

Creation Care of the Other 71%

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'This subject is as vast as the sea itself'

Philippe Reymond, 1958¹

The importance of the oceans

As the ocean covers approximately 71 percent of the surface of the Earth, it is arguable that we live on a water planet that should be called the Ocean. The so-called 'blue marble' picture taken by astronauts from space reinforces the ubiquity of the ocean. The presence of water on Earth and the existence of the ocean, from which life emerged, are critical to life on Earth. The water cycle—in simple terms, water evaporates from the ocean, is transported by the atmosphere over land, falls as rain and returns to the oceans via rivers—sustains life on land. However, the ocean also sustains life more directly, being the habitat for an amazing range of living organisms, from microscopic bacteria, phytoplankton (miniscule plants) and zooplankton (miniscule animals), through to the largest mammal on Earth, the blue whale, which can be up to thirty metres in length and weigh up to 180 tonnes. There is an amazing diversity of life in the oceans, with peculiar creatures such as sea cucumbers living on the seabed at depths of four or more kilometres, and under tremendous pressure due to the weight of water above them, through to the more familiar fish, such as cod.

Human beings have used the ocean as a resource for thousands of years. For example, seaweed, shellfish, shrimps, and fish of many kinds have been harvested from the ocean and used for food. What started out as a small-scale local enterprise—and is still such in many parts of the world—has also become big business with factory ships, which process and freeze the fish caught by fishing vessels out at sea, turning fishing into an industrial scale enterprise. Fishing provides a significant fraction, about 16 percent, of the total animal protein eaten by humans globally, with this percentage being higher in some nations, often the poorer less developed ones.

The oceans are also a crucial part of the climate system with the large-scale ocean circulation (currents) re-distributing vast amounts of heat across the globe. For example, in the North Atlantic at 26°N, the ocean currents are transporting northwards approximately 1.3 petawatts (10^{15} watts) roughly 100 times the world's present installed power generating capacity (which is about 10^{13} watts). This heat is transferred to the weather systems crossing the Atlantic and provides the United Kingdom and northwest Europe with its milder and wetter weather.² The presence of phytoplankton in the oceans is important for the carbon cycle. Just like plants on land, they use the carbon dioxide (CO_2) absorbed by the ocean from the atmosphere to grow. About a third of the CO_2 being emitted into the atmosphere due to the burning of fossil fuels (oil, coal, gas) is absorbed by the ocean.³ Part is simply dissolved in the oceanic waters, leading to ocean acidification, and part is utilised by phytoplankton for growth, with the ultimate fate of some of the carbon being burial in deep-sea sediments.⁴

The ocean is also important culturally. For example, this can be seen in novels such as *Moby Dick* by Herman Melville, and the works of Joseph Conrad, who spent time at sea as a sailor.⁵ Certain cultures were or are closely linked to the sea, such as the ancient Phoenicians in Old Testament times, and the Polynesians in the Pacific. The Polynesians made amazing voyages across the Pacific in very simple seagoing craft. As a result, the ocean (*Moana*) is heavily embedded in Polynesian culture and even in theology.⁶ Globally, the interaction between humans and the ocean has influenced many cultures, even those that were not that involved in seafaring, such as the ancient Israelites (see next section).

In this chapter we will examine what the Bible says about the ocean as part of God's creation; consider how we should care for the other 71 percent of the Earth; give some examples of such care; and end with a reflection on the ocean and God's glory.

The ocean and the Bible

Surprisingly little has been written on the ocean from a biblical perspective, either as part of the wealth of writing on creation care, the environment and ecology, and sustainability, or as a topic in its own right.⁷ While some Bible dictionaries include articles on the sea⁸ and Raymond has written a fuller chapter,⁹ there is a need for a more extensive treatment of the subject, which Raymond describes as 'as vast as the sea itself'¹⁰—an echo of Psalm 104:25—and which covers almost the whole Bible, from Genesis 1:10 to Revelation 21:1.

