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Plenty more fish in the sea?

A working paper on the legal issues related to fishing beyond maximum sustainable yield: A UK case study



Plenty more fish in the sea?

A working paper on the legal issues related to fishing beyond maximum sustainable yield: A UK case study

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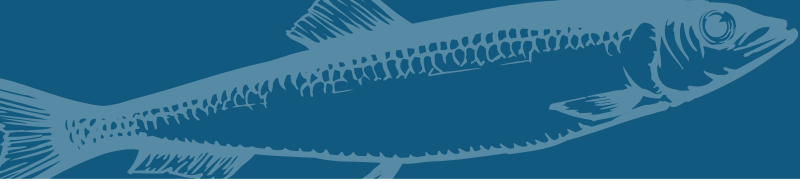
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Executive Summary

Maximum Sustainable Yield (MSY) is about to become a centre stage issue.

The EU now has a commitment that fishing will progressively be managed at levels that correspond to MSY, and setting of quotas will respect scientific advice. Where possible, this is to be attained by 2015, and all fish stocks will be managed at MSY by 2020 at the latest.

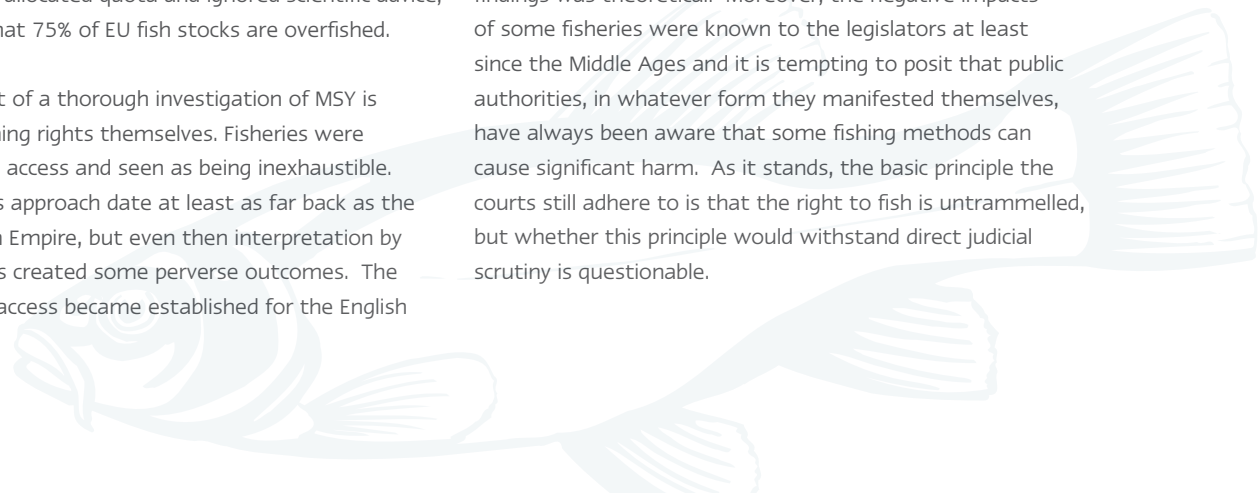
What the term 'maximum sustainable yield' means will dominate the next seven years of fisheries discussions.

MSY has two different interpretations. Scientists use the term to mean the ability of a fish stock to support a sustainable fishing industry. Lawyers use it when assessing the obligations of a country in respect of its sovereign fishing rights. This report focuses on the legal interpretation of MSY. The report's findings are particularly important as the EU has consistently over-allocated quota and ignored scientific advice, with the result that 75% of EU fish stocks are overfished.

The starting point of a thorough investigation of MSY is the nature of fishing rights themselves. Fisheries were traditionally open access and seen as being inexhaustible. The origins of this approach date at least as far back as the era of the Roman Empire, but even then interpretation by the Roman courts created some perverse outcomes. The principle of open access became established for the English

fishery in the 12th century. Before then, it is likely that all viable tidal fisheries were granted by the Crown into private hands following the Norman conquest. Indeed, some of these private tidal fisheries still persist today.

In the seventeenth century, the *mare liberum* (freedom of the seas) debate confirmed open access on the high seas, but the position for territorial waters (within the 3 mile limit) was more complex. Under the common law, fishers operated under the public right to fish which permitted open access and has come to be interpreted as being based on the principle of inexhaustibility of the stock. Where this myth of inexhaustibility has come from is difficult to tell. It is often attributed to the Victorian scientist Thomas Huxley because of his pronouncement on the fecundity of some fish species, but Huxley himself highlights fisheries which were vulnerable to over-fishing and recognises that, on the high seas, no regulatory mechanisms were available, so this aspect of his findings was theoretical. Moreover, the negative impacts of some fisheries were known to the legislators at least since the Middle Ages and it is tempting to posit that public authorities, in whatever form they manifested themselves, have always been aware that some fishing methods can cause significant harm. As it stands, the basic principle the courts still adhere to is that the right to fish is untrammelled, but whether this principle would withstand direct judicial scrutiny is questionable.



The United Nations Convention on the Laws of the Sea (UNCLOS) changed everything. Coastal states now enjoy sovereign rights over a far larger area of sea than they did previously. UK territorial waters now extend to 12 nautical miles and its exclusive economic zone (EEZ) extends up to 200 nautical miles. UNCLOS recognises sovereign rights for fisheries but also imposes duties on coastal states to restore stocks to levels which can produce MSY within their EEZs. Sovereign fishing rights are not untrammelled; they are qualified by a duty to restore stocks and to preserve the marine environment. Similar obligations are contained in the Convention on Biodiversity (with a target for 2020) and by virtue of the World Summit for Sustainable Development (with a target of 2015 for depleted stocks). Increasingly, international obligations of this nature are being enforced through the domestic courts.

Many countries (including the UK itself for its Crown Dependencies and overseas territories) vest their fishing rights in an identifiable legal entity which then not just regulates the fishery, but also acts as an owner in the way it disposes of the fishery to commercial operators. Unfortunately, for the waters immediately adjacent to the UK, it is not clear in what Crown entity the UK's fishing rights actually vest. The UK fishery is clearly some form of public asset and it is likely that there is a Crown trust in existence. The terms of this trust would place similar duties to maintain and restore fish stocks as those contained within UNCLOS.

Despite a first instance decision to the contrary, it is possible that the terms of that trust are enforceable by third parties.

There is a well-established principle in English law of *nemo dat quod non habet* (you cannot dispose of something you don't own). The fact that the UK's sovereign rights are qualified to MSY mean that the UK cannot grant to its fishers (or fishers of other Member States operating in UK waters) untrammelled rights which it does not possess itself. The same principle applies to the EU Common Fisheries Policy; the UK cannot confer on the EU greater fishing rights than those acknowledged by UNCLOS.

The scientific origins of the term MSY were in the work of Beverton and Holt and related to a theoretical maximum, where a capture fishery will sustain itself. The legal meaning of the term gives discretion to fisheries managers to establish a management system which uses the best available science to determine what actions needs to be taken. The legal interpretation of MSY is therefore much broader than the scientific one and has the following features:

- it is constantly evolving relating to the best available science of the time;
- it defines the limits of a coastal state's sovereign rights;
- it may relate to the setting of fishing quota (where calculations of scientific MSY are particularly predominant), but many obligations for the attainment of MSY may also

be satisfied by the imposition of technical or area-based management techniques such as marine protected areas;

- it provides the framework in which fisheries should be managed; and
- it can be used to show where stocks or areas of sea are not being properly managed, and thus direct where management resources should be targeted.

The introduction of the ecosystem approach to fisheries management means that legal MSY can now take into consideration a much wider range of services provided by the fishery in the calculation and management of that fishery. UNCLOS itself permits taking into consideration relevant environmental and economic factors, including the economic needs of coastal fishing communities, but the ecosystem approach takes that a stage further by assessing all the services provided by the fishery. This shifts the focus away from simply treating the fishery as a commercial resource, to ensure that management benefits a much broader constituency.

In 2008, the environmental non-governmental organisation (NGO), WWF tried to take the European Commission to the European Court of Justice for failing to allocate cod quota according to scientific advice. However, WWF was unable to access the European court system because the ECJ refused access to NGOs; ECJ rules at the time did not grant an NGO the right to be heard in court. Those rules are under scrutiny



once again because they seem incompatible with the Aarhus Convention, so this position may change shortly. There are also other legal forums for testing the point. The UK courts do not have the same access restrictions as the ECJ, so a case launched in the UK courts concerning UK fishing rights or the voting patterns of the UK Minister in the EU could come to trial. The former President of the International Tribunal for the Laws of the Sea (ITLOS), Rüdiger Wolfrum, recommended ITLOS as having suitable jurisdiction to ensure compliance with MSY requirements

The legal regime has dramatically moved away from the impossibility of *mare liberum* and open access fisheries to the possibility of effective regulation. Clearer sovereignty over the sea and better technology informing enforceable law means the legal context of fisheries have changed fundamentally for the better. There is an understanding that fisheries are held on trust for future generations. Fishing to MSY and trusteeship amount to the same thing; the legal interpretation of coastal states' rights and responsibilities under MSY and the obligations of a Crown trust are the same. The ecosystem approach provides the matrix to understand who the beneficiaries of that trust are and where management effort needs to be directed. All these pieces are now in place and the hard law is there at the edges to ensure that reform remains on track.

In short there are two key points to be drawn from this report:

- It is illegal for coastal states to permit fishing beyond MSY; and
- It is highly likely that this law is enforceable through the court system.

Contents

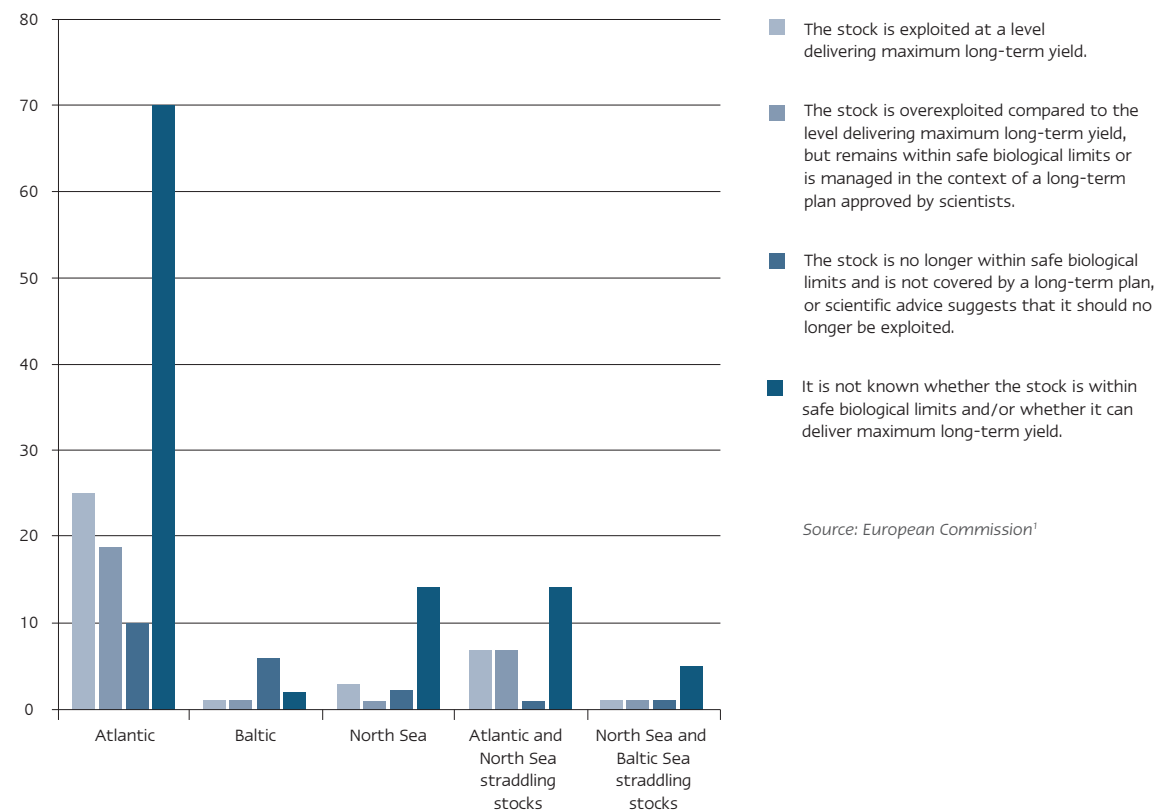
1	Introduction: The only way is up	6
2	The origins of fishing rights	8
3	The UK fishery	10
4	The great Victorian fisheries debate	13
5	International law and fisheries	15
6	Coastal states' rights in fisheries	20
7	What is Maximum Sustainable Yield?	25
8	MSY and ecosystem services: a further issue	29
9	Conclusion	34



1

Introduction: *The only way is up*

Numerous reports have documented overfishing around the world. The 2011 assessment of EU stocks by the European Commission shows huge knowledge gaps, and where there is sufficient knowledge alarming levels of overfishing.



