

Cambridge University Press

978-0-521-14247-2 - Tropical Trees as Living Systems

Edited by P. B. Tomlinson and Martin H. Zimmerman

Index

[More information](#)

Index to subjects and plant genera

- Abies*
 - apical dominance in, 520, 523, 524, 530
 - architectural variations of, 216, 229
- Abroma*, 214–16
- Abscisic acid, 383, 462
- Abscission
 - of bark, 392, 393
 - of branches, 369–71, 377, 389–92
 - effect of soil moisture on, 449, 450
 - of flowers, 388
 - of fruits, 388, 389, 394
 - of leaves, 384–8, 394–6
 - morphology of, 381, 382
 - physiology of, 382–4, 462
 - releasing buds, 396, 461, 462
 - of shoot tips, 390, 483
 - of stems, 389
 - summary of, 393
- Acacia*
 - flowering of, 87
 - fruiting of, 92, 93
 - leaves of, 358, 359
 - in Mexican forest, 167
 - predation on seeds of, 97
- Acaciaepiphyllum*, 15, 19, 21
- Acanthococos*, 258
- Acanthopanax*, 273, 275
- Acanthophora*, 273
- Acanthosyris*
 - flowering of, 455, 457, 458
 - phenology of, 448
- Acer*, 309, 371, 508
- Aciphylla*, 272
- Acoelorrhaphis*, 370
- Acrocomia*, 266
- Acrotony*
 - definition of, 402, 403
 - role in trunk formation, 410–20
 - see also Growth*
- Adansonia*, 356
- Adenanthera*, 138, 159
- Adenostoma*, 365
- Adinandra*, 143, 159, 654
- Aegiphila*, 376
- Aeschynomene*, 326
- Agathis*
 - branch abscission in, 391
 - growth rate of, 654
 - habitat of, 642
 - reiteration in, 205, 206
 - seedling growth of, 491
 - tracheid length in, 518
- Agave*, 91
- Age structure of forest, 171–4
- Aglaia*, 148
- Ailanthus*, 371, 508
- Aiphanes*, 255
- Ajuga*, 428, 440
- Alangium*, 132
- Albizia*
 - annual fruiting of, 92
 - leaf abscission of, 385
 - leaves of, 358, 359, 591, 592
 - seeding synchrony of, 95
- Allagoptera*, 256
- Alnus*, 308, 309, 624
- Alstonia*
 - branching of, 196
 - crown characteristics of, 595, 603, 609
 - germination of, 132, 159

Cambridge University Press

978-0-521-14247-2 - Tropical Trees as Living Systems

Edited by P. B. Tomlinson and Martin H. Zimmerman

Index

[More information](#)658 *Index*

- Alstonia* (cont.)
 growth correlations in, 427
 modular construction of, 224, 226
 roots of, 336, 337, 340, 345
 shoot abscission in, 390
- Alstroemeria*, 437
- Alyxia*, 228
- Amoora*, 139, 149
- Anacardium*, 92
- Anagallis*, 437
- Anakasia*, 272, 273, 275
- Ancistrophyllum*, 251, 262
- Andira*
 flowering of, 107, 108, 455, 456
 fruiting of, 106
 nectar of, 65
 phenology of, 448
 pollination of, 63
 predation on seeds of, 97
- Anemopaegma*, 65
- Anisophyllea*, 141, 145, 150, 151
- Annona*, 59
- Anthocephalus*
 death of, 559
 germination of, 142, 159
 leaves of, 591
 photosynthesis of, 646
 stands of, 653
- Anthocleista*
 growth correlations in, 430
 modular construction of, 224, 228
 roots of, 331, 333
- Anthostema*, 427
- Antidesma*, 136
- Apeiba*, 92, 376, 627
- Apex**
 abortion of, 390, 424
 effect of leaf primordia on, 425, 426
 parenchymatization of, 230, 316, 424
 see also Buds
- Apical control**, 198, 201
- Apical dominance**
 and bud position, 482–7; *see also Acrotany, Basitony*
 and cambial activity, 404
 in continuous light, 406, 407
 definition of, 402
 effect of day length on, 469
 effect of temperature on, 469
 loss after girdling, 315
 loss during winter, 403, 409–16
 reversed, 314
 spontaneous loss of, 419
- water conduction and, 523, 524, 530
- Aporusa*, 641
- Aralia*, 270, 272, 275, 371
- Araliaceae**
 branching in the, 271–8
 buds in, 278, 279
 cataphylls in, 270, 271
 foliage leaves in, 269, 270
 models in, 273
 relation to Umbelliferae, 272, 281
 shoot concept in, 279–81
- Araucaria*
 acrotany in, 420
 architecture of, 204, 233–45, 643
 branch abscission in, 391
 cambial activity in, 395
 compared with fossil conifers, 10
 nesting crowns in, 240, 242–5
 plagiotropy in, 199, 424, 431
 reiteration in, 240, 241
 reproduction of, 238, 239
 root system of, 240
 vegetative structure of, 233–8
- Arbutus*
 architectural variations of, 210–12, 227
 bark abscission of, 392, 393
- Archaeopteris*, 6–9
- Architectural models**, *see Model*
- Architectural modifications**
 ecologically imposed, 209–12
 by mutation, 212–17
 sex-related, 210, 211
- Architecture**
 adaptive significance of, 605
 of Araliaceae, 269–83
 of *Araucaria*, 204, 233–45
 and energy exchange, 535–59
 of fossil trees, 4–12
 hydraulic, 525
 of palms, 247–67
 see also Branching, Model
- Arctostaphylos*, 375
- Ardisia*, 641, 642
- Areca*
 architecture of, 247
 clustering of, 258, 259
 illustration of, 259
 stilt roots of, 258–60, 267
- Arenga*
 aerial branching of, 255
 architecture of, 247, 248, 250
 clustering of, 254
 flowering of, 251

Index

659

- illustration of, 248
- on river banks, 262
- Aromadendron*, 139
- Arthrophyllum*
 - bud scales of, 271
 - germination of, 133, 159
 - illustration of, 276
 - leaves of, 271
 - unusual form of, 273, 275, 280
- Articulation, definition of, 278
- Artocarpus*
 - flowering of, 455, 457, 458
 - germination of (5 sp.), 139, 140
 - phenology of, 448
- Arytera*, 142
- Astrocaryum*
 - demography of, 168–81
 - flowering and fruiting of, 169, 176
 - function of spines of, 177
 - growth rate of, 173
 - in Mexican forest, 166
 - predation on seeds of, 177
 - reproduction of, 174–6
 - shade tolerance of, 647, 648
 - stand density of, 167, 169, 627
- Ateleia*, 106, 108
- Attalea*, 370
- Aucoumea*, 332
- Auxin, 382, 383, 388, 394
- Avicennia*
 - branching of, 195
 - peg roots in, 328
 - roots of, 327, 332, 334, 336–8
- Baccaurea*, 136, 137
- Bactris*, 58, 254
- Balanocarpus*, 134
- Bamboo, fruiting of, 122, 123
- Barringtonia*
 - germination of, 138, 145, 150, 152
 - seedling growth in, 491
- Basitony
 - definition, 402, 403
 - role in trunk formation, 410–20
 - see also* Growth
- Bauhinia*
 - annual fruiting of, 92
 - leaves of, 358, 359, 375
 - predation on seeds of, 97
 - seeding synchrony of, 95
- Bequaertioidendron*, 329
- Berberis*, 365, 403, 418
- Bersama*, 385
- Beta*, 437
- Betula*
 - feather shoots of, 316
 - leaf area index of, 594
 - seedling growth of, 508
 - shoot elongation of, 308, 309, 405, 508
 - sylleptic shoots of, 316
- Bhesa*, 93, 100, 134
- Biomass
 - dead, in soil, 581
 - in different parts of tree, 567–71
 - grazing of, 572, 573
 - gross production of, 576–8
 - in litterfall, 571, 572
 - of Mexican trees, 179, 180
 - net production of, 572–4
 - primary production of, 567–72
 - in relation to height, 565
- Bixa*, 58, 376
- Boerhaavia*, 215
- Bombacopsis*, 92, 94
- Bombax*
 - branching of, 195
 - flowering of, 455, 459
 - germination of, 133
 - growth form of, 609, 622
 - nectar production of, 61
 - phenology of, 448
 - shoot growth of, 476, 477, 507
- Bonsai trees, 491
- Borassus*, 257
- Bouea*, 132
- Brachiphyllum*, 10
- Brachystegia*, 385
- Branch
 - absence of, 190
 - adventitious, 8
 - aerial, in palms, 249, 250, 255, 257
 - in Araliaceae, 271–8
 - axillary, 8, 192–5
 - dichotomous, 5, 6, 190–2, 215, 216, 249, 264
 - distichous, 263
 - monopodial, 196, 253
 - multiple axillary, 192, 193
 - periodicity, 195
 - precocious, 193
 - proleptic, 193–5, 279
 - pseudomonopodial, 5
- Branching
 - absence of, 190
 - adventitious, 8
 - aerial, in palms, 249, 250, 255, 257
 - in Araliaceae, 271–8
 - axillary, 8, 192–5
 - dichotomous, 5, 6, 190–2, 215, 216, 249, 264
 - distichous, 263
 - monopodial, 196, 253
 - multiple axillary, 192, 193
 - periodicity, 195
 - precocious, 193
 - proleptic, 193–5, 279
 - pseudomonopodial, 5

