

Index

- adaptive capacity 111, 124, 141
- adaptive management 97, 99, 101
- Agenda 21 26, 87, 89, 95–6, 103, 104
- Agreement Concerning Cooperation in Marine Fishing 91
- Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks 89, 92
- Agreement on the Conservation of African-Eurasian Migratory Waterbirds 92
- Agreement on the Conservation of Seals in the Wadden Sea 92
- Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas 92
- Antarctica 85
 - Antarctic ice sheet 58
 - Convention for the Conservation of Antarctic Seals 91
 - Convention on the Conservation of Antarctic Marine Living Resources 92
- anticipatory zoning 6, 158–61
- aquaculture 38, 42–3, 163
- Arabian Sea 85
- Arctic 5, 6, 17, 47–9, 57, 60, 74, 80, 158–61
 - Arctic Climate Impact Assessment 47–8, 49, 158
 - Arctic Management Area 159–60
 - Arctic Monitoring and Assessment Program 48, 49
- Argentina 73, 159
- auctions of future use rights 164–7
- Australia 6, 12, 32, 38, 40, 89, 102, 103–4, 106, 107, 139–46, 158, 163, 165, 172
 - see also* Great Barrier Reef
- Bahamas 139
- Baltic Sea 21, 31, 85, 149, 156
- Belgium 107
- Bering Sea 156
- Bermuda 104
- biodiversity, marine
 - Census of Marine Life 14
 - climate change and 55, 57–8, 60, 61, 111, 141
 - marine protected areas and 101–2, 127–8
 - treaties governing 86–9, 91–2
 - United Nations Convention on Biological Diversity 87–9, 103, 134–5, 148
 - see also* coral reefs
- Biodiversity Convention *see* treaties; United Nations Convention on Biological Diversity
- Black Sea 25, 29, 85
- Canada 13, 16, 21, 28, 32, 33, 47, 49, 56, 74, 104, 107
- cannon shot rule 73
- carbon dioxide 50, 51–2, 142
 - direct injections into oceans 52
 - ocean acidification 58–9
 - ocean fertilization 52
 - oceans as CO₂ sinks 51–2, 173
- Caribbean 30, 37, 172
- Caribbean Challenge 138–9
- Caspian Sea 30
- Census of Marine Life 14
- Chile 54, 73, 158–9
- China 16, 28, 39
- climate change 2–4, 5, 49–61, 110
 - adaptation 110–11, 119–30, 134–50, 171, 172
 - and the creation of hypoxic zones 56–7

- and dynamism of marine ecosystems 110
 - effects on Arctic 47–9
 - effects on coral reefs 2, 11, 61–2, 123, 136–7, 137–8
 - effects on kelp forests 147, 155
 - effects on marine biodiversity 55, 57–8, 60, 61
 - effects on ocean currents 54, 55, 56–8
 - effects on sea surface temperatures 54–5
 - incorporated into Biodiversity Convention 88–9
 - limits of marine protected areas to address 104
 - and marine disease 60–61
 - and marine pollution 60
 - migrations of marine species 55
 - mitigation 50–53, 110, 143, 150, 173
 - and ocean acidification 58–9
 - oceans and climate 53–4
 - and place-based management 111
 - reference sites for scientific study 128–9
 - sea-level rise 54, 58–9
 - and survivor ecosystems 129
 - coastal development 2, 27–9
 - coastal ecosystems 12, 20
 - integrated coastal management (ICM) 95–7
 - value of 12
 - comparative law 5–6
 - contiguous zone 76, 79
 - continental shelf 76–7, 80, 96
 - Convention for the Conservation of Anadromous Stocks 92
 - Convention for the Conservation of Antarctic Seals 91
 - Convention for the Conservation of Migratory Species of Wild Animals 91–2
 - Convention for the Conservation of Southern Bluefin Tuna 92
 - Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean 92
 - Convention on the Conservation and Management of the Pollock Resources in the Central Bering Sea 92
 - Convention on the Conservation of Antarctic Marine Living Resources 92
 - Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention) 31, 84, 85–6
 - coral reefs 2, 7, 11–13, 28, 97, 100–101, 172
 - as climate change reference sites 128–9
 - coral bleaching 2–3, 40–41, 60, 61, 136
 - Coral Triangle 136–8
 - effects of climate change on 60, 61–2, 123, 135–6, 136–7
 - effects of ocean acidification on 60, 123
 - effects of sea-level rise on 123, 137
 - International Coral Reef Initiative 89
 - and marine protected areas (MPAs) 101, 119–30, 138
 - no need for anticipatory zoning 155, 160
 - protected in the Northwestern Hawaiian Islands 119–30
 - protected under Biodiversity Convention 88–9
 - threats to 11, 36–7, 125–7, 135–6, 137
 - value of 12, 40–41, 144
- Cuba 104
 - currents 53–4, 55–6, 109–10, 156
 - Denmark 47, 49
 - disasters 39–41
 - coral bleaching 40–41, 60
 - Fukushima Daiichi Nuclear Power Station 39–40
 - hurricanes and cyclones 19, 40
 - oil spills 39, 40
 - tsunami 39
 - disease 37–9, 60–61
 - Dominican Republic 139
 - dynamic zoning 6, 161–3

