

Cambridge University Press

052161256X - Top Predators in Marine Ecosystems: Their Role in Monitoring and Management

Edited by I. L. Boyd, S. Wanless and C. J. Camphuysen

Index

[More information](#)

Index

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

- aerial-pursuit 94
- Aethia pusilla* *see* auklet, least
- Alaska, Steller sea lion population decline 275–89
- albatross, black-browed, Bird Island Monitoring Programme 159, 160, 162, **164**, 170–1, 171
- Alosa pseudoharengus* *see* gaspereau
- Ammodytes dubius* *see* sand lance
- Ammodytes marinus* *see* sandeel
- anchovy, Peruvian 6, 13, 13, 124–5
- Antarctic, ecosystem 17
- Antarctic Circumpolar Current 28–9, 36
- Antarctic Circumpolar Wave 29, 36
- Anthus pratensis* *see* pipit, meadow
- Arctic, polar bear 99
 - as indicator of ecosystem dynamics 99, 113–15
- Arctocephalus gazella* *see* seal, fur, Antarctic Atlantic Ocean,
 - North
 - fish density 13
 - North Atlantic Oscillation 149–51
 - trophic levels 15
 - northwest, food-web shift 121, 124, 125
 - southwest
 - physical anomalies 29–31
 - SST variability 30, 31, 35–6, 41
- auk, in MSFA 89–93
- auklet, least, prey abundance 216
- Balaenoptera acutorostrata* *see* whale, minke
- Bank region, Firth of Forth 48, 50–2, 55
- Barents Sea
 - scenario modelling 313, 310–21
 - management 310–13, 317–19, 321
 - modelling considerations 319–20
 - predation 316–17, 318–19
 - recruitment 315
- bass, kelp, prey abundance 216
- Bass Rock, gannet colony 240, 242, 243, **245**, 238–47
- Beaufort Sea, polar bears 99, 103–13
- Bering Sea
 - Eastern, food web 338, 342
 - effect of fisheries 17–18
- Berwick Bank, sandeel fishery 227
- biomass limit
 - fish stock 211–13
 - reference point 213–15, 218–19
- Bird Island
 - Antarctic fur seals, foraging behaviour 135, 136, 140
 - krill population sampling via predator diet 250–4, 258–9
 - macaroni penguin, foraging behaviour 133–4, 135, 136–40
- Bird Island Monitoring Programme, South Georgia 37–41, 158, 171, 161–73
 - data 167–9
 - predator performance 162, 163, 169
 - variables 159, 160
- Black Sea, effect of fisheries 18
- bloom, spring 48, 49–50, 54–7
 - as indicator 49–50
- blubber, seal, sampling 100–1
- bottom-up forcing 122–4, 143, 147, 150, 154
- bycatch 17, 207, 224
- Callorhinus ursinus* *see* seal, fur, Northern capelin 6, 73–4, 124–5

Cambridge University Press

052161256X - Top Predators in Marine Ecosystems: Their Role in Monitoring and Management

Edited by I. L. Boyd, S. Wanless and C. J. Camphuysen

Index

[More information](#)

Index 371

- and cod performance 225
- and guillemot performance 216–17
- Barents Sea scenario modelling 313–14, 318
 - predation 316–17
 - recruitment 315
- northwest Atlantic cold-water event 124, 125
- catalysts 89, 90, 91
- CCAMLR 8, 158, 262–3, 327, 330–2, 333–41
 - Ecosystem Monitoring Programme *see* CEMP
- CEMP 160, 158–61, 171, 262–3, 335
- cetaceans
 - in MSFA 91, 93
 - North Sea 93, 366–7
 - see also* dolphin; porpoise; whale
 - Cetorhinus maximus* *see* shark, basking
 - Champocephalus gunneri* *see* icefish
 - Circus cyaneus* *see* harrier, hen
- climate change
 - oceans 6
 - Eynhallow fulmar colony 150, 149–51
 - Clupea pallasii* *see* herring, Pacific
- cod, Atlantic 13, 17, 21, 69, 74
 - Barents Sea scenario modelling 313–14, 318
 - predation 316–17
 - recruitment 315
 - North Atlantic, productivity decline 225
 - North Sea, interaction with sandeel 229, 230, 227–30, 231, 232
- cod, Pacific 277–8
- composite standardized index 335–6, 337
- conservation, marine 347–8, 356–7
- Convention on the Conservation of Antarctic Marine Living Resources
 - see* CCAMLR
- copepod, calanoid 179
- Cystophora cristata* *see* seal, hooded