Cambridge University Press

978-0-521-14247-2 - Tropical Trees as Living Systems

Edited by P. B. Tomlinson and Martin H. Zimmerman

Index

[More information](#)660 *Index*

- Branching (*cont.*)
 - of reproductive axes, 189
 - sequential, 202–6
 - sylleptic, 193–5, 279, 316
 - sympodial, 11, 196, 253
 - in *Terminalia*, 285–318
 - in vegetative vs. reproductive axes, 189
- Brassaiopsis*, 272, 275
- Breynia*
 - growth form of, 595–7, 601
 - leaves of, 600
- Bridelia*, 328, 336, 337, 345
- Brosimum*, 165
- Bruguiera*
 - branching of, 195
 - knee roots of, 329, 336, 337, 340
- Buchanania*, 641
- Bud scales
 - in Araliaceae, 270, 271
 - formation of, 406
 - and intermittent growth, 270, 271
 - in proleptic shoots, 193
- Buds
 - in Araliaceae, 278–81
 - determinism outside, 414–16
 - determinism within, 411–14
 - and growth correlations, 401–21
 - longevity of axillary, 204
 - released by leaf abscission, 396, 461, 462
- Bumelia*, 197
- Burkea*, 331
- Bursera*, 93, 392
- Byrsonima*, 73, 74
- C4 plants, 378, 646
- Caesalpinia*
 - annual fruiting of, 93
 - in Mexican forest, 167
 - predation on seeds of, 97
- Calamus*
 - architecture of, 247, 250
 - climbing organs of, 262
 - clustering of, 254, 255
 - length of, 250
 - vegetative reproduction from inflorescence in, 263, 266
- Callistophyton*, 8
- Callixylon*, 6
- Calophyllum*, 341, 641
- Calycophyllum*, 93
- Calyptranthes*, 193
- Cambial activity
 - and apical dominance, 404
- effect of soil moisture on, 449, 450
- and leaf abscission, 395
- in leaf bases, 395
- periodicity of, 490
- in root knees, 329
- in *Theobroma*, 449–52
- Camellia*, 309, 477
- Campnosperma*
 - blown over, 613
 - growth rate of, 634, 643
 - habitat of, 642
- Canarium* (5 sp.), 133
- Carbohydrate content and abscission, 382
- Carbon cycling, 581–7
- Carboniferous trees, 9, 10
- Carapa*, 627, 628
- Careya*, 138
- Carica*
 - crown characteristics of, 190, 595
 - leaves of, 600
 - nectar of, 66, 77
- Cariniana*
 - flowering of, 455, 456, 460
 - phenology of, 448
 - roots of, 335–7
- Carissa*, 223
- Carpinus*, 403
- Carya*, 392
- Caryota*, 251, 253, 255, 265
- Casearia*, 613, 627
- Cassia*
 - flowering of, 455, 456, 460
 - fruiting pattern of, 102–5, 108
 - phenology of, 448
 - pollination of, 58
 - predation on seeds of, 97, 98, 103
- Casuarina*, 11, 133, 159
- Catalpa*, 72
- Catastrophic events, *see* Forest dynamics, Gap, Storms
- Cavanillesia*, 622
- Caytonia*, 11
- Cecropia*
 - annual fruiting of, 93
 - crown characteristics of, 540, 612
 - habitat of, 316, 371, 540, 552, 558, 628, 652
 - leaves of, 376, 591, 594
 - photosynthesis of, 646
 - root suckers of, 613
 - seed dispersal of, 94
 - seed dormancy of, 625
 - seed production of, 625

Cambridge University Press

978-0-521-14247-2 - Tropical Trees as Living Systems

Edited by P. B. Tomlinson and Martin H. Zimmerman

Index

[More information](#)*Index*

661

- stand density of, 627
- turnover rates of, 622–5
- Cedrela*
 - flowering of, 455, 459
 - phenology of, 448
 - shoot growth of, 477, 478, 481–3
- Cedrus*, 392
- Ceiba*
 - growth of cuttings of, 466–8, 471–7
 - growth form of, 622, 652
 - shoot growth of, 507
- Cephalotaxus*, 424
- Ceratolobus*, 250, 253
- Cercidium*, 356
- Cercis*, 358, 359
- Cercocarpus*, 365
- Ceriops*, 195, 329
- Ceroxylon*, 250, 370
- Chablis*, definition of, 551
- Chamaebatia*, 365
- Chamaedorea*, 256, 260
- Cheilosia*, 137
- Chemotaxonomy*, 32–4
- Chiostethon*, 139, 281
- Chlorophora*
 - annual fruiting of, 93
 - growth of cuttings of, 466–8, 470, 472–6, 480
 - roots of, 332, 335–7
- Chorisia*, 622
- Chrysalidocarpus*, 253, 257
- Cinnamomum*, 387
- Citrus*
 - flushing of, 390
 - fruit abscission in, 394
 - leaf abscission in, 384, 387
 - precocious flowering in, 492
 - rejuvenation in, 439
 - root growth in, 245, 512
 - shoot abscission in, 390
 - shoot growth in, 245, 483
 - thorniness of, 481
- Classopollis*, 10, 11, 17, 23
- Clavatipollenites*, 15, 16
- Clethra*, 194
- Climax forest*
 - definition of, 547, 548, 650
 - stratification of, 536
- Clusia*, 330
- Clustering in palms*, 253–6
- Clytostoma*, 77
- Cneoridium*, 365
- Coccloba*, 66, 71, 167
- Cochlospermum*
 - annual fruiting of, 93
 - flowers of, 61
 - pollination of, 58
 - seed dispersal of, 94
 - xylopodia in, 331
- Cocos*, 247, 255
- Coffea*
 - architectural modification of, 214, 215, 217
 - continuous branching of, 195
 - orthotropy in, 199
 - plagiotropy in, 424, 431
- Coleus*, 395
- Combretodendron*, 224
- Combretum*, 392
- Commiphora*, 385, 392
- Computer modeling of growth*, 497–513
- Conocarpus*, 195
- Contour mapping*, 35–47
- Cooksonia*, 4
- Copaifera*, 385
- Corchorus*, 215, 216
- Cordaites*, 8, 9
- Cordia*
 - annual fruiting of, 93
 - apical parenchymatization in, 230
 - architecture of, 226
 - flowering of, 106
 - demography of, 168–81
 - germination of, 178
 - growth rate of, 173, 174
 - leaves of, 376
 - in Mexican forest, 167
 - nectar of, 61, 65, 66
 - predation on seeds of, 178
 - reproduction of, 176
 - seeding synchrony of, 95
 - stand density of, 168
- Cornus*, 194, 540
- Correlations, see Growth correlations*
- Corylus*, 407, 409–12, 415, 419, 420
- Corypha*, 189, 247, 251
- Couma*, 228
- Couroupita*, 280, 386, 477
- Crataeva*, 63
- Cratoxylum*, 641
- Croton*, 376
- Crudia*, 138
- Cryosophila*, 266, 333, 338, 340
- Crypteronia*, 641
- Cunonia*, 93
- Cussonia*, 507

