

Index

f = figure, t = table

- Abrolhos islands, 280, 289–93
- acid–base balance, 185, 186
- Acrobates pygmaeus* (feathertail glider)
 - basal metabolic rate of, 7t
 - diet of, 76, 107, 108
 - energetics of, 120, 121
 - gastrointestinal tract of, 113f, 114
 - hibernation in, 15, 19t
 - passage rate of pollen grains in, 115
 - pollination by, 112t
 - adrenal glands, 143, 144t
 - Aepyprymnus rufescens* (rufous rat-kangaroo or rufous bettong)
 - basal metabolic rate of, 7t
 - diet of, 321f, 322t
 - digestive function in, 328, 329, 330f, 332f, 333, 334t
 - energy metabolism in, 337, 338
 - field metabolic rates of, 17t
 - food intake and digestion in, 336
 - gastrointestinal tract of, 325, 326f, 327f, 328
 - helminth fauna in, 328
 - maintenance energy requirement of, 11t
 - maintenance nitrogen requirement of, 26, 29t, 336
 - mycophagy by, 322t
 - nitrogen metabolism in, 336
 - water turnover rates in, 23t
 - agile antechinus (see *Antechinus agilis*)
 - agile wallaby (see *Macropus agilis*)
 - aldosterone, 143, 144t
 - allied rock-wallaby (see *Petrogale assimilis*)
 - Ameridelphia, 342f, 343, 344f
 - ammonia, 185f, 186, 242, 243f
 - amylase, 132, 169
 - anatomy, of gastrointestinal tract, 54–60, 78, 79, 86–90, 112–17, 132–35, 165–70, 181, 182, 189, 190, 194–98, 202, 203, 207–25, 324–8
 - Antarctica, 342f, 343, 345f
 - Antechinomys laniger* (kultarr)
 - basal metabolic rate of, 6t
 - relative medullary thickness, 64t
 - torpor in, 68t
 - water turnover rates in, 21t
 - Antechinus agilis* (agile antechinus), 48
 - Antechinus flavipes* (yellow-footed antechinus) 62t
 - diet of, 49
 - relative medullary area, 122
 - relative medullary thickness, 64t
 - tolerance to sodium fluoroacetate by, 73
 - torpor in, 68t
 - Antechinus melanurus*, 62t
 - Antechinus stuartii* (brown antechinus)
 - ascorbic acid biosynthesis in, 94t
 - basal metabolic rate of, 6t
 - diet of, 38, 42
 - digestion in, 62
 - dissachardases in, 62t
 - energetics of, 71–73
 - field metabolic rates of, 16t
 - kidneys of, 65t, 72
 - nitrogen balance in, 72f
 - pollination by, 111, 112t
 - relative medullary thickness, 64t
 - torpor in, 68t
 - water turnover rates in, 22t
 - Antechinus swainsonii* (dusky antechinus)
 - basking by, 73
 - diet of, 42, 48
 - digestion in, 61, 62
 - field metabolic rates of, 16t
 - maintenance energy requirement of, 11
 - water turnover rates in, 22t
 - antilopine wallaroo (see *Macropus antilopinus*)
 - ascorbic acid (vitamin C), 93, 94t, 95, 174

- Australidelphia, 342f, 343, 344f
- B vitamins, 205
- bacteria, 135, 170, 171, 193, 199, 230, 231, 333
- banded hare-wallaby (see *Lagostrophus fasciatus*)
- bandicoots, 82–95
- bare-tailed woolly opossum (see *Caluromys philander*)
- bark peeling, 97, 98, 99
- Barrow island, 14, 296, 297
- basking, 70t, 73
- batch reactors, 36, 37f
- Bennett's tree-kangaroo (see *Dendrolagus bennettianus*)
- Bennett's wallaby (see *Macropus bennetti*)
- Bernier island, 93
- Bettongia gaimardi* (Tasmanian bettong)
 - diet of, 319, 320f, 322t
 - field metabolic rates of, 17t
 - mycophagy by, 322t
 - tolerance to sodium fluoroacetate by, 320
- Bettongia lesueur* (burrowing bettong)
 - diet of, 318, 322t
 - gastrointestinal tract of, 327
 - mycophagy by, 322t
 - relative medullary thickness, 291t
 - tolerance to sodium fluoroacetate by, 320
- Bettongia penicillata* (brush-tailed bettong)
 - basal metabolic rate of, 7t
 - diet of, 318, 319
 - digesta passage in, 328, 329
 - energy metabolism in, 337
 - field metabolic rates of, 17t
 - food intake and digestion, 335t
 - gastrointestinal tract of, 327
 - maintenance energy requirement of, 11t
 - maintenance nitrogen requirement of, 29t, 336
 - mycophagy by, 322t, 323
 - nitrogen metabolism in, 336
 - relative medullary thickness, 291t
 - tolerance to sodium fluoroacetate, 320
- water turnover rates in, 23t
- Bettongia tropica* (northern bettong)
 - 319, 322t
- bilby (see *Macrotis lagotis*)
- black-eared opossum (see *Didelphis marsupialis*)
- black-footed rock-wallaby (see *Petrogale lateralis*)
- black-shouldered opossum (see *Caluromyslops irrupta*)
- black-striped wallaby (see *Macropus dorsalis*)
- bobuck (see *Trichosurus caninus*)
- bogong moth, 106, 107f
- boodie (see *Bettongia lesueur*)
- Borhyaenidae, 349
- branch licking, 97, 98f
- bridled nailtail wallaby (see *Onychogalea fraenata*)
- brown adipose tissue, 66, 67
- brown antechinus (see *Antechinus stuartii*)
- brown four-eyed opossum (see *Metachirus nudicaudatus*)
- Brunners glands, 57–59, 79, 169, 181, 190, 196, 222, 328
- brush-tailed bettong (see *Bettongia penicillata*)
- brush-tailed phascogale (see *Phascogale tapoatafa*)
- brush-tailed rock-wallaby (see *Petrogale penicillata*)
- Burramys parvus* (mountain pygmy-possum)
 - diet of, 52, 106, 107f
 - energetics in, 121
 - gastrointestinal tract of, 114
 - hibernation in, 19t, 127
 - mycophagy by, 322t, 346
 - burrowing, 45, 127, 128
 - burrowing bettong (see *Bettongia lesueur*)
- bushy-tailed opossum (see *Glironia venusta*)
- caecotrophy, 190–2
- caecum fermenters – definition, 126, 149
- Caenolestes fuliginosus* – diet, 43
- Caenolestes obscurus* (rat opossum), 359
 - dentition of, 348

