycota (blights) 315, 330–331
Ophiidiomyces ophioidiicola 146
Ophiocordyceps sinensis (caterpillar fungus) 318–319
Ophiophagus hannah (king cobra) 142–143
Oplegnathus fasciatus (striped beakfish) 216
 orange clownfish (*Amphiprion percula*) 214
 orange roughy (*Hoplostethus atlanticus*) 210
 orangutans (*Pongo* spp.) 73, 354
Orbicella faveolata 260, 263
 orchids (Orchidaceae family) 22
 commercial exploitation 27–28
 conservation status 33
Orca orca (killer whale) 95
Oreochromis nilotica (Nile tilapia) 163, 195
 Oriental magpie-robin (*Copsychus saularis*) 120
 Oriental wolf snake (*Lycodon capuci*) 140
Ornithorhynchus anatinus (platypus) 70
 Orthoptera (grasshoppers and crickets) 232
 ortolan bunting (*Emberiza hortulana*) 120
Oryctolagus cuniculus (rabbit) 370
Oryx dammah (scimitar-horned oryx) 81, 337
 osprey (*Pandion haliaetus*) 369–370
Otaria flavescens (sea lion) 94
Otis tarda (great bustard) 371–372
Oxychilus allianus 298
- Pachnodus silhouettanus* 303
Pachydiplax longipennis (blue dasher) 231
 Pacific salmon (various spp.) 198
 paddlefishes (various spp.) 196–198
Paedocypris progenetica (dwarf minnow) 190
Paedophryne amauensis 154
Pan troglodytes (chimpanzee) 79
Panax spp. 26–27
Pandion haliaetus (osprey) 369–370
 pangolins (various spp.) 74, 382–384
Panthera tigris (tiger) 75, 76, 361
Pantholops hodgsonii (Tibetan antelope) 361
Paphiopedilum spp. 27, 33
Paphiopedilum sukhakulii 28
Papustyla pulcherrima 300
Parnacella gervaisi 293
Partula hyalina 289–290
Partula spp. 293
Parvimolge townsendi (Townsend's dwarf salamander) 171
 passenger pigeon (*Ectopistes migratorius*) 110–111
Passer domesticus (house sparrow) 109, 120
Passer hispaniolensis (Spanish sparrow) 109–110
Passer italiae (Italian sparrow) 109–110, 120
Pasteurella multocida 80
Patellifolia webbiana (beet) 356
 peacock grouper (*Cephalopholis argus*) 215
 Pecos river mayfly (*Acanthametropus pecatonica*) 229–230
Pelliciera rhizophorae (mangrove) 354
Pelodiscus spp. (softshell turtles) 136
 penguins (various spp.) 379–380, 384
Penicillium notatum 318
Penicillium spp. 317
Peniophora spp. 320
Pentagenia robusta (robust burrowing mayfly) 230, 242
Perdix perdix (grey partridge) 119
 Père David's deer (*Elaphurus davidianus*) 81–82
 peregrine falcon (*Falco peregrinus*) 372–373, 385–386
Peripatopsis alba (cavernicolous velvet worm) 281, 282
Peripatopsis leonina 281
Perisoreus canadensis (grey jay) 123
Petauroides spp. (greater gliders) 380
 petrels (various spp.) 371
Petrogale spp. (rock wallabies) 380
Pezoporos flaviventris (western ground parrot) 380
Phasmida spp. (stick insects) 234–235
 Philepittidae spp. (sunbirds) 354
Phlebotomus areolatus 48
Phlebotomus spp. 47
Phlegmarius spp. 46
Phoca vitulina (harbour seal) 92, 95
Phocoena sinus (vaquita) 90, 97, 98, 101
Phoebastria immutabilis (Laysan albatross) 123–124
Phoebastria nigripes (black-footed albatross) 123–124
Phrynosoma comutum (Texas horned lizard) 141
Phthiraptera spp. (lice) 237
Phycodurus eques (leafy sea dragon) 211
Phyllococcus oahuensis 234
Phyllonrycter aphylla (Jamaican flower bat) 68
Phylloscopus trochiloides (greenish warbler) 6
Physarum polycephalum 315
Physarum spp. (plasmodial slime moulds) 315, 327, 329–330
Phytophthora infestans (potato blight) 7, 315, 327, 330–331
 pig (*Sus domesticus*) 110
 pig-footed bandicoots (various spp.) 77
 pika (*Ochotona roylei*) 76
 pikas (various spp.) 80
Pilularia spp. 59
Pimephales promelas (fat-headed minnow) 358
 pink pigeon (*Nesoenas mayeri*) 126

- Pinzon giant tortoise (*Chelonoidis niger duncanensis*) 149
 pipefishes (various spp.) 216–217
 Pitcairn reed-warbler (*Acrocephalus vaughani*) 358
Placostylus spp. 299
 plane trees (various spp.) 6
 planthoppers (various spp.) 234
 plasmodial slime moulds (*Physarum* spp.) 327, 329–330
Plasmodium falciparum 329
Platalea minor (black-faced spoonbill) 125, 126–127
Platanus occidentalis (American plane) 6
Platanus orientalis (oriental plane) 6
Platanus x hispanica 6
Platyserium spp. (stag's horn ferns) 47
Platydemus manokwari (New Guinea flatworm) 298
 platypus (*Ornithorhynchus anatinus*) 70
Plecoptera spp. (stoneflies) 231
Plectostoma crassipupa 289–290
 pleurocarpus feather mosses 45
Pleurozia purpurea (purple spoonwort) 53
Pleurozium schreberi 45
Pleurozium spp. 57
 ploughshare tortoise (*Astrochelys yniphora*) 143
 pochard (*Aythya ferina*) 121–122, 369–370
Podilymbus gigas (Atilán grebe) 358
Podocnemis expansa (Arrau turtle) 142
Poecilonites spp. 304
 poison dart frogs (various spp.) 166
 Poko noctuid moth (*Agrotis crinigera*) 233, 238
 polar bear (*Ursus maritimus*) 89–91, 379, 384
Polymita spp. 300
 Polynesian ground-dove (*Alopecoenas erythropterus*) 123
Polytrichum juniperum 45
Polytrichum spp. (hair-cap mosses) 42
 pompeii worm (*Alvinella pompejana*) 251
Pongo abelli (Sumatran orangutan) 354
Pongo pygmaeus (Bornean orangutan) 73, 354
 porcini (*Boletus edulis*) 320
Porcula salvania (pygmy hog) 237
Porphyrio mantelli (takahe) 370
Portunus trituberculatus (Gazami crab) 254
 potato blight (*Phytophthora infestans*) 7, 315, 327, 330–331
Powelliphanta augusta 296
 praying mantids (*Mantodea* spp.) 235
Prionailurus planiceps (flat-headed cat) 73
Pristis pectinata (smalltooth sawfish) 210–212
 proboscis monkey (*Nasalis larvatus*) 13
Procambarus morrisi (Putnam County cave crayfish) 358
Procyon lotor (raccoon) 386
Progne subis (purple martin) 385
 protostellids (slime moulds) 315
Prototroctes oxyrhynchus (New Zealand grayling) 209, 209
Prunus africana (African cherry) 27
 Przewalski's horse (*Equus przewalskii*) 80
Psephurus gladius (Chinese paddlefish) 197
Pseudemidura umbrina (western swamp turtle) 354
Pseudomys oralis (Hastings River mouse) 380
Pseudoscleropodium spp. 57
Pseudosubulina theoprikeni 289–290
Psilocybe spp. 320
Psittacula eques (echo parakeet) 126
Psittacus erithacus (grey parrot) 112
Psittacus timneh (Timneh parrot) 112
Psychroteuthis glacialis 252
Pterapogon kauderni (Banggai cardinalfish) 206, 214, 217
Pteridium aquilinum (fern) 42
Pterodroma hypoleuca (Bonin petrel) 123–124
Pterodroma phaeopygia (Galápagos petrel) 122
Pterois spp. (lionfishes) 206, 215–216
Pueraria montana var. *lobata* (kudzu vine) 385
 Puerto Rican crested anole (*Anolis cristatellus*) 145
 puffin, Atlantic (*Fraterecula arctica*) 112–113
 puffins (various spp.) 371
Puma concolor (cougar) 83, 339, 342–343
 purple emperor butterfly (*Apatura iris*) 383
 purple martin (*Progne subis*) 385
 purple spoonwort (*Pleurozia purpurea*) 53
Pusa hispida (ringed seal) 100
 Putnam County cave crayfish (*Procambarus morrisi*) 358
Pycnonotus zeylanicus (straw-headed bulbul) 113–115
 pygmy hog (*Porcula salvania*) 237
 pygmy hog-sucking louse (*Haematopinus oliveri*) 237
 pygmy rattlesnake (*Sistrurus miliarius*) 146
 pygmy sloth (*Bradypus pygmaeus*) 72
Pyrrhula murina (Azores bullfinch) 124
Pythium insidiosum 315
Pythium spp. 315
Python bivittatus (Burmese python) 143, 148