- Davis Strait, polar bears 103–13
- depth, critical, phytoplankton 47, 48, 55
- Diomedea melanophris* *see* albatross, black-browed
- dipping 90, 94
- Dissostichus eleginoides* *see* toothfish, Patagonian
- divers 119, 121–2, 123
 - benthic, low-tide foraging 185, 184–6
 - mid-water, shallow sea fronts 184, 182–4
 - sandeel availability 192–3
- diving
 - and prey dispersal 136–40
 - in foraging model 303–8
- dolphin
 - bottlenose 366
 - white-beaked 83–7
- DPSIR framework 362, 363, 365

- Ecological Quality Objectives (EcoQOs) 364, 363–4, 365, 366–9
- ecosystems
 - integrity 262–3
 - management 7–9, 262–3, 324–8, 343, 348
 - direct effects on populations 330–3
 - European seas 362–9
 - higher trophic levels 325–6, 330
 - indirect effects on populations 333–41
 - objectives 329, 324–43, 362: ecological quality 363–4, 366–9; societal choice 368–9; top predators 363, 363, 366–9
 - stable states 342–3
 - sustainability 362
 - modelling difficulties 349
 - monitoring 158–61, 333–41, 343
 - Bird Island 161–73
 - see also* CEMP
- El Niño 4 region 33–4, 35–6
- El Niño Southern Oscillation 41, 172
- energy budgets
 - North Sea birds 197, 198, 199, 193–9, 200, 202, 203, 204, 205, 206, 208
 - methods 194–6
- energy investment, grey seals 71
- Engraulis ringens* *see* anchovy, Peruvian
- Erignathus barbatus* *see* seal, bearded
- EU Birds Directive 366
- EU Habitats Directive 366–7
- Eumetopias jubatus* *see* sea lion, Steller
- Euphausia* *see* krill

- Farne Islands 84, 87–8
- Faroe Islands, fulmar colony 145, 147–8
- fat, adipose
 - polar bears 100
 - sample collection 100

Cambridge University Press

052161256X - Top Predators in Marine Ecosystems: Their Role in Monitoring and Management

Edited by I. L. Boyd, S. Wanless and C. J. Camphuysen

Index

[More information](#)

372 Index

- fatty acid signatures 106
 - polar bears
 - comparison with prey 102, 101–3, 104
 - quantitative analysis 100, 103–9, 110, 111, 112, 113
 - quantitative analysis 106–7
- feeding, social 91
- feeding associations, multispecies *see*
 - foraging assemblies, multispecies
- Firth of Forth
 - oceanography 50–2
 - sandeel fishery 54, 55–7, 192, 218, 223–6, 228, 233
 - seabird breeding study 47, 50–2
 - spring bloom 55
- fish
 - body size 16, 16
 - forage species 123, 124–5
 - minimum stock size threshold 211–13
 - North Atlantic biomass 13, 14
 - piscivorous, impact of sandeel fisheries 224–6, 229, 230, 231, 233
 - spawning stock biomass 211–13
 - trophic levels 15, 14–16
- fisheries
 - 1900s expansion 12–14
 - effect on ecosystems 11–23
 - comparison with top predators 20–2
 - direct 12–17
 - evolutionary change 16, 22
 - indirect 17–20
 - monitoring 343
 - mortality of Steller sea lion 279–80
 - waste 148–9, 152–4, 207
 - global catch 13, 12–14
 - impact of marine reserves 356–7
 - management 211–13
 - direct effects on populations 330–3
 - goals 324–6, 327–8, 329, 343, 367
 - indirect effects on populations 333–41
 - scenario modelling, Barents Sea 310–13, 318–9, 321
 - sandeel
 - Firth of Forth 54, 55–7, 192, 218, 223–6, 228, 233
 - Shetland Islands 224
 - sprat, Moray Firth 224
- fishing
 - down food web 14
 - ghost 12, 17
 - see also* fisheries
- flatfish 13
- flounder 69, 74, 73–4
- food chain 2
 - length 18–20
- food supply
 - and foraging trip duration 237–47
 - changes 5
- food web 15, 14–16
 - competition 19, 18–19
 - effect of fisheries 12, 17–19
 - fishing down 14
 - northwest Atlantic 121, 121, 124, 125
 - regime shifts 122–4
 - research 126–7
 - Southern Ocean 131–41
- forage species 124–5
- foraging
 - Antarctic fur seals 132–4, 135–40
 - critical habitat protection 353
 - grey seals 65–9, 76–9
 - macaroni penguins 133–4, 136–40
 - model 304, 305, 294–308
 - assumptions 295–7
 - food particles 302, 298–302
 - guillemot 307, 303–8
 - patchy environment 298, 297–8, 299
 - polar bears 100
 - seabirds 119–20
 - gannets, trip duration as indicator of food supply 237–47
 - North Sea 87–8: energy budgets 193–6, 197, 198, 199, 200; impact of oceanography 180–8
- foraging assemblies, multispecies, North Sea 89–91, 93–5, 187
- forcing
 - bottom-up 122–4, 143, 147, 150, 154
 - external 123–4
 - top-down 143, 147
- Fratercula arctica* *see* puffin, Atlantic
- fulmar, North Atlantic 6, 83–7
 - diet 148–9
 - foraging 148–9
 - importance of fishery waste 147–9, 152–4
- in MSFA 90, 93–5
- population change 146, 144–6
 - expansion 145, 147–8
 - Eynhallow colony 150, 149–51
 - hunting 147–8, 153–4