Index

- Caenolestes obscurus* (cont.)
 - diet of, 42, 54, 55f, 56f, 57
 - gastrointestinal tract of, 59
- Caenolestidae*, 42
- calcium, 186
- Caloprymnus campestris* (desert rat kangaroo), 328
- Caluromys derbianus*, basal metabolic rate of, 6t
- Caluromys philander* (bare-tailed woolly opossum)
 - diet of, 80
 - digesta passage in, 82
 - maintenance nitrogen requirement of, 27, 28t, 82
- Caluromyslops irrupta* (black-shouldered opossum), diet of, 80
- cardiac glandular mucosa, 54, 78, 218, 220f, 221f, 252
- cardiogastric gland, 54, 55f, 56f, 133, 165, 166f, 324, 325f
- catalase, 160
- caudal fat storage, 43, 66, 69, 92, 93
- cellobiase, 62t
- Cercartetus caudatus* (long-tailed pygmy-possum)
 - diet of, 52, 109
 - hibernation in, 19t
 - pollination by, 76, 112t
- Cercartetus concinnus* (western pygmy-possum)
 - hibernation in, 19t
 - pollen digestion in, 119
 - pollination by, 112t
 - relative medullary area, 122
- Cercartetus lepidus* (little pygmy-possum)
 - caudal fat storage in, 93
 - diet of, 110
 - hibernation in, 19t
 - pollination by, 112t
- Cercartetus nanus* (eastern pygmy-possum)
 - ascorbic acid biosynthesis in, 94t
 - basal metabolic rate of, 7t
 - caudal fat storage in, 93
 - diet of, 107, 109
 - hibernation in, 19t, 121
 - maintenance nitrogen requirement of, 27, 28t, 121, 122
 - pollination by, 112t
- Chaeropus ecaudatus* (pig-footed bandicoot), 84, 85, 89
- chemical reactor theory, 36, 37f, 38, 125, 126, 149
- Chilean mouse opossum (*see Thylamys elegans*)
- Chilean shrew opossum (*see Rhyncolestes raphanurus*)
- Chironectes minimus* (water opossum), 5, 44f
 - basal metabolic rate of, 6t
 - diet of, 43
 - gastrointestinal tract of, 57f
- chitin, 40, 92
- chitinase, 40
- chitobiase, 40
- chloride, 147t
- cobalt, 31, 286, 287
- colon fermenters – definition, 127
- colonic separation mechanism (CSM), 175, 200
- common brushtail possum (*see Trichosurus vulpecula*)
- common dunnart (*see Sminthopsis murina*)
- common planigale (*see Planigale maculata*)
- common ringtail possum (*see Pseudocheirus peregrinus*)
- common spotted cuscus (*see Spilocuscus maculatus*)
- common wombat (*see Vombatus ursinus*)
- continuous-flow, stirred-tank reactors (CSTRs), 36, 37f
- copper, 31, 33, 147t, 285, 286
- coppery brushtail possum (*see Trichosurus vulpecula johnstoni*)
- coprophagy, 205
- corticosteroids, 73, 131, 143
- creatinine, 30, 31, 32t, 147t
- Dactylopsila trivirgata* (striped possum), 52
 - diet of, 106
 - gastrointestinal tract of, 76, 96, 114f
- Dasyurus byrnei* (kowari) 357
- ascorbic acid biosynthesis in, 94t
- basal metabolic rate of, 6t
- dentition of, 53
- digesta passage in, 61
- gastrointestinal tract of, 605

- non-shivering thermogenesis in, 66
- relative medullary thickness, 64t
- torpor in, 68t
- water turnover rates in, 21t
- Dasyurus cristicauda* (mulgara)
 - basal metabolic rate of, 6t, 8
 - diet of, 49
 - torpor in, 68t
 - water turnover rates in, 21t
- Dasykaluta rosamondae* (little red kaluta)
 - male die-off, 73
 - relative medullary thickness, 64t
- Dasyurodes byrnei* (see *Dasyurus byrnei*)
- Dasyurus geoffroii* (western quoll)
 - basal metabolic rate of, 6t
 - diet of, 50, 51
 - tolerance to sodium fluoroacetate by, 73
 - torpor in, 68t
- Dasyurus hallucatus* (northern quoll), 50
 - basal metabolic rate of, 6t
 - gastrointestinal tract of, 58f
 - relative medullary thickness, 64t
 - tolerance to sodium fluoroacetate by, 73
- Dasyurus maculatus* (spotted-tailed quoll)
 - ascorbic acid biosynthesis in, 94
 - basal metabolic rate of, 6t
 - diet of, 49, 50
 - disaccharidases in, 62t
 - gastrointestinal tract of, 60f
 - kidneys of, 65f
 - relative medullary thickness, 64t
- Dasyurus viverrinus* (eastern quoll)
 - basal metabolic rate of, 6t
 - diet of, 49, 50
 - digesta passage in, 61
 - field metabolic rates of, 16t
 - maintenance energy requirement of, 11t
 - water turnover rates in, 21t, 22t
- Dendrolagus*, dentition, 264
- Dendrolagus bennettianus* (Bennett's tree-kangaroo)
 - diet of, 269
 - gastrointestinal tract of, 213, 214f, 220
- Dendrolagus lumholtzi* (Lumholtz's tree-kangaroo)
 - diet of, 269
 - gastrointestinal tract of, 213, 214f, 220
- Dendrolagus matschiei* (Huon tree-kangaroo)
 - basal metabolic rate of, 8t
 - relative medullary thickness, 291t
- dentition, 45, 51–4, 85, 107, 128, 129, 167, 168, 181, 189, 195, 206, 261–6, 315, 316, 324
- desert bandicoot (see *Perameles eremiana*)
- desert rat-kangaroo (see *Caloprymnus campestris*)
- Didelphidae, 42, 45
- Didelphis albiventris* (white-bellied opossum)
 - diet of, 79, 80
 - enteroendocrine cells in, 79
- Didelphis aurita*
 - diet of, 79, 80
 - digestion in, 81, 82
- Didelphis marsupialis* (black-eared opossum)
 - basal metabolic rate of, 6t
 - diet of, 79, 80
- Didelphis virginiana* (Virginia opossum), 343, 359
 - ascorbic acid biosynthesis in, 94t, 95
 - basal metabolic rate of, 6t
 - diet of, 76, 77
 - food intake by, 79
 - gastrointestinal tract of, 78f, 79
 - RNAase activity in, 229t
 - salivary glands of, 78
 - tolerance to sodium fluoroacetate by, 74
 - urine concentration in, 66
- diet analysis
 - in carnivores, 40–2
 - in herbivores, 266, 267
- diformylphloroglucinols (DFPCs), 155, 160, 161
- digesta passage, rate of, 60, 61, 82, 90, 91t, 92, 115, 118f, 119, 139, 174, 175f, 176, 183, 198, 199, 234–40, 328–32
- dimorphic echymipera (see *Echymipera clara*)