662 *Index*

- Cyathocalyx*, 132
Cycadeoidea, 10
Cycas, 210, 211, 218
Cydista, 77
Cynometra, 165, 358, 359
Cyphostemma, 392
Cyrtostachys, 253
Cytokinin, 383, 384, 388
- Dacryodes*, 133, 641
Daemonorops, 251, 252
Dalbergia, 65, 102
Daucus, 272, 437
 Decurrent trees, 196
 Demography of trees, *see generic entries*
Dendropanax, 270
 Density, *see Stand density*
Desmoncus, 260
Dialium, 138
 Diameter
 distribution, 617–20
 height relations, 547, 564
Dicorynia, 557
Dicranolepis, 201
Didymopanax, 224
Dillenia
 crown characteristics of, 595, 596, 603, 611
 germination of (4 sp.), 134, 159
 leaves of, 600
Dioclea, 97
Diospyros
 fruiting of, 93
 germination of (9 sp.), 135, 136, 147
 habitat of, 540, 553, 641
Dipsacus, 425
Dipteris, 262
Dipterocarpaceae
 flowering in, 126
 habitat of, 641
 seeding patterns in, 118–22
 roots of, 342
Dipterocarpus
 crown characteristics of, 595, 597
 germination of, 135, 153
 habitat of, 641
 resistance to wind of, 650
Dipteryx, 627
Dizygotheca, 227
 Dormancy
 breaking of, 446
 effect of environment on, 476–8
 effect of young leaves on, 426
- inheritability of, 492
 of lateral buds, 193, 194
 of seeds, 145, 146, 160, 624, 625, 636, 650
 shoot growth after, 403, 404
- Dracontomelum*, 132, 374
 Dry matter, *see Biomass*
Dryobalanops, 134, 135
Durio
 crown characteristics of, 595
 germination of (3 sp.), 133, 153, 154
- Dyalianthera*, 552
Dyera, 132
Dysoxylum
 germination of (3 sp.), 139, 148
 habitat of, 641, 642
- Eddyia*, 9
Elaeis
 architecture of, 216, 247
 roots of, 338, 340
- Elaeocarpus*, 136, 345
Elateriospermum, 137, 386
Eleiodoxa
 architecture of, 249
 colonizing nature of, 265
 flowering of, 251
 fruiting of, 249
 habitat of, 265
 illustration of 249
- Encelia*, 366
Endospermum
 germination of, 653
 growth form of, 652
 light requirement of, 645
 roots of, 345
- Energy budget, 179
 Energy exchange, 535–59
- Entandrophragma*, 332
Enterolobium
 annual fruiting of, 93
 flowering of, 88
 predation on seeds of, 97
 survival of immature fruits of, 125
- Eospermatopteris*, 6
Ephedra, 18, 391
Ephedripites, 17
Epinasty, 310
Erechtites, 625
Eremospatha, 255, 262
Erica, 227
Erioglossum, 142
Ernestiodesdendron, 10
Eryngium, 272

Index

663

- Erythrina* flowering of, 455–7, 460
 leaf abscission of, 385, 387
 nectar of, 70, 71
 phenology of, 447, 448
- Erythroxylum*, 93, 136
- Eschweilera*, 329
- Espeletia*, 272
- Establishment growth, 161, 267
- Ethylene, 383
- Eucalyptus* bark abscission in, 392
 cultivation of, 591
 leaf abscission in, 387
 pioneer species, 591
 predation on seeds of, 89
 pure stands of, 654
 vessels of, 518, 530
 water conduction in, 522
- Eugeissona* architecture of, 250
 clustering of, 258, 259
 crown characteristics of, 612
 flowering of, 251, 252
 germination of, 153
 growth and habitat of, 264
 illustration of, 252, 259
 stilt roots of, 258–60, 266
- Eugenia* germination of (8 sp.), 140, 141
 habitat of, 641, 642
 size of seeds of, 153
- Euodia*, 142, 159
- Euphorbia* abortion of terminal bud of, 215
 architecture of, 209–11, 226
 models in genus, 209
- Euphorbiaceae, 225, 391
- Euterpe* habitat of, 370
 life cycle of, 164, 170, 171
 roots of, 332
- Evolution of herbs, 215
 leaves, 15, 18–21
 pollen, 15–18, 21–3
 tropical trees, 3–26
- Excurrent trees, 196
- Extinction of species, 131
- Fagara*, 226
- Fagraea* architecture of, 228, 603
 germination of, 139, 159
- Fahrenheitia*, 137
- Feather shoots, 316
- Ficophyllum*, 15, 19, 21
- Ficus* flowering of, 458
 fruiting of, 83, 93, 100
 germination of, 140
 leaf abscission of, 386
 phenology of, 448
 roots of, 336–8; column, 330; hanging, 329; strangling, 325, 326, 330
- Flagellaria*, 6, 191
- Flindersia*, 32–51
- Flowering in *Araucaria*, 238, 239
 basipetal, 248
 in Brazilian trees, 454–61
 effect of age on, 86, 479–83, 491, 492
 in *Hedera*, 432
 intermittent, 126
 in palms, 251–3
 physiology of, 433, 435
 and plagiotropy, 491, 492
 in relation to fruiting, 88
 in response to environment, 455, 470
 reversal of, 437
 in small crops, 88
 sterile, 62, 83
 synchronized, 108
 in *Theobroma*, 451, 452
 time of, 451–61
 see also Seeding patterns
- Flowers abscission of, 388
 conversion to vegetative shoot, 437
 damaged by squirrels, 176
 sterile, nectar-producing, 62
 for tissue culture, 437
- Fordia*, 138, 641
- Forest age structure of, 171–4, 620–4
 development, 547–59
 dynamics, 617–36, 639–54
 elements of, 546, 547
 storms affecting, 649, 650
 see also Gap
- Fouquieria*, 385
- Foxtail, 212, 213, 215, 228
- Fraxinus* development of, 407, 411
 habitat of, 371
 leaf initiation in, 309