Cambridge University Press

052161256X - Top Predators in Marine Ecosystems: Their Role in Monitoring and Management

Edited by I. L. Boyd, S. Wanless and C. J. Camphuysen

Index

[More information](#)

Index 373

- paleoecology 151–2
 use of proxies 151–2
- Fulmarus glacialis* *see* fulmar, North Atlantic
- gadoid *see* fish, piscivorous
- Gadus macrocephalus* *see* cod, Pacific
- Gadus morhua* *see* cod, Atlantic
- gannet, Northern 83–7
 chick care 241, 246
 dietary analysis 244, 245–6
 energy budget 197, 198, 199, 193–9, 200, 202, 203, 204, 205, 206, 208
 foraging
 behaviour Bass Rock colony 245, 238–47; Great Saltee colony 238–44, 246–47
 range 240, 238–44: and colony size 237–8, 242, 243, 246–7; trip duration 243, 238–44, 246–7
 in MSFA 90, 89–91, 93–5
 northeast Atlantic, as monitor of fish stock 237–47
 northwest Atlantic, food-web shift 124, 125
 satellite telemetry 239
 travel speed 238–41
- gaspereau 69
- ghost fishing 12, 17
- Glyptocephalus cynoglossus* *see* flounder
- Great Saltee, gannet colony 240, 242, 243, 238–44
- grouse, red, MSFR 269–71
- guillemot, common 47, 83–8
 breeding success 56, 57, 58
 capelin requirement 216–17
 energy budget 197, 198, 199, 193–9, 200, 202, 203, 204, 205, 206, 208
 foraging model 307, 303–8
 in MSFA 89–91, 92, 93–5
 sandeel availability 54, 192–3
 thermocline use 184, 181–4, 186
- gull, *Larus*, in MSFA 83–7, 90, 89–91, 93, 94
- habitat
 critical, protection 350–2
 thermal 125
- haddock, North Sea, interaction with sandeel 229, 230, 227–30, 231, 232
- Halichoerus grypus* *see* seal, grey
- harrier, hen, MSFR 269–71
- harvest *see* fisheries; fishing
- herring, Atlantic
 Barents Sea scenario modelling 313–14, 318
 predation 316–17
 recruitment 315
- herring, Pacific 277–8
- horizon of relevance 2
- hotspots
 diversity 354, 355–7
 prey 125, 126
- Hudson Bay, polar bears 99, 103–13
- human activity
 effect on higher trophic levels 5, 329, 324–43, 347–8
see also fisheries
- hunting, effect on fulmar population 153–4
- Hydrobates pelagicus* *see* storm-petrel
- hydrography
 effect on prey 122
 effect on seabirds 180–8
- Hydrurga leptonyx* *see* seal, leopard
- ice breakup, effect on polar bear diet 111
- icefish 17, 37
- Iceland, fulmar colony 145, 147–8, 152, 153
- ICES, ecological quality objectives 364, 363–4
- Illex illecebrosus* *see* squid
- inference, inverse, predator performance and prey availability 264, 267–8, 272
- initiators 89, 91
- instrumentation, animal-borne 178
- International Whaling Commission, Revised Management Procedure 312, 319
- Isle of May, seabird breeding 50, 56, 58, 59, 84, 87–8, 180, 183
- James Bay, polar bears 99
- kittiwake
 black-legged 8, 47, 83–7
 breeding success 56, 55–8, 192–3
 energy budget 197, 198, 199, 193–9, 200, 202, 203, 204, 205, 206, 208
 foraging at shallow sea fronts 180–1, 182, 183, 186
 in MSFA 90, 89–91, 92, 93–5
 sandeel requirement 54, 215–16, 217, 218