Index

- Diprotodon*, 347
- disaccharidases, 62t, 224
- Distoechurus pennatus* (feather-tailed possum), 76
- diet of, 110
- transthyretin in, 123
- Dorcopsis*, 268, 355
- Dorcopsis luctuosa* (grey dorcopsis), 212
- Dorcopsulus vanheurni* (small dorcopsis), dentition, 268
- Dorre island, 93
- Dromiciops australis* (Monito del Monte), 348, 349
- diet of, 42, 43
- gastrointestinal tract of, 59
- hibernation in, 15, 19t, 67, 68t, 120
- transthyretin in, 123
- drought
 - effects of in koalas, 161, 162
 - effects of in wombats, 129, 146, 147t
- dusky antechinus (*see* *Antechinus swainsonii*)
- dusky mouse opossum (*see* *Marmosa fuscata*)
- dusky pademelon (*see* *Thylogale brunii*)
- eastern barred bandicoot (*see* *Perameles gunnii*)
- eastern grey kangaroo (*see* *Macropus giganteus*)
- eastern pygmy-possum (*see* *Cercartetus nanus*)
- eastern quoll (*see* *Dasyurus viverrinus*)
- eastern short-tailed opossum (*see* *Monodelphis dimidiata*)
- eastern wallaroo (*see* *Macropus robustus*)
- echidna (*see* *Tachyglossus aculeatus*)
- Echymipera clara* (dimorphic echymipera), diet of, 86
- Echymipera kaluba* (spiny echymipera)
 - basal metabolic rate of, 7t
 - diet of, 86
- Echymipera rufescens* (rufous spiny bandicoot), basal metabolic rate of, 7t
- endogenous urinary nitrogen (EUN), 25, 27, 30, 121, 122
- energy, maintenance requirements for, 10–12
- enteroendocrine cells, 78, 79, 116, 117, 165
- essential oils (*see* terpenes), 27, 159
- Eucalyptus* foliage
 - as food, 155, 156
 - composition of, 156t
- euro (*see* *Macropus robustus erubescens*)
- exudates, 96, 97, 103, 106, 110, 114
- fat-tailed dunnart (*see* *Sminthopsis crassicaudata*)
- fat-tailed pseudantechinus (*see* *Pseudantechinus macdonnellensis*)
- feather-tailed possum (*see* *Distoechurus pennatus*)
- feathertail glider (*see* *Acrobates pygmaeus*)
- fermentation rate, 136f, 137, 138, 172, 183, 201, 241t, 245–7, 306, 308f, 309f, 332–4
- fluoroacetate toxicity, 73–4
- foliage gleaning, 97, 98f, 99, 109
- food intake and digestion, 13t, 61, 62, 79, 90, 91t, 135–40, 171–4, 198–202, 240, 241, 244–52, 308–10, 332–6
- fungi
 - anaerobic in gut, 232, 234f
 - nutritive value of, 338, 339t
- Garden island, 293, 294
- gas, 242, 243, 244
- gastric sulcus, 215–18
- Gastrolobium*, 73, 74
- Giles' planigale (*see* *Planigale gilesi*)
- Glironia venusta*, diet of, 80
- glucocorticoid hormones, 73
- glucokinase, 253t
- gluconeogenesis, 40, 254, 255
- glucose, 147t, 253t, 254f, 255t
- glucose-6-phosphate dehydrogenase, 145
- glucuronic acid, 174, 185, 187
- glycogen, 14
- golden bandicoot (*see* *Isodon auratus*)
- Gondwana, 95, 343
- Goodfellow's tree-kangaroo (*see* *Dendrolagus goodfellowi*)
- gray four-eyed possum (*see* *Philander opossum*)
- gray short-tailed opossum (*see* *Monodelphis domestica*)

- greater bilby (*see Macrotis lagotis*)
 greater glider (*see Petauroides volans*)
 green ringtail possum (*see Pseudochirops archeri*)
 grey dorcopsis (*see Dorcopsis luctuosa*)
 grey-bellied dunnart (*see Sminthopsis griseoventer*)
 ground cuscus (*see Phalanger gymnotis*)
 gums, 27, 97, 98, 99, 103
Gymnobelideus leadbeateri (Leadbeater's possum), 360
 basal metabolic rate of, 7t
 diet of, 96, 102, 103
 field metabolic rates of, 17t
 gastrointestinal tract of, 114, 115
 torpor in, 15, 19t, 12
 water turnover rates in, 23t
- haemoglobin, 66, 299f
 hairy-footed dunnart (*see Sminthopsis hirtipes*)
 hare-wallabies (*see Lagorchestes, Lagostrophus*)
 helminths, 45, 46, 90, 135, 169, 170, 181, 183, 190, 196, 197t, 230, 325, 328
Hemibelideus lemuroides (lemuroid ringtail possum), 196, 197t
 diet of, 152, 194
 field metabolic rates of, 17t
 water turnover rates in, 23t
- Herbert River ringtail possum (*see Pseudochirulus herbertensis*)
 hexokinase, 253t
 hibernation, 15, 18
 honey possum (*see Tarsipes rostratus*)
 honeydew (*see lerps*), 97, 99, 104f, 105f
 hormones, 73, 78, 79
 Huon tree-kangaroo (*see Dendrolagus matschiei*)
 hydrogen, 242, 243
 hydrogenation of unsaturated fatty acids, 255, 257
Hypsiprymnodon moschatus (musky rat-kangaroo), 352f, 353, 358
 dentition of, 315, 316
 diet of, 317, 322t
 gastrointestinal tract of, 324, 325f
 helminth fauna of, 328
 mycophagy by, 322t
- invertebrates, composition of, 40, 41t
 iron, 147t
 isomaltase, 62t
Isoodon auratus (golden bandicoot)
 basal metabolic rate of, 6t, 8
 field metabolic rates of, 16t, 92
 tolerance to sodium fluoroacetate by, 93
- Isoodon macrourus* (northern brown bandicoot), 359
 ascorbic acid biosynthesis in, 94t
 basal metabolic rate of, 6t
 digesta passage in, 90–2
 digestive function in, 91t
 gastrointestinal tract of, 87f, 88, 89
 tolerance to sodium fluoroacetate by, 93
 water turnover rates in, 21t, 22t
- Isoodon obesus* (southern brown bandicoot)
 diet of, 83, 84f, 322t
 disaccharidases in, 62t
 field metabolic rates of, 16t
 mycophagy by, 322t
 tolerance to sodium fluoroacetate by, 93
 water turnover rates in, 22t
- Kangaroo island, 294, 295, 296
 Kangaroo island wallaby (*see Macropus eugenii*)
 ketone bodies, 252
 kidney function, 63–5
 kino, 97, 99
 koala (*see Phascolarctos cinereus*)
 kowari (*see Dasyurus byrnei*)
 kultarr (*see Antechinomys laniger*)
- lactase, 62t
 lactation, 179, 180f, 181, 193, 194
Lagorchestes conspicillatus (spectacled hare-wallaby)
 basal metabolic rate of, 7t
 Brunner's glands in, 222
 diet of, 275
 ecology of, 296, 297
 relative medullary thickness, 291t
 water turnover rates in, 23t
- Lagorchestes hirsutus* (rufous hare-wallaby)
 diet of, 274, 275

