

Maximum Sustainable Yield

**The Wrong
Management
Objective
For Bass**

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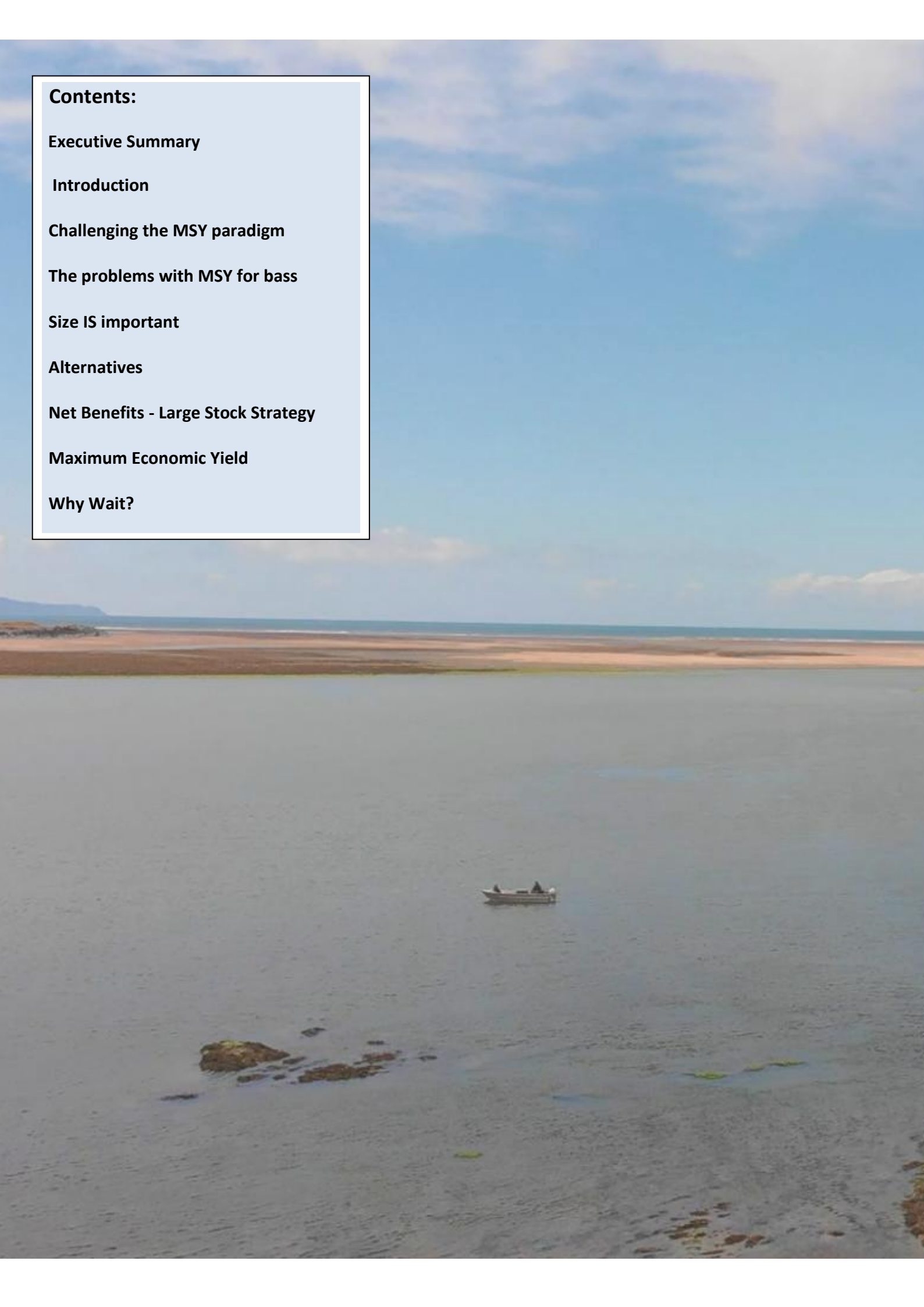
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Executive Summary

The Government's Joint Fishery Statement includes two key goals that are at the heart of its aspiration for "World class fisheries management" :

1. **Protect and improve our fish stocks; and**
2. **Manage fish stocks to maximise the benefits to coastal communities.**

So, what bass stock level will maximise benefits to coastal communities?

One thing is certain, Maximum Sustainable Yield (MSY), which maximises only the tonnage of bass that is killed and sold, is not the answer.

MSY is widely recognised as being economically inferior to the principle of Maximum Economic Yield (MEY), so an MSY policy will not maximise benefits. We have seen very clearly the result of using MSY for bass – a disastrous crash from which the stock is making a very slow recovery. Coastal communities are still paying a heavy price for this mismanagement.