At the beginning of Genesis, the Bible affirms the goodness of the ocean and the creatures living in it (1:9–10, 20–21). The Psalms reiterate God's



Figure 1: The diversity of underwater life. (Photograph: Robert D Sluka)

creation and ownership of the sea and all that is in it (95:5, 146:6). God blesses the ocean creatures and tells them to be fruitful and multiply (Gen 1:22). The Genesis language of the ocean teeming with creatures is picked up in Psalm 104:25 and echoed in Ezekiel 47:10. Following the Flood, God makes a covenant with all his creatures, including those in the ocean (Gen 9:8–17). God uses creation, including the ocean, to reveal himself and his character to Job (Job 38:1–42:6). The ocean is a place where human trade and travel take place (Ps 107:23, Jonah 1:3, Acts 27:38). In the process, people see the wonders of God’s creation (Ps 107:23–24). That God values his creation, and specifically the ocean, is shown in his blessing (in terms of abundance of life) and his care for his creatures (Ps 104:27–28). It is part of God’s mandate to humanity that we should care for his creation as he does (Gen 1:26–28).¹¹

Associated with the ocean in the Bible is the imagery of chaos and danger as, for example, in the storms experienced by Jonah, Jesus (Mark 4:35–41), and Paul (for instance, Acts 27–28).¹² However, God is seen as being in control of the waves and the sea and the creatures in it (see, for example, Ps 65:5–7, 74:13, 93:3–4, 107:29; Prov 8:29; Jer 5:22), and ‘treads on the waves of the sea’ (Job 9:8), echoed in Jesus’ walking on the water (Mark 6:48). There is also a *mythical* element associated with the sea and some of the creatures

living in it, such as Leviathan. Leviathan at times seems to be a creature of the sea, as in Psalm 104:26 where it might simply be something large like a whale frolicking in the waves.¹³ In other scriptures, it appears to be more like a mythical monster in enmity and conflict with God, as in Job 41 or Isaiah 27:1—though, even here, it is clear that it is subject to God. Similarly, the ocean itself seems sometimes to be symbolic of chaos and evil in opposition to God (Job 38:8; Isa 17:12–13; Mark 4:35–41).¹⁴ In light of this, it is probably best not to take ‘and there was no longer any sea’ in Revelation 21:1 as saying that there will be no ocean in the new creation. Rather, the lack of sea is more likely to be symbolic of the removal of chaos and evil from the new creation.¹⁵

Note that Revelation 5:13 speaks of ‘every creature . . . on the sea, and all that is in them’ singing praise to the Lamb (Jesus). This leads into the final aspect of the ocean to be considered here, namely that the ocean and the creatures in it were created for God’s praise. In fact, they are commanded to praise him (Ps 69:34, 96:11, 98:7, 148:7). They were not created simply as a resource for humanity to use and exploit; therefore their value is not instrumental (or extrinsic). Actually, oceanic creatures, like those on land and in the air, and humanity itself, are all part of what Bauckham aptly describes as the community of creation.¹⁶ This is well captured in Psalm 104, which reveals God’s generosity to and blessing of his creation, with the world as his gift to all living creatures who share it with one another.¹⁷ Together the whole of creation is called to worship God and bring him glory (Ps 96:11–12, 148:1–14; Isa 4:23, 49:13). Ultimately, ‘the earth will be filled with the knowledge of the glory of the LORD as the waters cover the sea’ (Hab 2:14).

What can be concluded from this brief biblical overview of the ocean, and the creatures in it? First, the ocean is part of God’s good creation and has intrinsic value for that reason. Humans are to value the ocean and all therein, just as God does. Second, humanity’s calling to care for God’s creation includes caring for the ocean and the creatures in it (the other 71 percent). So, two questions arise: what are the present day problems relating to the ocean; and how is humanity to exercise its care of this part of God’s creation?