Index

- Lagorchestes hirsutus* (*cont.*)
 - field metabolic rates of, 17t
 - gastrointestinal tract of, 213, 215, 225f
 - maintenance energy requirement of, 11t
 - relative medullary thickness, 291t
- Lagostrophus fasciatus* (banded hare-wallaby)
 - diet of, 274
 - relative medullary thickness, 291t
- Lasiorhinus krefftii* (northern hairy-nosed wombat)
 - diet of, 129, 130
 - reproduction in, 131f
- Lasiorhinus latifrons* (southern hairy-nosed wombat), 360
 - basal metabolic rate of, 7t, 8
 - creatinine excretion by, 32t
 - dentition of, 131
 - diet of, 127, 128, 129f, 130
 - digesta passage in, 139, 141f
 - digestion in, 135–7, 138f, 139, 140t
 - endogenous urinary nitrogen excretion in, 30t
 - energetics of, 140
 - foraging strategy of, 145
 - gastrointestinal tract of, 133f, 134, 135f
 - maintenance energy requirement of, 11t
 - maintenance nitrogen requirement of, 28t
 - methaemoglobin in, 145
 - nitrogen metabolism in, 140–2
 - responses to drought by, 146, 147t
 - water turnover rates in, 21t, 23t
- Leadbeater's possum (*see* *Gymnobelideus leadbeateri*)
- lemuroid ringtail possum (*see* *Hemibelideus lemuroides*)
- lerp, 96, 97
- lesser bilby (*see* *Macrotis leucura*)
- lesser hairy-footed dunnart (*see* *Sminthopsis youngsonii*)
- Lestodelphis halli* (Patagonian opossum)
 - caudal fat storage in, 93
 - diet of, 43, 45
- Lestoros inca*, diet of, 43
- lipid metabolism, of macropods, 255, 256t, 257
 - little long-tailed dunnart (*see* *Sminthopsis dolichura*)
 - little pygmy-possum (*see* *Cercartetus lepidus*)
 - little red kaluta (*see* *Dasykaluta rosamondae*)
 - little rock-wallaby (*see* *Peradorcus concinna*)
 - little water opossum (*see* *lutreolina crassicaudata*)
 - long-footed potoroo (*see* *Potorous longipes*)
 - long-nosed bandicoot (*see* *Perameles nasuta*)
 - long-nosed potoroo (*see* *Potorous tridactylus*)
 - long-tailed dunnart (*see* *Sminthopsis longicaudata*)
 - long-tailed planigale (*see* *Planigale ingrami*)
 - long-tailed pygmy possum (*see* *Cercartetus caudatus*)
 - lowland ringtail possum (*see* *Pseudocheirus canescens*)
 - Lumholtz's tree-kangaroo (*see* *Dendrolagus lumholtzi*)
 - Lutreolina crassicaudata* (little water opossum)
 - basal metabolic rate of, 6t
 - diet of, 43, 44
 - lysozyme, 229, 230
 - Macropus agilis* (agile wallaby), 355
 - diet of, 273, 274
 - gastrointestinal tract of, 222, 223f
 - Macropus antilopinus* (antilopine wallaroo)
 - diet of, 277
 - lipids, 256t
 - Macropus dorsalis* (black-striped wallaby)
 - diet of, 273
 - methaemoglobin in, 160
 - protozoa in, 232
 - Macropus eugenii* (tammar wallaby), 355
 - ascorbic acid biosynthesis in, 94t
 - basal metabolic rate of, 8t
 - carbohydrate metabolism in, 252, 253t
 - creatinine excretion by, 32t
 - diet of, 274

- digesta passage in, 236, 237f, 238f, 239f
- endogenous urinary nitrogen in, 30t
- field metabolic rates of, 17t
- food intake by, 13t
- gastrointestinal tract of, 209f, 210, 211f, 213, 215, 216, 217f, 221f
- maintenance energy requirement of, 11t
- maintenance nitrogen requirement of, 29t
- mycophagy by, 322t
- nitrogen metabolism in, 25, 242, 243f, 247, 257, 258, 259f
- nutritional ecology of, 280, 288, 289, 290, 292, 293f, 294f, 295f, 296
- relative medullary thickness, 291t
- RNAase activity in, 229
- SCFA production in, 246f
- water turnover rates in, 21t, 23t, 24
- Macropus fuliginosus* (western grey kangaroo)
 - diet of, 227, 228, 230, 276
 - faecal particle sizes in, 129, 130f
 - mycophagy by, 322t
 - nutritional ecology of, 308f, 309f, 310f, 311
- Macropus giganteus* (eastern grey kangaroo), 207f
 - ascorbic acid biosynthesis in, 94t
 - carbohydrate metabolism in, 252, 253
 - dentition of, 262, 264f
 - diet of, 276
 - digesta passage in, 234, 235f, 235t, 236, 237f, 238f, 239f
 - digestion, pattern of in stomach, 248f
 - disaccharidase activity in, 62t
 - ecology and nutrition of, 305–8
 - field metabolic rates of, 17t
 - food intake by, 13t
 - gastrointestinal tract of, 207f, 208f, 209f, 212, 213, 215, 216, 218, 219f, 220f, 221f, 222, 224
 - helminths in, 230
 - lipid metabolism in, 255, 256t
 - maintenance energy requirement of, 11t
 - maintenance nitrogen requirement of, 29t, 305
 - relative medullary thickness, 291t
 - RNAase activity in, 229t
 - salivary glands of, 143, 144, 227
 - water turnover rates in, 21t, 24t
- Macropus irma* (western brush wallaby)
 - diet of, 273
 - relative medullary thickness, 291t
- Macropus parma* (parma wallaby)
 - basal metabolic rate of, 7t
 - gastrointestinal tract of, 215, 222
 - maintenance energy requirement of, 11t
 - maintenance nitrogen requirement of, 29t, 312
 - nutritional ecology of, 312, 313
 - protein turnover in, 25, 258, 259t
- Macropus parryi* (whiptail wallaby)
 - diet of, 273, 274
 - methaemoglobin in, 160
- Macropus robustus erubescens* (euro), 355
 - basal metabolic rate, 8t
 - creatinine excretion by, 32t
 - diet of, 272f, 277
 - ecology of, 297, 298, 299f
 - food intake and digestion, 13t, 249t, 251
 - gastrointestinal tract of, 221
 - helminths in, 230
 - maintenance energy requirement of, 11t
 - maintenance nitrogen requirement of, 29t
 - nitrogen balance in, 300t
 - nutrition and metabolism of, 298, 299, 307, 308f, 309f, 310f
 - protein turnover in, 259t
 - relative medullary thickness, 291t
 - sulphur balance in, 300t
 - water turnover rates in, 21t, 24t
- Macropus robustus isabellinus*, 297
- Macropus robustus robustus* (eastern wallaroo)
 - ascorbic acid biosynthesis in, 94t
 - diet of, 277
 - endogenous urinary nitrogen excretion by, 30t
 - food intake and digestion in, 13t, 250f, 251
 - gastrointestinal tract of, 220
 - maintenance nitrogen requirement of, 29t
 - protein turnover in, 259t
 - water turnover rates in, 21t, 300