Quercus canariensis (Algerian oak) 339
 quillworts (*Isoetes* spp.) 46, 54
 quokka (*Setonix brachyurus*) 356

 rabbit (*Oryctolagus cuniculus*) 370
Racomitrium lanuginosum 45
 racoon (*Procyon lotor*) 386
 radiated tortoise (*Astrochelys radiata*) 143
Rafetus swinhoei (Yangtze giant softshell turtle) 135–136
 rainbowfishes (various spp.) 195
Rana dalmatina (agile frog) 168
Rana temporaria (common frog) 160
Rangifer spp. (caribou) 80, 317
Raphus cucullatus (dodo) 110
 rats (various spp.) 110, 140–141, 371
Rattus exulans (Pacific rat) 110
Rattus macleari (Christmas Island rat) 78
Rattus norvegicus (brown rat) 110, 371, 383
Rattus rattus (house rat) 110, 371
 rays (various spp.) 207–208, 216
Recurvirostra avosetta (avocet) 369
 red-breasted goose (*Branta ruficollis*) 355
 red fox (*Vulpes vulpes*) 356, 379
 red-headed vulture (*Aegyptius monachus*) 372
 red kangaroo (*Osphranter rufus*) 385
 red kite (*Milvus milvus*) 371, 385
 red tegu (*Salvator rufescens*) 137

- reed bunting (*Emberiza schoeniclus*) 385
 regent honeyeater (*Anthochaera phrygia*) 380
Reginaia apalachicola 295
 resplendent angelfish (*Centropyge resplendens*) 206, 214, 215
 resplendent quetzal (*Pharomachrus mocinno*) 368
 resurrection plant (*Selaginella lepidophylla*) 58
 Retigala day gecko (*Cnemaspis retigalensis*) 144
Rhachistia aldabrae 300
Rheobatrachus silus (southern gastric-brooding frog) 357
Rhinella marina (cane toad) 370
Rhinoceros unicornis (Indian rhinoceros) 385
Rhizopus oligosporus 316
Rhizopus stolonifer 316
Rhynchocyon chrysopygus (golden-rumped sengi) 73
Rhynchomeles pratorum (Seram bandicoot) 72
Rhyncogonus bryani 232
Rhytidadelphus spp. 57
 rice kernel rust (*Tilletia horrida*) 320
Riekoperla darlingtoni (Mount Donna Buang wingless stonefly) 231
 right whales (*Eubalaena* spp.) 90, 93–94, 97
 ringed seal (*Pusa hispida*) 100
Rissa tridactyla (black-legged kittiwake) 112–113
 river dolphins (various spp.) 383–384
 robber frogs (*Eleutherodactylus* spp.) 161
 robust burrowing mayfly (*Pentagenia robusta*) 230, 242
 rock gnome lichen (*Cetradonia linearis*) 319
 rock mosses (*Andreaea* spp.) 39, 42–43
 rock wallabies (*Petrogale* spp.) 380
 rockfishes (Scorpaenidae spp.) 208
 Rocky Mountain locust (*Melanoplus spretus*) 238, 238
 Rodrigues fody (*Foudia flavicans*) 126
 Rodrigues warbler (*Acrocephalus rodericanus*) 126
Romankenkius pedderensis 283
Rucervus eldii eldii (Manipur brow-antlered deer) 354
 rufous-fronted laughingthrush (*Garrulax rufifrons*) 120
 Russian desman (*Desmana moschata*) 74
 rust fungi (various spp.) 319
- Saccharomyces cerevisiae* 318
Sadleria cyatheoides 47
 saiga antelope (*Saiga tatarica*) 80, 356
 Saint Helena earwig (*Labidura herculeana*) 236
Salamandra salamandra (fire salamander) 160–161
Salmo salar (Atlantic salmon) 198, 355
 salmonids (various spp.) 14, 198–199, 213
 saltwater crocodile (*Crocodylus porosus*) 371
Salvinia molesta 49
Salvinia spp. 48
 Sangihe golden bulbul (*Thapsinillas platenae*) 112
 Sangihe whistler (*Coracomis sanghirensis*) 112
 Sangihe white-eye (*Zosterops nehrkomi*) 112
Saprolegnia spp. 315
Sarcophilus harrisii (Tasmanian devil) 78, 357, 370
Sarcosoma globosum (witches cauldron fungus) 319, 339
 sawfishes (various spp.) 210–212
 scaly-foot snail (*Chrysomallon squamiferum*) 261
Scaphirhynchus suttkusi (Alabama sturgeon) 197
Sceloporus arenicolus (dunes sagebrush lizard) 139
Sceloporus cyanogenys (blue spiny lizard) 144
Scelotes guentheri (Günther's dwarf burrowing skink) 135–136
Schindleria brevipinguis (stout infantfish) 211
 scimitar-horned oryx (*Oryx dammah*) 81, 337
 scissor-tailed flycatcher (*Tyrannus forficatus*) 368
 Scorpaenidae spp. (rockfishes) 208
 sea cucumbers (*Holothuroidea* spp.) 261–262
 sea lion (*Otaria flavescens*) 89, 94
 sea mink (*Neovison macrodon*) 89–92, 91
 sea otter (*Enhydra lutris*) 89–91, 92, 95–96, 102
 sea turtles (various spp.) 136–138, 142
 seahorses (various spp.) 216–217
 seals (various spp.) 89, 379
Selaginella lepidophylla (resurrection plant) 58
Selaginella spp. (spikemosses) 9, 46, 49
 Seram bandicoot (*Rhynchomeles pratorum*) 72
Serinus canaria var. *domestica* (island canary) 120
Setonix brachyurus (quokka) 356
 Seychelles magpie-robin (*Copsychus sechellarum*) 126
 Seychelles warbler (*Acrocephalus sechellensis*) 124–126, 360
 Seychelles white-eye (*Zosterops modestus*) 125, 126
 sharks (various spp.) 207–208, 216
Shinisaurus crocodilurus (Chinese crocodile lizard) 147
 short-tailed chinchilla (*Chinchilla chinchilla*) 83
 shrews (various spp.) 73
 Sichuan taimen (*Hucho bleekeri*) 356
 sika deer (*Cervus nippon*) 76, 77
 silky anteaters (*Cyclopes* spp.) 80
 silver fern (*Cyathea dealbata*) 58
 silver-backed chevrotain (*Tragulus versicolor*) 83
 silver-thread moss (*Bryum argenteum*) 50
 sirenian spp. 88
 siskin (*Spinus spinus*) 385
Sistrurus miliarius (pygmy rattlesnake) 146
Sitta europaea (nuthatch, Eurasian) 385
Sitta insularis (Bahama nuthatch) 124
 skinks (various spp.) 135–136
 skylark, Eurasian (*Alauda arvensis*) 119
 skywalker gibbon (*Hoolock tianxing*) 83
 slime moulds
 dictyostellids 315
 myxomycetes 315
 plasmodial 315, 327, 329–330
 protostellids 315
 smalltooth sawfish (*Pristis pectinata*) 210–212
Sminthopsis aitkeni (Kangaroo Island dunnart) 380
 smut fungi (various spp.) 319–320
 snails (various spp.) 293
 snowy owl (*Bubo scandiacus*) 112
 social tuco-tuco (*Ctenomys sociabilis*) 68, 72
 social wrasse (*Halichoeres socialis*) 214, 215–216
 sockeye salmon (*Oncorhynchus nerka*) 198, 200, 209
 softshell turtles (*Pelodiscus* spp.) 136
Solenodon paradoxus (Hispaniolan solenodon) 76, 77
Sousa teuszii (Atlantic humpback dolphin) 90
 South American fur seal (*Arctocephalus australis*) 94
 South American water snake (*Hydrodynastes melanogigas*) 138
 Southern elephant seal (*Mirounga leonina*) 99