Cambridge University Press

052161256X - Top Predators in Marine Ecosystems: Their Role in Monitoring and Management

Edited by I. L. Boyd, S. Wanless and C. J. Camphuysen

Index

[More information](#)

374 Index

- kleptoparasites 89, 90, 94
krill 6, 124–5
 abundance variability
 sea-surface temperature 258, 257–8
 South Georgia 29–31, 36, 131–41,
 161–3, 164, 165, 166, 168, 169,
 249–58, 259, 263, 272, 331–2, 336,
 337, 367–8
 biomass limit 213, 331–2
 demography, South Georgia 254–7
 harvesting 18, 158, 166
 importance in food web 333
 migration in water column 135–6
 population dynamics 252–4, 255
 sampling 250–1, 252, 258–9
 predator requirements 215
 size composition, Antarctic fur seal diet
 36, 250–1, 253, 254, 254, 258
- lactation, grey seals 65, 71, 73, 78
Lagenorhynchus albirostris *see* dolphin,
 white-beaked
Lagopus lagopus scoticus *see* grouse, red
Larus spp. *see* gull, *Larus*
- mackerel 13
mackerel, Atka 277–8
Mallotus villosus *see* capelin
mammals, marine
 critical habitat 353
 effect on ecosystems 20–2
 North Sea 93, 94
 recording at sea 85
man, effect on ecosystems *see* fisheries;
 human activities
marine protected areas 350
 see also reserves, marine
Marr Bank
 MSFA 84, 92
 piscivorous fish study 226–33
 sandeel fishery 224
mass
 maternal postpartum, grey seal 65, 71, 73,
 78
 weaning, grey seal 65, 71, 73, 78
metrics 364, 366–9
 pressure 368
Microtus agrestis *see* vole, field
modelling
 ecosystem 1–2, 7, 348, 349
 indirect effects of fishing 17–18
 partial-system 2
 primary production patterns, Firth of
 Forth 48, 50–1, 52, 53
 QFASA, polar bear diet 103–13
 scenario
 Barents Sea 310–21: modelling
 considerations 319–21
 whole-system 1, 4
Moray Firth 84, 87–8
Morus bassanus *see* gannet, Northern
multispecies assessment 121, 121–2
multispecies foraging assemblies *see*
 foraging assemblies, multispecies
- NOAA sea-ice dataset 32–3
North Sea
 foraging habitat 88–9
 marine mammals 93
 marine-management objectives
 362–9
 oceanography 178–9
 seabird breeding 46–59
 seabird foraging 87–8, 192–3
 seasonal oceanographical cycle 47–9
 shallow sea front 88–9, 178–9, 180–1,
 182–4
 foraging assemblies 89–93
 stratification 88–9
 top predators 84, 86, 83–7, 362–9
- oceanography
 influence on prey 47–9, 122, 178–9,
 180–8
 animal-borne instrumentation 178
 at-sea surveys 178
 North Sea 47–9, 178–9
 regime shifts 123, 122–4, 125
- oceans
 climate change 6
 physics, impact on seabirds 180–8
Odobenus rosmarus *see* walrus
Orcinus orca *see* whale, killer
oscillations *see* Atlantic Ocean, North
 Atlantic Oscillation; El Niño
 Southern Oscillation
- over-fishing 22, 211–13
- Pacific Ocean, sea-surface temperature 33,
 35–6
paleoecology
 fulmars 151–2
 use of proxies 151–2
Paralabrax clathratus *see* bass, kelp

Cambridge University Press

052161256X - Top Predators in Marine Ecosystems: Their Role in Monitoring and Management

Edited by I. L. Boyd, S. Wanless and C. J. Camphuysen

Index

[More information](#)