Cambridge University Press

978-0-521-14247-2 - Tropical Trees as Living Systems

Edited by P. B. Tomlinson and Martin H. Zimmerman

Index

[More information](#)664 *Index*

- Fraxinus* (*cont.*)
 - morphology of, 403
 - shoot growth of, 508
 - stump sprouts of, 420
- Frenelopsis*, 10
- Freycinetia*, 58
- Fruiting**
 - annual, 92–100, 176
 - of *Eleiodoxa*, 249
 - mast, 91, 105–23
 - in relation to age, 86
 - in relation to flowering, 88
 - supra-annual, 100–5
 - see also* Seeding patterns
- Fruits**
 - abscission of, 388, 389, 394
 - immature, survival of, 125
 - trapping of, 176
- Gallesia*
 - flowering of, 455, 456, 460
 - phenology of, 448
- Ganua*, 641, 642
- Gap**
 - formation of, 550–2
 - frequency of formation of, 620–4, 634
 - size of, 628, 629, 643, 644
 - species, 160, 627, 644–9
 - succession in, 174, 552–6
 - time of occurrence of, 625, 626
- Garcinia*, 137, 150, 151
- Gardenia*, 142
- Gastonia*, 270, 275, 278
- Gaultheria*, 136, 159
- Genipa*, 93, 100, 458
- Geographic variations**
 - chemotaxonomy and, 32–4
 - of *Flindersia*, 42–52
 - methods of study, 32–42
 - numerical methods, 34–8
- Geonoma*, 261, 263
- Germination** (Chap. 5)
 - mycorrhizal problems during, 157
 - of palms, 161
 - prolonged, 145, 146
 - rapid, 130–45
 - in relation to distance from tree, 145, 158, 160
 - in relation to extinction, 131
- Gibberellins*, 383, 384, 388
- Ginkgo*, 11, 309
- Gisekia*, 215
- Gladiolus*, 437
- Gleditsia*, 424–7
- Gleichenia*, 653, 654
- Glinus*, 215
- Gliricidia*, 93, 97
- Glochidion*
 - crown characteristics of, 595, 597
 - germination of (2 sp.), 137
 - leaves of, 600
 - stand density of, 635
- Glossopteris*, 384, 391
- Gluta*, 641
- Gmelina*
 - growth of cuttings of, 466–8, 472–4, 477
 - plantations of, 651
- Godmania*, 93
- Goethalsia*, 627
- Gossypium*, 214–16, 388
- Gravimorphism**, 482–7
- Grevillea*, 366, 387
- Grewia*, 144
- Grossonephelis*, 142
- Growth**
 - computer modeling of, 498–507
 - continuous, 195, 465, 477, 491, 595
 - effect of age on, 479–82, 507–11
 - effect of bud position on 469, 482–7; *see also* Acrotony, Basitony
 - effect of day length on, 466–78
 - effect of roots on, 490, 491, 497–513
 - effect of soil moisture on, 449, 450
 - effect of temperature on, 468–77, 484, 490
 - effect of water stress on, 490, 491, 497–513
 - establishment, 161, 267
 - inhibition, *see* Growth correlations
 - intermittent, 270, 271, 497–513, 595
 - periodicity, 307–9, 445–63, 490, 497–513
 - see also* Cambial activity, Rhythmic growth, Root growth, Shoot
- Growth correlations** (Chaps. 17, 18)
 - acropetal inhibition, 430
 - in cuttings, 482–7
 - inductive, 425–9
 - internal, 430, 431
 - over long distances, 430
 - of vegetative parts, 423
- Growth rate**
 - and branching, 195
 - of various species, 173–5, 634, 643
 - and wood density, 646
 - see also* Forest dynamics, Rhythmic growth, generic entries

Cambridge University Press

978-0-521-14247-2 - Tropical Trees as Living Systems

Edited by P. B. Tomlinson and Martin H. Zimmerman

Index

[More information](#)*Index*

665

- Guarea*, 448, 458
Guayule, 343
Guazuma, 93, 95, 552
Guioa, 142, 159
Gymnocladus, 371
Hakea, 366
Hamelia, 376
Hampea, 627
Harmsiopanax, 272, 275, 281, 282
Harpullia, 142
Harungana, 345
Hedeoma, 33
Hedera
 adhesive roots of, 273
 flowering of, 432
 growth correlations in, 431, 432
 leaves of, 270
 phase change of, 318
 phyllotaxis in, 269, 432
 plagiotropy in, 432
Height
 diameter relations, 547, 564
 growth, *see* Growth rate
 of tropical trees, 561, 562
Helianthus, 216, 311
Helicteres, 376
Helicarpus, 376
Hemiangium, 93
Herbivore relations, 629–32, 635
 see also Seed
Herbs, 215
Heritiera
 germination of, 143
 habitat of, 641, 642
 leaf abscission in, 386
Heteromeles, 365
Hevea
 architecture of, 212, 213, 226
 compared with Araliaceae, 278
 continuous growth in, 512, 513
 development of, 424, 425
 growth correlations in, 431, 438
 lampbrush form of, 212, 213, 215, 217,
 219, 228, 229
 leaf abscission in, 387
 leaf initiation in, 309
 rhythmic growth in, 424, 500, 501, 507,
 508
 root growth in, 512
Hibiscus, 395
Hildegardia, 477, 636
Hiraea, 73, 74
Homonoia, 262
Hopea
 crown characteristics of, 595, 597, 606
 germination of (6 sp.), 135
 habitat of, 641
 respiration of, 575
Horsfieldia, 140
Hunteria, 132
Hura, 202, 203
Hydnocarpus, 137, 641
Hydraulic conductivity
 of capillaries, 519–21
 leaf-specific, 522–6
 measured/theoretical, 520, 521
 in top and bottom of tree, 522
Heronima, 627
Hygrophila, 262
Hymenaea
 flowering and fruiting of, 86, 87,
 108–18, 124
 leaf abscission in, 385
 leaves of, 358, 359
 predation on flowers of, 108
 predation on seeds of, 97, 109
 survival of immature fruits of, 125
Hyphaene
 branching of, 6, 9, 190, 249, 250, 256
 clustering of, 253
 germination of, 257
 species description of, 216, 256, 263,
 264
Hypopodium, 193, 194
Icacinaeae, 273
Iguanura, 250
Impatiens, 215, 216, 229
Inga
 branching of, 552
 flowering in, 458
 habitat of, 552
 leaves of, 358
 phenology of, 448
Internode length, 595
Intsia
 germination of, 138, 145
 leaves of, 374
 roots of, 341
Iriartea, 260, 266, 627
Irvingia, 143
Iryanthera, 552
Ischnophyton, 11
Insertia, 210–12
Ixonanthes, 139, 159

Cambridge University Press

978-0-521-14247-2 - Tropical Trees as Living Systems

Edited by P. B. Tomlinson and Martin H. Zimmerman

Index

[More information](#)666 *Index*

- Jacaranda*, 72
- Jacaratia*, 66
- Jacquinia*, 93, 167
- Jessenia*, 370
- Juglans*, 365, 371, 412
- Juniperus*, 33
- Juvenility, *see Rejuvenation*
- Knema*
 - germination of (5 sp.), 140
 - habitat of, 641, 642
- Kokoona*, 134
- Koompassia*
 - germination of, 138, 146
 - habitat of, 641, 642
 - height of, 562, 593
- Korthalsia*
 - aerial branching of, 257
 - colonization by, 265
 - distribution of, 251
 - flowering of, 251
 - light requirement of, 648
 - suckering of, 257
- Lactuca*, 217
- Laetia*, 627
- Lagerstroemia*, 139
- Laguncularia*
 - branching of, 195
 - roots of, 332, 333, 336–9
- Lammas shoots, 193
- Landolphia*, 223
- Lansium*, 139
- Larix*, 316, 365
- Larrea*, 366, 373
- Leaf area density
 - concept of, 536
 - height relation of, 565
 - of southeast Asiatic species, 596–612
- Leaf area index
 - concept of, 536
 - of Mexican trees, 179
 - of Southeast Asiatic trees, 595–612
- Leaf primordia, 406, 473–5
- Leaves
 - abscission of 384–8, 394–6; *see also Litterfall*
 - adaptive arrangement of, 607–12
 - adaptive significance of, 351–87
 - compound, 351–87
 - distribution of, 351–5
 - effect on shoot growth of, 477
 - evolution of, 15, 18–21, 24, 25
 - morphology in Araliaceae, 269, 270
- of north temperate forests, 364–6
- origin of, 6–10
- resembling branches, 280
- in savannas, 356
- in subtropics, 357–60
- in tropical rain forests, 360–4, 374–8
- water supply of, 525, 526
- Lebachia*, 10
- Lecythidaceae*, 273
- Lecythis*, 448, 455–7
- Leea*, 138, 159
- Leptaulus*, 196
- Leptocycas*, 11
- Leptospermum*, 141
- Licania*, 625
- Licuala*, 253, 254, 256, 257
- Light profile, 566, 567
- Light requirement
 - of climbing palms, 253, 648
 - of fossil trees, 649
 - see also Forest, Gap*
- Liliacidites*, 15, 16
- Linaria*, 280
- Liriodendron*, 194, 508
- Lithocarpus*, 137, 605
- Litsea*, 93, 137, 641
- Litterfall, 571–3
- Livistona*, 153
- Lolium*, 438
- Lonchocarpus*
 - annual fruiting of, 93
 - flowering of, 455, 456
 - leaves of, 358
 - in Mexican forest, 165
 - phenology of, 448
 - predation on seeds of, 97
- Longevity
 - of axillary buds, 204
 - of leaves, 394, 395
 - of phloem, 395
 - of trees, 651; *see also Age structure of forest, generic entries*
- Lophira*, 507
- Lophopetalum*, 641
- Lucuma*, 448, 458
- Luehea*, 59, 60, 93, 376
- Lumnitzera*, 195, 329
- Lysiloma*, 167
- Macaranga*
 - crown characteristics of, 595–7, 601, 604–6, 610–14
 - death of, 559