These data are dire. On the EU's own figures, of 190 stocks only 40 are known to be fished within safe biological limits, 28 are stable but fished beyond maximum sustainable yield, 22 fisheries are recommended to be closed, and for 105 stocks there is insufficient data. The European Commission states baldly that 75% of EU fisheries are overfished compared to a global average of 25%.²

Nevertheless there are reasons to be optimistic about the future of fisheries. Marine fisheries have been open access and governed as if they were inexhaustible since the Roman Empire. For the first time in over a millennium, the basic principles of fisheries governance have shifted from a fundamentally flawed premise towards something more interesting and more sensible. Over time it is likely these changes will work their way through to operational changes to fishing practices, and increasingly sustainable management. We may just have reached the bottom.

The purpose of this report is to:

- look at these changing legal principles in the context of the UK fishery,
- describe developments in the law over time,
- assess how these may have contributed to overfishing, and
- show how recent changes, particularly the ecosystem approach, may underpin a successful fisheries management regime in the future.

Our team of investigators comprise two lawyers (Appleby and Palmer), a marine biologist (Simpson), and an expert in ecosystem services (Everard).

Since the UK has the single largest fishery in the EU and is the progenitor of the common law that covers a significant proportion of the world, the results of this analysis may have consequences for jurisdictions well beyond UK waters.



2

The origins of fishing rights

What did the Romans ever do for us?

The key precedent for both common law and Roman legal traditions comes from the Digest of Justinian, the Roman legal code which collated all established precedent throughout Justinian's huge empire. Frustratingly little is known about the cases which informed the law in this area but, as an example, the Digest cites a case concerning an estate in Botria,³ where a seller of a coastal estate tried to retain the tuna fishing rights when he sold it. It was decided that, although the contract was binding upon the buyer under contract law, the sale would not bind third parties because by nature the sea was open to all; the seller had no exclusive property rights and he could not exclude anyone else. Both parties lost the case.

This approach was part of a major regulatory principle. Roman law stipulated that the seas were *res communis* (a common resource to all citizens) both in ownership and use.⁴ And, *jus gentium* (rules that applied universally, and therefore internationally) granted free (open) access to the sea and the right to fish them. The result authorised prima facie an unlimited number of fishers, using an unrestricted amount of gear, to chase, what we now know, is limited stock using whatever fishing gear they wanted. This Roman concept of a common right to fish in the sea went unchallenged in Europe from the sixth to the twelfth centuries.⁵

Roman world view

The Roman view of fish stocks echoed down the centuries and is summed up beautifully by the writer Oppian:

*Great Neptune, whose commands control the Seas,
Can curb the tempests and the waves appease,
And all ye Ocean-Gods that peaceful reign
Low in the depths of the unfathomed main,
Permit the muse to tell what kinds obey
Your wat'ry powers and cut the liquid way.
May the calm sea smile on the distant shore.
While I discover all the hidden store.
And thou O Gods tune my artless tongue,
Please the sovereign pair, and form the grateful song.
But ah! How great the task! For who can know
What creatures swim in secret Depths below?
Unnumbered shoals glide through the cold Abyss
Unseen, and wanton in unenvy'd bliss.
For who with all his skill can certain teach,
How deep the Sea, how far the waters reach?
Foolish th'attempt; none can the space define.
The depth retires beneath, and mocks the sinking line.
Three hundred fathoms founded at the most,
Such is the knowledge which our labours boast.
To comprehend the whole we fruitless seek;
Our souls are finite and our reason weak.⁶*

Although Justinian's Digest was several centuries afterwards, the original animism of Greek thought and the sheer limitation on contemporary science still permeated the court's findings. The sea was open to all because it was unfathomable and unknowable and it arrogant to try

to understand it. This is something that perhaps later generations would do well to remember.

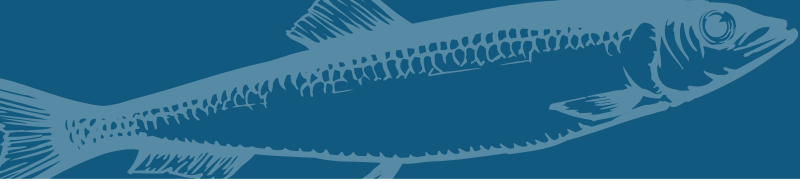


Roman mosaic from Tunisia – © Getty Images

A brief history of Mediterranean stocks

At this point it is worth pausing for a moment to understand the stock in question.

Because the Mediterranean does not have any large, single-species stocks that lend themselves to industrialised fishing, small fleets and traditional (artisanal) fishing methods prevail⁷. This makes fisheries landings data and multispecies stock assessments challenging or impossible to collect. However, it is clear that fishing has damaged Mediterranean reef systems⁸. The Mediterranean houses 5.5% of the world's marine fauna and there is evidence that intense exploitation over thousands of years has depleted megafauna, from Mediterranean monk seal, sea turtles, bluefin tuna, and groupers, to smaller invertebrate species including red coral, lobsters, and limpets. By comparing unprotected fished areas with areas where there have been legal restrictions against fisheries (marine protected areas), a 'modern-day baseline' has been recently established,⁹ although sharks, seals and turtles are still generally missing (sharks being 96-99.99% below historical levels). This suggests that as a result of fishing activities in the Mediterranean, fish biomass is only 10-40% of its potential in all fished sites included in the study.¹⁰ It is evident that fisheries regulation in the Mediterranean has been unsuccessful.



3

The UK Fishery

Private fisheries in tidal waters

Though the Roman legal system prevailed in much of Europe, the English had their own legal tradition, which did not favour open access. Legal historians Stuart and Hubert Moore state that by the time of the Norman Conquest:

It can be shown by records that [private fisheries] existed in almost every piece of tidal water round the coasts which was naturally available for the profitable exercise of an exclusive fishery.¹¹

This is unsurprising; hunting rights were a highly valued prerogative of the Norman kings to be distributed to loyal supporters. Many country estates still control tidal estuarine fisheries to this day.

However, by the Middle Ages the tide was turning against restricted access fisheries. The great medieval jurist Henry Bracton looked to Norman controlled Sicily for part of his hugely important treatise *On the Laws and Customs of England* (De Legibus et Consuetudinibus Angliae). He directly quoted Azo's Institutes regarding the right to fish, he stated:¹²

All rivers and ports are public, so that the right to fish therein is common to all persons.¹³

Here, the principle of open access crept into English law. Perhaps Bracton also recognized the realpolitik of the time. The coastal fisheries that the King might grant to his followers were already in private hands and technological development in fishing vessels meant fishers could travel beyond where possession of a space could be enforced - even beyond any jurisdiction. For these areas, open access was a practical response.

Regulation of public fisheries after Bracton

The result is that very few new private tidal fisheries have been created in English and Welsh waters since Bracton's time, except for shell fisheries, even though (as we discuss subsequently) the coastal state's jurisdiction has gradually expanded. This lack of privatisation of coastal fisheries did not stop their regulation. In the Middle Ages, England was an agrarian society and, just as the regulation of fisheries is of social importance in such countries today,¹⁴ a great deal of regulation was implemented to conserve the fishery and combat the negative impacts of fishing on other activities.¹⁵ The earliest record, from 1285, is legislation via the Statute of Westminster to establish a closed season¹⁶ and regulate nets in salmon rivers. The first mention of damage by trawling is in 1376, where alarmed petitioners of Edward III sought to ban an eighteen by ten foot oyster-dredging device

known as a 'wondrychoun'. Fishers were taking such large quantities of small fish that they fed them to their pigs.¹⁷ A Commission was appointed to investigate but, sadly, there is no record of its findings. From then on there is sporadic English legislation concerning fixed fishing devices, regulating mesh size, and setting the fishing season, as well as the establishment of fisheries conservancy bodies (with marine jurisdiction) and the findings of the Admiralty courts and some of the coastal manorial courts. This body of evidence shows that coastal commercial fishing in territorial waters was a highly regulated activity and the negative impacts of fishing were well appreciated.

Difference between territorial waters and high seas fishery

There was also an international flavour to both how entitlement to fish the seas and oceans evolved and how differences between nations over these entitlements engulfed the evolution of law in this area. English jurist John Selden wrote *Mare Clausum* (1614) as a response to Hugo Grotius's *Mare Liberum* (1609). These treatises had two opposing notions concerning 'sovereignty' over the sea. Grotius, on the one hand, disregarded the notion that a sovereign state could impose sovereignty over the sea in favour of free trade. Selden, on the other hand, insisted that 'English sovereignty in territorial waters was based on long

and continuous possession',¹⁸ which neatly fitted the feudal 'possessory' legal framework that had only recently changed.

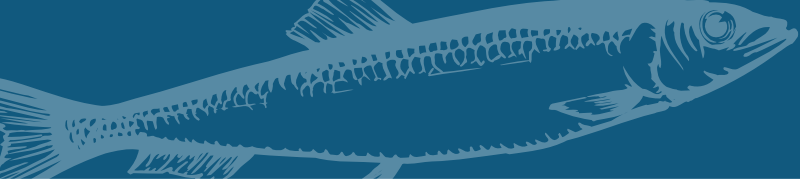
In reality (despite their scholarly impetus) Grotius' and Selden's positions served the national interests of Holland and England (respectively) in response to a multinational dispute that had developed over sovereign rights to the seas.

The Pope started the dispute in 1493, when he divided the world's seas into two and granted one half to the Spanish and the other to the Portuguese (the divide separated the Atlantic into east and west). Britain, Holland, Denmark and France, unilaterally and multilaterally, rejected Spanish and Portuguese papal (sovereign) privileges to fisheries and began to decree their rights to fish the seas. War was imminent and the Dutch resigned themselves to the English standpoint that each country had the right to take possession of its own coastal waters. In *The Law of War and Peace*,¹⁹ Grotius accepted coastal territories but maintained that the high seas were free to all (upholding the Roman notion of *jus gentium*). Grotius was strongly influential on the development of the law concerning fisheries²⁰ and also on later economists and academics. What is most significant is the common misconception that existed about the inexhaustibility of fish stocks. Grotius foresaw that in spite of the abundance of fish they may well be exhaustible and William Welwood, for the British, strongly argued that the colossal Dutch herring fleet, which the *mare liberum* argument protected, would

destroy the stocks which were native to waters adjacent to Scotland.²¹ Nevertheless, the *mare liberum* concept is the one that became adopted under international law. The notion of open access fisheries on the high seas (beyond canon shot – or three nautical miles of the coast) had yet again triumphed.

Overseas expansion of the common law in territorial waters

This did not stop the expansion of the UK common law over the sea in territorial waters. English, and subsequently British, overseas colonial development expanded the area ostensibly governed by English law by adding huge new coastlines to the British Empire under English common law. Ireland already used the common law and so already tended to follow England and Wales. Under the Fisheries (Scotland) Act 1704, Scotland (although retaining its own legal system) accepted the principle of open access fisheries even though there had been a long history of limited access.²² The rapid expansion of the common law around the world from the UK to its colonies also brought with it the principle of open access fisheries in territorial waters to the United States, Canada, Australia, New Zealand and India, to name but a few.



Ownership of the fishery in the common law

Unfortunately the common law brought with it one essential weakness: the question of ownership of the public fishery was never soundly addressed.

