

Index

Page numbers in *italic* denote figure. Page numbers in **bold** denote tables.

- Abelisaurus comahuensis* 321
Acanthodiscus sp. 60, 64
Acantholissonia gerthi 61
aeolian facies
 Huitrín Formation **145**, 151–152, 157
 Troncoso Member 163–164, 167, 168
aeolian systems, flooded 168, 169, 170, 172, 174–182
Aeolosaurus 318
Aetostreon 200, 305
Afropollis 76
Agrio Fold and Thrust Belt 3, 16, 18, 29, 30
 development 41
 stratigraphy 39–40, 40, 42
 structure 39, 42–44, 47
 uplift Late Cretaceous 43–44
Agrio Formation
 ammonite biostratigraphy 58, 61, 63, 65, 66, 67
 bedding cycles 232, 234–247
 calcareous nannofossil biostratigraphy 68, 71, 72
 highstand systems tract 154
 lithofacies 295, 296, 297, 298–302
 marine facies 142–143, **144**, 153
 organic facies 251–263
 palaeoecology 310, 311, 312
 palaeoenvironment 309–310, 311, 312–313
 palyomorph biostratigraphy 74, 75, 76
 stratigraphy, Valanginian–mid-Hauterivian 252–254
Agua de la Mula Member 253, 254
 calcareous nannofossils 71
 geochemistry 256–257, **256**
 lateral variation 260–261
 lithofacies 297, 298, 312
 organic maturation 258
Amargasaurus cazaui 317, 318
ammonite inquilinism 198–199
ammonite zones, early Valanginian–early Hauterivian 60, 69, 70
ammonites
 biostratigraphy 57–68
 correlation with Mediterranean succession 68, 69, 70
 Los Catutos Member 212, 213, 215, 222
 Rio Salado 196, 197
Amphidonte 306, 307, 310, 312
Andean Cordillera 3, 16, 18
 stratigraphy 44–45
 structure 45–50
Andean Fold and Thrust Belt 37–53
 tectonic evolution 50–53
 tectonic framework 39
Andes, Neuquén 2, 3, 5, 6
 morphostructural units 38
 stratigraphy 40
 tectonic evolution, 15–32, 37–39, 51
 interaction with Neuquén Basin 29–30
Andes, topography 37
Andesaurus delgadoi 318, 320
andesite 21, 23, 26, 42, 44
anoxia *see* dysoxia–anoxia
Aphrodina 199
Aphrodina quintucoensis 302
Aptea notialis 75
Araucariacites australis 74, 75, 76
Araucarioxylon 95, 273–276
arc morphostructural units 38
Arenicolites 193, 196
Argentinceras noduliferum 62
 biozone 58, 61
Asteriacites 90, 91, 270
Asterosoma 86 92
Auca Mahuida volcano 25, 30
Aucasaurus garridoi 321
Auquilco evaporites 42
Avilé Member 141, 253, 298
 ammonites 66
 calcareous nannofossils 71
Bajocian, fossil coniferous wood 270–276
Balmeiopsis limbatus 76
Barremian, chronostratigraphy 141
basalt
 alkaline 17, 23, 25, 29
 tholeiitic 20
basin
 back-arc 42
 foreland 6, 7, 29
 intra-arc 20, 23, 25, 41, 44
batholith
 Late Cretaceous 29
 Patagonian 45
baupläne 285, 286
bay-fill facies, Lajas Formation 87, 88, 90, 99
Bayo dome complex 50
bedding cycles
 shale–marl–limestone

- Cretaceous 231–232, 235–247
 geochemistry 235–236, **237**, 238
 Benioff zone, shallowing 19, 27, 29, 31
 benthic associations 198
Berriasella 61
 Berriasian–Aptian, biostratigraphy 57–77
 ‘*Besaireiceras*’ *australe* 64
 biopelmicrite 212–216
 bioturbation 85–88, 90–94, 93, 98
 bivalve association, infaunal 199–200
 bivalves
 Agrio Formation 302, 303, 304, 307
 Los Catutos Member 212, 214–215