- southern gastric-brooding frog (*Rheobatrachus silus*) 357
 southern hognose snake (*Heterodon simus*) 141
 southern white rhinoceros (*Ceratotherium simum*) 362–363
 Spanish sparrow (*Passer hispaniolensis*) 109–110
 sparrow (*Passer domesticus*) 109, 120
Sphaerodactylus spp. 144
Sphagnum capillifolium 43–59
Sphagnum papillosum 43–59
Sphagnum spp. (bog mosses) 38–39, 43–45, 57
Sphagnum subnitens 41
Spharopteris medullaris (tree fern sago) 58
Sphenodon guentheri 135–136
Sphenodon punctatus (tuatara) 135–136, 143
 spider monkeys (various spp.) 80
 spiders (various spp.) 273
 spike mosses (*Selaginella* spp.) 9, 46, 49
 spined dwarf mantis (*Ameles fasciipennis*) 235
Spinus spinus (siskin) 385
 spiny lizards (various spp.) 144
 spoon-billed sandpiper (*Calidris pygmaea*) 370
 squid (various spp.) 253
 stag's horn ferns (*Platyacrium* spp.) 47
 stag's-horn clubmoss (*Lycopodium clavatum*) 46
 stalked barnacle (*Vulcanolepas scotiaensis*) 252
 steelhead (*Oncorhynchus m. irideus*) 200
 Steller sea lion (*Eumetopias jubatus*) 95
 Steller's sea cow (*Hydrodamalis gigas*) 90, 91, 92
 stick insects (*Phasmida* spp.) 234–235
 stoneflies (*Plecoptera* spp.) 231
 Storr's lerista (*Lerista storni*) 136
 stout infantfish (*Schindleria brevipinguis*) 211
 straw-headed bulbul (*Pycnonotus zeylanicus*) 113–115
Streptopelia turtur (European turtle dove) 112, 115, 121–122
Strigops habroptilus (kakapo) 370
 stringwood (*Acalypha rubrinervis*) 358–359
 striped beakfish (*Oplegnathus fasciatus*) 216
 sturgeon (various spp.) 190, 195–198, 213–214, 358
 sturgeon, Atlantic (*Acipenser oxyrinchus oxyrinchus*) 213–214
 sturgeon, European (*Huso huso*) 197, 209, 209
 sucking bugs (various spp.) 234
 Suckley's cuckoo bumble bee (*Bombus suckleyi*) 244
 Sumatran orangutan (*Pongo abelli*) 354, 356
 sun bittern (*Eurypyga helias*) 368
 sunbirds (various spp.) 354
Sus domesticus (pig) 110
 swans (various spp.) 369–370
Swietenia spp. (mahogany trees) 26
Sylvia atricapilla (Eurasian blackcap) 120, 127–128
Syntrichia ruralis (great hairy screw-moss) 42–43, 42
Szygium spp. 21

Tachysphex pechumani 233
 takahe (*Porphyrio mantelli*) 370
Takakia spp. 39
Tamandua mexicana (northern tamandua) 76
 tapirs (*Tapirus* spp.) 83
 tardigrades (various spp.) 284
 Tasmanian devil (*Sarcophilus harrisii*) 78, 357, 370

Tasmanophlebi lacuscoerulei (large blue lake mayfly) 230
Tchangmargarya ziyi 297
 tegus (various spp.) 137, 148–149
Telespiza ultima (nihoa finch) 112
 termites (*Blattodea* spp.) 236
 Texas horned lizard (*Phrynosoma cornutum*) 141
Thalassarche melanophris (black-browed albatross) 128
Thapsinillas platenae (Sangihe golden bulbul) 112
Thermus aquaticus 4, 328
Thermus brockianus 4
 threadfin butterflyfish (*Chaetodon auriga*) 214, 215
 three-toed sloths (*Bradypus* spp.) 368
Thunnus thynnus (Atlantic bluefin tuna) 208–210, 212–213
 thylacine (*Thylacinus cynocephalus*) 75
Thyreophora cynophila (bone skipper) 235–236
 Tibetan antelope (*Pantholops hodgsonii*) 361
 tiger (*Panthera tigris*) 75, 76, 361
 tiger salamander (*Ambystoma tigrinum*) 160
 tigers (various spp.) 75, 385
 tilapia (various spp.) 193
Tilletia horrida (rice kernel rust) 320
 timber rattlesnake (*Crotalus horridus*) 146
 Timneh parrot (*Psittacus timneh*) 112
 Tobias' caddisfly (*Hydropsyche tobiasi*) 242
 tokay gecko (*Gekko gekko*) 143
 tortoises (various spp.) 146
Tortula pagorum 41
 Townsend's dwarf salamander (*Parvimolge townsendi*) 171
Tragulus versicolor (silver-backed chevrotain) 83
 tree fern sago (*Spharopteris medullaris*) 58
 tree moss (*Climacium dendroides*) 40–41
 tree snake, brown (*Boiga irregularis*) 15
Tremella amesenterica (witches butter) 320
Tremella aurantialba 320
Tremella fuciforma 320
Tremella spp. 320
Trichechus manatus (West Indian manatee) 98
Trichechus spp. (manatees) 88
Trichonympha campanulata 329–330
Trichonympha spp. 327
Triturus cristatus (great crested newt) 158–159
 trout (various spp.) 191–199
 trout cod (*Maccullochella macquariensis*) 356
 truffle (*Tuber melanosporum*) 318
Trypanosoma spp. 329
 tuatara (*Sphenodon punctatus*) 135–136, 143
Tuber melanosporum (truffle) 318
Tupaia nicobarica (Nicobar tree shrew) 72
 turquoise dwarf gecko (*Lygodactylus williamsi*) 142
 turtle dove (*Streptopelia turtur*) 112, 115, 121–122
 turtles (various spp.) 138, 140, 142, 145
 two-toed sloths (*Choloepus* spp.) 368
Tympanocryptis centralis (Australian earless dragon) 136
Tyrrhenaria ceratina (Corsican land snail) 289–290