There was some precedent. In the case of *Banne Fishery*,²³ despite recognising there were both tidal (navigable) and non-tidal (non-navigable) rivers, the court proclaimed that under the common law²⁴ a man may have an interest in a fishery:

*Every navigable river, as high as the sea flows and ebbs in it, is a royal river, and the fishery [therein]...belongs to the king by his prerogative; but every other river not navigable...the [owners] on each side [of the river] have an interest of common right [in fishery].*²⁵

The court continued:

*The River Banne, so far as the sea flows and ebbs in it, is a royal river; and the fishery of salmon there is a royal fishery, which belongs to the king as a several fishery, and not to those who have the soil on each side of the water.*²⁶

The only English jurist to make a sustained argument in this area is the well respected Lord Hale:

In this sea the king of England hath a double right, viz a right of jurisdiction which he ordinary exerciseth by his admiral, and a right of propriety or ownership. The latter is that which I shall meddle with...

The right of fishing in this sea and the creeks and arms thereof is originally lodged in the crown, as right of depasturing is originally lodged in the owner of the wast whereof he is lord

But though the king is the owner of the great waste, and as a consequent of his propriety hath the primary right of fishing in the sea and the creeks and arms thereof; yet the common people of England have regularly a liberty of fishing in the sea or creeks or arms thereof, as a publick common of piscary, and may not without injury to their right be restrained of it, unless in such places or creeks or navigable rivers, where either the King or some particular subject hath gained a propriety exclusive of that common liberty....

So, for the vast majority of English waters, even though the Crown owned it, the people enjoyed the right of open access for fishing and navigation: a pragmatic piece of meddling if ever there were one.

It is easy to underestimate the importance of Lord Hale's assertions. Until the judiciary were required to include public policy implications in its decisions United States law was entirely based on the English common law. Iconic commentators, such as Bracton and Lord Hale, in conjunction with early English precedents continue to have a global influence today.²⁷ This remains the fundamental basis of law for fisheries in most common law jurisdictions.

4

The Great Victorian Fisheries Debate

Open access and the Magna Carta

By the middle of the 1860s, the open access nature of the inshore fishery had become so entrenched that, in the case of *Malcolmson v O'Dea*,²⁸ the House of Lords held erroneously that the principle of open access was confirmed in the Magna Carta and also that the fundamental limitations on Crown prerogative contained in the Magna Carta meant no new private fisheries could be created by Crown action alone. It would need express legislation to grant the Crown (or the civil service) the right to do so. Except for shell fisheries in the UK no such legislation exists and the UK state is unable to sell or lease the UK's fishery (except in its Crown Dependencies and Overseas Territories).

The basis of the regulation of the British fishery

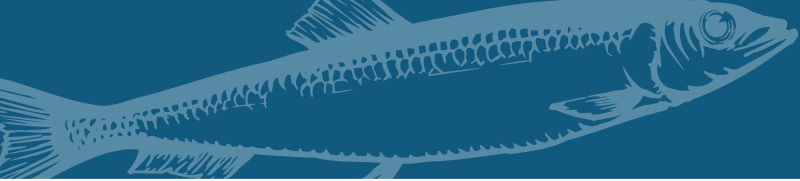
At the same time there was also unprecedented effort to revitalise the management of the UK's fishery with new acts governing salmon and freshwater fisheries²⁹ and shellfish.³⁰ Enabling legislation created inshore management regimes in England and Wales by Sea Fisheries Committees³¹ and the registration of fishing vessels.³² In this atmosphere of increasing regulation it is reasonable to surmise that there was a great deal of contemporary expertise and debate on

the management regime and what it could achieve. It is no surprise that, as a result, the two great works on UK fisheries management date from this period, Moore and Moore's *History of the Law of Fisheries* and Stewart's *Treatise on the Laws of Fisheries in Scotland*. Since then, even with the passage of the Marine Acts in Scotland and the UK, there has never been such a comprehensive and focused attempt to organise the management structures of UK fisheries. And, with the exception of the abolition of Sea Fisheries Committees by the Welsh Government, the management structures put in place in this period are still in place today.

Thomas Huxley's views on science and regulation

Extensive legal activity took place alongside significant scientific debate. This debate became infamous with the polymath Thomas Huxley's (1882) pronouncement:

*I believe, then, that the cod fishery, the herring fishery, the pilchard fishery, the mackerel fishery, and probably all the great sea fisheries, are inexhaustible; that is to say, that nothing we do seriously affects the number of the fish. And any attempt to regulate these fisheries seems consequently, from the nature of the case, to be useless.*³³



He based this observation on the fecundity of the stock and the catch size of the fishing fleet at the time. It is an observation which has been extensively criticized by modern writers.

However, it is often forgotten that in the same speech Huxley went on to say:

There are other sea fisheries, however, of which this cannot be said. Take the case, for example, of the oyster fisheries, so far as it concerns beds which are outside the three-mile limit of the territorial jurisdiction of this country. Theoretically, at any rate, an oyster bed can be dredged clean. In practice, of course, it ceases to be worthwhile to dredge long before this limit is reached. But we may assume, for the sake of argument, that an oyster bed may be thus stripped. In this case the oyster bed is in the same position as a salmon river. The operations of man bear a very large proportion to the sum of destructive agencies at work, and it may seem that restriction by force of law should be as useful in the one case as in the other.

Huxley then concludes:

Oyster fisheries may be exhaustible; and for those which lie outside the territorial limit no real protection is practically possible.

These are sensible practical points. In the 1880s outside the 3 mile limit there was very little regulators could do to limit overfishing as it was beyond their jurisdiction, even when it was acknowledged to be harmful. He had no notion of industrial fishing in today's sense, nor was he sure that any regulation to limit fishing outside the 3 mile limit could be enforced. It is unfair to take Huxley's scientific pronouncements out of context.

A different take on Huxley's argument is that regulation on the high seas was nigh on impossible at the time and given the fecundity of the pelagic species they would probably be fine. But the inability to frame effective regulation for the North Sea for the more vulnerable oysters meant these were likely to become depleted.

Huxley's legacy

Huxley's fateful pronouncement of inexhaustibility somehow lingered in the social and legal consciousness. A series of court cases confirmed that not only was the public right to fish in inshore waters open access, but that right was 'untrammelled' and had no effective limit. This position was confirmed as recently as 1998 in *Adair v the National Trust*.³⁴ Justice Girvan does not even appear convinced himself of the soundness of his judgment when he held:

The public right to fish in sea waters and on the foreshore was a common law development of some antiquity and emerged in an age that failed to recognise the environmental and ecological impact that flows from an untrammelled right to reap the harvests of nature. The public right to fish paid no regard to the threat of depletion of fish stocks or to the impact such a depletion would have on the natural chain.

But this is not true, to some extent the public had been aware of the negative impact of untrammelled fishing rights since at least 1376. It is tempting to posit that the public has always been aware of the potential harm from overfishing. By 1999, although common sense may not have made it into Justice Girvan's court room, the position of open access unrestricted fisheries was no longer an acceptable principle.

5

International Law and Fisheries

What are the UK's fishing rights today?

The UK enjoys rights and is subject to obligations established under international law. International law is often thought of as solely operating between nations, but not binding on or actionable by its citizens or other legal persons. This is a potentially 'pernicious sentiment' according to the late Lord Bingham.³⁵ He pointed out that that not only are UK Ministers bound by international law under the current Ministerial Code, but there is an 'osmotic absorption' of international law into the national courts and increasing numbers of national courts deciding questions of international law. The nature and extent of the UK's rights and obligations at this level fundamentally influence the approach of the courts.

In the 1970s, the UK had been a firm advocate of open access high seas fisheries promulgated under *mare liberum*. This supported its traditionally large distant water fleet. However it brought the UK into conflict with Iceland, which in 1972 unilaterally declared a 200 nautical mile limit for their domestic fishery and announced plans to reduce overfishing by introducing a quota system enforced by the Coast Guard.³⁶ By 1976, the UK accepted that international opinion was against it and withdrew its fleet from the disputed waters. In Montego Bay, Jamaica on the 10th December 1982, the United Nations Convention on the Laws of the Sea (UNCLOS) was concluded. It was not until the 25th July 1997, 15 years

later, the UK acceded to the treaty. By doing so, the UK accepted the principle of expanded territorial waters to 12 nautical miles and a 200 nautical mile Exclusive Economic Zone (EEZ) granting sovereign rights over its fishery to coastal states. The UK accession expressly declared:

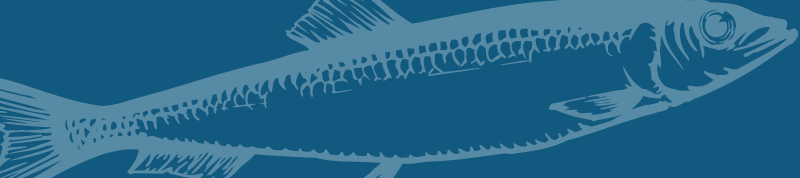
The United Kingdom cannot accept any declaration or statement made or to be made in the future which is not in conformity with articles 309 and 310 of the Convention. Article 309 of the Convention prohibits reservations and exceptions (except those expressly permitted by other articles of the Convention). Under article 310 declarations and statements made by a State cannot exclude or modify the legal effect of the provisions of the Convention in their application to the State concerned, including constitutional provisions.

Moreover it went on to declare:

The United Kingdom considers that declarations and statements not in conformity with articles 309 and 310 include, inter alia, the following:

[...]

Those which purport to subordinate the interpretation or application of the Convention to national laws and regulations, including constitutional provisions.



In stating this, the UK expressly accepts the primacy of the international law in this area. The UK declared its rights under UNCLOS via the Territorial Sea Act 1987 and the Fishery Limits Act 1976 which respectively established 12 nautical miles as territorial limits and the limits of its sovereign fishery.

Territorial Sea

A number of basic well known features of UNCLOS are set out in the international regime:

- the UK has sovereignty over its territorial sea, which extends for 12 nm from its baselines;³⁷
- foreign vessels have a right of innocent passage in the territorial sea³⁸ but this does not include fishing;^{39 40} and,
- the UK may adopt laws and regulations relating to fish stock conservation with which flag states must comply when their vessels are in the UK's territorial sea.⁴¹

In addition, there are certain key environmental obligations contained in UNCLOS:

- the coastal state is obliged to protect and preserve the marine environment; and⁴²
- the coastal state is obliged to preserve rare or fragile ecosystems as well as the habitat of depleted, threatened, or endangered species and other forms of marine life.⁴³

These obligations are not set out specifically in respect of fisheries, but there is now an overriding obligation to protect the marine environment which was not present before. The coastal state's management of its fisheries needs to incorporate this.

Exclusive Economic Zone (EEZ)

The UK is entitled to an EEZ⁴⁴ but, although the power to declare one exists,⁴⁵ the UK has not yet done so. However, it has declared an Exclusive Fishing Zone⁴⁶ In practice, through its ratification of UNCLOS, the UK is bound to manage the area of water which is nominally an Exclusive Fishing Zone as an EEZ.

The EEZ extends to 200 nm from the coastal state's baseline,⁴⁷ unless there is a proximate neighbouring state in which case the EEZ runs down the mid line. The coastal state has sovereign rights for the purpose of exploring, exploiting, conserving, and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed and of the seabed and its subsoil'.⁴⁸ It also has jurisdiction for the purposes of (inter alia) the protection of the marine environment.⁴⁹

It is easy to see how a coastal state may misinterpret those sovereign rights to equate to the EEZ forming part of its

territory, but there is a subtle and important legal difference between the EEZ and territorial waters. While the UK has sovereignty in territorial waters, it only has sovereign rights in the EEZ. Those rights can only be exercised in a manner compatible with UNCLOS, and the treaty contains within it some fundamental terms and conditions which dictate their use.⁵⁰

The coastal state has the same environmental obligations as those within its territorial waters:

- the coastal state is obliged to protect and preserve the marine environment;⁵¹
- the coastal state is obliged to preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life,⁵²

but there are some additional requirements:

The coastal state must ensure through proper conservation and management measures that the maintenance of the living resources in the exclusive economic zone is not endangered by over-exploitation. Such measures shall also be designed to maintain or restore [our emphasis] populations of harvested species at levels which can produce the maximum sustainable yield [MSY], as qualified by relevant environmental and

*economic factors, including the economic needs of coastal fishing communities and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether sub-regional, regional, or global.*⁵³

This is a significant restriction on the ambit of a coastal state's discretion. The state's rights are limited to maximum sustainable yield and, leaving the definition of MSY aside for a moment, the state has a duty to restore stocks. There is a potential policy justification on stock management focused on the economic needs of fishing communities but, since in the long term the needs of coastal fishing communities are inextricably linked to the health of the stock, it is almost impossible to conceive of an economic justification for over-exploitation, except perhaps in response to some national emergency.