 Vaca Muerta–Chachao Formations 197, 198
 body forms *see* bauplâne
 Bouguer anomalies 47
 braidplains, fluvial 112, **114**, 118, 119, 149
 browsers, mobile 303, 306
 bryozoans 307, 308, 312
 Burgess sequence 101, 102, 271
- Caldera del Agrio 30, 48, 50
 Callaqui volcano 50
Callialasporites sp. 74, 76
Callialasporites trilobatus 75
Callianassa 304–305
 Campana Mahuida igneous complex 21
 Candeleros Formation 28
 carbonate, productivity cycles 231–232,
 240–241
 carbonate facies
 Agua de la Mula Member 301
 Huitrín Formation 42, **144**, 148, 149
 Mulichinco Formation **117**, 125, 126
 carnivores
 mobile epibenthic 303, 306–307
 nektonic 303, 308–309
Carnotaurus sastrei 318, 320, 321
 Cayanta Formation 21, 42, 44
Caypullisaurus bonapartei 283, 284, 285, 287,
 290
 cement, limestone–marl rhythmite 216, 223
Ceratostreon 200, 306, 307, 310, 312
Cernina fluctuata 306
 Cerro Mocho anticline 42, 43
 Cerro Parva Negra volcano 25
Chacantuceras ornatum 60, 63, 64, 309
Chachaicosaurus cayi 282, 283, 285, 290
 Chachao Formation
 facies analysis 189, 191, 192
 macrofossils 196–200, 202
 relative oxygenation 185–203
 sedimentation 192
 trace fossils 193, 194, 196
 Challaco Formation 85, 85, 86, 95
 channel-fill 91, 92, 93
 Chihuidos ridge 30
- Choiyoi Group 40, 40, 43, 44
Chondrites 200, 203
 association 193, 194
 Chorreado Member 141, 142, 146, 149
 Chos Malal
 fold and thrust belt 41
 organic facies variation 251–263, 252
 chronostratigraphy 4
Circulodinium distinctum 75, 76
Classopollis sp. 74, 75, 76
Clepsilithus maculosus 71, 72
 bioevent 70, 73
 climate change, effect on clastic/carbonate
 cycles 240, 245, 246
Clypeopygus 304
 coast, transgressive facies **115**, 122–123
 coastal plain facies **115**, 123
Coenholectypus 306
 Cola de Zorro Formation 25, 30, 40, 45,
 47–48, 50
 Coladas de Fondo de Valle monogenetic field 50
 Collipilli Formation 21, 42
 Conglomerados de Tralahué 44
 Copahue volcano 25, 50
 coquinas 298–299, 300
 coral, Agua de la Mula 301, 308, 311, 312
 Cordillera del Viento 20, 21, 22, 29, 40
 basement uplift 42, 44
 Cretaceous, Late, uplift, Agrio Fold and Thrust
 Belt 43–44
 Cretaceous, Late–Cenozoic foreland basin phase
 3, 6, 7
 Cretaceous, Late–Palaeogene arc 21–22, 22
 tectonism 29
 Cretaceous, Lower
 aeolian systems 163–182
 biostratigraphy 57–77
 lithofacies, Agrio Formation 295–302
 lowstand 139–160
 Mulichinco Formation 109–135
 palaeoclimate 245
 palaeoecology, Agrio Formation 302–313
 sediment supply, Agrio Formation
 244–245
Crioproteridinium orthoceras 75, 76
Crioceratites andinus 66, 309
Crioceratites apricus 66
Crioceratites diamantensis 66, 67, 309
 biozone 66, 69, 297
Crioceratites schlagintweiti 66, 67
 biozone 66, 69, 297
 crocodylians 280–281, 282, 283, 285
 cross-bedding
 Lajas Formation 88, 90, 91, 92, 93
 Mulichinco Formation 118, 119
 Troncoso Member 169
 cross-lamination 121, 125, 299–300
Crucellipsis cuvillieri 71, 72

- bioevent 70, 71
- crust
- discontinuity 51–52
 - thin, Loncopué Graben 19–20
 - Cruziana* 120, 121, 123, 125, 299