Index

667

- germination of, 137, 159, 265
 habitat of, 371, 594, 642, 652, 653
 leaf movements in, 378
 leaves of, 591, 595, 600, 608
 longevity of, 651
 root suckers in, 613
 roots of, 345
 stand development of, 651, 653
Machaerium, 448, 455, 459
Mackinlaya, 270–2, 275
Maclura, 424
Madhuca, 143
Magnolia, 387
Maingaya, 137
Mallotus, 641
Malus, 485
Mammillaria, 190
Mangifera
 architectural variations of, 210–12, 217
 fruiting of, 86, 101
 modular branches of, 225
 rhythmic growth in, 508
Mangrove, 328, 329
 See also generic entries
Manicaria, 370
Manihot
 architectural variation of, 212, 213, 217
 growth correlations in, 482, 486, 487
 modular construction of, 223
 shoot growth of, 466, 467, 469, 480–2,
 485–7
Manilkara, 448, 455, 459
Marah, 160
Mast fruiting, 91, 105–23
Mastixia, 134
Mauritia
 habitat of, 370
 roots of, 333, 338, 340
Medullosa, 9
Melanorrhoea, 387
Melianthus, 57
Meristem
 number, 189
 types in *Terminalia*, 312
Merremia, 610
Meryta, 271
Mesozoic gymnosperms, 10–12
Mesua, 137
Metasequoia, 365, 391
Metrosideros, 330
Metroxylon
 architecture of, 247, 250
 dense stands of, 265
 flowering of, 251
 roots of, 333
Mezzettia, 132, 643
Micromelum, 142
Milletia, 138
Mimusops, 143
Miniaturization, 439
Mitragyne, 329, 334, 336, 337, 340
Mixed axes, 201
Model (illustrations, 188, 189)
 Attims: branching in, 197; crown
 characteristics of, 595; in fossil trees,
 6, 9; in mangrove trees, 195;
 modification of, 216, 227
 Aubréville: crown characteristics of,
 595; rhythmic branching in, 195,
 197
 Chamberlain: in the Araliaceae, 274,
 275; branching in, 196; crown charac-
 teristics of, 595; modification of, 217
 Champagnat: in the Araliaceae, 274,
 275; modification of, 227
 Cook: branch abscission in, 377;
 branching in, 195; crown characteris-
 tics of, 595; in fossil trees, 8; syllepsis
 in, 204
 Corner: in the Araliaceae, 274, 275;
 crown characteristics of, 595; in di-
 cotyledons, 190; in fossil trees, 6, 8, 9;
 modification of, 212–17; in palms, 247
 Fagerlind: modular branches in, 225; in
 the Rubiaceae, 225
 Holtum: in the Araliaceae, 274, 275;
 modification of, 212, 213, 216; in
 palms, 247
 Koriba: in the Apocynaceae, 225; axis
 reorientation in, 202; in the Euphor-
 biaceae, 225; modification of, 214–16;
 a modular model, 224; in the
 Rubiaceae, 225
 Leeuwenberg: in the Apocynaceae,
 225, 228; in the Araliaceae, 274, 275;
 in the Euphorbiaceae, 225, 228; in
 fossil trees, 12; modification of, 216,
 217; a modular model, 224–8; ortho-
 tropy in, 199; in the Rubiaceae, 225; in
 sunlit trees, 211
 Mangenot, 189
 Massart: crown characteristics of, 595;
 in fossil trees, 8, 10; modification of,
 216; reiteration in, 206
 Nozeran: in the Apocynaceae, 225;
 branching in, 199; in the Euphor-

Cambridge University Press

978-0-521-14247-2 - Tropical Trees as Living Systems

Edited by P. B. Tomlinson and Martin H. Zimmerman

Index

[More information](#)668 *Index*

- Model, Nozeran (cont.)**
- biaceae*, 225; modification of, 217, 218; modular trunk in, 224; in the *Rubiaceae*, 225
 - Petit, modification of, 214–16
 - Prévost: in the *Apocynaceae*, 225; crown characteristics of, 595; in the *Euphorbiaceae*, 225; sympodial construction of, 196; a modular model, 224; in the *Rubiaceae*, 225
 - Rauh: apical control in, 201; in the *Apocynaceae*, 225, 226, 228; in the *Araliaceae*, 274, 275; branching in, 197, 228; crown characteristics of, 595; in the *Euphorbiaceae*, 225, 228; in fossil trees, 9; modification of, 212–14, 217; plagiotropy in, 198; in the *Rubiaceae*, 225
 - Roux: branching in, 195; crown characteristics of, 595; in fossil trees, 7, 8; modifications of, 214–17; syllepsis in, 204
 - Scarrone: in the *Apocynaceae*, 225, 228; in the *Euphorbiaceae*, 225, 228; modification of, 217, 227; modular branches in, 225, 226, 228; in the *Rubiaceae*, 225; in shaded trees, 211
 - Schoute: in fossil trees, 9; dichotomous branching in, 192; as a modification, 216
 - Tomlinson: in the *Araliaceae*, 274, 275; in fossil trees, 9; modification of, 212
 - Troll: axis reorientation in, 202; crown characteristics of, 595; modification of, 214–17
 - Modular construction, 196, 223–30, 278
 - Mollugo*, 215
 - Monocarpia*, 132, 643
 - Montrouzieria*, 228
 - Mora*, 628
 - Morinda*, 142, 159
 - Mouriri*, 543
 - Mucuna*, 97
 - Muntingia*
 - annual fruiting of, 93
 - crown characteristics of, 595, 597
 - grown in sun and shade, 209, 210
 - leaves of, 600
 - seed dispersal of, 94
 - Murraya*, 142
 - Musanga*
 - architecture of, 540
 - habitat of, 371, 540, 624
- leaves of, 591, 594, 609
- stilt roots of, 345
- Mycorrhizae**
- in the nursery, 157
 - terminology of, 324
 - in tropical trees, 330
- Mydocarpus*, 227
- Myrialepis*
- colonization by, 265
 - distribution of, 251
 - flowering of, 251
 - light requirement of, 253, 648
- Myrianthus*, 330
- Myristica*, 140
- Myrsine*, 524
- Nannorrhops*, 251, 256
- Narcissus*, 437
- Nectar**
- alkaloids in, 75, 76
 - amino acids in, 67–71, 76, 79
 - antioxidants in, 75
 - ascorbic acid in, 75
 - black, 57
 - concentrations of, 64, 65, 79
 - concentrations at different height, 65, 69, 79
 - deterrents in, 75–7
 - lipids in, 72–4
 - phenols in, 76
 - secretion of, 80
 - sugars in, 64–7
- Nectandra*
- demography of, 169–81
 - in Mexican forest, 165, 166
 - reproduction of, 174, 176
 - stand density of, 167
- Neea*, 167
- Nelumbites*, 15, 26
- Nenga*, 258–61
- Nephelium*, 143
- Nephrosperma*, 260
- Nesting crowns, 240, 242–5
- Nicotiana*, 216
- Nilssoniocladus*, 11
- Nitrogen fixation, 330, 331
- Nypa*
- branching of, 190, 250, 256
 - dense stands of, 265
 - germination of, 258
- Ochanostachys*, 575, 641, 642
- Ochroma*
- annual fruiting of, 93
 - architecture of, 224, 540