In short, coastal states do not have untrammelled authority inside the EEZ. There is a fundamental binding legal principle that coastal states must not overfish; moreover they have a duty to restore stocks. As they don't have the right themselves, coastal states should not be permitting its citizens or the citizens of other nations to over fish in their EEZ.

Continental Shelf

Beyond the EEZ, a coastal state has sovereign rights to natural resources from the boundary of the EEZ to the continental shelf's edge, where the shelf is contiguous. As far as fisheries are concerned these only extend to sedentary species; there are no explicit environmental obligations beyond the fundamental restrictions outlined for territorial waters and those relating to the high seas.

Straddling stocks

On the 19th December 2003, the UK also ratified the UNCLOS provisions relating to straddling stocks.⁵⁴ These provide that states shall apply the precautionary approach widely to conservation, management, and exploitation of straddling fish stocks and highly migratory fish stocks, in order to protect the living marine resources and preserve the marine environment. So, for fish stocks which straddle different states' waters (which account for many of the UK's white fish), there is an additional requirement for the application of the precautionary principle. The provisions also contain the same terms as the EEZ with respect to management according to MSY and includes a management regime of fisheries beyond the EEZ.

High Seas

The high seas fishery is common to all humanity (*res communis*). All states have a freedom of fishing on the high seas but there is a duty to cooperate with other states over conservation⁵⁵ and a duty to manage the high seas with a view to obtaining MSY.⁵⁶

The high seas are primarily part of international jurisdiction and there is no coastal state to enforce these environmental obligations. UNCLOS explicitly makes it the responsibility of nation states to take necessary measures for their respective nationals to ensure the conservation of marine living resources.⁵⁷

Together the high seas and the continental shelf cover 26% of the global fishery.⁵⁸ This is a large portion of the international catch but the difficulty of enforcing high seas regulation means the focus of this report is inside the EEZ where the responsibilities of the coastal state are clearer. However, these are intriguing areas for further investigation.⁵⁹

Other international law

The Implementation Plan adopted by the World Summit on Sustainable Development (WSSD) in Johannesburg included the obligation to:



Maintain or restore stocks to levels that can produce the maximum sustainable yield with the aim of achieving these goals for depleted stocks on an urgent basis and where possible not later than 2015.

This was reinforced by the Convention on Biodiversity (albeit allowing for a slight delay) in Target 9 of the Strategic Plan for Biodiversity 2011-2020 which sets out that:

by 2020, all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

Both the EU and the UK are signatories to these instruments.

EU law

The Marine Strategy Framework Directive requires that member states take the necessary measures to achieve or maintain 'good environmental status' in the marine environment by the year 2020 at the latest. For commercial fisheries good status is defined as:

Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stocks.⁶⁰

The Directive even includes comments on the EU's own Common Fisheries Policy (CFP) and it states in its recitals:

The Common Fisheries Policy, including in the future reform, should take into account the environmental impacts of fishing and the objectives of this Directive.⁶¹

This list of international and EU regulation relating to MSY is not exhaustive. It is very clear that coastal states either only have a qualified right to a sustainable fishery or they have a duty to implement regulation to ensure sustainable exploitation. This has finally been reflected in the reformed CFP.

The Reform of the European Union's Common Fisheries Policy (CFP)

The final agreed text of the new basic regulation of the CFP states:

.... international instruments [especially those contained in UNCLOS] predominantly foresee conservation

obligations, including among other things obligations to take conservation and management measures designed to maintain or restore marine resources at levels which can produce the maximum sustainable yield both within sea areas under national jurisdiction and on the high seas, and to cooperate with other States to this end, obligations to apply the precautionary approach widely to conservation, management and exploitation of fish stocks, obligations to ensure compatibility of conservation and management measures where marine resources occur in sea areas of different jurisdictional status and obligations to have due regard to other legitimate uses of the seas. The Common Fisheries Policy should, therefore, contribute to the Union's implementation of its international obligations under these international instruments.

For the first time since its inception the CFP has recognized fundamental obligations to maintain and restore stocks. It seeks to implement these by

Improv[ing] its Common Fisheries Policy to ensure that the exploitation of marine biological resources restores and maintains populations of harvested stocks within a reasonable timeframe above levels that can produce the maximum sustainable yield. The exploitation rates should be achieved by 2015. Achieving those exploitation rates by a later date should be allowed only if achieving

them by 2015 would seriously jeopardise the social and economic sustainability of the fishing fleets involved. Those rates should be achieved as soon after 2015 as possible and under no circumstances later than 2020. Where scientific information is insufficient to determine this level, approximate parameters may be considered.

The EU dominates the allocation of fishery resources between member states and their regulation. Discussions over MSY are therefore going to be centre stage over the next seven years of European fisheries policy.

Overfishing: cause or symptom

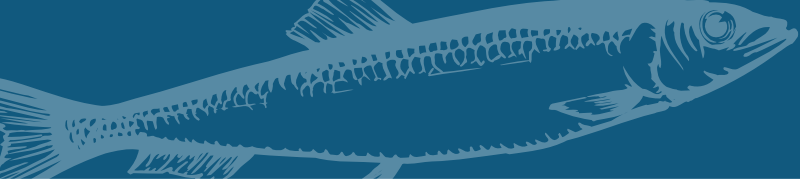
There is no question that coastal waters have been significantly affected by overfishing with numerous cases of overexploitation leading to stock reduction and in many cases collapse. UK examples include the collapse of the North Sea and Atlantic herring fishery (1968- 69) and the overexploitation of North Sea and Atlantic cod (1970-1980s). This mirrors collapses in other harvest species which were once internationally important including the Indian sardinella (in the 1940s), Japanese sardine (in the 1940s and 1950s), South African pilchard (1965-66), Greenland cod (1968), Georges Bank haddock (1968), Namibian pilchard (1970-71), Peruvian anchoveta (1972-73), Gulf of Guinea sardinella (1973-74) and Canadian Atlantic cod (in the 1990s).⁶²

Other, more subtle impacts on stocks include reduced spawning potential, modified age and size at spawning,⁶³ implications for populations through growth and demographics (e.g. age and size structure, sex ratio), and reduced genetic diversity. Additionally, fishing modifies the composition of the assemblage, altering the quantity of target species as well as that of associated and dependent species. For associated species, unintended catch discarded at sea may reduce their numbers to the extent that, over time, it distorts shape of the food chain. This leads to a 'trophic cascade', graphically described by Pandolfi as a 'slippery slope to slime', as each predator species is removed from the food chain and fishers move down the food chain until all that's left is slime or other inedible species.⁶⁴

Sometimes, fishing activities also change the environments in which fish are found. For example, demersal trawling by beam or otter trawl and dredging can lead to modification of certain habitats, including devastating in a single haul those that may have taken centuries to establish. In contrast, of course, many marine habitats are high-energy, soft-sediment habitats, which can show remarkable resilience to the impacts of heavy gear including dredges used in UK waters for collecting scallops.

The practical effects of UNCLOS

There is abundant evidence of the harm inappropriate and excessive fishing activity causes. Commercial fishing responds to the nature and enforceability of regulation in their choice of gear and area to fish. From the lawyer's perspective, the repeated pattern of short term practice by the commercial fishing industry is a result of poor regulation. As Huxley observed in the nineteenth century, it was incredibly difficult to regulate the high seas, but the additional rights which UNCLOS acknowledged belonged to coastal states brought with them the duty to create meaningful regulation. The reformed CFP is just a symptom of the chain of events set in motion by UNCLOS.



6

Coastal states' rights in fisheries

International law and ownership of the fishery

International law sets out the limits of coastal state's property rights over the sea. Within territorial waters these extend to the seabed, the space above the seabed, and the right to fish (among other things). Within the EEZ these rights are limited to a right to exploit living natural resources. On the continental shelf the sovereign rights only extend to sedentary species.⁶⁵ On the high seas there is a freedom of fishing to all states as long as they have due regard for the rights of other states and the rights contained in UNCLOS.⁶⁶

A sidelong glance at the EU

It has long been recognised that the coastal state has the power to regulate its sovereign fisheries and its territorial waters. The UK does so through its membership of the EU via the Common Fisheries Policy (CFP). This report is about the role of the coastal state rather than the EU. It is important to remember that rights conferred on the EU are no greater than those enjoyed by the member state, so the CFP is best approached with a real understanding of the coastal state's role. The CFP's only exclusive competence is for the conservation of marine biological resources,⁶⁷ and shared competence for other fisheries matters⁶⁸ with the following objectives:

a) to increase agricultural productivity by promoting technical progress and by ensuring the rational development of agricultural production and the optimum utilisation of the factors of production, in particular labour; thus,

b) to ensure a fair standard of living for the agricultural community, in particular by increasing the individual earnings of persons engaged in agriculture;

(c) to stabilise markets;

(d) to assure the availability of supplies;

(e) to ensure that supplies reach consumers at reasonable prices.⁶⁹

The EU's role in this area has its limitations. Differing competences mean that the EU dictates the regulation for the conservation of fish stocks in all EU member states' waters. For all other aspects of the CFP and marine environmental law, the EU sets the benchmark and member states must impose regulation meeting that benchmark. But member states are entitled to develop further laws in these areas, as long as they don't conflate with other EU laws such as competition rules. For this section it is important to realise is that the EU is precluded from prejudicing the member state's system of property ownership.⁷⁰

There is a great deal of misunderstanding of the EU's role. It can be set out like this:

- International law sets out the ambits of the UK's proprietary and regulatory authority over fisheries;
- The UK confers authority on the EU to regulate fisheries. That authority stems from various aspects of EU law:
 - o Regulation for the conservation of marine biological resources (i.e. fish stocks) is the exclusive competence of the EU;
 - o Other regulation is shared competence where the UK may regulate but where the EU sets the benchmark;
- Within the 12 mile limit the EU grants the UK powers to regulate its fishery;⁷¹
- Between the 6 and 12 mile limit, the London Convention⁷² permits access to UK fisheries by other EU member states, meaning for this area fisheries regulation remains within the de facto control of the EU.

The point to notice here is that even though the EU has the power to regulate the UK's fishery, it does not own it. The EU policy of *relative stability*⁷³ means that EU member states' fleets remain in the same proportion and member states' fishers can access each other's fisheries.⁷⁴ Within that system the EU ensures that the UK retains control of its proportion of the EU fishery which it then allocates to fishing companies which have an economic link to the UK.

UK's proprietary rights in its fishery

Unfortunately, the UK has no specific legislation dealing with the ownership of UK fisheries and the Blue Book, which sets out UK fisheries laws for fisheries managers, is completely silent on the point.⁷⁵ It is left to an analysis of the smattering of case law and legal treatise to make some sense of the ownership structure. Appleby⁷⁶ and Barnes⁷⁷ cite a number of historic cases and draw differing conclusions. Appleby sides with Lord Hale and takes the view that the fishery is held on trust for the public while Barnes prefers to view the fishery as held under a *parens patriae* (parent of the nation) obligation. Both are complicated means of ownership and require a little further explanation.