Ulex europaeus (gorse) 371
 Union Island gecko (*Gonatodes daudini*) 142
Ursus arctos californicus (California grizzly bear) 75
Ursus maritimus (polar bear) 89–91, 379, 384
Ustilago maydis (corn rust) 320

- Valeriana leschenaultia* 356
Vandenboschia speciosa 49
Vanellus macropterus (Javan lapwing) 356
 vaquita (*Phocoena sinus*) 90, 97, 98, 101
Varanus mertensi (Mertens' water monitor) 141
Varanus mitchelli (Mitchell's water monitor) 141
 variable cuckoo bumble bee (*Bombus variabilis*) 244
 velvet scoter (*Melanitta fusca*) 121–122
 velvet worms (Onychophora) 10–11
Vertigo moulinsiana (Desmoulin's whorl snail)
 289–290, 305
Vertigo spp. 305
Vinodolia lacustris (Lake Prespa mudsnail) 297
Vipera wagneri (ocellated mountain viper) 143
 vipers (various spp.) 143, 147
 Virginia opossum (*Didelphis virginiana*) 69–70
Vulpes lagopus (Arctic fox) 379
Vulpes vulpes (red fox) 356, 379
 vultures (various spp.) 113, 372

 Wagner's viper (*Vipera wagneri*) 143
 Wallace's giant bee (*Megachile pluto*) 371
 walrus (*Odobenus rosmarus*) 89, 101, 379, 384
 warty frogfish (*Antennarius maculatus*) 207–208, 211
 wasps (various spp.) 233–234
 water hyacinth (*Eichhornia crassipes*) 371, 385
 water vole (*Arvicola amphibius*) 371–372
 West Indian manatee (*Trichechus manatus*) 98
 western gorilla (*Gorilla gorilla*) 79
 western ground parrot (*Pezoporus flaviventris*) 380
 western long-beaked echidna (*Zaglossus bruijnii*) 70
 western swamp turtle (*Pseudemys umbrina*) 354
 whales (various spp.) 95, 98, 100; *see also individual species by name*
 whiptail lizard (*Contomastix vittata*) 138
 white stork (*Ciconia ciconia*) 383
 white tiger (*Panthera tigris*) 75, 76, 361

 white-rumped shama (*Kittacincla malabarica*) 120
 white-rumped vulture (*Gyps bengalensis*) 113, 372
 white-tailed sea eagle (*Haliaeetus albicilla*) 371–372
 whooper swan (*Cygnus cygnus*) 369–370
 wigeon (various spp.) 5
 wigeon, European (*Anas penelope*) 369–370
 winter skate (*Leucoraja ocellate*) 212–213
 witches butter (*Tremella amesenterica*) 320
 witches cauldron fungus (*Sarcosoma globosum*) 319,
 339
 wollemi pine (*Wollemia nobilis*) 19
Wollemia nobilis (wollemi pine) 19
 wolves (various spp.) 75
 wombats (various spp.) 70
 wood cockroach (*Margatteoidea amoena*) 236

 Xerces blue butterfly (*Glaucopsyche xerces*) 233, 239
Xerocrassa molinae 303

 Yangtze giant softshell turtle (*Rafetus swinhoei*)
 135–136
 Yangtze River dolphin (*Lipotes vexillifer*) 90, 92, 93
 yellow crazy ant (*Anoplolepis gracilipes*) 357
 yellow-breasted bunting (*Emberiza aureola*) 112
 yellow-throated miner (*Manorina flavigula*) 357
 yeti crab (*Kiwa tyleri*) 252

Zaglossus attenboroughi (Attenborough's long-beaked
 echidna) 70, 72
Zaglossus bruijnii (western long-beaked echidna) 70
Zalophus japonicus (Japanese sea lion) 90
 zebra mussel (*Dreissena polymorpha*) 297
 Ziyuan fir (*Abies ziyuanensis*) 358
Zonitacion spp. 289–290
Zonites santoriniensis 295
Zosterops modestus (Seychelles white-eye) 125, 126
Zosterops nehrkorni (Sangihe white-eye) 112

Subject Index

Page numbers in *italic* refer to figures; those in **bold** to tables

For named plant/animal examples *see* species index

- A Life on Our Planet* (Attenborough) 17, 387
 acidification of seawater 206, 218–223, 384
 activity levels in response to temperature, reptiles 145
 adaptation to urban life, organisms 386
 adaptations to freshwater, osmoregulation 279–281
 A formal test of the theory of universal common ancestry (Theobald) 4
 agriculture, ecosystem threats from 354–355, 384
 birds 117–119
 flowering plants 24
 insects 239–240, 240
 reptiles 139, 145
 air travel 384
 algae 331–332
 Alliance for Zero Extinction (AZE), amphibians 170
 Amphibian Conservation Action Plan (ACAP), IUCN 154
 Amphibian Specialist Group (ASG), IUCN 155
 Amphibian Survival Alliance (ASA) 155
 amphibians 154–156, 171–173
 climate change 163–166
 conservation status/threats 153, **153**, **155**
 conservation successes 165–166, 170–171, 173, 374
 disease 160–162
 general drivers of decline 156–157, **157**
 habitat loss/degradation 157–160
 invasive species 163
 life history traits 154
 One Plan Approach to conservation 172
 overexploitation 166–168
 pollution 168–170
 as sentinels of ecosystem health 154
Amphibians Thriving in Nature approach 171–173, 173
 Anthropocene 109–111, 349–350
 aquaculture *see* fishing/fisheries
 arbuscular mycorrhizal fungi (AMF) 316
 Archaea 4
 arctic ecosystems
 bryophytes and pteridophytes 43, 45, 56–57
 climate change 56–57
 arthropods (other than insects) 270–273, 276
 conservation status 270–271
 conservation successes 373–374
 introduced/invasive species 275–276
 land colonisation 271–272
 taxonomic diversity 273–276
 ASA (Amphibian Survival Alliance) 155
 ASG (Amphibian Specialist Group), IUCN 155
 Attenborough, Sir David 43, 219
 A Life on Our Planet 17, 387
 TV programme on state of nature 387
 avalanches, ecosystem threats 358
 AZE (Alliance for Zero Extinction), amphibians 170

 Baas–Becking hypothesis, terrestrial invertebrates 283
 bacteria 328
 banning of harmful substances 372
 Barometer of Life Red List Status 342
 baselines, shifting, marine mammals 93–94
 benthic–pelagic coupling, marine invertebrates 253
 biodiversity hotspots
 bryophytes/pteridophytes 51–52, 53–54
 for conservation priority 16–17
 biodiversity indicators, freshwater fish as 177, 180–181
 Biodiversity Targets, Global Plant Conservation Strategy of the Convention on Biological Diversity 34
 biogeographic regions; *see also* geographic range
 bryophytes and pteridophytes 51
 flowering plants 23–24
 biological carbon pump, marine invertebrates 253
 bioluminescence 16
 BirdLife International 106, 129
 birds 106–109
 agricultural impacts 117–119
 captive animals 121
 climate change 123–124
 conservation status 108, 111–117, 114, 117, 118, **292**
 conservation successes 124–129, 125, 372–376
 deforestation/logging 119–120
 human impacts on 109–111
 illegal killing/trapping 121, 127–128
 invasive species 122