Cambridge University Press

978-0-521-14247-2 - Tropical Trees as Living Systems

Edited by P. B. Tomlinson and Martin H. Zimmerman

Index

[More information](#)*Index*

669

- growth rate of, 646
 habitat of, 371, 540, 552
 leaves of, 376, 624
 pollination of, 63
 seed dispersal of, 94
 seed dormancy of, 625
 stand density of, 627
 turnover rate of, 622
- Ocotea*, 310, 557
Octomeles, 654
Oenocarpus, 263, 370
 Oil-collecting bees, 72, 73
Olinia, 93
Olneya, 356
Oncocalamus, 251, 262
Oncosperma, 250, 253, 257
Opuntia, 215, 216
Orania, 263
Orbignya, 258
Oreopanax, 270, 271, 309
 Organogenesis
 in cuttings, 472, 473
 duration of, 406
 Origin of tropical trees, 3–26
Ormosia, 138, 358
Oroxylum, 133, 159, 605
 Orthotropy, 197
Osmoxylon, 269, 270, 273
Ouratea, 333
- Pachira*, 628
Pachystela, 330
Palaquium, 605, 641, 642
Paliturus, 215, 217
 Palms
 aerial branching of, 249, 250, 255–7
 architecture of, 247–67
 climbing, 250, 251
 climbing organs in, 260, 262
 clustering of, 253–6
 colonization by, 264, 265
 distichous, 263
 flowering in, 251–3
 fossil record of, 20
 geotropic stems of, 257, 258
 germination of, 257, 258
 growth forms in, 250
 heights of, 250
 peg roots in, 328, 329
 stilt roots of, 258–60, 266
 suckering in, 253–6, 266
 vegetative growth from inflorescences
 in, 255, 263
 see also generic entries
- Panax*, 272
Pandanus, 338, 340
Panicum, 435, 438, 492
Parartocarpus, 140
Parashorea, 135, 157, 647
Parinari, 645
Parkia
 fruiting of, 93
 germination of, 138, 146
 pollination of, 62, 63
 roots of, 342
Parkinsonia, 93, 97, 356
Paropsia, 141, 159
Pastinaca, 272
Paulownia, 371
Payena, 143
Pellacalyx, 141, 159
Peltophorum, 138, 386
Pentace, 641, 642
Pentaclethra, 163, 620, 627
Pentapanax, 273, 275
Periploca, 404
Persea
 architectural variations, 227
 flower abscission in, 388
 leaf abscission in, 387
 shoot growth of, 500, 507
Phaseolus, 97, 395
Phenakospermum, 218
 Phloem
 and apical dominance, 315
 connecting leaves and roots, 395
 longevity of, 395
 see also Translocation
Phoenix, 253, 255, 370
 Photoperiod
 and abscission, 384
 and flowering, 455, 470
 and shoot growth, 467–76
 Photosynthesis
 of canopies, 535, 578–80
 changing levels of, 541
 and light intensity, 646
Phryganocydia, 77
Phyllanthus
 acropetal inhibition in, 430
 apex parenchymatization in, 424
 axillary position of branch in, 8
 distribution of male and female flowers
 in, 244
 flowering in, 491, 492
 flowering inhibition in, 433
 growth correlations in, 425, 426
 phyllomorphic twigs in, 377

Cambridge University Press

978-0-521-14247-2 - Tropical Trees as Living Systems

Edited by P. B. Tomlinson and Martin H. Zimmerman

Index

[More information](#)670 *Index*

- Phyllanthus* (*cont.*)
 plagiotropy in, 424, 428, 429, 431, 436–8
 sleep movements in, 378
- Phyllostachys*, 83
- Phyllotaxis*, 198–200, 233, 263, 312–14
- Phytolacca*, 625
- Picea*, 392
- Pigafetta*
 architecture of, 248
 colonizing nature of, 265, 653
 height of, 250
 illustration of, 248
 light requirement of, 265
- Piliostigma*, 331
- Pimelodendron*, 641
- Pinanga*
 bulbils of, 256, 257
 clustering of, 253, 254
 rheophyte species of, 262, 263
- Pinus*
 acrotony in, 420
 apex parenchymatization in, 424, 427
 architectural model of, 212, 540
 architectural variations in, 212–16, 229
 bark abscission in, 392
 foxtail form of, 212, 213, 215, 219, 228
 leaf abscission in, 391
 in Mexican forest, 165
 plagiotropy in, 198
 reproduction of, 244
 rest in, 477
 shoot growth of, 500
- Pioneer species
 architecture of, 540
 germination of, 158, 159
 palms, 264, 265
 table of, 627
- Piper*, 196
- Piptadeniastrum*, 328, 335–7
- Piscidia*, 102
- Pithecellobium*
 annual fruiting of, 93
 flowering of, 88, 126
 germination of, 139, 146, 148, 150, 159
 leaves of, 358
 predation on seeds of, 96–100
 seeding synchrony of, 95
 shoot growth of, 507
 size of fruit crop, 98
- Pittosporum*, 148
- Plagiotropy
 in *Ajuga*, 427
 definition of, 197, 431
- flowering and, 427, 491, 492
 in fossil trees, 7–9
 induction of, 198, 317, 424, 479, 480, 484
 in *Hedera*, 432
 in pagoda trees, 603
 in roots, 431
 in *Theobroma*, 317, 318
- Planchonella*, 143
- Platanus*, 392
- Platea*, 137
- Platylophus*, 93
- Plectocomia*, 251, 253, 255, 256
- Plectocomiopsis*, 251, 253, 265, 648
- Plerandra*, 273, 275
- Ploiarium*, 605
- Plumeria*, 93, 223, 387
- Pneumatophores, 326
- Pneumorhiza, 326
- Podocarpus*, 141, 619
- Podophyllum*, 611
- Poecilanthe*, 448, 458
- Pollen
 evolution of, 15–18, 21–3
 preservation in fossils, 25
 reward for pollinators, 58, 59
- Pollination biology, 57–80, 102
- Polyathia*, 132, 153
- Polyscias*, 269
- Pometia*, 143, 374
- Popowia*, 641
- Populus*
 growth correlations in, 485
 roots of, 328
 seedling growth of, 508
 shoot growth in, 501
- Posoqueria*, 330
- Pourouma*
 habitat of, 540, 546, 553
 stand density of, 627
- Prainea*, 641, 642
- Prioria*, 619
- Progymnosperms, 6–9
- Prolepsis, 193–5, 279
- Prosopis*, 97, 356
- Protandry, 63
- Protium*, 627
- Protomegabaria*, 330, 336, 337
- Prunus*, 142, 508
- Psaronius*, 9
- Pseudobombax*, 622
- Pseudolmedia*, 165
- Pseudopanax*
 architecture of, 227, 269, 278