Creation care and the oceans

Major problems in the oceans

As we have seen, the oceans are meant to glorify God and point us, in our awe and wonder at its beauty and majesty, to him. A trip to the beach reveals tide pools full of interesting creatures that inspire exclamations of wonder. A storm rolls in and we see the power of the waves pounding the beach. Perhaps you are a diver and save up so that you can take that once in a lifetime trip to the Great Barrier Reef or the Maldives to see *pristine* coral

reefs. There are still many places in the world where we can revel in God's beauty, majesty, and creative power in, at, or around the ocean.

However, the ocean is in many aspects a shadow of its former self. Research suggests that fish are less abundant, waters are polluted, ecosystems are lost or changed beyond recognition, islands of trash float around our seas, and physical and chemical changes threaten some species' survival. There is now clear evidence of marine extinctions.¹⁸ While we want to focus later in this chapter on the ways in which we can serve God through taking care of the ocean, we do need to spend a short time on some of the major problems that face the sea. An exhaustive list would be overwhelming, so we focus here on three major problems: overfishing, climate change, and ocean pollution.

One of the most significant issues impacting the health of the ocean is *overfishing*. Most of the major fisheries of the world are in decline: tuna, shark, cod—the list goes on. There are, of course, some notable exceptions, but the recently paid price of \$1,700,000 for one bluefin tuna at a Japanese market indicates that rarity confers value in many cultures and that there can be economic incentive to hunt down the last remaining individuals.¹⁹

Much of this is due to simply taking more fish from the ocean than are replaced through breeding, but certain fishing practices make this worse. Fishing tends to target the larger individuals of a species, which are also the ones that produce the most offspring. For example, catching one large grouper (a fish used for food) of about a metre in size could be the same as removing hundreds of individuals half that size in terms of how many eggs they might produce.²⁰ Many species of fish gather in what used to be very large numbers at very specific places and times of the year to spawn. Fishermen have naturally targeted these aggregations, and it does not take a research scientist to understand that this has huge impacts on the population.

Small coastal communities can find that they are damaging the basis of their livelihood through the methods they use to fish. This can be as destructive as homemade bombs thrown into the sea destroying corals while that night's meal floats to the top for collection, or using nets that catch fish too young to have reproduced even once.

There is also a matter of justice at work here, as industrial fleets from wealthier nations ply the waters off the coast of Africa scooping up the fish that poor, coastal fishermen need to feed their families. Often governments sell fisheries contracts to other countries: the money pocketed in some distant capital never reaches the coastal fishing communities and the sea is overfished, leaving the poor without their daily bread.

These issues in poorer, developing countries are not simple. One of us (RS) lived for over a year in a fishing village in the Maldives. I spent many an hour sitting with my neighbour who was a fisherman, listening to his

woes and gaining a better understanding of what it took for him to feed his family each day. He had the same dreams and desires as I did, but very few alternatives and little access to knowledge about the ocean. At a particularly low point in my time there, I poignantly remember being out on a fishing vessel and thinking his case hopeless, and wondering why I was spending my time with them anyway as they were 'only fishermen.' I had a revelatory moment shortly after as the Holy Spirit chastened me by reminding me that a huge proportion of Jesus' disciples were fishermen!

A second major problem is *climate change and its impact on the seas and coasts*. There is no doubt that climate change, driven by human use of fossil fuels, is already affecting the oceans.²¹ Firstly, much of our increasing emissions of CO₂ into the atmosphere is absorbed by the ocean, changing its chemistry and in particular making it more acidic.²² The effect has been clearly documented.²³ Secondly, the oceans are warming.²⁴

These two effects are having an increasing impact on the ocean, from the tropics to the poles. Acidification changes the seawater carbonate chemistry, which in turn impacts those species that use calcium carbonate in building shells. These include some species of plankton, molluscs, and corals. Coral-algal symbiosis is particularly sensitive to fairly small changes in temperature and acidity, which will affect the long-term survival of coral ecosystems and loss of biodiversity. As about a quarter of marine species are associated with coral reefs such changes would have a severe impact.²⁵ Polar ocean ecosystems are affected by the unexpectedly rapid loss of sea ice in the Arctic; the polar regions are known to be more sensitive to the effects of global warming.²⁶