Index 375

- penguin 18
- gentoo
 - Bird Island Monitoring Programme 159, 160, 162, 163, **164**, 171, 170–1: effect of SST 36, 37–41
 - macaroni
 - Bird Island Monitoring Programme 159, 162, 163, **164**, 166, 171, 170–1
 - energy demands **134**, 133–4
 - foraging behaviour 133–4, 135, 136–40: diving behaviour 137, 136–40
 - krill dependence **134**, 131–41
 - petrel *see* storm-petrel
 - Phalacrocorax aristotelis* *see* shag, European
 - phalarope 83–7
 - Phoca groenlandica* *see* seal, harp
 - Phoca hispida* *see* seal, ringed
 - Phoca vitulina* *see* seal, harbour
 - Phocoena phocoena* *see* porpoise, harbour
 - physics, ocean, impact on seabirds 180–8
 - phytoplankton, critical depth 47, 48, 55
 - pinniped *see* sea lion; seal
 - pipit, meadow 269–71
 - piscivores 119, 121–2
 - see also* fish, piscivorous
 - planktivores 119, 121–2
 - Pleurogrammus monopterygius* *see* mackerel, Atka
 - plunge-diving 90, 94
 - polar bear
 - Canadian Arctic 99
 - adipose fat sampling 100, 101
 - diet 99–115: effect of ice breakup 111; as indicator of ecosystem dynamics 99, 113–5; variation with latitude 113
 - fatty acid signature 102, 101–3, 104: QFASA 100, 103–9, 110, 111, 112, 113
 - Pollachius virens* *see* pollock
 - pollock 17–18, 69, 73–4, 124–5
 - pollock, walleye 277–8, 279, 286–9
 - fishery management 212
 - population change
 - decline of Steller sea lion 275–89
 - top predators 143–4
 - Bird Island Monitoring Programme 171, 170–1
 - northern fulmar 144–6, 147–8
 - porpoise, harbour 83–7, 93–5, 366
 - predator–prey interaction 1, 21–2
 - cod 229, 230, 231, 226–33
 - inverse inference 264, 267–8, 272
 - North Sea 47, 226–33
 - predator response 120, 163, 168, 196–208, 264–73
 - seabirds 119–20
 - South Georgia 161–73
 - uncertainty 266, 267–8
 - predators
 - apex *see* predators, top
 - diversity hotspots 354, 355–7
 - generalist, multispecies functional response 264–5, 269–71, 273
 - krill dependent 29–31, 36, 131–41, 249–59, 272, 367–8
 - performance variables 162, **164**, 161–6, 336, 337
 - marine mammals 20–2, 353
 - parameter indices 335–6
 - thermal habitat 125
 - top
 - as indicator of ecosystem dynamics 3–9, 64–9, 74, 99, 113–15, 126–7, 161, 353
 - critical habitat 350–2, 353
 - DPSIR framework **363**, 363, **365**
 - human exploitation, management 325–6, 330, 333–41
 - management objectives 362–9
 - North Sea 84, 86, 83–7, 95
 - population change 143–4, 171, 170–1
 - prey density requirements 215
 - species-specific sensitivity 218
 - terrestrial breeding season 3
 - pressure metric 368
 - prey
 - abundance, predator requirements 215
 - availability, gannet monitoring 237–47
 - availability/abundance, influence of oceanography 122
 - calorific energy 264
 - density monitoring 266–72
 - distribution 131–41
 - hotspots 125, 126, 355–7
 - thermal habitat 125
 - see also* predator–prey interaction
 - producers 90, 91
 - production
 - primary 48, 49, 50, 54, 178–9
 - at thermocline 182–4
 - model 51
 - productivity, predator, operational objectives 338, 339–41

Cambridge University Press

052161256X - Top Predators in Marine Ecosystems: Their Role in Monitoring and Management

Edited by I. L. Boyd, S. Wanless and C. J. Camphuysen

Index

[More information](#)