Index

- Macropus rufogriseus* (red-necked wallaby)
 - ascorbic acid biosynthesis in, 94t, 95
 - brown adipose tissue in, 67
 - diet of, 273, 274
 - regurgitation by, 226
 - SCFA production in, 241t, 244
 - voluntary food intake by, 13t
- Macropus rufus* (red kangaroo), 301f
 - basal metabolic rate of, 8t
 - carbohydrate metabolism in, 252, 255t
 - diet of, 277, 278
 - digesta passage in, 234, 235t, 235f, 236
 - ecology of, 301, 302
 - endogenous urinary nitrogen excretion by, 30t
 - food intake and digestion in, 13t, 240, 249t, 251t, 308f, 309f, 310f
 - gastrointestinal tract of, 210, 215, 218, 220, 222, 224, 227f
 - lipid metabolism in, 255, 256t
 - maintenance energy requirement of, 11t
 - nitrogen balance in, 300t
 - reproduction in, 302, 303f
 - RNAase activity in, 229t
 - relative medullary thickness, 291t, 304
 - sulphur balance in, 300t
 - water metabolism in, 21t, 22t, 302, 303, 304
- Macrotis lagotis* (bilby), 9f
 - basal metabolic rate of, 6t, 8
 - diet of, 85, 86, 322t
 - field metabolic rates of, 16t
 - gastrointestinal tract of, 88f, 89
 - mycophagy by, 322t
 - water turnover rates in, 21t, 22t
- Macrotis leucura* (lesser bilby), diet of, 86
- mahogany glider (*see* *Petaurus gracilis*)
- maintenance energy requirement, 10t, 12, 63, 334
- maintenance nitrogen requirement, 25, 26, 27, 28t, 29t, 122, 140, 176, 183, 184, 192, 258, 305, 312, 336
- maltase, 62t
- manna, 97, 99, 104f
- Marmosa*
 - diet of, 43
 - gastrointestinal tract of, 57f, 58
 - Marmosa cinerea*, diet of, 44
 - Marmosa fuscata* (dusky mouse opossum), diet of, 81
 - Marmosa microtarsus*
 - basal metabolic rate of, 6t
 - torpor in, 68t
 - Marmosa robinsoni* (murine opossum)
 - basal metabolic rate of, 6t
 - diet of, 81
 - field metabolic rate of, 16t
 - gastrointestinal tract of, 57
 - torpor in, 68t
 - water turnover rate in, 22t
 - marsupial lion (*see* *Thylacoleo carnifex*)
 - marsupial mole (*see* *Notoryctes*)
 - marsupial tapir (*see* *Palorchestes*)
 - merycism, 226, 227
 - metabolic faecal nitrogen, 25, 27, 121, 122, 177
 - metabolic intensity, 8
 - metabolic rates, 3
 - basal, 3, 4, 5, 6t, 7t, 8t, 9
 - field, 3, 12–14, 16t, 17t, 18t
 - maximum sustained, 3
 - standard, 3
 - summit, 14
 - metabolic scope, 14, 15
 - Metachirops* (*see* *Philander*)
 - Metachirus nudicaudatus* (brown four-eyed opossum)
 - basal metabolic rate of, 6t
 - diet of, 80, 81
 - digestion in, 81, 82
 - methaemoglobin, 145, 160
 - methane, 242, 243, 244
 - methanogenesis, 243, 244
 - Microbiotheridae, 42, 43
 - microbial protein synthesis, 247
 - milk, of
 - common brushtail possum, 180f
 - common ringtail possum, 180f, 193, 194
 - eastern quoll, 180f
 - koala, 179, 180f
 - long-nosed potoroo, 337
 - northern brown bandicoot, 180f
 - numbat, 46
 - tammar wallaby, 180f
 - mixed function oxidases, 187

- molar progression, 265f, 266
- molibdenum, 285, 286
- Monito del Monte* (*see* *Dromiciops australis*)
- Monodelphis brevicaudata*
 - basal metabolic rate of, 6t
 - torpor in, 68
- Monodelphis dimidiata* (eastern short-tailed opossum), diet of, 45
- Monodelphis domestica* (gray short-tailed opossum)
 - basal metabolic rate of, 6t
 - diet of, 43, 44, 45
 - summit metabolic rate of, 15
- motility
 - of macropodid stomach, 213, 215
 - of macropodid small intestine, 222, 224
 - of potoroine gastrointestinal tract, 331
- mountain brushtail possum (*see* *Trichosurus caninus*)
- mountain pygmy-possum (*see* *Burramys parvus*)
- mouse opossums (*see* *Marmosa*, *Thylamys*)
- mulgara (*see* *Dasyurus cristicauda*)
- murine opossum (*see* *Marmosa robinsoni*)
- musky rat-kangaroo (*see* *Hypsiprymnodon moschatus*)
- mycophagy, 317, 318, 319, 320, 321, 322t, 323, 324
- Myrmecobius fasciatus* (numbat)
 - basal metabolic rate of, 6t
 - diet of, 46
 - gastrointestinal tract of, 59f
 - torpor in, 19t, 68t
- myrmecophagy, 46, 106
- nailtail wallabies (*see* *Onychogalea*)
- nabarlek (*see* *Peradocus concinna*)
- narrow-nosed planigale (*see* *Planigale tenuirostris*)
- nectar, 49, 96, 100f, 101, 102, 104, 105f, 108, 110, 117, 119
- nematodes, 45, 230
- nest sharing, 67, 69, 70t
- Ningaui ridei* (Wongai ningaui)
 - kidneys of, 65f
 - relative medullary thickness, 64t
- Ningaui timealeyi* (Pilbara ningaui),
 - relative medullary thickness, 64t
- Ningaui yvonneae* (southern ningaui)
 - diet of, 47
 - torpor in, 68
- nitrogen balance, 25, 26f, 72f, 300t
- non-shivering thermogenesis, 66
- northern bettong (*see* *Bettongia tropica*)
- northern brown bandicoot (*see* *Isoodon macrourus*)
- northern hairy-nosed wombat (*see* *Lasiorhinus krefftii*)
- northern marsupial mole (*see* *Notoryctes caurinus*)
- northern nailtail wallaby (*see* *Onychogalea unguifera*)
- northern quoll (*see* *Dasyurus hallucatus*)
- Notoryctes* (marsupial moles)
 - diet of, 45
 - gastrointestinal tract of, 59f
 - tropor in, 19t, 68t
- Nototherium*, 347
- numbat (*see* *Myrmecobius fasciatus*)
- nutritional niche, 1, 35
 - fundamental, 1
 - realised, 2
- oesophagus, 207–10
- Onychogalea fraenata* (bridled nailtail wallaby), diet of, 275
- Onychogalea unguifera* (northern nailtail wallaby), diet of, 275
- Ooldea dunnart* (*see* *Sminthopsis ooldea*)
- optimal digestion theory, 35, 36f
- optimal foraging theory, 35
- origin of marsupials, 341, 342f, 343, 344f, 345f
- Ornithorhynchus anatinus* (platypus), 5, 94t, 95
- Oxylobium*, 73
- Palorchestes*, 347
- Panamanian land bridge, 349
- parma wallaby (*see* *Macropus parma*)
- Patagonian opossum (*see* *Lestodelphis halli*)
- PEP carboxykinase, 40
- Peradocus concinna* (nabarlek or little rock wallaby), 216
- dentition of, 262, 263, 266
- diet of, 273