Other biological processes and ecosystems are also being affected.²⁷ One example is that the warming of the ocean's surface waters is leading to changes in how phytoplankton species are distributed; warmer water species are migrating into the warmer areas and colder water species are migrating away from them. As phytoplankton are the base of the oceanic food chain, this in turn has an impact on the whole ecosystem.²⁸ Changes in ocean currents and mixing as the oceans warm may affect the dispersal of plankton and fish larvae. How well marine species can adapt to these changes and all the other impacts discussed is unclear, as are the long-term effects on ocean ecosystems.

Finally, sea level rise, due both to thermal expansion of the oceans and the melting of ice sheets, is well documented and will affect many of the poorer communities on the planet.²⁹ For example, the projected rise of approximately one metre over the next one hundred years would displace about ten million people who currently live near the coast in Bangladesh. It would also negatively affect many communities on low-lying islands, such as the Maldives in the Indian Ocean. In addition, increasing sea level, when combined with

other effects such as storm surges, will also lead to increased flooding risk in low-lying coastal regions such as Bangladesh and the Netherlands.³⁰

The third major problem in the world's oceans is that of *ocean pollution*. We often see the ocean as a vast and spacious resource, which we could not possibly damage. 'There is the sea, vast and spacious, teeming with creatures beyond number—living things both large and small' (Ps 104:25). Our perception of the immensity of the sea is, of course, on one level correct. Yet many still look out on the ocean and only see it two dimensionally; the vast plane of the sea hiding a three dimensional world. Yet beneath the surface the oceans are being damaged due to human activity, both directly and indirectly from the land.

Perhaps the most dramatic example of direct ocean pollution caused by human beings is the Deepwater Horizon drilling platform oil spill in the Gulf of Mexico in 2010—the largest marine oil spill ever.³¹ This is just the latest of a series of major oil spills that span the last fifty years, going back to such incidents as the Torrey Canyon oil tanker spill in 1967.³² Ironically, not only is the burning of fossil fuels affecting the ocean negatively, but the extraction and transport of the fuels themselves also leads to negative impacts. On a smaller scale, ships that clean out their tanks at sea and dispose of rubbish overboard contribute to the problem, as do containers of goods washed overboard (most famously perhaps the one full of rubber ducks washed overboard in the Pacific, of which some have made it into the Atlantic after many years, via the Arctic Ocean).³³

What we do on land can also dramatically impact the ocean. As the saying goes, all drains lead to the sea. We build a golf course next to the ocean that needs fertilizers to keep the greens green. With the next rain it is washed off into the sea where algae are able to use it to out-compete corals—in some cases, shifting the systems from coral reefs to algal forests. Similarly, fertilizer and chemical run-off from land can cause eutrophication—the ecosystem response to the run-off—leading to harmful algal blooms (HABs), which are poisonous and can affect both marine life and humans, if we eat shellfish or fish affected by them.³⁴ A plastic bag is washed into the sea at a beach picnic in California and ends up circulating in the middle of the Pacific Ocean (the so-called *Great Pacific Garbage Patch*) or washes up on a beach in a South Pacific island or perhaps worse, is mistaken for a jellyfish by a sea turtle, ingested, and causes injury or death to the animal.³⁵

As we have seen with our greenhouse gas emissions, what we do on the land impacts the sea. Through ocean currents what we do to the sea in one place can be transported to other far distant places where these problems did not originate. Ultimately, we are not loving our neighbours, but doing to them as we would not want them to do to us.

Practical solutions

Overfishing, climate change, and pollution: Is there hope? We believe so. While we have to exercise appropriate humility in our dealing with the ocean, we do know some things that we can do to glorify God through caring for the ocean.³⁶ Fisheries are managed by limiting the amount of the target species caught or their size, allowing individuals to reproduce before capture. Management can also take the form of limiting effort—for example, allowing only certain sized boats or regulating net mesh size so that small fish pass through. There is important work here for fisheries scientists, mathematicians, biologists, and ecologists who can study the target species and the fishing techniques and determine the appropriate quantities to harvest with sustainable techniques. The world needs Christians in these fields who can, as Psalm 111:1–2 exhorts, delight in and study the works of God, and guide the rest of us in our relationships with the sea.