- overexploitation 112, 120–122
- Red List Index 113–115, 114
- threatened species relative to total/nation 116
- black-listed species, avoidance of trading in 168
- Bonn Convention on the Conservation of Migratory Species of Wild Animals 371
- boreal ecosystems
 - bryophytes and pteridophytes 43, 45, 56–57
 - climate change 56–57
- bryophytes *see* spore-bearing land plants
- bushmeat hunting 74
- bycatch, fisheries 122, 128

- cage-bird trade 121; *see also* pet trade
- California, freshwater fish 199–200
- Cambrian explosion 10
- captive animals
 - amphibians 166–167
 - birds 121
 - marine mammals 99
 - terrestrial arthropods other than insects 273–276
 - terrestrial mammals 73–75
- captive breeding of threatened species
 - conservation methods 370
 - insects 241
 - reptiles 149
 - terrestrial mammals 81–82
- car windscreens, illustration of insect declines 381–382
- carbon pump, marine invertebrates 253
- carnivorous marine mammals 89
- CBD (Convention on Biological Diversity) 371
- cells, evolution of 1, 4, 6, 8–11
- Cenozoic era 69–79
- CEPF (Critical Ecosystem Partnership Fund) 52
- chemosynthesis, marine invertebrates 252
- Chinese traditional medicine (TCM) 74; *see also* medicinal plants
- chloroplasts, evolution of cells 9
- chytridiomycosis, amphibians 160–161
- CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) 74, 371
- climate change impacts 358, 384
 - amphibians 163–166
 - birds 123–124
 - bryophytes and pteridophytes 56–57
 - factors which continue to threaten wildlife 384
 - flowering plants 28–29
 - freshwater fish 189
 - future outlook 379–380
 - impact on evolution 10
 - insects 241–242
 - marine fish 206, 218–222
 - marine mammals 87, 99–101
 - reptiles 143–145
 - terrestrial mammals 79–80
 - terrestrial molluscs 300–301
- CMS (Conservation of Migratory Species of Wild Animals) 371
- commercial exploitation/harvesting from the wild
 - amphibians 166–168
 - birds 112, 120–122, 121, 127–128
 - bryophytes and pteridophytes 57–58
 - deforestation/logging 119–120, 384
 - factors which continue to threaten wildlife 384
 - flowering plants 25–28
 - freshwater fish 189
 - future outlook 382–383
 - issues in need of urgent action 383–384
 - marine fish 206, 217–218
 - marine invertebrates 264–265
 - reptiles 141–143
 - terrestrial mammals 73
 - terrestrial molluscs 299–300
- coniferous woodland 14
- Conservation Dependence, measurement metrics 346
- Conservation Gain, measurement metrics 346
- Conservation Legacy, measurement metrics 345
- conservation methods 368
 - 2020 year of special conservation effort 370
 - captive breeding of threatened species 370
 - and conservation successes 371–372
 - creation of national parks/protected areas 368–370
 - international collaboration/legislation 371
 - removal of invasive species 370–371
- Conservation of Migratory Species of Wild Animals (CMS) 371
- conservation status; *see also* future outlooks
 - amphibians 153, **153**, **155**
 - assessment *see* Red List assessment
 - benefits of discipline of conservation 324
 - birds 108, 117, 118, 292
 - bryophytes and pteridophytes 37, 58–60
 - conifer species 19–22
 - eligibility to perform assessments 340
 - flowering plants 24–25, 30–33
 - freshwater fish 19, 180–181, 183–184, 199–200
 - fungi 311–314, 320–321
 - Green Status 342–345
 - insects 228–237
 - mammals 292
 - marine fish 208–213, 212, 214
 - marine invertebrates 256–258
 - marine mammals 87, 89–93, 90, 90–91, 92, 97–99
 - quality control 340, 341
 - reptiles 132, 135–136
 - terrestrial invertebrates 270–271, 279, 281–282
 - terrestrial mammals 67–68, 67
 - terrestrial molluscs 288, 290–292, 301–304
 - vertebrate species in different categories 156
- conservation successes/reintroduction programmes
 - 2, 372–373
 - amphibians 165–166, 170–171, 173, 374
 - arthropods 373–374
 - banning of harmful substances 372
 - benefits of establishing conservation discipline 324
 - birds 124–129, 125, 372–376
 - bryophytes and pteridophytes 60
 - conservation scenarios for specific mammals 76
 - Costa Rica 368
 - fish 374
 - flowering plants 20–21, 34
 - fungi 321–323
 - future outlooks 346
 - Green Status 342–345

402 SUBJECT INDEX

- conservation successes/reintroduction programmes (cont.)
 mammals 376–377
 marine fish 224
 marine mammals 101–103
 measurement metrics 345–347, 345–346
 molluscs 374
 plant species 373
 reptiles 148–150, 374
 species benefitting from conservation methods 371–372
 terrestrial mammals 82–83
 terrestrial molluscs 304–305
 consumer purchasing power 82
 Convention on Biological Diversity (CBD) 371
 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) 58, 74, 371
 convergent evolution 6
 COP26 international climate summit 380
 coral bleaching 220–223
 coral reefs 13, 254, 263–264
 Costa Rican example of conservation success 368, 387
 Cousteau, Jacques Yves 188–202
 COVID-19 pandemic 370, 386–387
 Critical Ecosystem Partnership Fund (CEPF) 52
 Critically Endangered status (CR), Red List Categories/Criteria 337–339
 Crocodile Specialist Group, IUCN 148
 crop wild relatives (CWRs) 33
 cryptic species
 freshwater fish 182
 terrestrial invertebrates 281
 Cyprus example, illegal bird-trapping 127–128
- Data Deficient (DD) status **335–336**, 339; *see also* knowledge gaps
 amphibians 155, 156, 157
 birds 106, 111
 flowering plants 30, 33
 freshwater fish 178, **179–180**, 183
 fungi **312–314**
 insects **228–229**, 229–237
 marine invertebrates 249, 256–258, **257–258**, 262–263
 marine mammals 90
 molluscs 290–291
 reptiles **134**, 135, 137–138
 terrestrial mammals 67, 68, 81
 deciduous woodland 13–14
 Declining Amphibian Populations Task Force (DAPTF), IUCN Species Survival Commission (SSC) **154**
 deforestation/logging 25–26, 119–120, 384
 degradation of habitats *see* habitat loss/degradation
 desert ecosystems 13, 22
 desertification 383–384
 desiccation, bryophytes and pteridophytes 49–50
 development, residential and commercial 352–354
 Diamond, Jared 110
 diclofenac, veterinarian drug 372
 dicotyledons 18
 dinosaur extinction 1
 disease
 amphibians 160–162
 blight infections 315, 330–331
 ecosystem threats 356–357
 reptiles 146
 terrestrial mammals 78–79
 disturbance, ecosystem threats 98–99, 356
 DNA sequencing, evolution of multicellular life 8–9
 downlisting, Red List Status 340–342
 drivers of decline *see* ecosystem threats
 drought tolerance, bryophytes and pteridophytes 49–50
- Earth and Moon, origins of 2–5
 image from space 3
 Pangea and break-up of continents 7–8, 8
 earthquakes, ecosystem threats 358
 ecological roles, marine mammals 94–96
 ecosystem engineers, marine invertebrates 254
 ecosystem services
 marine invertebrates 254–255
 marine mammals 87, 94–96
 terrestrial mammals 69
 ecosystem threats 349–350, 358–360, 363–364; *see also specific threats by name (e.g. climate change)*
 agriculture and aquaculture 354–355
 climate change 358
 disease 356–357
 ecosystem modification 356
 effects on insects 237–239
 effects on marine invertebrates 258–262, **259–260**, **260**, 260
 effects on terrestrial molluscs 294–295
 factors threatening 350–352
 human intrusions and disturbances 356
 invasive species 356–357
 measurement 352; *see also* conservation status
 mines and energy production 355
 mitigation strategies 360–363
 pollution 357–358
 resource use 356
 transportation and service corridors 355
 volcanoes, earthquakes, tsunamis, avalanches 358
 ecosystems 11–17
 ecotourism 387
 empty forest syndrome 74
 Endangered (EN) Red List Categories/Criteria 337–339
 Endangered Species Act (1973), USA 96, 198
 endemic species
 island habitats 23–24
 Madagascar 195–196
 endocrine-disrupting pollutants 169
 endomycorrhizal fungi 316
 energy production, ecosystem threats 355
 environmental drivers of decline *see* ecosystem threats
 Erwin, Terry 5
 European Council for the Conservation of Fungi 321