Index

- Peradorcus concinna* (cont.)
 - relative medullary thickness, 291t
- Perameles bougainville* (western barred bandicoot)
 - caudal fat storage in, 93
 - tolerance to sodium fluoroacetate by, 93
- Perameles eremiana* (desert bandicoot)
 - caudal fat storage in, 93
 - diet of, 84
- Perameles gunnii* (eastern barred bandicoot), diet of, 83
- Perameles nasuta* (long-nosed bandicoot), 359
 - ascorbic acid biosynthesis in, 94t
 - basal metabolic rate of, 6t
 - diet of, 83, 84f, 322t
 - digesta passage in, 90, 91t
 - digestive function in, 90, 91t
 - disaccharidase activity in, 62t
 - gastrointestinal tract of, 88, 89
 - mycophagy by, 322t
 - water turnover rates in, 21t
- Pesudantechinus macdonnellensis* (fat-tailed pseudantechinus)
- Petauroides volans* (greater glider)
 - ascorbic acid biosynthesis in, 94t
 - basal metabolic rate of, 7t
 - dentition of, 181
 - diet of, 150, 151
 - diet selection by, 163, 187
 - energetics of, 183, 186, 187
 - field metabolic rates of, 16t
 - digesta passage in, 183
 - gastrointestinal tract of, 181, 182, 194
 - maintenance energy requirement of, 11t
 - maintenance nitrogen requirement of, 28t
 - nitrogen metabolism in, 183, 185f, 186, 192
 - sodium transport in, 184f
 - water metabolism in, 188
 - water turnover rates in, 23t, 24
- Petaurus australis* (yellow-bellied glider)
 - diet of, 96, 103, 104f, 105f
 - pollination by, 111, 112t
 - torpor in, 15
- Petaurus breviceps* (sugar glider), 76, 360
 - basal metabolic rate of, 7t
- dentition of, 53
- diet of, 96, 97, 98f, 99f, 100f, 101
- field metabolic rates of, 17t
- gastrointestinal tract of, 114, 115f
- maintenance nitrogen requirement of, 28t, 121, 122
- mycophagy by, 322t
- passage of pollen grains in, 115
- pollination by, 111, 112t
- torpor in, 15, 19t, 112t
- water turnover rates in, 23t
- Petaurus gracilis* (mahogany glider), diet of, 96, 105
- Petaurus norfolkensis* (squirrel glider)
 - diet of, 101, 102
 - pollination by, 111, 112t
- Petrogale assimilis* (allied rock-wallaby), diet of, 270
- Petrogale brachyotis* (short-eared rock-wallaby), diet of, 271
- Petrogale inornata* (unadorned rock-wallaby), water turnover rate in, 23t
- Petrogale lateralis* (black-footed rock-wallaby)
 - diet of, 271
 - endogenous urinary nitrogen excretion by, 30t
 - lipids, 256t
- Petrogale penicillata* (brush-tailed rock-wallaby)
 - Brunner's glands in, 222
 - diet of, 271
- Petrogale rothschildi* (Rothschild's rock-wallaby), water turnover in, 23t
- Petrogale xanthopus* (yellow-footed rock-wallaby)
 - diet of, 271, 272f, 273
 - field metabolic rates of, 17t
 - water turnover rates in, 24t
- Petropseudes dahli* (rock ringtail possum), diet of, 194, 195
- pH of
 - caecum, 171
 - colon, 135, 171
 - small intestine, 135, 171
 - stomach, 135, 171, 240
 - urine, 185
- Phalanger gymnotis* (ground cuscus)
 - diet of, 202

- digesta passage in, 203
 digestion in, 202
 gastrointestinal tract of, 203f
- Phalanger intercastellanus (orientalis)* (southern common cuscus), 365
- Phalanger vestitus* (Stein's cuscus), diet of, 155
- Phascogale calura* (red-tailed phascogale)
 diet of, 51
 field metabolic rates of, 16t
 relative medullary thickness, 64t
 tolerance to sodium fluoroacetate by, 73, 74
 water turnover rates in, 22t
- Phascogale tapoatafa* (brush-tailed phascogale)
 basal metabolic rate of, 16t
 diet of, 48, 49, 322
 gastrointestinal tract of, 60f
 mycophagy by, 322
 relative medullary thickness, 64t
 torpor in, 68t
- Phascolarctos cinereus* (koala)
 bacteria in caecum and colon of, 170, 171
 basal metabolic rate of, 7t, 8
 dentition of, 166, 167f, 168f, 169t
 diet of, 150, 151f
 diet selection by, 157, 158f, 159t, 160, 161, 162
 disaccharidase activity in, 62t
 digesta passage in, 174, 175f, 176
 digestion in, 171, 172, 173t, 174
 enteroendocrine cells in, 115
 field metabolic rates of, 16t
 gastrointestinal tract of, 165, 166f, 169, 170
 helminth fauna in, 170, 196
 lactation in, 179, 180f, 181
 maintenance energy requirement of, 11t
 maintenance nitrogen requirement of, 28t
 nitrogen metabolism in, 176, 177
 nutrition of young, 179, 180f, 181
 salivary function in, 168, 169
 water metabolism in, 177, 178t, 179
 water turnover rates in, 22t, 24
- Phascolonus*, 347, 351
- phenolics, 27
- Philander opossum* (gray four-eyed opossum)
 basal metabolic rate of, 6t
 diet of, 43, 44
 gastrointestinal tract of, 57f
 urinary concentration in, 66
 phosphorus, 33, 162, 163f, 164t, 186, 310, 311
 pig-footed bandicoot (*see Chaeropus ecaudatus*)
 Pilbara ningaui (*see Ningaui timealeyi*)
- Planigale*, 41
- Planigale gilesi* (Giles' planigale)
 basal metabolic rate of, 6t
 diet of, 47
 torpor in, 68t
- Planigale ingrami* (long-tailed planigale)
 basal metabolic rate of, 5, 6t
 torpor in, 68t
- Planigale maculata* (common planigale)
 basal metabolic rate of, 6t
 relative medullary thickness, 64t
 torpor in, 68t
- Planigale tenuirostris* (narrow-nosed planigale)
 diet of, 47
 torpor in, 68t
- Planigales (*see Planigale*)
 plant secondary metabolites, 27
 platypus (*see Ornithorhynchus anatinus*)
 plug-flow reactors (PFRs), 36, 37f, 38, 55
 pollen, 109–11, 115, 117–19
 pollination, 111, 112t, 113t
 potassium, 162, 163f, 164f
 potoroos (*see Potorous*)
Potorous longipes (long-footed potoroo), 317
 diet of, 318
 mycophagy by, 322t
- Potorous tridactylus* (long-nosed potoroo)
 basal metabolic rate of, 7t
 creatinine excretion by, 32t
 diet of, 317, 318f, 332t, 323, 339t
 digesta passage in, 328–31
 energy metabolism in, 337, 338
 field metabolic rates of, 17t
 food intake and digestion by, 332, 333, 324t, 334, 335t
 gastrointestinal tract of, 326–28

Index

- helminths in, 328
- maintenance energy requirement of, 11t
- maintenance nitrogen requirement of, 29t, 336
- mycophagy by, 322t, 323, 339t
- nitrogen metabolism in, 336
- water metabolic rates in, 21t, 23t
- pretty-face wallaby (*see Macropus parryi*)
- Procoptodon*, 347, 354
- proline-rich salivary proteins, 169
- Propleopus*, 347, 353
- protein turnover, 25, 141, 142
- Protomnodon*, 347
- protozoa, 231, 232, 233f
- Pseudantechinus macdonnellensis* (fat-tailed pseudantechinus)
- basal metabolic rate of, 6t, 8
- kidneys of, 65f
- relative medullary thickness, 64t
- Pseudantechinus woolleyae* (Woolley's pseudantechinus), relative medullary thickness, 64t
- Pseudochirulus canescens* (lowland ringtail possum), diet of, 152, 153
- Pseudocheirus mayeri* (pygmy ringtail possum), diet of, 150, 152
- Pseudocheirus occidentalis* (western ringtail possum), basal metabolic rate of, 7t
- Pseudocheirus peregrinus* (common ringtail possum)
- ascorbic acid biosynthesis in, 94t
- basal metabolic rate of, 7t
- caecotrophy by, 190, 191f, 191t, 192f
- dentition of, 189
- diet of, 151, 152
- diet selection by, 160, 161
- digesta passage in, 190
- disaccharidase activity in, 62t
- field metabolic rates of, 17t
- gastrointestinal tract of, 189f, 190, 194
- lactation in, 193, 194
- maintenance nitrogen requirement of, 28t
- nitrogen metabolism in, 192, 193
- water turnover rates in, 23t
- Pseudochirops archeri* (green ringtail possum)
- diet of, 152, 195, 269
- gastrointestinal tract of, 194, 195
- Pseudochirulus herbertensis* (Herbert River ringtail possum)
- diet of, 152
- field metabolic rates of, 17t
- gastrointestinal tract of, 194
- water turnover rates in, 23t
- pygmy ringtail possum (*see Pseudocheirus mayeri*)
- pyloric glandular mucosa, 54, 56f, 78, 116, 219
- pyruvate kinase, 40
- quokka (*see Setonix brachyurus*)
- rat opossum (*see Caenolestes obscurus*)
- rat-kangaroos (*see Aepyprymnus, Hypsiprymnodon*)
- rate of passage of digesta, 60, 61
- red kangaroo (*see Macropus rufus*)
- red-bellied pademelon (*see Thylogale billardierii*)
- red-cheeked dunnart (*see Sminthopsis virginiae*)
- red-legged pademelon (*see Thylogale stigmatica*)
- red-necked pademelon (*see Thylogale thetis*)
- red-necked wallaby (*see Macropus rufogriseus*)
- red-tailed phascogale (*see Phascogale calura*)
- regurgitation, 226, 227
- relative medullary area, 122
- relative medullary thickness, 64t, 65, 142, 177, 291t, 304
- Rhyncolestes raphanurus* (Chilean shrew opossum)
- caudal fat storage in, 93
- diet of, 43
- ribonuclease, 228, 229t
- ribonucleic acid (RNA), 228
- rock ringtail possum (*see Petropseudes dahlii*)
- rock-wallabies (*see Petrogale, Peradorcus*)
- Rothschild's rock-wallaby (*see Petrogale rothschildi*)
- Rottnest island, 278, 279, 280f, 281–8
- rufous bettong (*see Aepyprymnus rufescens*)

