

Marine life

Dead kittiwakes, dwindling fish and oceans of plastic: my voyage of discovery

Kevin Rushby
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Aboard the Summer Rose ... (from left) Matthew, Mike and Jim. Photograph: Kevin Rushby for the Guardian

Kevin Rushby joined the crew aboard the Summer Rose fishing boat seeking insight into the state of our seas. He found life hard for fishermen and marine creatures alike – but can conservation measures such as Michael Gove’s ‘blue belt’ help?

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It takes 20 minutes of sailing to get into position under the cliffs, then we begin. Matthew grabs the rope connected to the marker buoy and loops it up over the winch. Mike, his father and the captain, turns the boat and starts to follow the rope as the pots come up. Each one is hauled on to the gunwale where Matthew deftly removes the creatures within. Large lobsters and edible crabs to the left, the rest thrown back overboard alive: the females with eggs, the ones with scarred tails or soft shells and the undersized, plus the cod that have unwisely ventured into the creels, the tiny green crabs and the arm-long catsharks. The crewman, Jim, grabs the empty pots, re-baits and stacks them. Some need repairs, a whip of line to tie up a hole – a job completed in a few seconds. At 20 pots the line is finished and Mike sails us back to the start point. He checks the GPS and Jim chucks the creels overboard in a steady stream. There is no time for conversation and anyway you would struggle to hear anything above the engine, the sea and the screams of the gulls. The next buoy is captured. The first pot arrives, alive with silver water and thrashing bodies. This relentless pace will be kept up for the next five hours.

I am sitting in the bows, out of the way. It is shortly after dawn on a glorious summer morning. Golden light bursts on the chalk cliffs of Flamborough, East Yorkshire. In the water are rafts of puffins and the air is filled with movement and noise: gannets, kittiwakes, sandwich terns and herring gulls. This is one of the government's new marine protected areas (MPAs), part of a big expansion in habitat protection. Environment secretary Michael Gove has called for a third of the world's oceans to be protected by 2030, and in June announced 41 new protected areas to add to the 50 already declared since 2013, adding 11,700 sq km to the existing 209,000 sq km of protected British seas. The stated aim is to ban damaging activities such as dredging in these areas, and to protect and restore rare or threatened marine habitats; there are more than 5,000 MPAs worldwide.

Far away I see a Manx shearwater skimming the gentle swell. I'm also scanning for seals, basking sharks, dolphins and the humpback whale someone spotted here a few days ago. We move closer to the cliffs where the sea has sculpted deep caverns, stacks and archways. Far inside the darkness of one grotto I glimpse patches of shimmering, aquamarine light revealing an underwater connection to another cave entrance or an arch. These are mysterious worlds, unexplored by humans. At the top, 400ft above, people will soon be parking their cars and walking their dogs.

And then I see the dead kittiwakes. There must be some chance meeting of current and tide because they have gathered here. Their white breasts pockmark the sea like an evil rash. I want to ask Mike about it, but he is at the other end of the boat, checking lobsters for size. I want to ask about the protected area too: why are we fishing inside it? I'm an outsider, on this fishing boat, the Summer Rose, for the day, hoping to get an insight into the state of our marine environment from the people who earn their living within it. But all talk is going to have to wait until the last pot has sunk back down through the kelp forest beneath us to the silent seabed.



Puffins ... 33,000 have vanished from Sumburgh Head in Shetland in less than a decade.
Photograph: Kevin Rushby for the Guardian

No indicator of oceanic health is as visible and well documented as the seabirds, and the news is not good. In fact, the statistics are catastrophic: research shows [a 69.7% drop worldwide in the last 60 years](#). Birds are a popular and well-studied subject, with legions of dedicated observers prepared to go out in all weathers and count. This is not an extrapolation or inspired guesswork. Entire colonies have simply disappeared. At Sumburgh Head in Shetland, [33,000 puffins have vanished in less than a decade](#), leaving a handful of survivors. Populations of guillemots, fulmars, razorbills, skuas and terns have all crashed. And kittiwakes too. Of all the gulls, the kittiwake is arguably the most interesting: a supreme flyer with the grace of a ballerina and the ferocious temper of a cage fighter, they attracted Victorian hunters who took special trains from London to shoot at them from Flamborough's cliffs. Adam Nicolson's great and tragic book, [The Seabird's Cry](#), relates how one naval officer recorded the deaths of 107,250 birds in a single season. The feathers went into hats. Such was the carnage that in 1889 Emily Williamson founded the Plumage League for women who refused to wear them. It later evolved into the RSPB. Now, however, kittiwake numbers are in decline again and this time the causes are less visible, but no less of human fault. British seas have warmed and that has reduced the sand eel population, a particularly bad development for surface-feeders like the kittiwake.