- European Union, Special Protection Areas (SPAs) 127
- Extinct (EX) category, Red List Categories/Criteria 336
- Extinct in the Wild (EW), Red List Categories/Criteria 337
- Extinction Rebellion movement 380–381
- extinction risk, limitations of Red Listing 342–343
- extinctions
- geography of 71–72
 - great extinction events 1–2
 - Holocene 1–2
 - insects 237–239, 238
 - K–T/K–Pg dinosaur extinction 1
 - marine fish 209, 217
 - marine mammals 87–105, 90, 91, 92, 98
 - molluscs 290–294, 293
 - Permian–Triassic 1
 - Pleistocene 71
 - reptiles 134–136, **134**
 - terrestrial invertebrates 283
 - terrestrial mammals 65, 69–72
 - terrestrial molluscs 290–294, 293
 - Triassic/Jurassic 1
- fish, freshwater 177–178
- as aquatic biodiversity indicators 177, 180–181
 - climate change 189
 - commercial exploitation 189
 - conservation status 19, 180–181, 183–184, 199–200
 - conservation successes 374
 - drivers of decline 184–189
 - families most vulnerable to extinction **190–191**, 190–199
 - future outlook 200–202
 - habitat loss/degradation 185–186
 - invasive species 188
 - pollution 186–188
 - taxonomic diversity 182–183
 - threatened species by taxonomic order **179–180**
 - water use pressures 185
- fish, marine 206–208
- climate change 218–222
 - conservation status 208–213, 212, 214
 - conservation successes 224, 374
 - drivers of decline 213
 - extinctions 209, 217
 - future outlooks 223–224
 - geographic range 206, 215, 219–221
 - habitat loss/degradation 221–223
 - invasive species 206, 215–216
 - living fossils 207, 217
 - oceanic debris 216
 - oceanic warming/acidification 206, 218–223
 - overexploitation/harvesting 217–218
 - physiological stress 221, 223
 - reproductive potential 206, 216–217
 - taxonomic diversity 207–208, 211
- fishing/fisheries, negative impacts 97, 122, 128, 354–355; *see also* fish, freshwater
- Flow Country, Sutherland, Scotland 44
- flowering plants *see* plant species
- food use *see* human consumption
- food webs, marine 253–255
- forest ecosystems
- bryophytes and pteridophytes 54–55
 - deciduous woodland 13–14
 - flowering plants 22
 - logging/deforestation 25–26, 119–120, 384
 - non-timber forest products 26–27
- A formal test of the theory of universal common ancestry (Theobald) 4
- Fortey, Richard 10
- fossil record 7–8, 10
- fossils, living 207, 217
- fragmentation of habitats
- amphibians 157–160
 - flowering plants 25
 - insects 239
 - terrestrial mammals 72–73
- freshwater organisms *see under name of class (e.g. fish)*
- Fungal Conservation: Issues and Solutions* (European Council for the Conservation of Fungi) 321
- fungi 311–314
- benefits of discipline of conservation 324
 - challenges for conservation 322
 - conservation and reintroduction programmes 321–323
 - conservation status 311, **312–314**, 318–321
 - ecological roles 317–318
 - evolution 10
 - future outlooks 323
 - human uses 318
 - number of species **312–314**
 - paradigm of unlimited dispersal 312
 - species diversity 312
 - taxonomic diversity 314–320
- future outlooks 379, 383–387
- causes for optimism 384–385
 - climate change 379–380
 - commercial exploitation 382–383
 - conservation successes 346
 - Extinction Rebellion movement 380–381
 - factors which continue to threaten wildlife 384
 - fungi 323
 - genome sequencing 383
 - insects 245, 381–382
 - issues in need of urgent action 383–384
 - marine fish 223–224
 - threatened species 382
 - wilding/rewilding 383
- gardens, role of 385–386; *see also* horticultural impacts
- genome sequencing 383
- geographic range, changing
- bryophytes and pteridophytes 51
 - flowering plants 23–24
 - marine fish 206, 215, 219–221
- geography of extinctions 71–72
- geological events, ecosystem threats 358

404 SUBJECT INDEX

- Global Amphibian Assessment (GAA) 154
 Global Biodiversity Information Facility (GBIF) data 32
 Global Reptile Assessment 134–135
 Global Strategy for Plant Conservation (GSPC), Convention on Biological Diversity 32, 34
 Global Tree Assessment 32
 Goulson, Dave (*Silent Earth*) 382
 governmental policies *see* law and policy
 grassland ecosystems 12–13, 22
 great extinction events 1–2; *see also* extinctions
 Green Score formula, Green Status 344
 Green Status, International Union for Conservation of Nature (IUCN) 342–345, 345–347, 345–346; *see also* conservation successes/reintroduction programmes
 gymnosperms 19
- habitat fragmentation *see* fragmentation of habitats
 habitat loss/degradation; *see also* agriculture
 amphibians 157–160
 bryophytes and pteridophytes 54–56
 flowering plants 24–25
 freshwater fish 185–186
 insects 239
 marine fish 221–223
 reptiles 138–140, 145
 terrestrial mammals 72–73
 terrestrial molluscs 295–297
- habitat management, landscape-level approach 159
 habitats 11–17
 harvesting from the wild *see* commercial exploitation/harvesting
 herbal medicines *see* medicinal plants
 herbaria, role in plant conservation 20–21
 holistic perspectives, social-ecological systems 224
 Holocene extinction event 1–2
 horticultural impacts 27, 33, 58
 human consumption, amphibians 167; *see also* fishing/fisheries
 human disturbance, ecosystem threats 356
 human populations 349–350, 384; *see also* Anthropocene
 human–wildlife conflict, terrestrial mammals 75–77
 hybridisation 5
 hydrothermal vents 15–16, 252, 261
- ignorance of the natural world, factors which threaten wildlife 383–384
 illegal trading *see* trade regulation and illegal trading
 Important Bird and Biodiversity Areas (IBAs) 127
 infectious disease *see* disease
 insecticides 245
 insects 227–228
 agricultural impacts 239–240, 240
 captive breeding of threatened species 241
 climate change 241–242
 conservation status 228, **228–229**, 229–237, **230**
 drivers of decline 237–239, 238
 future outlooks 245, 381–382
 habitat loss 239
 introduced/invasive species 240–241
 knowledge gaps 242–244, 246
 law and policy issues 244, 246
 obstacles to conservation 242–245
 pollution 242
 priority actions for conservation 246
 public engagement 245–246
 taxonomic diversity 230–237
- international conservation measures
 legislative 371
 marine mammals 96–97
- International Network on Soil Biodiversity (NETSOB) 322
- International Union for Conservation of Nature (IUCN) 333; *see also* conservation status
- International Whaling Commission (IWC) 96
- introduced/invasive species
 amphibians 163
 birds 122
 crayfish 275–276
 ecosystem threats 356–357, 384
 flowering plants 29–30, 385
 freshwater fish 188
 insects 240–241
 marine fish 206, 215–216
 removal of invasive species 370–371
 reptiles 140–141
 terrestrial mammals 77–78
 terrestrial molluscs 297–300, **302**
- invertebrates, marine 249–252, 262–265
 conservation status 256–258, **257–258**
 drivers of decline 258–262, **259–260**, 260
 ecological roles 253–255
 knowledge gaps 255–256, 262–263
 mitigation of extinction risk 262–265
 number of extant species **250–251**
 overexploitation/harvesting 264–265
 taxonomic diversity 253
- invertebrates, terrestrial 279–284; *see also* arthropods;
 insects; molluscs
 conservation status 279, 281–282
 extinctions 283
 taxonomic diversity 279, 281
- island habitats 15
 bryophytes and pteridophytes 51
 flowering plants 23–24
- IUCN Red List of Threatened Species *see* conservation status
- IUCN Task Force on Assessing Conservation Success 343–344
- Jones, Carl 126
- kelp forests 14
- Key Biodiversity Areas, amphibians 170
- knowledge gaps; *see also* Data Deficient (DD) status
 factors which threaten wildlife 383–384
 insects 242–244, 246
 marine invertebrates 255–256, 262–263
- K–T/K–Pg dinosaur extinction 1
- land colonisation, terrestrial arthropods 271–272
 landscape-level approaches, habitat management 159