- rufous hare-wallaby (*see Lagorchestes hirsutus*)
- rufous rat-kangaroo (*see Aepyprymnus rufescens*)
- rufous spiny bandicoot (*see Echymipera rufescens*)
- rufous spiny echymipera (*see Echymipera rufescens*)
- saliva, 87, 132, 168, 169, 227, 228
- sap, composition of, 96–101
- Sarcophilus harrisii* (Tasmanian devil)
 - basal metabolic rate of, 6t
 - diet of, 47, 49, 50
 - field metabolic rates of, 16t
 - maintenance energy requirement of, 11t
 - water turnover rates in, 21t, 22t
- scaling factors, 4, 12, 13, 20, 21, 178
- scaly-tailed possum (*see Wyulda squamicaudata*)
- selenium, 33, 287, 288
- semi-batch reactors, 37, 149
- Setonix brachyurus* (quokka)
 - bacteria in forestomach of, 230, 231
 - basal metabolic rate of, 7t
 - carbohydrate metabolism in, 253t, 254f, 255t
 - creatinine excretion by, 31, 32t
 - diet of, 269, 270
 - digesta passage in, 234, 235t
 - ecology of, 278, 279
 - endogenous urinary nitrogen excretion by, 30t
 - field metabolic rates of, 17t
 - gases in forestomach of, 242
 - motility of gastrointestinal tract of, 213, 214, 222, 226
 - mycophagy by, 322t
 - nutritional ecology of, 279–88
 - relative medullary thickness, 291t
 - SCFA in forestomach of, 240
 - water turnover rates in, 23t, 24
- short-beaked echidna (*see Tachyglossus aculeatus*)
- short-chain fatty acids (SCFA), 135–8, 171t, 172, 183, 201, 240, 241t, 242, 244–7, 252, 306–9, 322–34
- short-eared rock-wallaby (*see Petrogale brachyotis*)
- short-faced kangaroos (*see Sthenurinae*)
- shrew opossums (*see Rhyncolestes raphanurus*)
 - silica, 131, 273
 - Simosthenurus*, 347, 354
- small dorcopsis (*see Dorcopsulus vanheurni*)
- Sminthopsis crassicaudata* (fat-tailed dunnart), 47, 48f
 - basal metabolic rate of, 6t
 - brown adipose tissue in, 67
 - diet of, 47, 48f, 69f
 - digesta passage in, 60
 - energetics of, 69, 70t, 71
 - field metabolic rates of, 16t
 - gastrointestinal tract of, 59f
 - relative medullary thickness, 64t
 - torpor in, 68t, 70t
 - water turnover rates in, 21t, 22t, 24
- Sminthopsis dolichura* (little long-tailed dunnart), relative medullary thickness, 64t
- Sminthopsis granulipes* (white-tailed dunnart), relative medullary thickness, 64t
- Sminthopsis griseoventer* (grey-bellied dunnart)
 - diet of, 42
 - relative medullary area, 122
 - relative medullary thickness, 64t
- Sminthopsis hirtipes* (hairy-footed dunnart)
 - pollen digestion in, 119
 - relative medullary thickness, 64t
- Sminthopsis leucopus* (white-footed dunnart), relative medullary thickness, 64t
- Sminthopsis longicaudata* (long-tailed dunnart), torpor in, 68t
- Sminthopsis macrourua* (stripe-faced dunnart)
 - diet of, 47
 - relative medullary thickness, 64t
 - torpor in, 68t
- Sminthopsis murina* (common dunnart)
 - relative medullary thickness, 64t
 - torpor in, 68t
- Sminthopsis ooldea* (Ooldea dunnart),
 - torpor in, 68t
- Sminthopsis virginiae* (red-cheeked dunnart), relative medullary thickness, 64t

Index

- Sminthopsis youngsonii* (lesser hairy-footed dunnart), relative medullary thickness, 64t
- sodium, 33, 143t, 144t, 306, 307
- sodium monofluoroacetate (compound 1080), 73, 74, 80
- South Tasman Rise, 342f, 345f
- southern brown bandicoot (*Isodon obesulus*)
- southern common cuscus (*see Phalanger intercastellanus (orientalis)*)
- southern hairy-nosed wombat (*see Lasiorhinus latifrons*)
- southern marsupial mole (*see Notoryctes typhlops*)
- southern ningaui (*see Ningaui yvonneae*)
- spectacled hare-wallaby (*see Lagorchestes conspicillatus*)
- Spilocuscus maculatus* (common spotted cuscus), 9f
 - basal metabolic rate of, 7t, 8
 - spiny echymipera (*see Echymipera kaluba*)
- spotted-tailed quoll (*see Dasyurus maculatus*)
- squamous epithelium, 218, 219f, 220, 221f
- squirrel glider (*see Petaurus norfolkensis*)
- Steins cuscus (*see Phalanger vestitus*)
- Sthenurus*, 347, 354
- striped possum (*see Dactylopsila trivirgata*)
- striped-faced dunnart (*see Sminthopsis macrourua*)
- sucrase, 62t
- sugar glider (*see Petaurus breviceps*)
- sulphur, 285, 286, 300t
- swamp antechinus (*see Antechinus minimus*)
- swamp wallaby (*see Wallabia bicolor*)
- Tachyglossus aculeatus* (short-beaked echidna), 5, 46, 94t, 95
- tammar wallaby (*see Macropus eugenii*)
- tannin - protein complexes, 313
- tannins, 155, 164, 200, 313
- Tarsipes rostratus* (honey possum)
 - basal metabolic rate of, 5, 7t
 - diet of, 76, 110, 111
 - energetics of, 120
 - enteroendocrine cells in, 116, 177
- field metabolic rates of, 17t
- gastrointestinal tract of, 115, 116f
- maintenance nitrogen requirement of, 122
- nectar consumption by, 119
- passage rate of pollen grains in, 118f
- pollen digestion in, 117
- relative medullary area, 122
- torpor in, 15, 19t
- transthyretin in, 123
- water turnover rates in, 23t
- Tasmanian bettong (*see Bettongia gaimardi*)
- Tasmanian devil (*see Sarcophilus harrisii*)
- Tasmanian pademelon (*see Thylogale billardierii*)
- Tasmanian tiger (*see Thylacinus cyanocephalus*)
 - termites, composition of, 46
 - terpenes, 27, 158–62, 174, 183–7
 - thick-tailed opossum (*see Lutreolina crassicaudata*)
 - thylacine (*see Thylacinus cyanocephalus*)
 - Thylacinus cyanocephalus* (Tasmanian tiger)
 - dentition of, 47
 - diet of, 46, 349
 - gastrointestinal tract of, 54
- Thylacoleo carnifex* (marsupial lion)
 - dentition of, 51, 52f
 - diet of, 347, 349, 350
- Thylamys elegans* (Chilean mouse-opossum)
 - caudal fat storage in, 93
 - diet of, 44
 - food intake and digestion in, 63
 - torpor in, 68t
- Thylamys velutinus*, diet of, 81
- Thylogale billardierii* (Tasmanian pademelon)
 - diet of, 269
 - field metabolic rates of, 17t
 - gastrointestinal tract of, 213, 216, 226
 - water turnover rates in, 23t
- Thylogale brunii* (dusky pademelon), diet of, 269
- Thylogale stigmatica* (red-legged pademelon)
 - diet of, 269, 322t