376 Index

- proxies
 ecosystem integrity 262–3
 in palaeoecology 151–2
- puffin
 Atlantic 83–7, 93–5
 prey abundance 216
- pursuit-diving 90, 94, 121–2
- Pygoscelis papua* *see* penguin, gentoo
- radiation, solar, and spring bloom 55
- Raja ocellata* *see* skate, winter
- Raja radiata* *see* skate, thorny
- razorbill, in MSFA 89–91, 93–5
- recruitment, Barents Sea scenario
 modelling 315
- redfish 69, 74, 73–4, 77–8
- regime shifts *see* oceanography, regime shifts
- reserves, marine 350–7
 benefits 351–2
 effect on fisheries 356–7
 high-mobility species 350–2
 mammals 353
 network 357
- response, predator 120, 163, 168
 decreased sandeel availability 196–208
 food supply change 5, 168
 multispecies functional 264–5, 269–71, 273
- Rissa tridactyla* *see* kittiwake, black-legged
- Sable Island, Nova Scotia, grey seal
 breeding colony 64–5, 66, 66, 76
- St Kilda, fulmar colony 145, 147–8, 152, 153
- salmon 13
- sand lance 69, 74, 73–4, 77–8
- sandeel 6, 47–55, 124–5
 and seabird breeding success 54, 56, 57–8, 192–3, 215, 217–19
 at shallow sea fronts 180–2
 at thermocline 182–4
 biomass, North Sea 213–15
 decline, predator response 196–208
 fishery, Firth of Forth 54, 55–7, 192, 218, 223–6, 228, 233
 life history 53, 179
 North Sea predators 83, 93, 192–3, 196–208, 213–14, 215
- sardine 6, 124–5
- Sardinops sagax* *see* sardine
- schooling 21
- scooping 90, 94
- Scotia Sea
 krill population 257
 sea-ice variability 30, 32–3, 35
- Scotian Shelf, Canada
 environmental variability 71–4, 76
 fish size 16
 grey seals 64–5
- scroungers 89, 90, 91
- sea lion, Steller 212
 diet 277–9
 management plan 288–9
 population decline 276, 275–89
 competing hypotheses 278–80, 283, 286, 287, 288, 286–9; fishery-related mortality 279–80; food limitation 278–9; ‘junk food’ 279; predation mortality 280
 model 280, 281
- sea otter 20, 21
- sea-ice
 Southern Ocean 29
 effect on krill 257–8
 Scotia Sea 30, 32–3, 35
- seabird–prey interaction 119–20
- multispecies assessment 121, 121–2
- seabirds
 effect of regime shifts 124
 fish consumption 213, 214
 limit reference point 213–15, 218–19
 foraging 119–20
 energy budgets 197, 198, 199, 193–9, 200, 202, 203, 204, 205, 206, 208
 model 303–8
 impact of ocean physics 180–8
 animal-borne instrumentation 178
 at-sea surveys 178
 trophic links 186–7
- North Sea
 breeding success 46–52, 59; sandeel availability 54, 217–19; sandeel fishery 55–7
 foraging 87–8
 response to sandeel decrease 196–202, 203, 204, 205, 206, 208
 northwest Atlantic, food-web shift 124
 recording at sea 85
- seal
 bearded
 blubber sampling 100–1

Cambridge University Press

052161256X - Top Predators in Marine Ecosystems: Their Role in Monitoring and Management

Edited by I. L. Boyd, S. Wanless and C. J. Camphuysen

Index

[More information](#)