- Latin binomial species names 6–7
 law and policy; *see also* trade regulations
 insects 246
 obstacles to conservation 244
 transnational 371
 Least Concern (LC) Red List Categories/Criteria 339
 life cycles, bryophytes and pteridophytes 42–49
 life forms
 bryophytes/pteridophytes 40–49
 flowering plants 21–23
 limnic organisms *see under name of class (e.g. fish)*
 living fossils, marine fish 207, 217
 logging 25–26, 119–120, 384
- Madagascan endemic fish species 195–196
 mammals, marine 87–89
 baseline status/shifting baselines 93–94
 captive animals 99
 climate change 99–101
 commercial exploitation 97
 conservation status 89–93, 90, 90–91, 92, **292**
 conservation successes 101–103, 376–377
 ecological roles 94–96
 extinctions 91–105
 fishery impacts 97
 international management 96–97
 oceanic pollution 98–99
 taxonomic diversity 88–89
 underwater noise/disturbance and stress 98–99
 vessel collisions 98
 mammals, marsupial 7, 70
 mammals, placental 7, 70
 mammals, terrestrial 65, 69–70
 captive breeding of threatened species 81–82
 climate change 79–80
 conservation scenarios for specific species 76
 conservation status 67–68, 81, **292**
 conservation successes 82–83, 376–377
 consumer power to aid 82
 Critically Endangered and Endangered 67
 Data Deficient status 81
 evolution 11, 66
 extinctions 65, 69–72
 habitat loss 72–73
 human–wildlife conflict 75–77
 infection/disease spillovers from human contact 78–79
 introduced/invasive species 77–78
 marsupials 70
 monotremes 70
 overexploitation 73
 placental 70
 species of conservation concern 68
 mangrove swamps 13
 Marine Mammal Protection Act (1972) 96
 marine organisms *see under name of class (e.g. mammals)*
 marine protected areas (MPAs) 97, 224
 marsupial mammals 7, 70
 measurement metrics
 conservation successes 345–347, 345–346
 ecosystem threats 352
 medicinal plants
 Chinese traditional medicine 74
 commercial exploitation 26–27
 conservation status 32–33
 Mediterranean climatic zones, flowering plants 23
 megafauna extinctions, Pleistocene 71
 migratory fish, vulnerability of 206, 213–215
 mining, ecosystem threats 355
 mitigation strategies 60, 360–363; *see also*
 conservation successes/reintroduction programmes
 amphibians 160–162
 birds 128–129, 355
 freshwater fish 201
 fungi 323
 insects 242–243, 246
 marine invertebrates 262–265
 mitochondria 9
 molluscs, terrestrial and freshwater 288–293, 305–306
 climate change 300–301
 conservation status 288, 290–291, **291–292**, 301–304
 conservation successes 304–305, 374
 drivers of decline 294–295
 extinctions 290–294, 293
 habitat loss 295–297
 invasive species 297–300, **302**
 number of species 290
 overexploitation/harvesting 299–300
 population trends **301**
 taxonomic diversity 289–290
 monocotyledons 18
 monotreme terrestrial mammals 70
 Moon, origin of *see* Earth and Moon
 mountain habitats 14
 MPAs (marine protected areas) 97, 224
 multicellular life, evolution 8–11
- naming conventions, species 6–7
 national parks 368–370, 385
 nature reserves 368–370, 385
 Near Threatened (NT) Red List Categories/Criteria 339
 Neolithic, development of agriculture 109
 NETSOB (International Network on Soil Biodiversity) 322
 noise disturbance, marine mammals 98–99
 non-native species *see* introduced/invasive species
 non-timber forest products (NTFPs) 26–27
 North American Bsal (*Batrachochytrium salamandrivorans*) Task Force 170
 northern boreal forests, bryophytes/pteridophytes 45
 nutrient cycles, marine invertebrates 253
- ocean currents, effects of climate change 219–220
 ocean habitats 15–16; *see also* mammals, marine
 oceanic debris, impacts 216