 - Cryptoclidus* 282, 283, 285, 288, 290
 - Cucullaea gabrielis* 302, 310, 311
 - Cura Mallín Basin 23, 24, 24, 29, 30, 45
 - structure 45–47, 50, 51
 - Cura Mallín Formation 23, 40, 44–45
 - Cura Niyeu Formation 84, 85, 86, 88, 98, 270
 - Cura Niyeu–Lajas sequence set 101, 102, 103
 - Curaco, reworked facies 170, 175, 176, 177, 178–181
 - Cuyanicerias transgrediens* 61
 - Cuyo Group 43, 84, 85
 - cycles, orbital 240
 - cyclicality 231–247, *see also* rhythmite
 - Cyclusphaera psilata* 75, 76
 - Cymatoceras perstriatum* 308, 311
- dacite 21, 23, 26, 42, 44
- Dactyloidites* 90, 93, 270
- Dakosaurus* sp. 284, 285, 287, 290
- Damas–Chaquilvín structure 50
- deformation 26, 28, 29, 30
 - Agrio Fold and Thrust Belt 30, 41, 42–44
 - Andean Fold and Thrust Belt 50–51
 - soft-sediment 179
 - facies, Troncoso Member 168, 169, 170
- delta front facies
 - Lajas Formation 86–88, 87, 89, 99
 - Mulichinco Formation 114, 118–120, 119
- depocentres
 - Cenozoic 45
 - Late Cretaceous 7
 - magmatic 23, 45, 46
- deposit feeders, burrowing 303, 304–305
- deposit-feeders association 200
- deposition 7, 8
 - see also* sedimentology
- deposits, synorogenic 27, 29, 30, 42, 44, 51
- diagenesis, limestone 223–224
- Diamante Formation 29
- Dichadogonyaulax cumula curtospina* 75
- dilution cycles, clastic 232, 243, 244–245
- dinosaurs, mid-Cretaceous 317–324
- discontinuity, crustal 51–52
- Disparilia* sp. 302, 310
- dissolution cycles, carbonate 232, 240, 243
- drapes, mud 90–91, 91, 92, 119, 120, 121, 122, 125
- dunes
 - Troncoso Inferior Member 151–152
 - flooded 163, 167–168, 170, 171, 174–182
- see also* aeolian facies
- dysoxia–anoxia
 - Valanginian–Hauterivian
 - Agrio Formation 254, 259–261, 298
 - global 261–263
- echinoids
 - Agrio Formation 304
 - Los Catutos Member 212, 213–214, 215
 - Eiffelithus primus* 71, 72
 - bioevent 70, 73
 - Eiffelithus striatus* 71, 72
 - bioevent 70, 73
 - Eiffelithus windii* 71, 72
 - bioevent 70, 73
- embayment facies 90, 116, 123
- Entolium* 189, 197, 199, 202
- Eocene, uplift 29, 50, 51
- erg 152
- Eriophyla* 199
- Eriophyla argentina* Burckhardt 302
- Eryma* 307
- estuaries 83, 96, 97
 - facies 115, 121–123, 122
- evaporites
 - Agrio Fold and Thrust Belt 42
 - Huitrín Formation 140, 145, 152–153, 165
- exogyrid association 200
- extension 26, 29, 30, 40, 45, 46, 47–50
- extinction, dinosaur, mid-Cretaceous 322–324
- facies associations
 - Agrio–Huitrín Formation 142–153
 - Troncoso Inferior Member 165–172
 - Lajas Formation 85–97
 - Mulichinco Formation 112–126
- falling stage systems tract 154, 155, 156, 157
- faults Liquiñe Ofqui 18, 29, 30, 50
- fish
 - Chachao Formation 196, 197
 - pyncnodontiform 309, 311
- flooding, dunes 170, 174–175, 179, 180, 181
- flooding surfaces 97–99, 100, 133
- floodplain facies, Lajas Formation 87, 94–96
- fluvial facies
 - Huitrín Formation 144, 145, 149–151, 150
 - Troncoso Member 165, 167
 - Lajas Formation 87, 94–96, 96, 270
 - Mulichinco Formation 115, 121
- fold and thrust belts 7, 39
 - see also* Agrio Fold and Thrust Belt; Andean Fold and Thrust Belt