- East Timor 136
- ecosystem based management (EBM)
97–101, 106, 122, 124, 137–8, 159,
161
- ecosystem services 4, 15–21, 50, 111,
170
cultural services 17
provisioning services 15–17
regulating services 18–19
supporting services 19
- Ecuador 54, 73, 87
- Egypt 73
- Endangered Species Act (U.S.) 11, 62,
108, 161
- England/Great Britain 72, 74–5
- Ethiopia 73
- Europe and European Union 6, 16, 33,
54, 74, 77, 86, 97, 104, 148–50
- exclusive economic zone (EEZ) 79–80,
96, 166
- Falkland Islands 74
- Federated States of Micronesia 138
- fisheries and fishing
Agreement Concerning Cooperation
in Marine Fishing 91
Agreement on Straddling Fish
Stocks and Highly Migratory
Fish Stocks 89, 92
as a basis for expanding marine
jurisdiction 73–4
and climate change 55
“Cod Wars” 74–5
Convention for the Conservation of
Anadromous Stocks 92
Convention for the Conservation of
Southern Bluefin Tuna 92
Convention on Fishing and
Conservation of the Living
Resources of the High Seas 77
Convention on the Conservation
and Management of Highly
Migratory Fish Stocks in the
Western and Central Pacific
Ocean 92
Convention on the Conservation and
Management of the Pollock
Resources in the Central Bering
Sea 92
current changes and 109–10
and ecosystem based management
(EBM) 97, 100
fisheries collapses 21, 41–2
on the high seas 81–2
individual fishing quotas (IFQs) 167
individual tradeable quotas (ITQs)
167
management 1, 2, 5, 11, 73, 149,
161–3
and marine reserves 101
in a nation’s EEZ 79–80
in a nation’s territorial sea 78
Newfoundland cod collapse 21
in the Northwestern Hawaiian
Islands 119–20, 126
overfishing 21, 34–7, 141, 158–9,
160
upwellings and 54
fragmented regulation 3, 6, 91, 93–4,
99, 170–71
species-specific protections 86, 91–2,
93
- France 25, 89
“freedom of the seas” 71–2, 76, 80–81
- Galapagos Islands 40, 87
- Germany 107
- Global Programme of Action for
the Protection of the Marine
Environment from Land-Based
Activities 85, 88
- governance, marine 5, 6, 26, 41–2, 89,
93–4, 141–4, 159, 170–73
adaptive management 97, 99, 101
and climate change planning 172–3
ecosystem based management
(EBM) as improvement to
97–101, 159
integrated coastal management
(ICM) as improvement to 95
jurisdictional mismatches 104
lack of knowledge for 26, 104–5
marine protected areas (MPAs), use
of 101, 159, 163
treaties and 71–89, 91–2
- Great Barrier Reef 12, 40, 87, 102, 104,
106, 109, 139–46, 155, 165
- Great Lakes 28, 29
- Great Pacific Garbage Patch 34, 127,
130