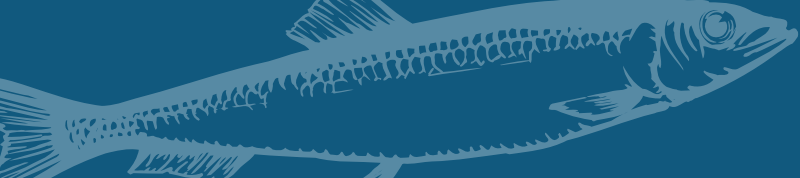
The difference between the two is outlined (albeit in the US context) by Kanner.⁷⁸ Broadly, the *parens patriae* function only gives the right to take action in court if something is harming that public right in question (in this case the right to fish); it does not give a cause of action in itself for mismanaging that property. A trustee, on the other hand, can defend that property but also has direct managerial obligations of the resources in their trust, known as fiduciary responsibilities. The result is that *parens patriae* cases are more suited to defending the environment from damage by other parties, whereas trustees have active responsibilities to manage the resource properly.

Potentially, there is also some distinction in the way the right to fish is held in territorial waters and in the EEZ. It is established that the expansion of the limit from 3 miles to 12 miles carried with it the expansion of Crown rights.⁷⁹ It follows these include the expansion of the public right to fish, which is confirmed by the Australian High Court in *Commonwealth v Yarmirr*.⁸⁰ Both Barnes and Appleby see no reason why those rights should not expand to the edge of the EEZ (and the continental shelf for sedentary species) under the same process of Crown prerogative.

The role of the public trustee

If Appleby is correct and some form of Crown public trust exists, the next point is to establish the role of the trustee, and its nature and extent. There are all sorts of duties relating to the conduct of the trustee but *Halsbury's Laws of England*⁸¹ notes three specific roles in relationship to the management of trust assets:

- a duty to have acquaintance with the trust and its affairs;
- a duty to take possession of trust property and preserve it; and
- a duty to bring and defend proceedings to protect trust property.



The first and last obligations are fairly self-explanatory but the second needs fuller explanation. *Halsburys* states that a trustee must take all reasonable and proper measures to obtain possession of the trust property if it is outstanding, and to get in all debts and funds due to the trust estate, and to preserve it and secure it from loss or risk of loss. Unless otherwise directed or authorised by the instrument creating the trust, he has a duty to make sure that trust property is prudently invested and avoid dealing with the property in a hazardous manner.

Not all of these are relevant to the public right to fish but there is a clear duty to preserve the right to fish and secure it from loss or risk of loss. In practice this places a direct obligation on the UK Crown to wisely manage the stock. We will return to this point later but allocating fishing rights to fishers beyond sustainable levels is very likely to be dereliction of these duties.

Enforcement of the trust

Whether this trust is enforceable by third parties, such as aggrieved campaigning organisations is an interesting point. In the case of *Tito v Wadell* [No.2]⁸² it was held that a trust imposed on the Crown was only one in a 'higher sense' and imposed no actionable obligation the Crown; like the pirates' code in the Disney film *Pirates of the Caribbean*,

the fiduciary responsibilities on the Crown are 'more like guidelines.' This contrasts with the other common law jurisdictions, such as the US and Canada, where there has been significant application of such trusts, although not yet in the EEZ,⁸³ in what might disingenuously be called the lower sense.⁸⁴ It remains a significant stumbling block to any judicial intervention in this area, but public trust cases have been successful elsewhere in the common law world and *Tito* is only a first instance decision. Indeed the eminent legal scholar Kevin Gray roundly criticised the current UK practice as being inexplicable to a Martian.⁸⁵ It does seem odd that the protection afforded to public property via the ostensibly more remote *parens patriae* obligation on the Crown turns out to be stronger than a UK Crown trust. It is therefore questionable whether *Tito* would survive a direct legal challenge and the case has already received mixed reviews.⁸⁶ Administration of public assets is one of the core responsibilities of government; claims of maladministration can become politically problematic and even lead to the resignation of Ministers.⁸⁷

Which Crown body owns the right to fish?

Even if *Tito* remains good law, it may not be the end of the story. *Halsburys* directs an aggrieved party to breach of statutory duty, a remedy which allows poorly functioning

statutory bodies to be judicially reviewed. The question then is which government department is responsible for the trust?

The answer is not straightforward. As a proprietary right of the Crown there are two potential Crown entities: the Crown Estate Commissioners on the one hand and a muddled collection of the Department for Food the Environment and Rural Affairs (Defra) and potentially the devolved administrations on the other. Those working in other jurisdictions will be used to the conflict between federal governments and states or provinces.⁸⁸ For this UK generation devolution is relatively novel⁸⁹ and the difficulties of competing authorities at different levels of government has not really had time to establish effective parameters.⁹⁰ Devolution is particularly complex where those parameters were unclear in the first place.

The Crown Estate is a United Kingdom body and, therefore, outside the ambit of devolution,⁹¹ so it makes sense to approach that first.

The Crown Estate Commissioners own:⁹²

- a significant part of the foreshore;
- almost all of the seabed in territorial waters;⁹³
- rights to natural resources on the continental shelf excluding fossil fuels;⁹⁴
- rights to generate electricity from wind, waves and the tides on the continental shelf;⁹⁵ and

- rights to the transportation and storage of natural gas and carbon dioxide on the continental shelf.⁹⁶

The development of the Crown's marine estate is itself very instructive as this research from the Scottish Law Commission in 2003 demonstrates:

Late into the nineteenth century, it could still be argued that the Crown's rights over the seabed and foreshore were part of the regalia majora, i.e. quasi-proprietorial rights which could not be alienated by the Crown. Alternatively, it was said that the Crown held both the seabed and foreshore simply as trustee or fiduciary for the benefit of the public. The predominant modern theory is that the Crown has a proprietary right in the solum of the seabed and foreshore. While this derives from the prerogative, it amounts to full ownership of the property. It is a patrimonial right: It is not a right held by the Crown in trust for the public. In other words, the ownership of the seabed and foreshore is not part of the regalia majora: It is held by the Crown for its own patrimonial benefit. However, while the Crown has full ownership, it is recognised that its proprietary rights cannot be exercised in a way which would prejudice the interests of the public in the sea (including the seabed) and the foreshore.⁹⁷

In other words the Crown's right to the seabed and the foreshore was held in similarly poorly defined capacity as the right to fish but now seems to have hardened into a more concrete form of ownership. There is no statutory authority for the Crown's ownership in this way; it comes straight from prerogative powers of the monarch which originate in the UK's unwritten constitution. The same prerogative could equally apply to fishing rights. It is also interesting to note the Scottish Law Commission's assertion that even if the rights were effectively a private part of the Crown Estate, there is still an overriding obligation to exercise that ownership function in a way that does not prejudice the interests of the public.

The other potential owners are Defra and (perhaps) the devolved administrations. There is no clear statutory provision for this function. Defra's powers are usually based in specific regulatory Acts of Parliament. There is not scope here to run through them all but none of these Acts specifically vest ownership of the fishery in Defra. As a result, none of the devolution settlements have yet vested ownership of the fishery in any devolved government department or agency.⁹⁸

In the recent case of the *United Kingdom Association of Fish Producer Organisations v Secretary of State for the Environment Food and Rural Affairs*,⁹⁹ where the issue of ownership of the UK's fishing quota was raised by interveners in the case, Justice Cranston found:

There is some force in the Interveners' point that statements about fishing quota and the fixed quota allocation system have always to be understood against the background that fish are a public resource.¹⁰⁰

Frustratingly indeterminate, this remark shows the current lax position of UK legal understanding: It is firmly established that it is the right to fish which is public, not the fish themselves, which are ownerless until captured,¹⁰¹ so the judgment on this point is simply incorrect. The question remains which public body owns the fishery on behalf of the public and what are its duties? Here the judge was silent but a Crown trust seems a very strong contender.

A crucial point about ownership

There is one final point to consider relating to the UK proprietary rights of its coastal fishery. The law of property has an interesting guiding maxim *nemo dat quod non habet*, no one can give a better property right than they have already. Within the EEZ, UK sovereign rights either under trust or through the concept of maximum sustainable yield under international law, only amount to sustainable husbandry and nothing more. Yet, as the EU figures in the introduction show, the UK (via the EU) has routinely allocated fishing quota at beyond recommended levels of independent scientists or has failed to do proper assessments to benchmark those levels in the first place. Those fishing rights



are not the UK's to give, by the same token the UK cannot confer on the EU the authority to do so on its behalf.¹⁰² A good analogy for this is a tenant of UK commercial property under a lease. The tenant becomes an owner for the purposes of the laws of property but the lease contains a number of important obligations to landlord from the tenant. For commercial tenants these often include a duty to maintain the property. This duty has been interpreted by the courts¹⁰³ to include restoring the property even if it was in a poor condition to start with. The position with the fishery is exactly analogous; while the UK exploits its fishery, it must maintain it.

Back to the EU

It plain from UK trust law, the reformed CFP and UNCLOS that fisheries can no longer operate outside sustainable levels. The inclusion of MSY obligations in the reformed CFP means that the technical definition of sustainability will be under stress as never before as UK law, the European Commission and member states attempt to understand what the term means in the context of their own fisheries and political constituencies.

7

What is Maximum Sustainable Yield?

In 1977 Larkin wrote an epitaph for MSY:

M.S.Y. (1930-1970)

*Here lies the concept, MSY.
It advocated yields too high,
And didn't spell out how to slice the pie.
We bury it with the best of wishes,
Especially on behalf of fishes.
We don't know yet what will take its place,
But hope it's as good for the human race.¹⁰⁴*

Reading this (particularly given the date) you could assume that MSY is discredited and has no further place in fisheries management. It is vitally important for any scientists to realise that enshrining MSY in UNCLOS and other international agreements potentially gives the phrase two meanings, one in law and the other in science. Even if the initial scientific definition becomes discredited, the term lives on in law and its legal definition may be very different to the scientific one,¹⁰⁵ as it relates to the legal rules of interpretation rather than the laboratory and peer reviewed journal.

Since the term originated in science, it is best to deal with the scientific definition first.

The Scientific perspective on MSY

The term maximum sustainable yield was first promoted by the British fisheries scientists Beverton and Holt.¹⁰⁶ In its essence, MSY is the largest catch that can be taken from a fish stock over an indefinite period without harming it. Or more formally, MSY is the removal of fish from a population to maintain it at the size where the per capita rate of increase is at its maximum. If you imagine a pristine, unfished population of fish, with a stable population size which is at the carrying capacity of the environment (availability of food and shelter), then the number of natural deaths (via disease and predation) balances with the number of births, or number of fish recruiting to the population is such that the population remains stable. This is in spite of the remarkable fecundity of some fish species, where there is potential for many more than the required two fish per female to survive to adulthood through the parents' lifetime and join the population. Effectively, density dependence due to limited food and shelter regulates the size of the population, and turnover is slow.

To a population of fish, fishing is simply another form of predation, although perhaps it selectively removes fish based not on poor health or local adaptation (as would a natural predator) but rather on size and success in inhabiting preferred habitats (where high densities will mean greatest return for effort by fishing activities). As fishing



increases, and this mortality is added to natural deaths, the population reduces in size. But since there are still plenty of reproductively active fish, the smaller population size, now below the carrying capacity of the environment, means that more resources are available for more fish to survive. Hence survival of offspring increases, and turnover, or per capita rate of increase (the rate per individual that the population grows) also increases. The fished population itself then remains stable. This is a preferred condition for the fishery, as fish are now being removed with commercial gain, and the population is replenishing itself, ideally at the maximum rate. This maximum rate is where the per capita rate of growth is greatest, which, as a rule of thumb, is where the population is half of the carrying capacity. This is theoretically where MSY lies. However, if populations drop below this level, the per capita rate of increase also drops, as too few fish remain to maximally replace those that have been removed. In this case population growth and yield in a fishery reduce below the optimum.

Working to a theoretically ideal situation presents real challenges and this forms the essential weakness of the concept. Far from being a stable equilibrium, MSY and maximum per capita rate of growth are at the point where the population is half its natural carrying capacity and where turnover is at a maximum rate. The population is effectively working “flat out” trying to replace itself. Since a drop in the population below this size means a drop in production

of new recruits, it is clearly a vulnerable position, not least if harvesting continues at a set level such that deaths start to outweigh reproduction. Populations are at the mercy of climatic conditions and there are many examples of fluctuating temperatures, timing of plankton blooms, hurricanes and cyclones, and climate change affecting fish and fisheries. Furthermore, fish populations tend not to live in isolation, so competition from similar species, both taxonomically and sharing preferred niches, can influence the survival rate of young fish. It is this process that can lead to regime shifts, for example where intense overfishing of piscivores has led to an ecosystem dominated by large crustaceans (e.g. the seemingly irreversible replacement of cod and other groundfish by Northern shrimp and snow crab in Newfoundland).