Defra has now shared its preliminary thinking on the Bass Fishery Management Plan (BFMP) and we are very pleased to see that it includes the goal of maximising the benefits of bass fishing for local coastal communities.

However, that goal simply cannot be achieved without the right harvest strategy and Defra's proposals on this front are far too timid. They propose starting work on new research to assess alternative harvest strategies in three years time (2026), with no commitment or plan for adoption or implementation.

It will then take years for future Governments to adopt and implement the harvest strategy and more years again for the fish stock to grow to the optimal size. At that rate, we will be stuck with the failed MSY approach well into the 2030's and probably not achieve the optimal stock size until 10 or 15 years... if ever. Are we really prepared to fail on a key goal for the bass fishery and coastal communities for the next twenty years or more? If so, what is the point of the Bass FMP?

We can do better than this by following the enlightened lead of fishery managers in Queensland, Australia. They are aiming for a final target of 60% of the unfished stock size (as a proxy for Maximum Economic Yield) by 2027, with an interim target of 40-50% of the unfished stock size as a stepping-stone.

We should do the same. We know that Maximum Economic Yield gives better economic benefits than MSY, so we should aim now for Maximum Economic Yield while the scientists work on providing an optimised harvest strategy within the next 3 years.

So we are asking Defra to be more ambitious with the Bass FMP and to recognise the need for concrete, rapid actions:

- State unequivocally that we will adopt MEY objectives in order to achieve the goal of maximising benefits for coastal communities.
- Set an interim goal of a bass stock size of 40-50% of the unfished stock size and ask the scientists to provide an interim harvest strategy to achieve this.
- Ask the scientists and economists to start working now on understanding the relationships between stock size and socio- economic benefits for coastal communities.
- Set a date within the next 3 years for adopting a final harvest strategy aimed at maximising benefits for coastal communities.

Let's put the Bass FMP firmly on track to deliver:

- A more resilient bass stock that can cope with bad years when fewer young fish survive to maturity.
- A higher Catch Per Unit of Effort for commercial fishers (so less fuel and time expended) and recreational fishers (fewer "blanks" and more bass per session).
- Higher commercial yields per fish (since the average fish size will be bigger).
- More of the very big fish that recreational fishers aspire to catch.

Introduction

The Fisheries Bill 2020 sets out the requirement for Fisheries Management Plans (FMPs) for a range of fish species of importance to commercial and recreational users. One of the 'front-runner' FMP species is the European sea bass (*Dicentrarchus labrax*). During 2022 Policy Lab conducted face to face interviews, workshops and on-line surveys with a range of bass fishery stakeholders. The emphasis throughout, was promoted as one of 'co-design' to inform English and Welsh governments in the drafting of the Bass FMP.

During this process, various 'Priority' scenarios were introduced into the co-design and co-refine stages - one of these was the future management objective: ***In the short term, prioritise maximising the amount of bass that can be caught in a sustainable manner under existing environmental conditions (Maximum Sustainable Yield - MSY).***

It is unlikely that Maximum Sustainable Yield (MSY) was introduced and selected as a priority by commercial and recreational fishers, who are the main bass fishery stakeholders. MSY appears to have been introduced as the default management objective by the fishery managers, with the sub-objective: ***Meanwhile, improve the evidence base for alternative approaches that prioritise societal and ecosystem benefits for use in the medium-long term.***

MSY has now been embedded within the presentation of the draft Bass FMP as **Goal 1** and there are major concerns that once MSY is enshrined within the Bass FMP, the alternative approaches hinted at, will be like the proverbial 'can be kicked down the road' as has so often happened with bass management improvement measures in the past.

Goal 1: Sustainable harvesting of the bass stock in line with scientific advice

Actions to achieve this goal:

Short term (1-2 years):

- Continue allocating catch in accordance with ICES scientific advice which does not exceed an MSY approach (within 95% confidence intervals).
- Seek to fill evidence gaps needed for robust stock assessments which accurately assess MSY. For example, on discarding (see Goal 7) and improve data collection on recreational catches (e.g. work with scientists, regulators and the recreational sector to increasing participation in the sea angling diary and/or consider options for other approaches e.g. apps, registration & reporting, onsite approaches).

Source: Defra - Bass FMP English & Welsh waters FiAG FMP subgroup – 09/05/2022

This short paper identifies the rationale for rejecting MSY as the primary goal and instead, focusing on alternative management objectives for the Bass FMP; to enable the restoration of the depleted bass stock and to ensure the future sustainable use, by the most economically efficient bass user base and maximise the trickle-down economic and social benefits to coastal businesses and communities.