Cambridge University Press

978-0-521-14247-2 - Tropical Trees as Living Systems

Edited by P. B. Tomlinson and Martin H. Zimmerman

Index

[More information](#)*Index*

671

- bud scales of, 271
- leaves of, 270
- unusual structure of *P. anomalam*, 275–7
- Psidium*, 198
- Psilophyton*, 5
- Psoralea*, 389, 392
- Pterocarpus*
 - flowering of, 87
 - germination of, 139
 - leaves of, 358
 - in Mexican forest, 167
 - stand density of, 627
- Pterocymbium*, 143
- Pterospermum*, 143
- Pterygota*, 143
- Ptychosperma*, 250
- Pycnanthus*, 552, 553
- Pycnocoma*, 333
- Quararibea*, 448, 458
- Quercus*
 - continuous growth in, 477
 - germination of, 160, 161
 - habitat of, 641
 - leaf abscission in, 387, 394, 396
 - organogenesis in, 406
 - rest in, 501, 502
 - roots of, 328, 344
 - shoot growth in, 406, 477, 490, 500–2, 506
 - size class distribution of, 619
 - vessels of, 521, 529
- Rainfall
 - in Brazil, 451–3, 460
 - in Southeast Asia, 563
- Ramulus*, 237
- Randia*
 - germination of (2 sp.), 142, 159
 - modular branches in, 225
 - nectar of, 71
- Raphia*
 - architecture of, 247, 250
 - flowering of, 251
 - geotropic stem of, 258
 - roots of, 333
- Ravenala*, 212–16, 218
- Reaction wood, 202, 330
- Recchia*, 167
- Reiteration
 - in *Araucaria*, 240
 - in *Carica*, 190
 - definition of, 187, 204, 205, 541
 - energy levels and, 540–6
- in roots, 245, 342
- Rejuvenation, 318, 433–9
- Respiration
 - in soil, 582–4
 - per tree, 574–6
- Rest
 - effect of environment on, 476–8, 501
 - a feedback mechanism, 510
 - permanent, 424
 - temporary, 424, 510
 - see also* Dormancy
- Retimonocolpites*, 15, 16
- Rhamnus*, 407, 409, 417, 418
- Rhipis*, 254, 524–6
- Rheophytes, 262, 263
- Rhizophora*
 - architecture of, 195, 197, 204, 205, 280
 - axillary buds, 193; longevity of, 204
 - germination of, 141, 153, 154
 - leaf abscission of, 395
 - leaf initiation in, 309
 - reiteration in, 205
 - root grafts in, 327
 - roots of, 326, 333, 336, 337
 - seedling abscission in, 389
- Rhododendron*, 279
- Rhus*
 - crown characteristics of, 613, 652
 - habitat of, 371
 - leaves of (4 sp.), 365
- Rhynia*, 4
- Rhythmic growth
 - in *Araucaria*, 233, 245
 - and branching, 195
 - in *Cephalotaxus*, 424
 - control of, 497–513
 - definition of, 278
 - in *Hevea*, 424
 - and modular construction, 227
 - in roots, 245
 - in seedlings, 508, 509
 - in *Terminalia*, 306–8
 - in *Theobroma*, 424, 425
- Ricinus*, 223
- Ring-porous trees, 528
 - shoot growth in, 510
 - water conduction in, 521, 522
- Rinorea*, 144
- Robinia*, 508
- Rollinia*
 - habitat of, 552
 - stand density of, 627
- Root competition, 643

Cambridge University Press

978-0-521-14247-2 - Tropical Trees as Living Systems

Edited by P. B. Tomlinson and Martin H. Zimmerman

Index

[More information](#)672 *Index*

- Root growth
 - continuous, 512
 - and root terminology, 326
 - rhythmic, 512
- Roots
 - absorbing, 324, 343, 345
 - adhesive, in *Hedera*, 273
 - adventitious, 325
 - age changes of, 332
 - in *Araucaria*, 240, 245
 - ascending, 342
 - branching of, 332
 - buttresses, 328, 340–4, 530, 546
 - classification of, 334–42
 - columnar, 329, 330
 - contraction of, 330, 331
 - depth of, 333
 - development of, 331–4
 - diversity of, 327–31
 - effect of, on shoot growth, 497–513
 - function of, 326
 - genotypic adaptations of, 331
 - grafting, 327
 - growth of, 245, 326
 - hanging, 329, 330
 - knee, 329
 - layering of, 333
 - nitrogen fixation in, 330, 331
 - peg, 325, 328, 329, 345
 - phenotypic modifications of, 332
 - secondary thickening in, 335–40
 - sinker, 325
 - six types in *Cryosophila*, 266
 - spine, 266, 328
 - strangling, 330
 - suckering from, 344, 345, 613
 - symbiotic, 330
 - tabular, 328
 - tap, 325, 333, 334, 340–2
 - terminology of, 324–7
 - tropisms of, 326
 - vessels in, 529
 - without secondary thickening, 266, 340
 - xylopodia, 331
 - see also* Stilt roots
- Roscheria*, 260
- Roystonea*, 370
- Rubiaceae, 225
- Rubus*, 409, 411–16
- Ruprechtia*, 167
- Sabal*, 258
- Sacoglottis*, 625
- Saintpaulia*, 490
- Salacca*, 263
- Salix*, 316, 331
- Sambucus*
 - development of, 408–12, 415, 418–20
 - habitat of, 371
 - morphology of, 403, 404
 - shoot growth in, 405, 407
- Sandoricum*, 139, 641, 642
- Santiria*, 133
- Sapindopsis*, 15, 19
- Sapium*, 390
- Sarcosperma*, 143
- Sassafras*, 194
- Saurauia*, 132, 159, 378
- Scale leaves, *see* Bud scales
- Scaphium*, 641, 642
- Scaphopetalum*, 336, 337
- Scheelea*, 131
- Schefflera*
 - bud scales of, 271
 - construction of, 272, 273
 - a diversifying genus, 269
 - leaves of, 270
 - model of, 275
 - a modular model, 224
 - roots of, 273, 330
- Schima*, 143, 159
- Schizolobium*, 97
- Schuurmansia*, 229
- Sciadendron*, 269
- Scorodocarpus*, 141, 151
- Scrophularia*, 433
- Scrutinanthe*, 133
- Secondary forest species, 160
- Seed
 - abscission of, 388, 389
 - coat, 146, 160
 - dispersal, 84, 94, 626, 627
 - dormancy, 145, 146, 624, 625, 636, 650
 - fire survival of, 153
 - food reserves in, 157, 160
 - germination, 599, 628, 653
 - number in *Corypha*, 188
 - oil-containing, 160
 - predation, 89–124, 177, 178
 - predator satiation, 89, 90, 95
 - significance of size of, 24, 147, 157, 160, 161, 628, 631
- Seeding patterns
 - geographic variation of, 89
 - of individuals vs. population, 89