Since MSY is based on a highly dynamic condition rather than a stable equilibrium, and a reduction of the population below this optimal size leads to decline, precise knowledge of population size is needed, and fishing effort needs to be carefully and continually adjusted in response to natural fluctuations in recruitment of fish to the fishery. Population size has been thus far described as the net balance of natural deaths and fish removed by fishing relative to new recruitment. Of course in many fisheries, including the UK demersal fishery, individual catches consist of fish representing a number of target and other species, and fishing is often a multispecies activity. Where fish are landed,

it is possible, though challenging, to calculate the total removal of fish by fishing by adding up the total catches of each species for an area. This is likely to be an imperfect estimate. But where fish are also discarded at sea, due to a lack of quota to land the fish, a limit on space on the boat for less valuable fish, and a lack of market for the fish due to consumer preferences, unaccounted for mortality of the population also occurs. Hence in many cases, without perfect information, the total rate of deaths can outweigh the capacity for replenishment, leading to population declines.

The legal definition of MSY

It has been shown that UNCLOS specifically states that fishing should be at MSY, and the proposed CFP reform 2013 includes a target of returning previously overexploited fisheries to MSY by 2015, albeit with the provision that fishing communities need to be considered during this transition where access may need to be reduced. The motivation is that by 2020, good environmental statues can be achieved under the Marine Strategy Framework Directive, and commercial fishing reflects the Europe 2020 Strategy for smart, sustainable and inclusive growth.

The words ‘maximum sustainable yield’ are used throughout UNCLOS and great care need to be taken in their interpretation. For international law, rules of interpretation

are set out in the Vienna Convention on the Law of Treaties 1969 which states:

*A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose.*¹⁰⁷

The Treaty then states that additional documentation can affect the interpretation,¹⁰⁸ and subsequent agreements and established practice can have an impact on interpretation. A special meaning can be given to a term if it is established that the parties so intended.

There is no specific definition of the term set out in UNCLOS and in reality it is unlikely that the parties intended to impose a narrow, highly technical Beverton and Holt style, scientific definition on MSY. Although the Treaty of Vienna does permit the investigation of supplementary information to provide a definition, it only does so where the meaning is ambiguous or obscure, or leads to a result which is manifestly absurd or unreasonable.¹⁰⁹ A limited, very technical scientific interpretation of the term grounded in the science of the early 1980s would be unworkable in many circumstances, particularly when applied to a dynamic ecosystem like the sea. Supplementary scientific information may be useful where the law is unclear, but it would be wrong for lawyers to borrow too much from scientific terminology when the result

is likely to be unreasonable or absurd, the exact reverse of the position where supplementary information can be adopted.

Lawyers would therefore tend to interpret MSY in plain English. Such a legal definition is put well by Garcia:

MSY is enshrined in UNCLOS and although not any more accepted as a valid and precautionary target, remains an important benchmark for management and a minimum target for depleted resources rehabilitation [...] The MSY concept is a macro level indicator, irrelevant to individual fishery operators but very relevant for governments (in complying with their duty of care) and for fishery management organisations which can use it to develop Limit Reference Points (LRPs) for management.¹¹⁰

This explanation hints at a major legal issue which lurks behind MSY. The term acts as a benchmark to assess whether governments are complying with their legal obligations. A legal investigation of the term hinges less upon 'what is MSY?' (as these are the sorts of cases which do not actually come to court) and more upon assessing circumstances where MSY has not been applied or has been misapplied. Although there have been no cases in the UK, Curcio¹¹¹ cites a number of cases that have come to court in the US. A workable definition of MSY (particularly when viewed in that context) is the US First Circuit decision in the

State of Maine v Kreps,¹¹² which ruled:

The term 'maximum sustainable yield' [...] refers to a scientific appraisal of the safe upper limits of harvest which can be taken consistently year after year without diminishing the stock [...] so that the stock is truly inexhaustible and perpetually renewable.

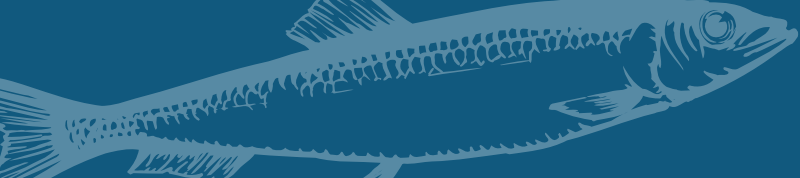
In all the cases Curcio cites, the courts have supported the decisions of the government agency responsible for setting quota, as long as there was the 'best scientific justification' for doing so. Curcio argues that in implementing MSY:

discretion should always favour the long-term conservation of fisheries, by employing methods and judgments which are risk-averse.

Implications of the legal definition

There are three clear implications which arise from this definition.

Perhaps most importantly, the dramatic and ongoing changes in fisheries regulations mean that the historic problems with MSY have, to some extent, improved. Following moves to reduce bycatch with a discard ban being imposed for many



fish in 2014, and to collate and incorporate commercial on-board catch data into fishing management, using modern technology including CCTV and image recognition processing, there is hope for a better handle on absolute fishing mortality. To use the wording of Curcio, best scientific justification is getting better.

So even with the potential pitfalls regarding the application of MSY, can fisheries be returned to levels where MSY is obtained? Despite fears that MSY was a worthy target but ecologically unattainable, or a potentially lucrative goal but economically painful to implement, there now exist several long-term management plans based on the MSY principle. The European Commission is basing its proposals for annual Total Allowable Catches (TACs) and quotas on achieving MSY by 2015.¹¹³ Current evidence of success around UK waters include: western Channel and Celtic Sea sole; North Sea and Rockall haddock; North Sea, Celtic Sea and west of Scotland herring; and North Sea nephrops. This achievement means better landings and higher incomes for fishers and coastal communities, coupled with greater ecological protection.

Secondly the term maximum sustainable yield is not tied to Beverton and Holt. There are many ways to approach MSY and the choice of approach depends on the context of the fishery. A single species fishery will calculate MSY in a different way to a mixed fishery because of the interdependence of the stock: to meet MSY obligations means using the appropriate

management and scientific arrangements for the geography of respective waters. It requires a pragmatic approach, but this is essential to achieve sustainable fisheries. Area based management may be as much part of the management process as setting quota.

Thirdly, from a management perspective, it is also possible to show, with some certainty, stocks or areas of sea where fisheries exceed MSY. It is plain that such fisheries are illegal *ab initio*. Their illegality means that managers should, as a priority, legitimise these fisheries through remedial management measures.

Legal action in the UK to prevent fishing beyond MSY

In 2008 the environmental organisation WWF took the European Commission to court for over-allocating Cod quota within the CFP.¹¹⁴ This case failed on a technicality. The rules of the European Court of Justice do not give *locus standi* (court access) to campaigning organisations, so they were denied access to the court system. The rules for access to EU member states' courts are the subject of a current EU consultation entitled suitably enough *The Fish cannot go to Court*. This seeks to implement the obligations under the Aarhus Convention, which the EU ratified in 2005, and which grants the right to challenge decisions or omissions

by public bodies that are suspected of not complying with environmental law. Ironically, given the EU's pivotal role in fisheries management the consultation only concerns access to member states' courts and there are no proposals to change access to the ECJ itself via legislation, but there is an ongoing judicial challenge.¹¹⁵ So before long a case on similar facts raised by an NGO may become triable in the ECJ and there may be better access to other member states' courts.

In any event, UK campaign groups do have *locus standi* in the UK courts and actions of UK officials regarding quota or affecting UK waters could still be scrutinised in the UK courts. Given the complexity of the ownership of UK quota and the responsibilities which result from both international and trust law, any deviation from following best scientific advice by the UK and EU authorities could result in real legal difficulties.

8

MSY and Ecosystem Services: *A further issue*

'Ecosystem services' describe the multiple benefits that the natural world provides to humanity, such as clean drinking water and decomposition of waste. The concept began to emerge in the late 1980s, as a branch of science, pedagogy, and development planning, to take a more integrated view of the wider ramifications of policies and practices. Although ecosystem services have grown up alongside the science of MSY, they stem from a very different scientific and legal approach.

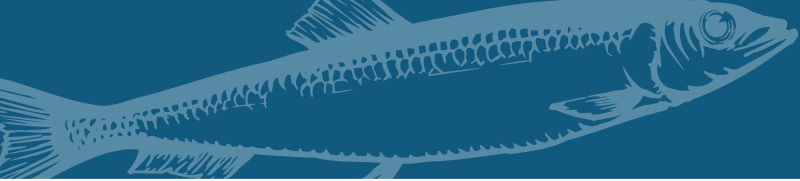
Internationally, the de facto standard classification of ecosystem services is that developed by the UN's Millennium Ecosystem Assessment, although variants upon it have arisen since. This classification itself integrated a wide range of pre-existing regional and habitat-specific classification schemes. In essence, the Millennium Ecosystem Assessment classification breaks ecosystem services down into four major categories:

- Provisioning services – tangible physical and energy resources extracted from ecosystems (food, fibre, medicines, etc.)
- Regulatory services - regulate natural processes (such as air quality, flood and climate regulation, natural disease and pest control, etc.)
- Cultural services - a broad range of aesthetic, spiritual, and other values that society derives from the natural world

- Supporting services - a variety of secondary processes within ecosystems which keep primary services functioning, resilient, and able to produce other more directly consumed services (soil formation, nutrient cycling, habitat for wildlife, etc.)

A series of reports from the Millennium Ecosystem Assessment,¹¹⁶ highlight significant declines in the quality of all major habitat types across the world, with a commensurate decline in their capacity to produce ecosystem services. The result is the ecosystem services are less able to support human wellbeing. Whilst some ecosystem services have increased substantially, particularly food production, it is often how these services have been enhanced that has led to a more pervasive decline in the quality and functioning of productive ecosystems.

In particular, the Millennium Assessment highlighted that, across the globe, capture fisheries are declining in production due to over-harvesting and destructive fishing methods, both legal and illegal. Globally, more than a billion people rely on fish as their main or sole source of animal protein, with fish consumption in developing countries being a particularly important source of protein. Fisheries and fish products provide direct employment to 38 million people, with a further 162 million people indirectly involved in the fisheries industry. In total, 200 million people depend on the faltering ecosystem services which support fish production.



The Millennium Ecosystem Assessment divided the world's oceans into two major sets of systems:

- 'marine fisheries systems' (waters from the low water mark – 50 m depth – to the high seas); and
- 'inshore coastal systems and coastal communities' (<50 m depth to the coastline and inland from the coastline to a maximum of 100 km or 50 metre elevation, whichever is closest).

A UNEP report, based on the findings of the Millennium Ecosystem Assessment, specifically addressed marine and coastal ecosystems and human wellbeing.¹¹⁷ It explored the searching question: How do we balance increasing demand for seafood and expanding opportunities for aquaculture, while promoting the health of fresh and coastal waters and restoring depleted wild fisheries?

The increasing demand has been matched by increasing fishing capacity and technological advances. Total global capture over the last century increased steadily towards a peak in the mid-1980s when it then began to decline. A number of economically important fisheries collapsed abruptly under intense fishing pressure, with the Atlantic cod fishery off the Newfoundland coast a prominent example. Collapse brings with it an associated nexus of significant social, economic and ecological system disruption. And, as coastal fisheries have been depleted, fleets now also expend more

energy and effort to reach fisheries at greater distances from shore and in deeper waters. As fishing expanded across the open ocean, the proportion of depleted stocks rose from 4% in 1950 to 25% in 2000, while the 'undeveloped' stocks plummeted from 65% to 0% over the same time period.

The report also found fishing for top predators is problematic. Commercial fishing has tended to target the very large fishes in the oceans, generally top predators, accounting globally for the removal of as much as 90% of some of these fishes (particularly sharks, tuna, marlin and swordfish). A more general focus on large, predatory fishes has changed the composition of the oceans and modified interactions among species. And there has been a subsequent tendency towards 'fishing down the food chain', where previously less desirable species, that feed lower in the food web, have been targeted as substitutes.