- gastrointestinal tract of, 213, 216
- mycophagy by, 322t
- Thylogale thetis* (red-necked pademelon)
 - ascorbic acid biosynthesis in, 94t, 95
 - basal metabolic rate of, 7t
 - creatinine excretion by, 32t
 - diet of, 269, 322t
 - digesta passage in, 236, 237f, 238f, 238t, 239f
 - food intake and digestion in, 13t, 241, 244, 245, 246f, 252
 - gastrointestinal tract of, 209f, 213, 216, 217f, 218, 219f, 220f, 221f, 224, 232
 - maintenance energy requirement of, 11t
 - maintenance nitrogen requirement of, 29t
 - mycophagy by, 322t
 - microbial protein synthesis in, 247
 - nutritional ecology of, 311, 312
 - protein turnover rate in, 25, 259t
 - relative medullary thickness, 291t, 312
 - SCFA production in, 241, 244, 245, 246f, 252
 - water turnover rates in, 21t
- thyroxine, 123, 140
- tiger quoll (*see* *Dasyurus maculatus*)
- tooth wear, 51, 52, 129, 167–9, 262, 266
- torpor, 15, 18, 19t, 67, 68t, 69, 70t, 92, 107, 120, 121
- transthyretin, 123
- tree kangaroos (*see* *Dendrolagus*)
- trehalase, 62t
- trehalose, 62
- Trichosurus caninus* (mountain brushtail possum)
 - diet of, 154
 - habitat selection by, 154
 - mycophagy by, 322t
- Trichosurus vulpecula* (common brushtail possum)
 - ascorbic acid biosynthesis in, 94t
 - basal metabolic rate of, 7t
 - dentition of, 195
 - diet of, 153, 154, 269, 322t
 - digesta passage in, 175f, 199
 - disaccharidase activity in, 62t
 - food intake and digestion in, 198, 199f, 200, 201
- gastrointestinal tract of, 196f, 197, 198f
- helminths in, 196, 197f
- maintenance energy requirement of, 11t
- maintenance nitrogen requirement of, 29t
- mycophagy by, 322t
- nitrogen metabolism in, 27, 201
- tolerance to sodium fluoroacetate by, 153, 154
- water metabolism in, 202
- water turnover rates in, 23t
- Trichosurus vulpecula johnstoni* (coppery brushtail possum), diet of, 154
- unadorned rock-wallaby (*see* *Petrogale inornata*)
- UR ratio, 177, 258, 290, 292f
- urea, 30, 31, 147t, 185t, 280, 281t, 283f, 284f
 - recycling of, 30, 141, 142, 177, 257, 258, 355, 356
- urine, concentration of, 65, 66, 77, 122, 179, 202, 297
- Virginia opossum* (*see* *Didelphis virginiana*)
- vitamin B₁₂, 286, 287
- vitamin C (*see* ascorbic acid)
- vitamin E, 279, 287, 288
- volatile fatty acids (*see* short-chain fatty acids)
- voluntary food intake, 12, 13t
- Vombatus ursinus* (common wombat), 127, 128f, 360
 - ascorbic acid biosynthesis in, 94t
 - creatinine excretion by, 32t
 - diet of, 128, 130, 131, 132f
 - digesta passage in, 139, 140, 141f
 - digestion in, 135, 136f, 137, 138f, 139, 140t
 - endogenous urinary nitrogen excretion by, 30t
 - energetics of, 140
 - gastrointestinal tract of, 132, 133f, 134, 135f
 - maintenance energy requirement of, 11t
 - maintenance nitrogen requirement of, 28t

Index

- Vombatus ursinus* (cont.)
 - methaemoglobin in, 145
 - mycophagy by, 322t
 - nitrogen metabolism in, 140–142
 - protein turnover in, 141, 142f
 - saliva of, 132
 - sodium balance in, 143
 - tolerance to sodium fluoroacetate by, 144, 145
- Wallabia bicolor* (swamp wallaby)
 - ascorbic acid biosynthesis in, 94t
 - dentition of, 262, 263, 264f
 - diet of, 270, 322t, 352f, 354
 - gastrointestinal tract of, 215, 222
 - mycophagy by, 322t
 - water, doubly labelled, 12
- water opossum* (*see Chironectes minimus*)
- water turnover rate, 18–25, 63, 177, 178, 179, 188
- western barred bandicoot (*see Perameles bougainville*)
- western brush wallaby (*see Macropus irma*)
- western grey kangaroo (*see Macropus fuliginosus*)
- western hare-wallaby (*see Lagorchestes hirsutus*)
- western pygmy-possum (*see Cercartetus concinnus*)
- western quoll (*see Dasyurus geoffroii*)
- western ringtail possum *see* *Pseudochirus occidentalis*
- whiptail wallaby (*see Macropus parryi*)
- white-bellied opossum (*see Didelphis albiventris*)
- white-eared opossum (*see Didelphis albiventris*)
- white-footed dunnart (*see Sminthopsis leucopus*)
- white-tailed dunnart (*see Sminthopsis granulipes*)
- whole-body protein turnover, 142, 258, 259t
- wongai ningaui (*see Ningaui ridei*)
- Woolley's pseudantechinus (*see Pseudantechinus woolleyae*)
- woylie (*see Bettongia penicillata*)
- Wyulda squamicaudata* (scaly-tailed possum), diet of, 155
- yapock (*see Chironectes minimus*)
- yellow-bellied glider (*see Petaurus australis*)
- yellow-footed antechinus (*see Antechinus flavipes*)
- yellow-footed rock-wallaby (*see Petrogale xanthopus*)
- Zaglossus* (long-beaked echidna), 5
- zinc, 33, 147t
- Zygomaturus*, 347