- foraminifera, Los Catutos Member 212, 213, 214, 215
- forcing, orbital 240, 245
- foreland, migration 21, 27–28
- foreland basin phase 6, 7

- fossils, trace *see* ichnofauna
Frenquellicerias 61
- Gastrochaenolites* 88, 193, 196, 301, 312
- gastropods
 Agrio Formation 302
 Los Catutos Member 212, 215
 Vaca Muerta–Chachao Formations 197, 198
- Geosaurus araucanensis* 283, 284, 285, 287, 290
- Gervillaria alatior* 304, 307, 311
- Gervillella aviculoides* 305
- Gigantosaurus carolinii* 321
- Glossifungites* 97
- Gondwana Orogen, collapse 5
- Gondwana, western margin
 biostratigraphy 5
 evolution 159
 tectonics 2–3, 5
- Gordia* 193, 196
- granitoids 20–21, 29
- Groebericerias* 59, 61
- growth-ring analysis 271, 274–275
- guild analysis, Agrio Formation 302, 303, 304–309
- Haqius circumradiatus* 71
- Hauterivian, index ammonites 65, 67
- hemicycles
 carbonate 236
 clastic 235
- highstand systems tracts 97, 132
- Holcoptychites agrioensis* 60, 64, 65, 309, 311
- Holcoptychites compressum* 60, 64
- Holcoptychites magdalenae* 64
- Holcoptychites neuquensis* 64, 65
 biozone 60, 64, 69, 296, 304
- Hoplitocrioceras gentilii* 66, 67, 309
 biozone 60, 66, 69, 296
- Hoplitocrioceras giovinei* 66, 67
- Hoploparia* 307
- Huincul Fault Zone 29
- Huitrín Formation 40, 42, 139–140, 141, 143, 146, 147
 facies associations 142–153, 144, 145, 146
 lowstand wedges 139–140, 153–160
 master sequence boundary 157–158
 sequence stratigraphy 154–158
 transgressive systems tract 158
see also Troncoso Formation
- hummocks 299–300
- hydrocarbons 5, 217, 253, 254, 257–259
 Agrio Formation 251, 253
- Hystriospharina neuquina* 74, 75
- ichnofauna
 Agrio Formation 298, 299
- Lajas Formation 86, 88, 90–92, 95, 98, 102
- Mulichinco Formation 121
 as proxy for relative oxygenation 185
- Rio Salado 192, 193, 194, 195, 196, 200–202
- ichthyosaurs 280–281, 282, 283, 285
- Ilokelesia aguadagrandensis* 320
- Inoceramus* 236, 239, 305
- inversion, tectonic 110
- Isognomon lotenoensis* 307
- Isognomon ricordeanus* 304, 307, 311
- isotopes
 black shales, $\delta^{13}\text{C}$ anomaly 263
 Los Catutos rhythmite 216, 218, 219, 222–224
- Jurassic
 Early–Early Cretaceous
 arc volcanism 20–21
 biostratigraphy 7–8
 post-rift phase 2–3, 5, 6, 7
 sequence stratigraphy 8–9
 tectonism 29, 50–51
- evaporites, Agrio Fold and Thrust Belt 42
- Late–Early Cretaceous, palaeo-oxygenation studies 185–203
- marine reptiles 279–291
- Middle
 Lajas Formation
 fossil coniferous wood 267–276
 sedimentology 83–104
 stratigraphy 85
- kaolinite 216, 220
- Karakaschicerias attenuatus* 60, 61, 63, 132, 133, 306
- kerogen 217, 220, 257–258
- Komplott sequence 102, 103
- La Tosca Member 141
- lagoon facies 90, 116, 123
- Lajas Formation 85, 86
 facies associations 85–97
 facies model 96
 fossil coniferous wood 267–276
 geological setting 270–271
 taxonomy 273–274
- sedimentology 85–96, 87
- sequence stratigraphy 96–104, 269
 boundaries 101
 deltaic successions 99
 flooding surfaces 97–99