- greenhouse gases 50
 Greenland 47, 72
 Greenland ice sheet 58
 Grenada 139
 Guam 138
 Guinea Bissau 107
 Gulf of Aden 85
 Gulf of Maine 108
 Gulf of Mexico 25, 30–31, 39, 74, 104, 129
 Guyana 77
- harmful algal blooms 21, 30
 costs of 21
 Hawai'i 12, 41–2, 52, 87
 high seas 71, 75–6, 77, 80–81
 hypoxic or “dead” zones 30–31, 56–7, 60
- Iceland 73, 74–5
 India 28, 41
 Indian Ocean 52–3
 Indonesia 73–4, 136
 Indo-Pacific Ocean 61
 integrated coastal management (ICM) 95–7
 Inter-American Convention for the Protection and Conservation of Sea Turtles 92
 Intergovernmental Panel on Climate Change (IPCC) 50, 51, 55, 59, 61, 110–11
 International Convention for the Conservation of Atlantic Tuna 86
 International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) 41, 84–5
 International Convention for the Prevention of Pollution of the Sea by Oil 83–4
 International Convention for the Regulation of Whaling 41, 82, 86, 91
 International Convention for the Safety of Life at Sea (SOLAS) 83
 International Convention on Oil Pollution Preparedness, Response, and Cooperation 85
 International Coral Reef Initiative (ICRI) 89
- International Maritime Organization (IMO) 85–6
 invasive species 29, 125–7
 Italy 31, 107
- Jakarta Mandate 88
 Jamaica 89, 139
 Japan 25, 39–40, 52, 75, 87, 89, 162
 jellyfish 25–6
jus cogens (peremptory norm) 72
- kelp forests 147, 155, 161
 Kenya 41
 Kiribati 74, 100–101
 Phoenix Islands Protected Area (PIPA) 100–101
 Korea 75, 87, 156
 Kuril Islands 75
- Libya 73
- Malaysia 136
 Maldives 41
 marine protected areas (MPAs) 101–5, 111, 121, 122, 134, 135, 138, 146–8
 marine reserves or “no take” areas 101, 105, 121, 122, 128, 134, 159, 163
 marine spatial planning 105–10, 111, 122–3, 139–41, 171–2
 flexibility mechanisms 110, 156–7, 157–67
 need for amendment procedures 157
 threat of stasis 109, 155
 Marshall Islands 138
 Mediterranean Sea 29, 85
 Mexico 73
 Micronesia Challenge 138–9
 Midway Atoll 1, 120–21, 125–6
 Millennium Ecosystem Assessment 15, 29, 31, 35, 36, 41–2, 105
- Namibia 107
 Natura 2000 148, 149
 Netherlands 72, 107, 157, 160, 165
 New Zealand 6, 17, 32, 95, 104, 107
 North Atlantic Ocean 41, 53, 55, 56, 57, 74, 107, 156, 165–6
 North Pacific Fur Seal Treaty 86, 91
 North Sea 21, 86, 149, 156, 157

- Northern Mariana Islands 138
 Northwestern Hawaiian Islands 1, 2, 100, 119–30
 Norway 47, 52, 107
- ocean acidification 58–9
 ocean exploration 26–7
 ocean fertilization 52, 89
 ocean zoning *see* marine spatial planning; zoning, marine
 oil spills 21, 39, 40, 41, 84
- Pacific Ocean 34, 38, 39, 56, 73, 100, 130, 172
 Palau 138
 Panama 40, 73
 Papahānaumokuākea Marine National Monument 1–2, 7, 87, 100, 120, 122–30, 134, 155
 Papua New Guinea 136
 paradigm of inexhaustibility 43
 Peru 54, 73, 74
 Philippines 21, 73–4, 89, 136
 phytoplankton 13, 19, 52, 53, 56, 61
 piracy 71–2, 76
 place-based marine management 3–4, 94–110, 111, 121–2, 134, 137–8, 158–61, 170–73
 as accidental adaptation 119–30
 and climate change adaptation 111, 119–30, 134–50, 170–72
 and climate change mitigation 173
 as conscious adaptation 134–50
 ecosystem based management (EBM) 97–101, 106, 122, 124, 137–8, 159, 161
 as an improvement on fragmented regulation 93–4, 170–71
 integrated coastal management (ICM) 95–7
 marine protected areas (MPAs) 101–5, 111, 121, 122, 134, 135, 138, 146–8
 marine reserves or “no take” areas 101, 105, 121, 122, 159, 163
 marine spatial planning 105–10, 122–3, 139–41, 171–2
 pollution 29–34, 38, 97, 104
 beluga whale contamination, St. Lawrence River 32–3
 causing hypoxic (dead) zones 30–31, 60
 endocrine disrupters 33
 Great Pacific Garbage Patch 34
 land-based 31, 60, 144–6, 165
 mercury 31–2, 60
 nutrients 30
 oil spills 21, 39, 40, 41, 84
 PCBs 32–3
 persistent organic pollutants (POPs) 33
 plastic 33–4
 sewage 29–30
 toxins 31–3, 34
 treaties governing 83–6
 Portugal 72
 precautionary approach 170
 property rights 166–7
- Red Sea 85
 resilience 4–5, 99, 110, 111, 123–5, 128, 129, 137, 138, 141–3, 144, 147–8, 170, 172
 Rio Conference on Sustainable Development 87
 rule of capture 71
 Russia 47, 49, 75
- St. Lucia 102, 107–8
 St. Vincent and the Grenadines 139
 Saudi Arabia 73
 Senegal 74
 Seychelles 41
 Solomon Islands 136
 South Africa 54
 South Pacific Tuna Treaty 86
 Spain 21, 72, 74
 Sri Lanka 41
 Stockholm Convention on Persistent Organic Pollutants 33
 Sweden 89
- Taiwan 74
 Tanzania 41, 107
 territorial sea 73, 76, 78–9
 threshold crossing 5
 treaties
 Agreement Concerning Cooperation in Marine Fishing 91

- Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks 89, 92
- Agreement on the Conservation of African-Eurasian Migratory Waterbirds 92
- Agreement on the Conservation of Seals in the Wadden Sea 92
- Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas 92
- Convention for the Conservation of Anadromous Stocks 92
- Convention for the Conservation of Antarctic Seals 91
- Convention for the Conservation of Migratory Species of Wild Animals 91–2
- Convention for the Conservation of Southern Bluefin Tuna 92
- Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean 92
- Convention on the Conservation and Management of the Pollock Resources in the Central Bering Sea 92
- Convention on the Conservation of Antarctic Marine Living Resources 91
- Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention) 31, 84, 85–6
- Geneva Conventions (UNCLOS I) 75–7
- Inter-American Convention for the Protection and Conservation of Sea Turtles 92
- International Convention for the Conservation of Atlantic Tuna 86
- International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) 41, 84–5
- International Convention for the Prevention of Pollution of the Sea by Oil 83–4
- International Convention for the Regulation of Whaling 41, 82, 86, 91
- International Convention for the Safety of Life at Sea (SOLAS) 83
- International Convention on Oil Pollution Preparedness, Response, and Cooperation 85
- North Pacific Fur Seal Treaty 86, 91
- role of, in ocean governance 71, 82, 89
- South Pacific Tuna Treaty 86
- Stockholm Convention on Persistent Organic Pollutants 33
- Treaty of Shimoda 75
- United Nations Convention on Biological Diversity (Biodiversity Convention) 87–9, 103, 134, 148
- United Nations Convention on the Law of the Sea (UNCLOS) 42, 71, 75–83, 87, 89, 91, 94–5
- World Heritage Convention 1, 87
- TurtleWatch 162–3, 173
- United Kingdom 19, 84, 89, 107, 148, 149
- United Nations Conference on Environment and Development (UNCED) 26
- United Nations Convention on Biological Diversity (Biodiversity Convention) 87–9, 103, 104, 134, 148
- United Nations Convention on the Law of the Sea (UNCLOS) 42, 71, 75–83, 87, 89, 91, 94–5
- United Nations Development Programme (UNDP) 28
- United Nations Educational, Scientific and Cultural Organization (UNESCO) 106, 157, 171–2
- United Nations Environment Programme (UNEP) 29, 30, 36, 37, 60, 86
- United Nations Food and Agriculture Organization (FAO) 35–6, 55

- United States 1, 13, 17, 18–19, 20–21, 27–8, 29, 30–31, 32, 38–9, 40, 47, 49, 52, 54, 56, 72, 73, 74, 77–8, 80, 88, 89, 93, 96, 97, 99, 100, 101, 102, 103, 106–7, 108, 109, 119–30, 135, 146–8, 158–61, 166
- value of oceans 11–22
 - for biodiversity 13–14
 - for bioprospecting 16
 - in Canada 13, 16
 - to coastal communities 18–19
 - in European Union 16
 - from fishing 16, 21
 - Robert Costanza's calculation of 19–20
 - from tourism and recreation 17
 - in the United States 13, 17, 18–19, 20–21
 - Venezuela 73
- whaling 72
 - Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas 92
 - International Convention for the Regulation of Whaling 41, 82, 86, 91
- wind energy, offshore 157, 160, 165–6
- World Heritage Convention 87
 - Northern Hawaiian Islands as world heritage site 1, 87
- World Oceans Day 22
- zoning, marine
 - anticipatory zoning 6, 158–61
 - and auctions of future use rights 164–7
 - dynamic zoning 6, 161–3
 - flexibility 110, 156–7, 157–67
 - Great Barrier Reef zoning 139–46
 - need for amendment procedures 157
 - see also* marine spatial planning