Some familiar landbased environmental practices have parallels in the ocean. For instance, like natural parks, there is a growing network of marine protected areas which have regulations that seek to limit the damage to the ecosystems under protection.³⁷ In some cases this limits fishing or other extractive activities and in other cases limited levels of fishing are allowed. As on land, they cannot exist as islands of biodiversity but interact with neighbouring uncontrolled areas. Generally, and perhaps counter-intuitively, within several years, fishermen near the reserve see their catches increase. This is due to the biology of most sea creatures as noted above—the abundance of the park overflows into the surrounding areas reminiscent of the teeming and swarming and original blessing of the sea (Gen 1:22).

As discussed elsewhere in this book (Chapter 8, ‘Global Warming, Climate Change, and Sustainability’), preserving and planting forests helps remove CO₂ from the atmosphere and lessen the drivers of climate change. The same is possible in the sea: mangrove forests and sea grass beds do the same, as well as providing habitats for many species, thus preserving diversity, and also lessening damage from floods.

Pollution is an area where we can have a huge impact. A beach or coast clean-up is a great activity to enjoy the outdoors. Gather a group of friends or have your church picnic at the coast and spend even thirty minutes with a rubbish bag picking up what shouldn't be there. Your neighbours will thank you. Even better is to try and avoid polluting in the first place. What human activities might need lessening or modifying, and can we as a church promote positive change?

Perhaps our biggest role is as consumers. What are we buying and where does it come from? How was that beautiful shell caught? Which fish in your supermarket come from a sustainable source? There are a num-

ber of programmes online that document and certify which species of sea creature have been caught in a way that is not damaging to the ocean and which have populations that are not overfished.³⁸ The herbal and 'Chinese' medicine trade is decimating large areas of the sea by collecting things in such a way as to degrade the ocean and cause overfishing. Don't participate!

The role of aquaculture, restoration, reconciliation and disaster relief: In many places in the world, aquaculture (the cultivation of fish and shellfish for food) is becoming a much needed source of protein, especially for the poor. Family-level ponds in the back garden can be hugely important. However, large, industrial aquaculture facilities can cause more problems than they solve. In some cases, mangrove forests are cut down to create shrimp or other seafood aquaculture facilities for foreign markets. This destroys important habitats for fish that local fishermen depend upon and reduces, in different ways, the ability of the coast to absorb both waves and carbon.³⁹ There is also an ethical question: why do usually poor, often protein malnourished, areas export luxury protein to countries that already have so much?⁴⁰ Additionally, culturing species at higher levels in the food chain, such as salmon, can require larger inputs of protein from lower levels on the food chain. It may take several kilograms of other fish to make one kilogram of salmon, for example. These fish may come from countries where there is a protein deficit. Is this a Christian way to act? The 'market' is usually invoked as an explanation and justification. Perhaps the economic benefit is greater than the injustice, but this needs to be examined critically.

One of us (RS) recently visited an area of Borneo that has been severely degraded by fishermen using homemade bombs to fish. Snorkelling over large areas of coral rubble was disturbing, especially when compared to the un-impacted sites, which were amazing, causing wonderment and praise to God from all in our party. Yet there was hope. Local and UK conservation groups were beginning the long process of restoring these habitats. Using wire frames with live coral attached to provide suitable substrate for growth, gives the ecosystem a hand up in restoration. There are times when habitats are so degraded that without this type of help, they are unlikely to recover. Many other examples could be given, but these projects all seek to restore that which we have destroyed.

What could Christian marine creation care look like?