 heterolithic tidal successions 99
 model 103–104

- parasequences 97, 99, 100, 269
- tidal channel successions 99, 270
- Laplataosaurus* 318
- Las Damas valley 47, 48
- Leptosalenia* 306, 312
- Ligabueino andesi* 320
- Limaysaurus* 319
- limestone
 - lithographic 207
 - micritic *see* shale–marl–limestone rhythmic bedding
- limestone–marl rhythmite, Los Catutos 207–226
- Liopleurodon* sp. 283, 284, 285, 287, 290
- Liquiñe Ofqui Fault Zone 18, 29, 30, 50
- Lissonia riveroi* 61, 62
 - biozone 60, 61, 69, 112, 132
- Lithophaga* 304
- lithostratigraphy 4
- Lithraphidites bollii* 71, 72
 - bioevent 70, 73
- Loncopué Graben 3, 15–16, 17, 18, 23, 25, 30
 - crustal thinning 19–20
- Los Catutos Member
 - limestone–marl rhythmite 207, 210–226
 - burial history 209, 224, 225, 226
 - chemistry 216
 - clay minerals 216, 220–221
 - diagenesis 223–224
 - isotopic composition 216, 218, 219, 222–224
 - organic matter 217
 - origin 217, 219
 - palaeoenvironment 221–222
 - petrography 212–216
- Los Molles Formation 84, 85, 86
- lowstand, Lajas formation 103
- lowstand systems tract 109–110
 - Huitrín Formation 157–158
 - Mulichinco Formation 129–132
- lowstand wedge
 - Huitrín Formation 139–140, 141, 158–160
 - evolution 153–154
 - sequence stratigraphy 154–158
 - Mulichinco Formation 109–110, 111, 130, 133–134
- Lyticoceras pseudoregale* 64
- macrofossils, Vaca Muerta-Chachao Formations 196–200, 201, 202
- Macromesodon agrioensis* 309
- magmatism, arc 15, 16, 20, 46
 - Cretaceous, Late–Palaeogene 21–22, 22
 - Jurassic–Early Cretaceous 20–21
 - migration 22, 27, 29
 - Miocene, middle–late 23–24
 - Oligocene–early Miocene 22–23, 26
 - Pliocene–Pleistocene 25
 - styles 25–28
- Maresaurus coccai* 280, 282, 285, 288, 290
- marine facies, Agrio Formation 142–143, 144, 148
- marl *see* limestone–marl rhythmite; shale–marl–limestone rhythmic bedding
- Mendoza Group 40, 42, 57, 58
- Mendoza Shelf 186
 - facies analysis 189–192
 - sedimentation 192
 - stratigraphy 187, 188
- Mesozoic, Neuquén Basin deposits 39–40, 42
- Metriorhynchus casamiquelai* 288
- Metriorhynchus potens* 290
- Meyerella rapax* 306
- Micrantholithus hoschulzii* 71, 72
- micrite 241
- microcarnivores, cemented 303, 308
- Milankovitch cycles 240, 245
- Mimachlamys robindina* 307, 311
- Miocene, middle–late
 - arc 23–24
 - tectonism 30, 51
- Mitrauquén Formation 23, 45
- Modiolus* 85
- Modiolus* cf. subsimplex 305
- Mollesaurus perihallus* 282, 283, 285, 288
- mouth bars 96
- Muderongia brachialis* 76
- Muderongia staurota* 75, 76
- mudflats 2, 9, 93
- mudstone
 - Agrio Formation 299–300
 - Lajas Formation 85–86, 88, 92, 95
 - Mulichinco Formation 121, 123, 126
- Mulichinco Formation
 - ammonite biostratigraphy 58, 61
 - calcareous nannofossil biostratigraphy 68, 71
 - facies associations 112, 114–117, 118–26, *foldout*
 - geology 110–111, 113
 - highstand systems tract 132–133
 - lowstand systems tract 129–132
 - lowstand wedge 109–110, 111, 130, 133–134
 - palaeoflow 120, 123, 124
 - palaeogeographic evolution 128, 131–132