Overfishing and destructive fishing methods are highlighted as particularly detrimental to fish stocks and wider ecosystem vitality. Examples include some forms of bottom trawling (for example, the use of heavy gear on sensitive substrates), dredging, and the use of explosives and fish poisons.

Subsidies, as high as 20% of the gross value of production in the OECD area in 2002, are noted as amongst the most powerful drivers of overfishing.

Aquaculture too, though it has the potential to be a sustainable form of food production, is implicated as an indirect driver of habitat loss, salinization of adjacent land, the release of effluent, the spread of infectious diseases, and overfishing for the production of high quality fishmeal used in feed for the farmed fish.

And finally, illegal fishing also contributes to overexploitation and is particularly contentious due to lack of surveillance, enforcement, and monitoring.

All of these direct and indirect pressures can profoundly change the dynamics of marine ecosystems and the functions that provide a range of other provisioning, regulatory, cultural and supporting services. There are broad implications for system resilience and human wellbeing. These systems are then increasingly unable to provide their full range of services, including their capacity to provide food, absorb threats, or control blooms of algae or other potential nuisance species. Plus, there is an increasing likelihood of unexpected or abrupt changes, such as pest and disease breakouts, catastrophic floods or species extirpations.

Recognising some of the wider economic implications of these impacts, the Millennium Ecosystem Assessment report, exploring the Opportunities and Challenges for Business and Industry, recognised that humankind depends on the oceans and coasts for its survival: 33% of the world's population live

in coastal areas which account for approximately 4% of the Earth's total land area. Changes to ecosystem services such as food security and the employment of nearly 38 million people in the fisheries industry will have ramifications far beyond the coastal zone.

This Millennium Assessment report highlights how driving forces such as the booming human population, technology (a major contributor to the capacity for overexploitation of fish stocks), and lifestyles (in terms of the shift in food preferences and globalisation) can affect biodiversity indirectly by causing changes which directly affect biodiversity, such as exploitation of fisheries or the application of fertilizers to increase food production. These, in turn, may have major secondary impacts on the productivity and balance of marine ecosystems and their provision of ecosystem services, often over long and broad temporal and spatial scales.

Three of the key findings of the Opportunities and Challenges for Business and Industry report are that:

- The major drivers of change, degradation, or loss of marine and coastal ecosystems and services are mainly anthropogenic.
- Marine and coastal ecosystems are among the most productive and provide a range of social and economic benefit to humans.
- Most services derived from marine and coastal

ecosystems are being degraded and used unsustainably and therefore are deteriorating faster than other ecosystems.

This represents a powerful and well-informed prospectus for far-sighted policies and actions to manage and exploit marine waters and their fisheries in more sustainable ways. We need to do more than balance exploitation with conservation. We also need to be mindful of the wider impacts on ecosystem integrity, functioning, and the provision of all ecosystem services. The economic and social implications of continuing to overlook ecosystem services, essential to the wellbeing of diverse constituencies of society including future generations, are as clear as they are often neglected. Support for fisheries is more than attending to the total mass of fish landed but must include:

- the sustainability of individual fish stocks;
- the collateral damage to ecosystem structure;
- the functioning of fishing methods; and
- the viability of a range of connected habitats.¹¹⁸

The Millennium Ecosystem Assessment also addressed actions to preserve marine fish species, noting that methods such as 'no take' marine reserves have shown to make marine ecosystems and their services more resilient to a range of pressures.

To bring ecosystems thinking into mainstream societal decision-making, the Convention on Biological Diversity, to which the UK Government is a signatory, promoted the ecosystem approach in 1995.

The ecosystem approach is defined as:

a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way.

The CBD provided 12 'complementary and interlinked' principles to make the ecosystem approach operational, which include provisions such as:

- recognising humanity and its choices as integral to ecosystems;
- the need for decentralised decision-making;
- recognising there is an economic context and the need to balance exploitation with conservation within the limits of ecosystem structure and functioning; and
- the inclusion of all forms of relevant information knowledge.

As a signatory of the CBD, the UK government is committed to implementing the ecosystem approach across all policy areas. This 'direction of travel', of embedding the value of nature across all policy areas, is reiterated in the HM



Government June 2011 Natural Environment White Paper, *The Natural Choice*. The ecosystem approach represents a sound formula.

In addition to implicit intentions under *The Natural Choice* White Paper, the ecosystem approach is already enshrined in law in the EU Marine Strategy Framework Directive¹¹⁹ and the UK Marine Policy Statement.¹²⁰

However, marking this transition from current fragmented policies and practices into a more integrated approach has proved challenging. There are knowledge gaps, technical and regulatory difficulties, and vested interests. An ongoing EU research programme, *Options for Delivering Ecosystem-Based Marine Management* (ODEMM running for 42 months from March 2010), is addressing how to implement the ecosystem approach into marine management. The aim of the research is to inform progressive transition of the conduct and management of various marine activities (including fisheries, dredging, etc.) to support the ecosystem approach, recognising the current fragmented basis of management (e.g. fish stock-based regime for fisheries management). It also recognises that implementation of the ecosystem approach at regional level will need to reconcile short-term economic demands with long-term ecosystem sustainability objectives. The ODEMM project is developing a knowledge base and a set of fully-costed ecosystem management options that would deliver the objectives of

these Directives, informing a step-by-step transition from the current fragmented system to fully integrated management. The ODEMM research is ongoing but we will endeavour to integrate its interim findings into our work as they become available.

All twelve of the principles of the ecosystem approach are relevant to the more sustainable management of marine fish stocks and the distribution of benefits, as noted in the table overleaf.

Taking this set of CBD principles as a guide, MSY is exposed as a crude metric of the overall limits of fisheries that need to maintain the vitality of their supporting ecosystems. It is, however, clear that if MSY is exceeded, the likely result is ecological instability and an unfair distribution of benefits across society and between generations. There are clear legal obligations but these considerations should propel a transition from current fragmented and often poorly-enforced practices towards a more integrated approach to marine management. Scientific MSY is an imperfect but necessary cornerstone of that integrated approach.

Both science and law tend to take a very narrow view of their constituents. Scientists need to make basic assumptions to permit scientific modelling. And decision makers are only permitted in law to make decisions within certain parameters and take into consideration specific information to inform

their decision (known in law as the principle of *ultra vires*). The result is that there is a tradition by both scientists and lawyers to systematically disregard important negative social and environmental consequences in their findings. By contrast, the ecosystem approach in marine management permits both scientists and lawyers to explore these wider effects. It is firmly endorsed in government policy and backed by legislation. The reformed EU CFP has a specifically endorsed the ecosystem approach.¹²¹ The result for MSY is that it will be interpreted in the light of ecosystem services provided by the fishery. This will change the dynamic of simply treating a fishery as an exploitable resource in isolation and looking only at the commercial fishing industry as the social manifestation of the fishery to seeing the fishery as a public resource and something which the broader environment, coastal communities and even those living inland have a stake in.

Subtle changes are already apparent in this respect. The Directorate General for Fisheries at the EU has been replaced by DG MARE. In Scotland, the Fisheries Department of the old Scottish Executive has been replaced with Marine Scotland. And at the local level in England, Sea Fisheries Committees have been replaced with Inshore Fisheries and Conservation Authorities. These organisational changes may seem unimportant, but each one has a broader remit than its predecessor and a tendency to look beyond the fishing industry for its constituency.

Convention on Biological Diversity Ecosystem approach Relevance to fishing to MSY

Principle 1: The objectives of management of land, water and living resources are a matter of societal choices	This relates to all in society, not merely those people and generations benefitting most directly from short-term gain, necessitating best available information of MSY to inform cross-societal choices
Principle 2: Management should be decentralized to the lowest appropriate level	A balance needs to be struck between high-level protection of stocks and local concerns about both exploitation and conservation
Principle 3: Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems	Fish are mobile constituents, and often top predators, of ecosystems so stock conservation has direct ramifications for not only the target ecosystem but for adjacent ecosystems and their resilience
Principle 4: Recognise potential gains from management. There is usually a need to understand and manage the ecosystem in an economic context	This includes both immediate extractible value but also sustainable economic potential, which is directly informed by MSY
Principle 5: Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach	It is not just the fish but the whole ecosystem of which it is part, and the processes performed by those ecosystems from which a wide range of human benefits flow, that should inform decision-making about stock exploitation. MSY is one, albeit crude, metric indicative of natural limits of marine ecosystems
Principle 6: Ecosystem must be managed within the limits of their functioning	As noted for Principle 5, management not merely of fish stocks but of the limits of ecosystem functioning should be respected. This relates both to fish take but also destructive methods of taking fish and shellfish
Principle 7: The ecosystem approach should be undertaken at the appropriate spatial and temporal scales	Constraints of fishery take and fishing methods should address impacts on whole connected ecosystems, of which MSY is one relative crude indicator
Principle 8: Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term	MSY is a relatively crude indicator of the maximum potential 'take' beyond which long-term decline in fishery potential is likely to occur
Principle 9: Management must recognize the change is inevitable	The baseline of fishery potential is ever-changing in a volatile world responding to natural and man-made pressures, so MSY should be reviewed regularly to protect the viability of both fishery stocks and the ecosystems that regenerate them
Principle 10: The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity	Exploitation of fisheries is an entirely legitimate activity that makes significant contributions to livelihoods and food security. However, it has to be controlled, in terms of quantity of fishery 'take' and methods deployed, such that stocks and the ecosystems that regenerate them can remain resilient and continue to provide the wide range of other benefits to humanity
Principle 11: The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices	Calculation of MSY is a relatively technocratic process yielding statistical outcomes, yet other anecdotal and other forms of evidence of fishery behaviour (not just from vested interests but from NGOs and other constituencies of society) should be factored into an adaptive management approach
Principle 12: The ecosystem approach should involve all relevant sectors of society and scientific disciplines	All of society has a vested long-term interest in the viability not merely of fishery stocks but of the ecosystems that support them and the services that these ecosystems provide. So all sectors of society have a legitimate voice in decision-making.



9

Conclusions

At the outset of research reported in this paper, the writers set themselves the task of looking positively into the future. An enormous amount of work has been done at international level to create legal and scientific structures to deliver well-managed fisheries. As a result, there are a number of reasons to be cheerful.

The overwhelming sense for the UK is that the regulatory measures are now in place to secure a better future for the fishery. Unlike in Huxley's day, there is enough law and international co-operation today to ensure adequate stock protection. What is now needed is its unbiased execution.

In the past, EU Fisheries Ministers in particular have mistaken law for politics. It seems to have been acceptable to trade the depletion of fish stocks for some other political capital. As a consequence, Ministers ignored scientific advice for a matter of decades with a resulting decline in the sustainability of fisheries. It is plain from this research that the EU should never have over-allocated quota, and was not entitled so to do. Furthermore, by being party to such agreements, UK Ministers were acting outside of their authority. Once there is a general recognition of this limit on a Minister's powers, it is difficult to see how any EU Fisheries Minister can continue to breach the law.

There are clear failures in the application of the law. However, these are in the process of being redressed via:

- a greater recognition of the need for public and ecosystemic benefit from fisheries, particularly institutional recognition that fish stocks do not exist in isolation but interact with their host marine environment;
- obligations to stick within scientific MSY under the EU CFP; and
- greater access to environmental justice to ensure the implementation of legal measures under UK and EU law, and the existence of legal drivers to ensure that the implementation of sustainable practice continues into the future.

The legal regime has dramatically moved away from the impossibility of *mare liberum* and open access fisheries, progressively creating the possibility of effective regulation. Clearer sovereignty over the sea and better technology informing enforceable law means that the legal context of fisheries has changed fundamentally for the better. There is an understanding that fisheries are held on trust for future generations. Fishing to MSY and trusteeship amount to the same thing; the legal interpretation of the rights and responsibilities of coastal states under MSY and the obligations of a Crown trust are the same. The ecosystem approach provides a matrix through which to understand who the beneficiaries of that trust are, and where management effort needs to be directed. All these pieces are now in place and the hard law is there at the edges to ensure that reform remains on track.