The UK Bass Fishery - Commercial and Recreational:

- Bass is a species of importance to both commercial fishermen and recreational anglers and divers.
- UK commercial bass first landing values in 2018 calculated to be €5.3 million (1% of total catch value)
- UK recreational angling expenditure on bass fishing calculated to be between €188 and €282 million
- Recreational catches have comprised up to 25% of the total UK catch in the past (*Armstrong et al 2013*)

The Biology and Ecology of Bass:

- Bass are a slow growing, late maturing and long-lived species
- First maturity for females is usually at 42cms length - approx 6 years of age
- Capable of living for 28 years with a reproductive capacity of circa 20 years
- Adults undertake annual pre-spawning migrations each autumn and over-winter in deep water
- Having spawned the adult bass return to inshore feeding grounds in spring / early summer
- Bass exhibit strong site fidelity and often frequent broadly the same inshore feeding areas each summer
- The Spawning Stock Biomass (SSB) has halved since 1985, mainly due to overfishing
- Restrictions on catch allowances and closed seasons were introduced by EU in 2015 due to falling stocks

Challenging the MSY Paradigm

The foundations for the Maximum Sustainable Yield (MSY) concept were introduced around a century ago by Baranov (1918), Russel (1931), Hjort *et al* (1933) and Graham (1935).

MSY can be defined as: **theoretically, the largest yield (catch) that can be taken from a specific fish stock over an indefinite period under constant environmental conditions, without reducing the size of the population.**

Of course, as we all know, environmental conditions are far from constant and bass stocks are seriously depleted.

In 1977, Peter Larkin published his now-famous paper, '*An epitaph for the concept of maximum sustained yield*'. Larkin criticised the concept of single-species maximum sustained yield for many reasons, including the possibility that it may not guard against recruitment failure, and the impossibility of maximising sustainable yields for all species simultaneously.

In recent years, there has been a fundamental change in the perception of the fishing mortality associated with MSY (FMSY) as a limit to be avoided rather than a target that can routinely be exceeded.

Source: MSY fish and fisheries. PM Mace 2001

Indeed, the validity of using MSY as an objective continues to be hotly debated by many in fisheries science:

The MSY concept is often criticized by aquatic ecologists who believe that this single-species construct stands in the way of ecosystem-based fisheries management (EBFM) or one of its variants

Source: ICES Journal of Marine Science, Volume 78, Issue 6, September 2021

If the MSY limits are set too high, or worse, become targets for levels of extraction, overfishing of a stock may result and this appears to have happened to bass stocks, but from the double whammy of two different causes: Growth Overfishing and Recruit overfishing.

Types of overfishing:

Conventionally, there are two types of overfishing relating to population growth and recruitment.

'Growth overfishing' is a situation where the fish are being caught at too high a rate to allow optimum growth, hence depressing the potential yield.

'Recruit overfishing' occurs where the spawning stock biomass has been reduced to a level where insufficient recruits are produced to support a fishery.

Source: Guide to Fishing at Maximum Sustainable Yield (MSY) Seafish, February 2022

Renowned marine biologist Daniel Pauly has suggested that MSY is too often used incorrectly:

"In principle, most fisheries scientists and legislations agree that MSY should be a limit, and not a target for fisheries management because if it were a target, this target would be exceeded about half of the time just because of uncertainties in estimation and application, resulting in overfishing and stock decline.

This implies that target catches should be set below and target biomass above the MSY level.

Also, at biomass levels of, for example, 60 per cent or more of carrying capacity, populations are much more capable of fulfilling their ecological roles than at the currently common 30–40 per cent levels, while at the same time supporting good catches."

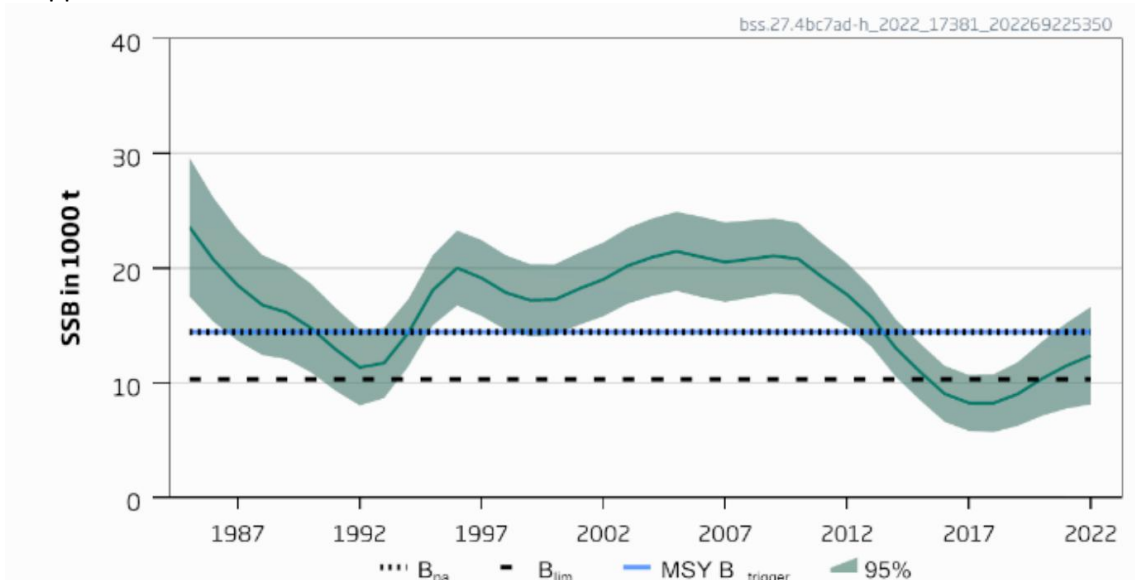
Source: Seas Around Us - Fisheries, Ecosystems and Biodiversity, Jan. 2021 University of Western Australia