 - palynomorph biostratigraphy 74
 - sequence stratigraphy 126, 127, 129
 - transgressive systems tract 132
- Muraenosaurus* sp. 282, 283, 285, 288, 290
- Myoconcha transatlantica* 304, 305, 311
- Mytilus* 307
- nannoconids 74
 - Nannoconus bucheri* 72, 74
 - Nannoconus circularis* 74
 - Nannoconus ligius* 71, 72

- bioevent 70, 73–74
 nannofossils, calcareous
 bioevents 70, 71, 73–74
 biostratigraphy 68–71, 72
 nekton 196–197, 202
Neocomites sp. 60, 61, 63, 64
Neocomites wichmanni 62
 biozone 58, 60, 61, 69, 112
Neocosmoceras sp. 61, 71
 Neogene–Quaternary, Andean Cordillera
 47–50
Neohoplaceras 61
 Neuquén Basin
 evolution 2–3, 5, 6, 7, 164–165
 geological setting 1, 2, 3, 84–85, 140–142,
 209–210, 232–234
 palaeogeography 186–188
 stratigraphy 4, 40
 Neuquén Embayment 2, 3, 23, 25, 38, 186, 187,
 234
 sedimentation 192
Neuquensaurus 318
Neusticemys neuquina 283, 284, 285, 287, 290
 Nevados de Chillán Volcanic Group 23
 North Patagonian Massif 2, 244–245, 244
Notoemys laticentralis 283, 284, 285, 287, 290
Nucleolites 304
- offshore shelf facies 85–86, 87
Olcostephanus (Jeannoticerias) agrioensis 64
Olcostephanus (Olcostephanus) atherstoni 61,
 63, 309
 biozone 60, 61, 69, 112, 132
Olcostephanus (Olcostephanus) boesei 64
Olcostephanus (Olcostephanus) laticosta 60, 64,
 65, 309
Olcostephanus (Olcostephanus) leanzai 60, 64
Olcostephanus (Olcostephanus) variegatus 66
Olcostephanus (Viluceras) permolestus 60, 61,
 63, 133
 Oligocene–early Miocene arc 22–23, 24, 26,
 44–45
 tectonism 29–30, 51
Oligosphaeridium complex 75, 76
Oosterella 64
Ophiomorpha 86, 92
Ophthalmosaurus sp. 282, 283, 285, 290
 organic facies
 Agrio formation 251–263
 geochemistry 256–257
 ostracods, Los Catutos Member 212, 213
 Owl sequence 102, 103, 271
 oxygenation
 relative 185–203
 from ichnofauna 200–202, 201
 from body fauna 201, 202
 oysters, cemented 117, 125, 126, 192, 197
 palaeobiology 9–10, 267–276, 279–291,
 295–313, 317–324
 palaeoclimate, Lower Cretaceous, Agrio
 Formation 245, 246
 palaeoenvironment, Jurassic marine reptiles 285,
 287–288
 Palaeogene, Cura Mallín Basin 45–47
Palaeophyscus 86, 92, 121, 143, 193, 196, 236
 palynomorph biostratigraphy 74, 75, 76
 Pampa de Tril
 calcareous nannofossils 71
 reworked facies 170, 171, 172, 173,
 174–175, 178–181
Panopea gurgitis 302
Parahaentschelinia 87
 parasequences 97, 99, 100, 131, 132
Paraspiticerias groeberi 67
 biozone 66, 68, 69, 297, 312
Parsimonia antiquata 307–308, 310
 Patagonian Batholith 45
 pelbiomicrite 212–216, 214
Pellegrinisaurus 318
 pellets 212, 216
Pholadomya gigantea 302
Phycodes 193, 196
 Pichaihue syncline 43, 44
 Pichi Tril Andesite 23
 Pilmatué Member 253–263
 ammonites 61, 66
 calcareous nannofossils 71
 geochemistry 256–257, 256
 lateral variation 258–260
 lithofacies 296, 298, 310, 311
 organic maturation 258
Pinna robinaldina 305, 311
 planktonic associations 197, 198
Planolites 90, 92, 93, 123, 193, 196, 236
 Plattenkalke 207
 plesiosaurs 280, 283, 285, 309
Pleurotomaria gerthi 306
Plicatula 307
 Pliocene–Pleistocene arc 25