If the seas are becoming a harsher place for seabirds, then humans are also finding things tougher. According to Professor Callum Roberts of York University, the average amount of effort required to catch a kilo of fish has risen 17-fold since records were first kept in 1889. And that record-keeping only began because fishermen were complaining that the shoals were getting harder to find.

“It probably requires 25 times more effort to catch a [fish](#) now than in the mid-19th century.”

First published in 2007, Roberts’s classic book, [The Unnatural History of the Sea](#), kickstarted much of the current debate about what the sea should be like. His contention is that human intervention has been altering the nature of the marine environment ever since over-exploitation of freshwater species in Europe had driven people out to sea in the 11th century. For that reason it is difficult, probably impossible, to calculate what the seas were like before human impact. Our population data is tainted by the effects of fishing. “There’s a phenomenon called baseline shift,” says Roberts. “We forget how much environmental degradation has already happened.”

To get an idea of the sheer fecundity of oceans without people, we can only rely on eye-witness accounts and a few grainy black and white films. [Footage from 1933 shows](#) the same Flamborough North Landing slipway that Mike Emmerson now uses covered in huge cod and other fish. The beach below is littered with willow baskets overflowing with lobsters while men in flat caps and traditional gansey sweaters race around trying to catch the escapees. Accounts tell of herring shoals so vast they darkened the sea for a hundred miles, shoals so thick that boats got stuck in them. Likewise there were enormous beds of oysters in estuaries such as the Humber, and bluefin tuna that came hunting in packs off Flamborough. A world record specimen of 386kg was hooked there. One boat was towed four miles by another giant.



Lobster potting boat at dawn off Flamborough Head. Photograph: Kevin Rushby for the Guardian

Humans have destroyed all these things. No oysters grow in the Humber; the herring industry is gone and so have the tuna. According to Daniel Pauly of the University of British Columbia, the world's fishing industry is nothing more than [a long-running Ponzi scheme](#), stealing from its capital and heading towards inevitable bankruptcy. When stocks are plundered from one area, the boats move on, venturing deeper and farther. When one species crashes, new ones are found, and sometimes renamed to make them marketable. So it was that the indigestible duo of slimehead and toothfish became the highly palatable orange roughy and Chilean sea bass. We are not unfamiliar with that trick in the UK – those catsharks Matthew is throwing back would once have ended up in chip shops as rock salmon.

I've squeezed past the crates of lobster and crab and joined Mike at the tiller. Why is he throwing perfectly decent cod and catshark back? "Our quota of whitefish for the year is 300kg. It's not worth bothering with."

"You could catch 300 kilos on a good day," adds Matthew who is now tying rubber bands around the pincers of irate lobsters.

Can they make a living purely from shellfish? "Ideally we would be potting in summer and long-lining for whitefish in winter," says Mike. "That would give each fishery a rest, but the quotas force us into potting all year." He supplements his income with angling and pleasure trips during the summer, taking holidaymakers off the beach at North Landing. The family operated trawlers until 30 years ago.

Matthew is back at the gunwale, waiting for Jim to gaff the next string of pots. "One thing I like about potting is that we put all the stuff we don't want back into the sea alive. It's low impact." And sustainable? "I think so," says Mike. "All the 'berried' ones go back." He shows me what he means – a female lobster carrying shiny black eggs under her tail, like clusters of berries. "Plus the size limit." Do the fishermen observe it? "You'd be out of business pretty quick if you didn't."