One element of all Christian practice is reflection and worship, and marine issues are no different. Following our earlier biblical summary, we should learn to appreciate more the beauty and wonder of the ocean. Perhaps we could take that church picnic by the sea, or explore how many of

the hymns and songs we sing utilise ocean and sea imagery. Exploring this helps us to reflect on what we and our churches can do practically.

As well as caring for marine creation in the ways already noted, there are specific things that can be done which relate to our biblical mandate to bring blessing to the nations. For instance, most of the coastal fishing communities in the Indian Ocean are predominantly Muslim. This represents an important opportunity for Christians to show love to these people groups through projects related to marine conservation. Also, how does it represent Jesus well when our supposedly Christian countries come in big ships and take a poor fisherman's dinner from his family? That may seem simplistic, yes, but often it is the way the fisherman thinks.



*Figure 2: Studying a tropical rockpool on the Kenyan coast.
(Photograph: Robert D Sluka)*

One group working in this area is A Rocha Kenya (ARK).⁴¹ The ARK field study centre is located on the shore of Watamu Marine National Park. This is a marine protected area with globally rare or threatened marine biodiversity. Additionally, the surrounding area is predominantly Muslim traditional fishing villages. Researchers are studying biodiversity, the impact of tourism on coral reefs, climate change issues, and beginning commu-

nity outreach and education among fishermen. This is done in partnership with government management of the park and community organizations. A training programme has been set up for local and international volunteers and interns so that they can learn important marine research methods and concepts, living in a Christian community that invites people of all faith backgrounds to come and see.

There are numerous possible sources of conflict related to different uses of the same space. You go to the beach and jet skiers ruin your swimming experience. You want to fish, but find out that your favourite fishing spot has been turned into a marine park. This second area of conflict resolution is covered in Chapter 18, 'Creation Care as a Ministry of Reconciliation'.

Thirdly, Christians can support disaster relief and disaster prevention, but in an informed way (see also Chapter 12, 'Un-natural Disasters'). While the global Christian church responded generously to the recent tsunamis, there appeared to be very little attention paid to marine conservation issues.⁴² In some cases many small boats were purchased and donated to people in areas where there was once a diversity of sizes of boats. This tended to concentrate fishing inshore where there were already significant overfishing problems. Few, if any, Christian groups were involved in restoration of coral reef habitats or fisheries issues, and few objected to the loss of coastal habitats, which afford the land a measure of protection from storms and erosion.⁴³ When we destroy these natural protective barriers it can cause great misery for coastal dwellers. Often it is the big business in a distant inland capital that is doling out land for large sums of money for hotels or other ventures and so causing difficulties for the poor. Finally, should Christians be supporting the international effort to develop tsunami warning systems? Wouldn't investing in these warning systems be a more effective use of money than responding after the damage and death has occurred? This, would, though, take a whole new way of thinking about how to utilise money, respond proactively, and partner with scientific and government agencies globally.

Reflection

As we reflect on what we have written, things can seem hopeless, but as Christians we know that there is always hope in Jesus Christ, however bleak things look, because he is faithful (Hebrews 3:6) and all things were created by him, through him and for him, and reconciled through him, too (Colossians 1:15–20). Perhaps a well-known story can help here:

A man was walking along a beach immediately after a storm that had thrown a large number of fish up onto the shore. As he walked along he was picking up fish and throwing them back into the ocean. Another person on the beach saw him and seeing the thousands of stranded fish said, 'This is hopeless, you aren't making any difference.' In response the man stooped down, picked up another fish and threw it into the ocean, saying, 'I made a difference to that one.'

Perhaps we are doing a small thing that may seem insignificant and lacking impact in the grand scheme of things but God says to us, 'your labour in the Lord is not in vain' (1 Cor 15:58). All this, all that we have written about, needs to be seen and set in the context of the seventh confession of faith from the *Cape Town Commitment*:

We share God's passion for his world, loving all that God has made, rejoicing in God's providence and justice throughout his creation, proclaiming the good news to all creation and all nations, and longing for the day when the earth will be filled with the knowledge of the glory of God as the waters cover the sea.⁴⁴