 tectonism 30, 51
 pliosaurs 280, 282, 283, 285, 287
 post-rift phase 5, 6, 7
 Principal Cordillera 17, 23, 25
 granitoids 20–21
 prodelta facies 85–86, 87, 96, 99, 115,
 120–121
 productivity cycles, carbonate 232, 240–241
 progradation, Pilmatué Member 253
Protaxius 304, 305
 proto-Pacific ocean 5, 6, 9
Protocallianassa 304, 305
Protohemichenopus neuquensis 261, 302, 310
Pseudofavrella angulatiformis 63, 64, 310
 biozone 60, 64, 69, 112, 133, 296, 310
Pseudofavrella garatei 64

- pseudoplanktonic associations 197, 198
 pterosaurs 283
Pterospermella australiensis 75, 76
Pterotrigonia coihuicoensis 311
Ptychomya koeneni Behrendsen 302, 311
 Puesto Burgos ignimbrites 44
Purranisaurus potens 283, 284
 Pushme–Pullyou sequence 101, 102
Pycnodontiformes 309, 311
Pygorhynchus 304
- radiolarians, Los Catutos Member 212, 214
 ramp, carbonate 149, 192
see also carbonate facies
 Rayoso Formation 28, 58
 Rayoso group 40, 57, 58
 reptiles, marine
 Jurassic 279–291
 baupläne 285, 286
 palaeoenvironment 285, 287–288
 palaeogeographic distribution 288, 290
 retro-arc morphostructural units 26, 38, 40, 41, 44, 46
 retro-arc system 5, 7
 reworked facies, Troncoso Member 169, 170, 172
 rhaxes, Los Catutos Member 212, 222
Rhizocorallium 193, 196
 rhythmite, limestone–marl
 Tithonian 207–226
 burial history 224, 225, 226
 origin 217, 219
 palaeoenvironment 221–222
 see also bedding cycles
 rifting 6, 29, 51–52
 Río Picunleo 47, 48–50
 Río Salado *see* Salado River valley
 ripples 121, 123, 124, 299–300
 flooded aeolian systems 169, 170, 172
Rocasaurus 318
 roll-back velocity 21, 29, 38
Rosselia 86, 92
Rotularia 199, 202, 203
 Salado River valley 187, 188, 189, 190
 macrofossils 196–200
 trace fossils 192, 193, 194, 195, 196
Saltasaurus 318
 sandflats 93–94
 sandstone
 Agrio Formation 298–300
 Huitrín Formation 143, 148, 151
 Lajas Formation 87–88, 90, 91, 92
 Mulichinco Formation 118, 119, 120, 121
 see also Avilé Member
Sarcinella occidentalis 308
 sauropoda 317–318
 scavengers 303, 308
- Schaubcylindrichnus* 86
Scolicia 90, 91, 270
 sea-level change 8, 9, 97
 Barremian–Aptian, Huitrín Formation
 139–140, 156, 158, 159, 160
 Valanginian
 Agrio Formation 42, 253
 Mulichinco Formation 110, 126, 131
 sediment, cyclicity 231–2
 sediment supply, Lower Cretaceous, Agrio
 Formation 244–245, 246
 sedimentology
 Jurassic, Lajas Formation 83–104
 Tithonian–Valanginian, Mendoza Shelf
 188–192
 sequence boundaries 101
Serie Andesítica 42, 44
 serpulids 197, 199, 307–308
 shale, black
 Agrio Formation 111, 141, 251, 253, 254,
 256, 256–61, 263, 298, *see also*
 Spitidiscus shale
 Vaca Muerta Formation 189, 202–203
 shale, grey
 Agrio Formation 298–299
 Chachao Formation 189
 shale–marl–limestone rhythmic bedding, Agrio
 Formation 235–247
 shelf facies 116, 124–126, 125
 shoreface facies 116, 124, 125
 Huitrín Formation 143, 144, 147–149, 148
 Sierra de Trocomán 47, 48
 Sierra del Chacaico 85, 86, 96, 267
 Sierra Pintada Massif 2
 siltstone, Lajas Formation 86, 87
Skolithos 123, 124, 125