Index 377

- fatty acid signature 101–13
 - in polar bear diet 113–15
- elephant, northern, breeding ground
 - 353
- fur, Antarctic
 - Bird Island Monitoring Programme, 159, 162, 168, 171, 170–71
 - diving 76–7, 137, 135–40
 - effect of SST 36, 37–41
 - energy demands 134, 133–4
 - foraging behaviour 132–4, 135, 135–40
 - krill dependence 134, 131–41
 - krill size in diet 36, 253, 254, 250–4, 258: sampling 251
 - Northern, population decline 278
- grey
 - eastern Canada 64–79: breeding colony 65
 - demography 78: diet 65, 69, 70, 74, 77–9; diving behaviour 65, 67, 67–9, 76–9; energy investment 71, 78; foraging 65–9, 68, 76–9; as indicator of ecosystem state 64–9, 74; lactation 65, 71, 73, 78; life history 65, 71; maternal postpartum mass 65, 71, 73, 78; prey biomass 73–4, 75; pup weaning mass 65, 71, 73, 78
 - North Sea 83–7, 366
- harbour 20, 83–7, 366
 - blubber sampling 100–1
 - fatty acid signature 103
 - in polar bear diet 113–5
 - population decline 278, 287, 289
- harp
 - Barents Sea scenario modelling 310–21: predation 317; recruitment 315; sealing 318–19
 - blubber sampling 100–1
 - fatty acid signature 101–13
 - in polar bear diet 114–15
- hooded
 - blubber sampling 100–1
 - fatty acid signature 101–13
 - in polar bear diet 114–15
- leopard, South Georgia 258
- ringed
 - blubber sampling 100–1
 - fatty acid signature 101–13
 - in polar bear diet 99, 113–15
- sealing, Barents Sea 318–19
- Sebastes* spp. *see* redfish
- sensitivity, species-specific, top predators 218
- shag, European
 - energy budget 197, 198, 199, 193–9, 200, 202, 203, 204, 205, 206, 208
 - in MSFA 94
 - tidal diving behaviour 182, 184–6
- shallow sea front 88–9, 178–9, 180, 186
 - Firth of Forth 48, 50–2, 55
 - foraging assemblies 89–93, 95
 - mid-water divers 182–4, 186
 - surface-feeders 180–1, 182, 186
- shark 13
 - basking, prey abundance 216
- shearwater, Manx, in MSFA 83–7, 90
- skate
 - thorny 69, 74
 - winter 69, 74
- skua
 - Arctic, sandeel requirement 215, 216, 217
 - in MSFA 90, 89–93, 94
- South Georgia
 - Atlantic physical anomalies 29–31
 - SST variability 30, 31, 32–4, 35–6, 41: effect on predators 36–41
 - teleconnections 33–4, 41
 - Bird Island Monitoring Programme 37–41, 158, 161–73
 - predator performance 163
 - variables 159
 - krill-dependent predators 131–41, 249–59, 272
 - krill population sampling 250–4
- Southern Ocean
 - food web 131–41
 - physical anomalies 28–9
 - sea-ice 30, 32–3, 35
 - teleconnections 33–4, 41
 - variability of krill population 249–59
- sprat 54, 124–5, 179, 182–4
- squid 41, 69, 74
- Stercorarius parasiticus* *see* skua, Arctic
- Sterna paradisaea* *see* tern, Arctic
- storm-petrel 83–7
 - in MSFA 90, 89–95
- stratification, North Sea 47, 49, 55, 88–9, 180
- suppressors 89, 90, 91
- surface-feeders 119, 121–2, 123

Cambridge University Press

052161256X - Top Predators in Marine Ecosystems: Their Role in Monitoring and Management

Edited by I. L. Boyd, S. Wanless and C. J. Camphuysen

Index

[More information](#)

378 Index

- surface-feeders (*cont.*)
 - effect of cold-water event 124
 - sandeel availability 192–3
 - shallow sea fronts 180–2
- surface pecking 90, 94
- surveys, at-sea 178
- sustainability 362
- swamping, of predator 21

- teleconnections 33–4, 41
- telemetry, satellite
 - Antarctic fur seal 134, 135, 136
 - gannet 239
 - macaroni penguin 134, 135
- temperature, sea-surface, variability
 - South Georgia 30, 31, 32–4, 35–6, 41
 - effect on krill 257–8
 - effect on predators 36–41
- tern
 - Arctic, sandeel availability 192–3
 - in MSFA 90, 89–95*Theragra chalcogramma* *see* pollock, walleye
- thermocline, importance to mid-water
 - divers 184, 181–4, 186
- tides 178–9, 180, 186
 - benthic divers 182, 185, 184–6
- toothfish, Patagonian, spawning biomass 333
- top-down forcing 143, 147
- total allowable catch
 - Barents Sea scenario model 310–21
 - cod 225, 318
 - harp seal 318–19
 - minke whale 318
- trawling 12, 17
- trophic cascades 18, 325, 348
- trophic level 15, 14–16, 20
 - higher
 - management goals 325–6, 330
 - predators *see* predators, top
- trout, Quebec 20
- tuna 13

- uncertainty, predator performance and prey
 - availability 266, 267–8
- United Nations Convention on the Law of the Sea 1982 327–8
- Uria aalge* *see* guillemot, common
- Ursus maritimus* *see* polar bear

- vole, field 269–71

- walrus 20
 - blubber sampling 100–1
 - fatty acid signature 101–13
- Wee Bankie
 - piscivorous fish study 229, 230, 231, 226–33
 - sandeel fishery 224, 225, 228
- whale, baleen 18
- whale, grey 20
- whale, humpback, breeding ground 353
- whale, killer
 - predator of sea otter 20
 - predator of Steller sea lion 278, 280, 289
- whale, minke 83–7, 93–5
 - Barents Sea scenario modelling 310–21
 - predation 316–17
 - recruitment 315
 - whaling 318, 319
- whaling
 - Barents Sea 318, 319
 - Bering Sea 17–18
- whiting, North Sea, interaction with
 - sandeel 229, 230, 227–30, 231, 232