From the perspective of the UK's 12,000 fishermen, there are probably more statisticians, scientists, government inspectors and general busybodies scrutinising their work than fish in nets. The government's Marine Management Organisation [produces monthly statistics](#) that detail catches by port, species, type of gear used, weight and value. From their figures I can see that Bridlington, Mike's local port, landed an impressive £1,500,000 worth of lobster and crab in the first five months of 2018, but just £2,000 of cod. In fact, the statistics lead you into a maze of fascinating, often surprising, data. When you tuck into your

cod, for example, you might be surprised to know [it was more likely caught on a Chinese boat than a British one](#) and has probably been halfway round the world for processing. The one dimension where the data seems lacking is about what is going on below the waves. The sheer cost and difficulty of obtaining accurate information there is prohibitive. But one thing troubles me: how is it possible to fish in a marine protected area? “There is a no-take zone where no fishing at all is allowed,” says Mike, “but in this part of the protected area, we’re on what is called artisanal potting grounds, where we can work.”



A gannet in flight ... research shows a catastrophic drop of 70% in seabird populations in the past 60 years. Photograph: Kevin Rushby for the Guardian

Mike played a major role in pushing for the MPA and embedded no-take zone (NTZ). He sees achieving a sustainable fishery as vital for the future – the idea being that protection will, in the long run, assist fishermen by increasing biodiversity and populations. Has it helped? “Maybe in Matthew’s lifetime it will.” He taps at a grubby GPS in a box by the winch. The next string of pots is coming up. It’s time for me to get out the way.

The evidence certainly suggests that NTZs work in the long-term. The [island of Lundy](#) in the Bristol Channel had been heavily fished for centuries before it was declared an NTZ in 2003 (30 years after a voluntary reserve was established). Since then the 3.3 sq km area has bounced back to life. Similar success occurred in [Lamlash Bay on Arran](#), where locals, appalled at the damage inflicted by

scallop dredging, [set up their own NTZ in 2008](#) after many years of fighting government indifference and fishing industry hostility. Eight years later, Howard Wood, who led the campaign, says: “We’ve got three times more lobsters within the reserve than the surrounding area and a 70% higher reproductive output.”

Research from around the world is even more decisive, showing that [NTZs produce, on average, 670% more fish biomass than unprotected areas](#), a biomass that spills out into the wider area and benefits fishing. So what about [Gove’s “blue belt”](#)? Like lots of people, I had read the reports and felt optimistic, imagining some sort of salty Serengeti where vast migratory herds of herring braved the menacing prides of tuna to the soothing sound of David Attenborough’s voice. But the idealistic goals underpinning terrestrial parks ever since Yellowstone was founded in 1872 have not been transferred to the marine world. Roberts is scathing: “Britain’s MPAs are a complete fiction. Only 1% is protected from trawling. Only 0.001%, the NTZs, is protected from all fishing.”

Read between the lines of government policy and Defra reports and it is clear he has a point. A fog of acronyms and carefully worded designations conceal the fact that most MPA territory offers scant protection to the creatures inside them (there is a [Defra document](#) dedicated to just attempting to list all the types of protection). Gove’s announcement offered no details of how the new areas were to be managed, inspected and assessed, nor how enforcement might happen, presumably because there are no extra resources for those things. In fact, the main promise for the 41 areas was that no new “damaging activities” would be allowed. This is like designating a national park and saying: “Poachers are strictly forbidden, except those who have plundered here previously”.



‘I want to see skates back in the North Sea’ ... Callum Roberts, author of *The Unnatural History of the Sea*. Photograph: Kevin Rushby for the Guardian

In UK waters, the only seas that are truly fully protected, in the manner we might expect on land, are the NTZs of Lundy, Lamlash and Flamborough. Add them up and you get about 7 sq km, an area smaller than London’s Richmond park. To put this feeble effort in perspective, a decade before, under Barrack Obama, the US had declared the north Hawaiian islands as an NTZ. The [Papahānaumokuākea marine national monument](#) is 1,500,000 sq km, an area somewhat larger than Richmond park – in fact it is the size of England and Wales combined. Sadly, under Donald Trump, [that reserve and others are now under threat](#), despite sound evidence that Hawaiian fishing catches have actually increased since the declaration.

The [International Union for the Conservation of Nature](#), best-known for its Red Lists of threatened species, has a useful [world map](#) that shows all protected areas. They are compiling international standards on MPAs. Dan Laffoley, senior adviser on marine conservation, is also sceptical of UK policy. “Protecting the status quo is not enough. Industrial activities are not compatible with marine protected areas.” His advice is diplomatically stated: “There has never been a better moment for the British government to scale up protection.” He is also clear that targets for protected seas worldwide, developed in the 1980s and widely cited at 10%, are redundant. “The [scale and rate of change](#) [in the oceans] is such that half of it needs to have high-level protection while the other half must be sustainably managed.”