 soft-sediment *see* deformation, soft-sediment
Speetonia colligata 71, 72
Sphaera koeneni 302
Spiticeras damesi 61, 62, 74
 biozone 58, 61
Spitidiscus riccardii 67, 298, 309
 biozone 66, 69, 297
Spitidiscus shale 66, 253, 254, 255, 256, 298
 geochemistry 256–257
 organic maturation 258
 sponges
 Agrio Formation 308, 312
 Los Catutos Member 212
Steinmanella 199
Steinmanella pehuenmapuensis Leanza 302, 310
Steinmanella transitoria (Steinman) 302, 311
Steneosaurus gertii 280
Stenopterygius grandis 282, 283
 stratigraphy, sequence 8–9
 Lajas Formation 96–104
 Mulichinco Formation 126, 127, 129
 subduction 3, 5, 6, 26

- angle 7, 27, 28, 30, 31
Substeueroceras koeneni zone 60–61
 suspension feeders 199–200, 302, 303, 304, 305,
 307–308
 swales 300
 synrift phase 5, 6
- tectonics
 history 2–3, 4
 interaction of Andes and Neuquén Basin
 29–30, 31, 37–39
 styles 25–28
Teichichnus 92, 121, 123, 193, 196, 236
Teredolites 90, 270
Thalassinoides 86, 92, 93, 194–196,
 200–202, 203, 236, 239, 254, 305
 association 193, 194
 theropoda 318, 320–322
 ‘*Thurmanniceras*’ 61
 ‘*Thurmannites pertransiens* Sayn’ 61
 tidal channel facies
 Lajas Formation 87, 90–91, 91, 92, 96, 98, 99,
 270
 Mulichinco Formation 114, 120
 tidal flats facies, Lajas Formation 87, 92–94, 96,
 99
 titanosaurs 318
 Tithonian, Middle, rhythmite 207–226
 Tordillo Formation 40, 43
 Tralalhue Conglomerates 30
 transgression 7, 8, 179, 186, 253
 transgressive systems tracts 97, 101, 104, 109,
 132, 158
 transpression 22, 29
 Trapa-Trapa Formation 23
 Tres Chorros extensional system 42, 47
 Triassic, Late–Early Jurassic synrift phase
 2–3, 5, 6
Trigonia carinata Agassiz 302, 311
 Trolón volcano 50
 Trolope dome complex 50
 Trolope valley 50
 Tromen volcano 30
 Troncoso Member 141–142, 146, 147, 150, 151,
 152
 depositional model 177–182
 facies associations 165–172
 sedimentary architecture 172–177
 soft-sediment deformation 163–182
Trypanites 193, 196
- turtles 283, 285
Tylostoma jaworskii 306
- uplift
 Eocene 50, 51
 Late Cretaceous 29, 43–44
 upwelling, asthenospheric 25–26, 28, 29
- Vaca Muerta Formation
 ammonite biostratigraphy 57–58, 60, 61, 62
 calcareous nannofossil biostratigraphy 68, 71,
 72
 facies analysis 189, 191, 192
 macrofossils 196–200
 marine reptiles 283, 287
 palynomorph biostratigraphy 74–76
 relative oxygenation 185–203
 sedimentation 192
 trace fossils 193, 194, 196
- Valanginian
 early–early Hauterivian, ammonite zones 60
 index ammonites 62, 63
 Mulichinco Formation 110–111
 biostratigraphy 112
 Valanginian–mid-Hauterivian
 Agrio Formation 251–263
 transgression 253
Valanginites argentinicus 61
- volcanism, arc
 Cretaceous, Late–Palaeogene 21–22
 Jurassic–Early Cretaceous 20–21
 Miocene, middle–late 23–24
 Oligocene–early Miocene 22–23, 26,
 144–45
 Pliocene–Pleistocene 17, 18, 25, 45
- Watznaueria* 71
Weavericeras vacaensis 67
 biozone 60, 66, 69, 296
- wood, fossil 95
 coniferous
 Lajas Formation 267–276
 geological setting 270–271
 taxonomy 273–274
- Xenotarsosaurus bonapartei* 320