406 SUBJECT INDEX

- oceanic warming and acidification 206, 218–223, 384
 One Plan Approach to conservation, amphibians 172
 optimism, causes for 384–385; *see also* conservation successes/reintroduction programmes
 ornamental plants *see* horticultural impacts
 osmoregulation, adaptations to freshwater 279–281
 overexploitation *see* commercial exploitation/harvesting from the wild
 oxygen, development of atmospheric 2, 4
- Pangea 7–8, 8
 peatland ecosystems
 bryophytes/pteridophytes 43–45, 44, 55–56
 commercial exploitation 57
 habitat loss 55–56
 Permian–Triassic extinction 1
 pesticide effects 383–384
 amphibians 168–170
 birds 109
 fish 186–188
 insects 119, 233, 242, 245, 381
 marine mammals 98–99
 plants 24
 pet trade; *see also* trade regulation and illegal trading
 amphibians 166–167
 birds 121
 marine mammals 99
 terrestrial arthropods other than insects 273–276
 terrestrial mammals 73–75
 phenological mismatches 28–29, 123, 219
 photosynthesis, bryophytes and pteridophytes 49
 physiological stress *see* stress
 placental mammals 7, 70
 plant species 18
 biogeographic regions 23–24
 climate change 28–29
 conservation status 30–33
 conservation successes 34, 373
 desert ecosystems 22
 evolution 7, 9–10
 forest ecosystems 22
 grassland ecosystems 22
 gymnosperms 19
 habitat loss 24–25
 introduced/invasive species 29–30
 life forms 21–23
 overexploitation 25–28
 rarity and threatened species 24
 taxonomic diversity 19–21
 value of herbaria 20–21
 plastics
 factors which continue to threaten wildlife 384
 issues in need of urgent action 383–384
 oceanic debris 216
 plate tectonics 8
 Pleistocene extinctions 71
 polar ice habitats 15
 policy measures *see* law and policy; trade regulations
- pollution
 amphibians 168–170
 ecosystem threats 357–358, 384
 freshwater fish 186–188
 insects 242
 issues in need of urgent action 383–384
 marine mammals 98–99
 oceanic debris 216
 reptiles 145
 population trends
 humans (*Homo sapiens*) 349–350, 384
 terrestrial molluscs 301
 primates 11
 protected areas 368–370, 385
 protozoan organisms 329–330
 pteridophytes *see* spore-bearing land plants
 public engagement, in conservation 245–246
- Ramsar Convention on Wetlands 371
 ranavirus infections, amphibians 160
 rarity; *see also* conservation status
 bryophytes and pteridophytes 54
 flowering plants 24
 recovery, conservation status assessment 342
 recovery potential, measurement metrics 346
 Red Data Books 334–336
 Red List assessment 333–336; *see also* conservation status
 limitations of Red Listing 342–343
 Red Data Books 334–336
 Red List assessment 334–336
 re-evaluation of Red List Status 340–342
 Red List Categories/Criteria 336–339, 337
 changes to Red List Categories over time 335–336
 eligibility to perform assessments 340
 re-evaluation of Red List Status 340–342
 regional applications 340
 threatened categories 337–339, 338–339
 Red List Index (RLI) 113–115, 342
 amphibians 155
 birds 114
 regulations *see* law and policy; trade regulations
 reintroduction programmes *see* conservation successes/reintroduction programmes
 reproductive potential, marine fish 206, 216–217
 Reptile Database 136–137
 reptiles 132, 134
 climate change 143–145
 commercial exploitation 141–143
 conservation status 132
 conservation successes 148–150, 374
 data limitations 137–138
 decline of prey species 146
 disease 146
 extinction risk 134–136, 134
 habitat loss/degradation 138–140, 145
 invasive species 140–141
 persecution by humans 147
 pollution, water 145
 population trends 138
 synergistic effects/multiple impacts 147–148

- taxonomic diversity **132**, 136–137
 threat status in different regions **135–136**
 unexplained decline 147
 reserves, nature 368–370, 385
 resource use, ecosystem threats 356
 rewilding 82–83, 383
 ring speciation 5–6
 rivers/river deltas 12–13
 RLI *see* Red List Index
 RSPB (Royal Society for the Protection of Birds),
 conservation successes 129

 salt marshes 13
 Sampled Red List Index for Plants study 22
 Sea Turtle Specialist Group, IUCN 148
 seagrass meadows 14
 seawater, acidification 206, 218–223, 384
 self-replication, evolution of cells 4
 sentinels of ecosystem health, amphibians as 154
 shellfish *see* molluscs
 shipping collisions, marine mammals 98
 short-range endemics (SREs), terrestrial invertebrates
 272–273, 281
Silent Earth (Goulson) 382
 Snake and Lizard Red List Authority 149
 snake fungal disease (SFD) 146
 social-ecological systems 224
 Special Protection Areas (SPAs), European Union 127
 species
 definition 5–6
 naming conventions 6–7
 numerical estimates 5
 spore-bearing land plants (bryophytes/pteridophytes)
 37
 Arctic tundra 45
 biodiversity hotspots 51–52, 53–54
 climate change 56–57
 commercial exploitation 57–58
 conservation status 37, 58–60
 conservation successes 60
 habitat loss 54–56
 life cycle 42–49
 life forms 40–41, 40–42, 46–49
 northern boreal forests 43, 45, 56–57
 northern bryophyte-rich ecosystems 43
 peatland ecosystems 43–45, 44
 rarity and threatened species 54
 species distribution and diversity 50–51
 taxonomic diversity 38–40
 SREs (short-range endemics), terrestrial invertebrates
 272–273, 281
 State of Nature Report (2019) 382
 stress
 marine fish 221, 223
 marine mammals 98–99
 stromatolites 3–4
 success stories *see* conservation successes/
 reintroduction programmes
 succulent plants 21–23
 symbiosis, marine invertebrates 251
 synergistic effects of multiple stresses, reptiles
 147–148

 taiga 14
 Taq polymerase enzyme 4
 taxonomy/taxonomic diversity 6–7
 bryophytes and pteridophytes 38–40
 flowering plants 19–21
 freshwater fish 182–183
 insects 230–237
 marine fish 207–208, 211
 marine invertebrates 253
 marine mammals 88–89
 reptiles **132**, 136–137
 terrestrial invertebrates 273–276, 279, 281,
 289–290
 terrestrial mammals 66
 TCM (traditional Chinese medicine) 74
 temperature-dependent sex determination (TSD),
 reptiles 143
 terrestrial organisms *see under name of class*
 (*e.g. mammals*)
The Variety of Life (Tudge) 9
 Theia, impact with Planet Earth 2–5
 Theobald, Douglas L. 4
 thermal vents 15–16, 252, 261
 threatened categories, Red List Categories/Criteria
 337–339, **338–339**
 threatened species; *see also* conservation status
 bryophytes and pteridophytes 54
 flowering plants 24
 freshwater fish **179–180**
 future outlook 382
 threats, ecosystem *see* ecosystem threats
 timber trees/logging 25–26, 119–120, 384
 trade regulation and illegal trading; *see also* pet trade
 amphibians 166–168
 birds 112, 129
 cacti 28
 CITES 74, 333
 EU Wildlife Trade (2017) report 58
 issues in need of urgent action 383–384
 mammals 74, 369, 383–384
 reptiles 142, 149
 timber trees 26
 traditional Chinese medicine (TCM) 74
 transnational *see* international conservation measures
 transportation corridors, ecosystem threats 355
 Triassic–Jurassic extinction 1
Trilobite!: Eyewitness to Evolution (Fortey) 10
 trilobites 10
 tropical rainforest ecosystems 12
 TSD *see* temperature-dependent sex determination
 tsunamis, ecosystem threats 358
 Tudge, Colin 9
 tundra ecosystems 43, 45, 56–57
 TV programme on state of nature, Attenborough's 387

 underwater noise/disturbance, marine mammals
 98–99
 unicellular organisms 327–328
 algae 331–332
 archaea 328–329
 bacteria 328
 Dictyostelium 330

408 SUBJECT INDEX

- unicellular organisms (cont.)
 - oomycota 315, 330–331
 - Physarum* 315, 330
 - protozoa 329–330
- uplisting, Red List Status 340–342
- urban life, adaptations to 386
- USA
 - Endangered Species Act (1973) 198
 - Federally Listed Threatened and Endangered plant species 29
- The Variety of Life* (Tudge) 9
- vertebrate species, conservation status **156**
- vertebrates 11
- vessel collisions, marine mammals 98
- viruses 6
- volcanoes, ecosystem threats 358
- Vulnerable (VU), Red List Categories/Criteria 337–339
- water, origins on Planet Earth 3
- water use pressures, impact on freshwater fish 185
- whaling 15
- white lists (species deemed to not be at risk from the trade and/or not likely to pose risks to other taxa) 168
- wildfires, and climate change 57
- wilding/rewilding 82–83, 383
- wildlife corridors 384, 385
- woodland *see* forest ecosystems
- World Commission on Protected Areas (WCPA) 127
- WorldWide Fund for Nature (WWF), letter signed by conservation experts, issues in need of urgent action 383–384
- zoonotic diseases *see* disease
- zoos *see* captive animals; captive breeding of threatened species