Back at Flamborough, the dead kittiwakes in the water might be a sign of problems to come, but the bird population is actually increasing. Mike helped take [RSPB bird observers](#) out in 2017 to scan the nearby cliffs of Bempton. The survey revealed a huge increase in numbers of gannets (up 425%) and razorbills (up 230%), making these cliffs the largest seabird colony in the UK, with over 400,000 birds. “There are always rarities too,” says Mike. “Last year there was an [albatross](#).” Why Flamborough should buck the national trend – seabirds are down 22% since 1982 – is not clear, although it is fortunate to have an NTZ and responsible fishermen like the Emmersons. While they have been emptying their lobster pots, small pieces of plastic brought out of the water are being collected. “We do our best to gather it up,” says Matthew: “Plastic bags, bottle tops, yoghurt cartons, fast food wrappers.” Mike is shaking his head sadly. “I hate to see it. Every year it’s worse.”



Sorting pots on the Summer Rose. Photograph: Kevin Rushby for the Guardian

The role of plastic in seabird population declines has been graphically portrayed in pictures of dead albatross chicks, their stomachs filled with bottle caps, but the impact of the substance goes much further. Left in seawater long enough, plastic will start to release tiny amounts of a gas, dimethyl sulphide, which in a cruel irony is the same as that released by phytoplankton when krill feed, a scent that some seabirds use [to locate their food](#). That Manx Shearwater I had seen scooting northwards earlier is one of those species, but we have no idea if this particular bird is suffering a decline; it is simply too elusive for easy surveying. All we know for sure is that its sense of smell is vital for navigation and feeding, and that it will assuredly encounter plastic everywhere on its immense annual migration to the seas south of the River Plate in Argentina, an annual journey of up to 20,000 miles.

And plastic really is almost everywhere now. Dr Toste Tanhua, a chemical oceanographer at [Kiel's Geomar Ocean Research Centre](#), and an adviser to the [Sky Ocean Rescue campaign](#), used the 2018 [Volvo Around the World yacht race](#) as an opportunity to take water samples from around the globe. "We found only two samples out of 65 that did not contain plastic," he says. "It's hardly surprising: ocean currents carry it everywhere."

While that is true, the plastic right under our noses is worming its way, quite literally, into the food chain. Researchers from Manchester University were shocked to find [river worms](#) on the Irwell had ingested huge quantities of plastic, mostly microfibres from acrylic clothing. They went on to discover that [microbead contamination](#) in several British sites exceeded the worst levels ever found anywhere in the world (previously on a South Korean beach). A return visit to sites in the Mersey catchment area found that a single winter flood in December 2015 had flushed around 7bn microbeads downriver into the Irish Sea. A clue as to where some of them may have gone came in a study published in June 2018. Scientists from Hull and Brunel universities examined [mussels](#) collected on British shores and bought in eight different UK

supermarkets. They found plastic microbeads in every single specimen. “Chances are that these have no [health] implications,” said one of the team, Professor Jeanette Rotchell, “But nonetheless, there is not enough data out there to say there is no risk.”

Unfortunately, other chemical pollutants can attach themselves to plastics and subsequently accumulate. Tanhua points out that of all the plastic going into the oceans every year, we can only account for about 1%. “My guess is that 2 million years from now, if people are still around, they will be living with the consequences,” he says.

Our last pot is up and on our way back to the beach, Mike sneaks the boat close to the caves and up to a stack for me to take a picture. Despite its hefty appearance, the vessel is highly manoeuvrable and perfectly steady, a successful design barely changed since the Vikings brought it over with their longships. “She’s a Yorkshire coble,” Mike says. “Built in Whitby in the 1970s. Larch on an oak frame. But I doubt anyone knows how to make them now.”

His family have fished here for generations, back to the days of sail when Flamborough was the worst place in the world for shipwrecks; somewhere below us are hundreds of them, including [John Paul Jones’s Bonnehomme Richard](#), sunk in a battle in 1779. Jim, who is a scuba diver, points east: “There’s two subs out there with bombs still on them.”