Index

673

- of injured trees, 87
- methods to study, 85, 86
- relation to age and size, 86, 87
- relation to flowering, 88
- relation to location, 87
- synchrony of, 83, 94, 95
 - see also* Fruiting
- Seedling**
 - germination, 130–44
 - morphology, 130–44, 146–55
 - size, 130–44, 155–8
- Semecarpus*, 595, 605
- Senecio*, 272
- Senescence, 427
- Sequoia*, 181, 391, 530
- Sequoiadendron*, 181, 391, 522
- Serenoa*, 253, 255
- Shade tolerance, 267
- Shoot**
 - definition of, 280
 - elongation, 404, 405, 471, 472
 - proleptic, 193–5, 279
 - sylleptic, 193–5, 279, 316, 403
 - tip abscission, 390, 424, 501
 - see also* Growth, Trunk
- Shorea*
 - crown characteristics of, 595, 604, 606, 608
 - effects of storms on, 650
 - germination of (10 sp.), 135, 160, 161
 - habitat of (4 sp.), 641
 - height of, 562
 - leaves of, 608
 - predation on seeds of, 131
 - respiration of (3 sp.), 575
- Shrub habit, 403–20
- Simarouba*
 - flowering of, 455–7, 460
 - nectar of, 66, 71
 - phenology of, 448
 - stand density of, 627
- Sindora*, 139, 145
- Socratea*
 - growth rate of, 266
 - roots of, 266, 338, 340
 - stand density of, 627
- Soil moisture, 449, 462
- Soil types, 621
- Solanum*, 215, 439
- Sonneratia*, 327, 328, 334, 336–8
- Sophora*, 365
- Sorbus*, 365
- Speciation, 31
- Spondianthus**, 330, 337
- Spondias*, 387, 448, 458
- Stachys*, 428
- Stahlia*, 358
- Stamen, 58
- Stand density**
 - of *Astrocaryum*, 167, 169
 - at different locations, 635
 - of gap (pioneer) species, 627
- Steleochocarpus*, 77
- Stellatopollis*, 15, 16
- Stemonurus*, 641
- Sterculia*
 - annual fruiting of, 93
 - flowering of, 458
 - germination of (2 sp.), 143
 - phenology of, 448
- Stigmaphyllon*, 66, 73, 74
- Stigmatic secretions, 59, 60
- Stilbocarpa*, 272, 275, 282
- Stilt roots**
 - development of, 327, 328
 - first reference to, 323
 - in fossil trees, 9
 - function of, 327, 328
 - in palms, 161, 258–60, 266, 267
- Storms, 174, 649, 650
 - see also* Forest dynamics, Gap
- Stratification theory**, 536
- Strelitzia*, 313, 314
- Streptocarpus*, 281
- Strobilanthes*
 - crown characteristics of, 612
 - fruiting of, 90, 91, 105, 122, 123
 - habitat of, 540
 - pollination of, 123
- Strombosia*, 141, 155
- Structural strength**, 529
- Stryphnodendron*, 163
- Stump sprouts**, 420
- Succession**, 535
 - see also* Forest dynamics, Gap
- Suckering**
 - in Araliaceae, 273
 - in palms, 253–256, 266
 - from roots, 344, 345, 613
- Swartzia*, 58, 448, 458
- Swietenia*, 93
- Swintonia*, 641
- Syllepsis*, 193–5, 279, 316, 403
- Sympomia*, 329, 553
- Syringa*, 430
- Syzygium*, 341

Cambridge University Press

978-0-521-14247-2 - Tropical Trees as Living Systems

Edited by P. B. Tomlinson and Martin H. Zimmerman

Index

[More information](#)674 *Index*

- Tabebuia*
 annual fruiting of, 93
 flowering of, 455–7
 leaves of, 357
 nectar of, 65
 phenology of, 448
- Tabernaemontana*, 376, 500, 540
- Taeniopteris*, 10
- Tapirira*, 448, 455, 456
- Tarrietia*, 332, 336, 337
- Taxodium*, 329, 365, 391
- Tecoma*, 448, 455, 459
- Tectona*
 ring-porousness of, 528
 shoot growth of, 476, 477, 507
- Teijsmanniodendron*, 144, 641, 642
- Telome theory**, 4–6
- Temperatures**
 in Brazil, 451, 452, 454, 460
 in Southeast Asia, 563
- Terminalia*
 branching of, 195, 197
 crown characteristics of, 312, 317, 595,
 597, 603, 612, 613
 establishment of, 264
 flowering of, 458
 general morphology of, 285–318
 germination of, 134, 286
 growth of cuttings of, 318, 466–8, 470–3,
 475–7, 480, 484, 490
 growth periodicity of, 307–309, 461
 leaf abscission of, 386, 396
 leafless period of, 307; 308
 phenology of, 448
 phyllotaxis of, 286
 reaction wood in, 202
 reverse apical control in, 308
 rhythmic growth in, 306–308
 shoot growth of, 507
 tannin content of fruits of, 125
 xylopodia in, 331
- Tetrameles*, 387
- Tetramerista*, 143
- Tetrapanax*, 272, 273
- Theobroma*
 architectural variation in, 217, 218, 224
 branching of, 199
 effect of soil moisture on, 449, 450
 growth correlations in, 425, 426, 434,
 435
 leaf abscission in, 387, 504, 505
 leaf growth in, 504–7
 leaf initiation in, 309
- modular construction of, 224
 phenology of, 446–52
 plagiotropic roots in, 431
 plagiotropy in, 317
 pollination of, 58, 463
 rest in, 501
 rhythmic growth of, 424, 425, 439, 500,
 508
 root growth in, 512
 roots of, 332
- Thevetia*, 93
- Thrinax*, 370
- Tibouchina*, 58
- Tieghemopanax*, 227
- Tilia*, 395, 411, 412
- Timonius*, 641, 642
- Tissue culture**, 437
- Toxicodendron*, 371
- Translocation**
 and abscission, 394
 in the dark, 463
 at low temperature, 463
 see also Phloem
- Tree fall**, *see Gap*
- Trema*
 branching of, 199, 200, 552
 habitat of, 552, 624, 628
 leaves of, 376
 longevity of, 651
 phyllotaxis of, 199, 200
 seed dispersal of, 94
 stand density of, 627, 653
 turnover rates of, 622
- Trevesia*, 270, 273, 275
- Trichilia*, 66, 264
- Trigoniastrum*, 144
- Trigonistemon*, 137
- Triomma*, 133
- Triplaris*, 66, 71, 93
- Triplochiton*
 apical dominance in, 483
 flowering of, 106, 483
 growth correlations in, 482–5, 487–9
 growth of cuttings of, 318, 465, 466, 469,
 471, 472, 475, 477, 479, 481–5, 487–90
 plantations of, 651
- Tristania*, 57, 141
- Trunk formation**, 401–21
 apical dominance and, 402
 growth continuity and, 403–10
 modular, 224
- Tsuga*, 524, 530
- Tulipa*, 437

Cambridge University Press

978-0-521-14247-2 - Tropical Trees as Living Systems

Edited by P. B. Tomlinson and Martin H. Zimmerman

Index

[More information](#)*Index*

675

- Turnover rates
 - in Costa Rica, 620–36
 - in Southeast Asia, 639–54
 - and soil types, 621, 633
 - see also* Forest dynamics
- Uapaca*, 335–7
- Ulmus*, 328, 344
- Understory trees, 540
- Utricularia*, 281
- Vaccinium*, 201
- Vatica*
 - germination of (3 sp.), 135, 154, 156
 - habitat of, 641
- Vegetative propagation, 437
- Vernonia*, 653
- Verschaffeltia*, 258, 260
- Vessels
 - ends of, 519
 - lengths of, 518
 - perforation plates of, 518, 526, 527
 - in roots, 529
 - in top and bottom of tree, 522
 - see also* Hydraulic conductivity
- Viburnum*, 611
- Vicia*, 404
- Virgilia*, 100
- Virola*, 553
- Vitex*, 144
- Vitis*
 - apex parenchymatization in, 424
 - dormancy inception in, 426
 - growth correlations in, 431, 438
 - rejuvenation in, 439
- Vochysia*, 165
- Volatile oils, 32–4
- Walchia*, 10
- Wallichia*, 251, 263
- Walsura*, 139
- Waltheria*, 376
- Warscewiczia*, 627
- Washingtonia*, 370
- Water conduction
 - efficiency of, 519–22
 - in roots, 529
 - safety of, 521, 522, 526–8
 - stem-to-leaf, 525, 526, 529
 - unit of, 518, 519
 - vessel-to-vessel, 519
 - in wide and narrow vessels, 521, 522, 529
- Welfia*, 266, 627
- Welwitschia*, 18
- Wielandia*, 11
- Williamsoniella*, 11
- Wind
 - effect on crown shape, 612, 613
 - fall, *see* Gap
- Wood
 - density and growth rate, 646
 - in *Terminalia*, 314
 - see also* Xylem
- Xanthophyllum*, 141, 390
- Xerospermum*, 160
- Ximenia*, 193
- Xylem
 - function of, 517–30; *see also* Vessels, Wood
- Xylocarpus*, 328, 335–7
- Xylopia*
 - flowering of, 93
 - peg roots of, 328, 345
 - roots of, 331, 333, 336–8
 - stand density of, 627
- Zanthoxylum*, 371
- Zea*, 215, 216
- Zygophyllum*, 373