Final word

As with any piece of work which seeks to construct a legal edifice which constrains political activity, there is the danger that this report may be criticised for being political rather than independent in nature. So, it is important then that the final word of this research comes not from the authors but from Professor Rüdiger Wolfrum, the then President of the International Tribunal for the Laws of the Sea, in a speech made in 2007:

When designing its policy on the management of living resources in the exclusive economic zone, a coastal State is not totally free, as article 61, paragraph 2, of the [United Nations] Convention [of the Laws of the Sea] clearly indicates. The coastal State must ensure that the living resources in the exclusive economic zone are not overexploited. There is also the obligation to maintain populations at or restore them to levels which can produce the maximum sustainable yield, taking account of the interdependence of stocks and any internationally recommended minimum standard.

Wolfrum then goes on to say:

The United Nations Convention on the Law of the Sea and subsequent international instruments provide detailed rules concerning the management and

conservation of marine living resources. They oblige coastal States and the flag States of fishing vessels, in particular to cooperate to ensure that the management and conservation measures the latter have taken are fully and efficiently implemented. The International Tribunal for the Law of the Sea has jurisdiction to ensure that this system of obligations is applied in accordance with the relevant legal instruments. The rules on provisional measures provide the Tribunal with the necessary tools to act expeditiously and prevent damage to fish stocks.¹²²



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- ⁵ Scott, A. (2008) *The Evolution of Resource Property Rights* OUP: King's Lynn, Norfolk.
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- ¹⁰ Sala E. et al., n8.
- ¹¹ Moore H. and Moore S. (1903) *The history and law of fisheries* Stevens and Haynes: London, xliii.
- ¹² Vinogradoff, P. (1922-1923) Roman Elements in Bracton's Treatise *Yale Law Journal* 32 751.
- ¹³ Publica vero sunt omnia flumina et portus. Ideoque ius piscandi omnibus commune est in portu et in fluminibus
- ¹⁴ Take for instance New Zealand, where Maori fishing rights are still a very important issue.
- ¹⁵ Such as the erection of fish weirs which caused problems for navigation, again even today there is a natural antipathy between the angler and the canoeists.
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- ²⁶ *Ibid*, 155.
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³⁸ Ibid Art. 17.

³⁹ Ibid Art. 19(2)(i).

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⁴¹ UNCLOS Arts. 21 (1) (d), (e) and (f).

⁴² Ibid Art. 192.

⁴³ Ibid Art. 194(5).

⁴⁴ UNCLOS, Art. 55.

⁴⁵ Marine and Coastal Access Act 2009, s41.

⁴⁶ Fishery Limits Act 1976.

⁴⁷ UNCLOS Art. 57.

⁴⁸ Ibid Art 56 (1)(a).

⁴⁹ Ibid Art. 56(1)(3)(b).

⁵⁰ Ibid Art. 57 (2).

⁵¹ Ibid Art. 192.

⁵² Ibid Art. 194(5).

⁵³ UNCLOS Art. 61.

⁵⁴ The United Nations Agreement for the Implementation of the

Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks

⁵⁵ UNCLOS Art. 118.

⁵⁶ UNCLOS Art. 119.

⁵⁷ UNCLOS Art. 117.

⁵⁸ MRAG Limited (2008) *The Global Extent of Illegal Fishing* www.mrag.co.uk/Documents/ExtentGlobalIllegalFishing.pdf

⁵⁹ For instance it is unclear how to enforce Art. 171 of UNCLOS against recalcitrant member states.

⁶⁰ Directive 2008/56/EC Annex I, (3).

⁶¹ Ibid Recital (40).

⁶² Garcia, S.M., et al. (2003) *The ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation and outlook* *FAO Fisheries Technical Paper* FAO: Rome 43, 71.

⁶³ Law, R. (2000) *Fishing, selection, and phenotypic evolution*. *ICES Journal of Marine Science* 57, 659-669.

⁶⁴ Pandolfi, J.M, et al. (2005) *Are U.S. coral reefs on the slippery slope to slime?* *Science* 307 (5716), 1725-1726. DOI:10.1126/science.1104258.

⁶⁵ UNCLOS Art. 77 (4).

⁶⁶ Ibid Art. 87 (e) and Art. 116 et seq.

⁶⁷ *The Consolidated Treaty of Functioning of the European Union* 30.3.2010 Art. 3 (1) (d).

⁶⁸ Ibid Art 4 (2) (d).

⁶⁹ Ibid Art. 39 (1).

⁷⁰ Ibid Art. 345.

⁷¹ Regulation (EC) No 2371/2002, Article 17(2).

⁷² London Fisheries Convention 9th March 1964. <http://sedac.ciesin.columbia.edu/entri/texts/acrc/fish64.txt.html>

⁷³ For a further discussion on relative stability and the CFP in general see Churchill, R. and Owen, D. (2010) *The EC Common Fisheries Policy* OUP: Oxford.

⁷⁴ Outside the 12 mile limit, in accordance with the London Convention, or by being domiciled in the UK

⁷⁵ The Marine Management Organisation [online] *The Blue Book* http://www.marinemangement.org.uk/fisheries/monitoring/regulations_bluebook.htm

⁷⁶ Appleby, T. (2013) *Privatising fishing rights - the way to a fisheries wonderland* *Public Law*.

⁷⁷ Barnes, R. (2011) *Revisiting the Public Right to Fish in British Waters* *International Journal of Marine and Coastal Law* 26, 433-461.

⁷⁸ Kanner, A. (2005) *The Public Trust Doctrine, Parens Patriae, and the Attorney General as the Guardian of the State's Natural Resources* *Duke Environmental Law & Policy Forum* 16, 57.

⁷⁹ Marston, G. (1991) *The Crown's Seabed Estate - a Valuable Prerogative* *Cambridge Law Journal*, 50, 384-385.

⁸⁰ (2000) 168 ALR 426.

⁸¹ *Halsburys Laws of England* (2007 Reissue) 48, paras 947-970.

⁸² [1977] Ch 106

⁸³ Babcock, H. M. (2007) *Grotius, Ocean Fish Ranching, and the Public Trust Doctrine: Ride 'Em Charlie Tuna* *Stanford Environmental Law Journal* 26:3, 3-76.

⁸⁴ Bennet, T. W. and Powell, C. H. (2000) *The State as a Trustee of Land* *South African Journal of Human Rights*, 16, 601-622, at 611.



⁸⁵ Gray, K. (1994) *Equitable Property Current Legal Problems* 47(2), 157-214.

⁸⁶ *Sheldon v RHM Outhwaite (Underwriting Agencies) Ltd* [1994] 3 W.L.R. 999.

⁸⁷ The infamous Crichel Down affair which established the rules of compulsory purchase in the UK..

⁸⁸ *Morton v British Columbia (Agriculture and Lands)* [2009] BCSC 136.

⁸⁹ Given UK's imperial past questions of 'home rule' dogged generations of politicians, but apart from Ireland these concerned overseas territories.

⁹⁰ The Scotland Act and the Government of Wales Act both date from 1998 which is a relatively short time when dealing with all the legal technicalities of transfer of powers from one body to another.

⁹¹ Although there is pressure to include the Crown Estate Commissioners in the devolution settlement in Scotland. See www.parliament.uk/business/committees/committees-a-z/commons-select/scottish-affairs-committee/news/crown-estate-report/

⁹² Crown Estate [online] *The Crown Estate Role in Offshore Renewable Energy Developments: Briefing, The Crown Estate* www.thecrownestate.co.uk/media/387737/role-in-offshore-renewable-energy.pdf

⁹³ Marston, G. (1981) *The Marginal Seabed: United Kingdom Legal Practice* Clarendon: Oxford, 18.

⁹⁴ Continental Shelf Act 1964.

⁹⁵ Energy Act 2004.

⁹⁶ Energy Act 2008.

⁹⁷ Scottish Law Commission (2001) *Report on the Law of the Foreshore and the Seabed* The Stationary Office: Edinburgh, 11.

⁹⁸ The Administrations (2012) *A Subject Specific Concordat between The Department for Environment, Food and Rural Affairs, Marine Scotland, The Welsh Government and, The Department of Agriculture and Rural Development (Northern Ireland) On Management Arrangements for Fishing Opportunities and Fishing Vessel Licensing In the United Kingdom UK Fisheries Administrations*. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69547/pb13771-fish-concordat.pdf

⁹⁹ [2013] EWHC 1959 (Admin)

¹⁰⁰ Ibid at 99.

¹⁰¹ *Halsburys Laws of England* 1(2) (2007 Reissue), 839.

¹⁰² In its accession agreement the UK states:

'The United Kingdom recalls that, as a Member of the European Community, it has transferred competence to the Community in respect of certain matters governed by the Convention. A detailed declaration on the nature and extent of the competence to the European Community will be made in due course in accordance with the provisions of Annex IX of the Convention.'

¹⁰³ *Proudfoot v Hart* [1890] 25 QBD 42.

¹⁰⁴ Larkin P. A. (1977) 'An Epitaph for the Concept of Maximum Sustained Yield' *Transactions of American Fisheries Society* 106, 1-11 at 10.

¹⁰⁵ Additionally, MSY has been reiterated by members states and the EU in the 1995 UN Fish Stock Agreement, in 2002 in the Johannesburg Declaration and most recently in 2010 in Nagoya. Currently the reimplementation of management according to establishing MSY is a key objective of the targets of Commission Communication "Our life insurance, our natural capital: an EU

Biodiversity Strategy to 2020", in particular to achieve maximum sustainable yield by 2015.

¹⁰⁶ See also Hey, E. (2012) The persistence of a concept: Maximum Sustainable Yield *The International Journal of Marine and Coastal Law* 27, 763-771 at 765.

¹⁰⁷ Treaty of Vienna, Art. 31 (1).

¹⁰⁸ Ibid Art. 31 (2).

¹⁰⁹ Ibid Art. 32.

¹¹⁰ Garcia S.,(1996) *Indicators for Sustainable Development of Fisheries*, Paper presented at the 2nd World Fisheries Congress, Brisbane, Australia, 2-8-96 (FAQ, 1996, 3) quoted in Lugten, A. and Andrew, N. (2008) Maximum Sustainable Yield of Marine Capture Fisheries in Developing Archipelagic States- Balancing Law, Science, Politics and Practice *International Journal of Marine and Coastal Law* 23 1-37.

¹¹¹ Curcio, P. L. (1997) *Fishermen's Dock Coop., Inc. v. Brown: Judicial Review of Optimum Yield. Determinations*. *Ocean and Coastal Law Journal* 3 259-274.

¹¹² 563 F. 2nd 1043, 1046.

¹¹³ See n 106.

¹¹⁴ WWF [online] *No justice for Cod* www.wwf.org.uk/what_we_do/press_centre/?unewsid=1784

¹¹⁵ See cases T-338/08, *Stichting Natuur en Milieu v Commission* and T 396/09, *Vereniging Milieudefensie v Commission*.

¹¹⁶ Millenium Ecosystem Assessment [online] <http://millenniumassessment.org/en/Global.html>.

¹¹⁷ See United Nations Environment Programme [online] *Ecosystem Services Economics* www.unep.org/ecosystemmanagement/

UNEPsWork/EcosystemServicesandEconomics/tabid/514/Default.aspx

¹¹⁸ Saltmarshes, mudflats, mangroves, estuaries and seagrasses are all connected habitats that provide key regulating services (shoreline stabilisation, prevention of soil erosion, processing pollutants, etc.) and supporting services (including serving as nursery areas for juvenile fishes and the organisms on which they feed).

¹¹⁹ Directive 2008/56 EC, Art. 3 (5).

¹²⁰ HM Government (2001) *Marine Policy Statement*, at 4.

¹²¹ COM(2008) 187 final Communication from the Commission to the Council and the European Parliament. The role of the CFP in implementing an ecosystem approach to marine management.

¹²² Wolfrum R. (2007) *Presentation given by the President of the International Tribunal for the Law of the Sea to the Meeting of the Friends of the Tribunal at the Permanent Mission of Germany to the United Nations in New York 21 June 2007.*

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