‘I wouldn’t advise a son to go into fishing, no’ ... Matthew Emmerson with part of the lobster catch. Photograph: Kevin Rushby for the Guardian

Do they ever get scared by conditions? “In a thick fret (fog) a few years ago,” says Matthew who serves on the Flamborough lifeboat, “I couldn’t see Dad at the other end of the boat. That was a bit worrying.”

Mike brings the boat gently to the beach at North Landing, then Matthew and Jim jump into the surf and start unloading the trays of shellfish, carrying them to a battered old Land Rover. I join Matthew in the car for the last leg of the day’s fishing: taking the catch to Bridlington fish pier. Mike is already loading up with pleasure anglers.

The talk in Brid is about scallop boats coming from outside to plunder their waters. It’s a reminder of how difficult conservation can be. Much of the UK’s marine policy depends on the cooperation and goodwill of local fishermen, but all that can be blown aside by the arrival of outsiders drawn in by conservation success and a resulting rise in stocks. “They were French and Scottish dredgers,” a worker on the pier tells me. “Moved into potting areas and smashed a load of gear.”

Scallop dredging is not only damaging to lobster pots, it is a disaster for the seabed. The whole lot is churned to extract the valuable creatures, without any regard for size or age. Roberts memorably calls it, “cutting down a rainforest to catch a parrot”. But a hand-dived scallop is hard to track down in a restaurant ([Ethical Shellfish](#) in Tobermory is one source) and dredging boats, as crusty as they may look, are goldmines. Bridlington has seen this happen before and the case shows how important enforcement is, and how difficult. In 2014 the sudden arrival of scallop boats from elsewhere [prompted an emergency ban](#). The value of the business is highlighted by a case from the same year when [a skipper was caught dredging in a Welsh MPA by a Royal Navy patrol](#). On board were scallops worth around £400,000.

At the pier, Matthew isn’t going to be retiring on the day’s proceeds. The lobsters and crabs are weighed and almost immediately dispatched. “They go all over,” the manager, Clive, says: “Spain, France, China.”

Back in the Land Rover, heading for Flamborough, I ask Matthew if he would advise a son to go into fishing. “I wouldn’t, no. Too much regulation and too much uncertainty.”

At the beach once again, the day over, I decide to go for a swim. The water is breathtakingly cold, much colder than the north of Norway where I had been a week before. As I swim out I wonder if that is a possible solution to the curiously robust bird population: cold water holds more oxygen and can support more life. That is partly why global warming represents such a threat to marine life. At the mouth of the small bay I climb out on a rock next to the rusted wreckage of an old

boiler, remnant of the Rosa, which ran aground in 1930. All 16 crew were rescued by the Flamborough lifeboat.

I had asked all my contributors about the future and, to my surprise, they were all optimists. “With the right incentives,” said Tanhua, “And the right choices. We all need to make the right choices in our own lives.”

“There’s a massive opportunity right now,” says Laffoley. “The UK could take the lead. I reckon about 1% of the world’s oceans are properly protected. We need to take that further.”

Roberts, one of the fiercest critics of the fishing industry and governments, was also hopeful. “Ocean protection is now at the top of the agenda.” Was there any particular goal he hoped to see? He laughs. “Skates. I want to see skates come back in the North Sea. There have been a few unconfirmed reports, so I’m hopeful.”

I get back in the water and dive down, opening my eyes to the greenish blur. Suddenly something flicks past me. I see only a black shape twisting away at speed. Fish? Seal? Puffin? A creature, no doubt, curious about the clumsy white-bellied trespasser. So much of our knowledge about the ocean is recently gathered: [coldwater coral reefs](#) in British waters were only discovered by science in the 1990s, by which time trawlers had destroyed many of them; the powerful but [alien intelligence of the octopus](#) and cuttlefish only began to be understood in the last decade; the [vital role of whales](#) in transporting nutrients from the deep ocean to the surface emerged even more recently; and the shearwaters’ awesome navigational powers are still being unravelled. Just as we unlock these and other mysteries, we also comprehend our own flawed and fatal role, and must decide if it will continue in the same way.

Link: <https://www.theguardian.com/environment/2018/oct/07/kittiwakes-fish-oceans-plastic-marine-life-fishing>