"MSY is an example of the proverbial three-legged stool. It began as policy, it was declared to be science, and then it was enshrined in law. The three partial theories could not be successfully unified into a comprehensive "scientific" theory because MSY was a policy camouflaged as science."

Source: Maximum sustained yield: a policy disguised as science - ICES Journal of Marine Science, March 2013

The problems with MSY for bass

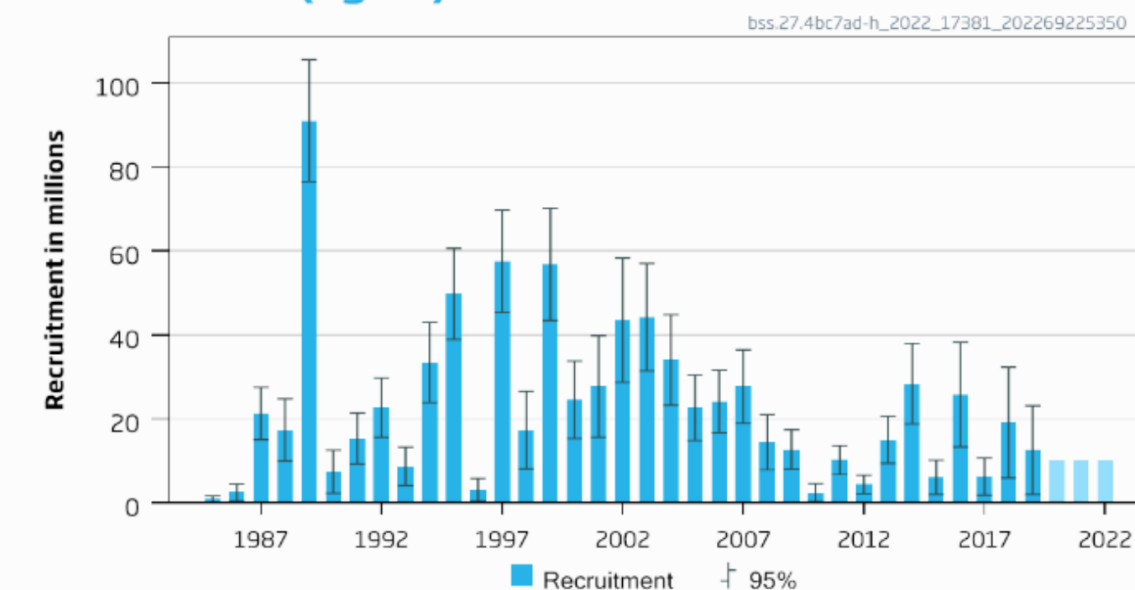
We have seen how years of managing bass stocks at an EU-wide level, where MSY is the default management objective for most fisheries, has coincided with a decline in the bass stock. In 2015, following the advice of ICES, recovery measures have been put in place and it is only now that the bass SSB appears to be on a modest upward trend. The 2022 ICES advice report for bass indicates that the SSB is now only just above B_{lim} and at approx. 50% of the estimated SSB levels of 1985. The SSB still needs to be restored to reach a safe level and a continuation of MSY objectives, coupled with poor recruitment years, could reverse the already fragile green shoots of recovery that are beginning to appear.



Source: ICES / CIEM advice on sea bass for areas North Sea, English Channel, Irish Sea, Bristol Channel, Celtic Sea 2022

A bass SSB that is below safe limits is highly likely to also have a negative effect on recruitment, manifesting in a cycle of insufficient breeding adults and rendering the stock incapable of producing sufficient young to replenish those taken by fishing and natural mortality. The 2022 ICES annual stock assessments for bass show that, in the preceding 12 years, recruitment at age '0' has, been markedly lower than for the three previous decades.

Recruitment (age 0)



Source: ICES / CIEM advice on sea bass for areas North Sea, English Channel, Irish Sea, Bristol Channel, Celtic Sea 2022

the stock is being fished harder than is appropriate for such a slow growing, late maturing fish.

Source: C-Bass in Action - GOV.UK Marine science blog - Dec 2014

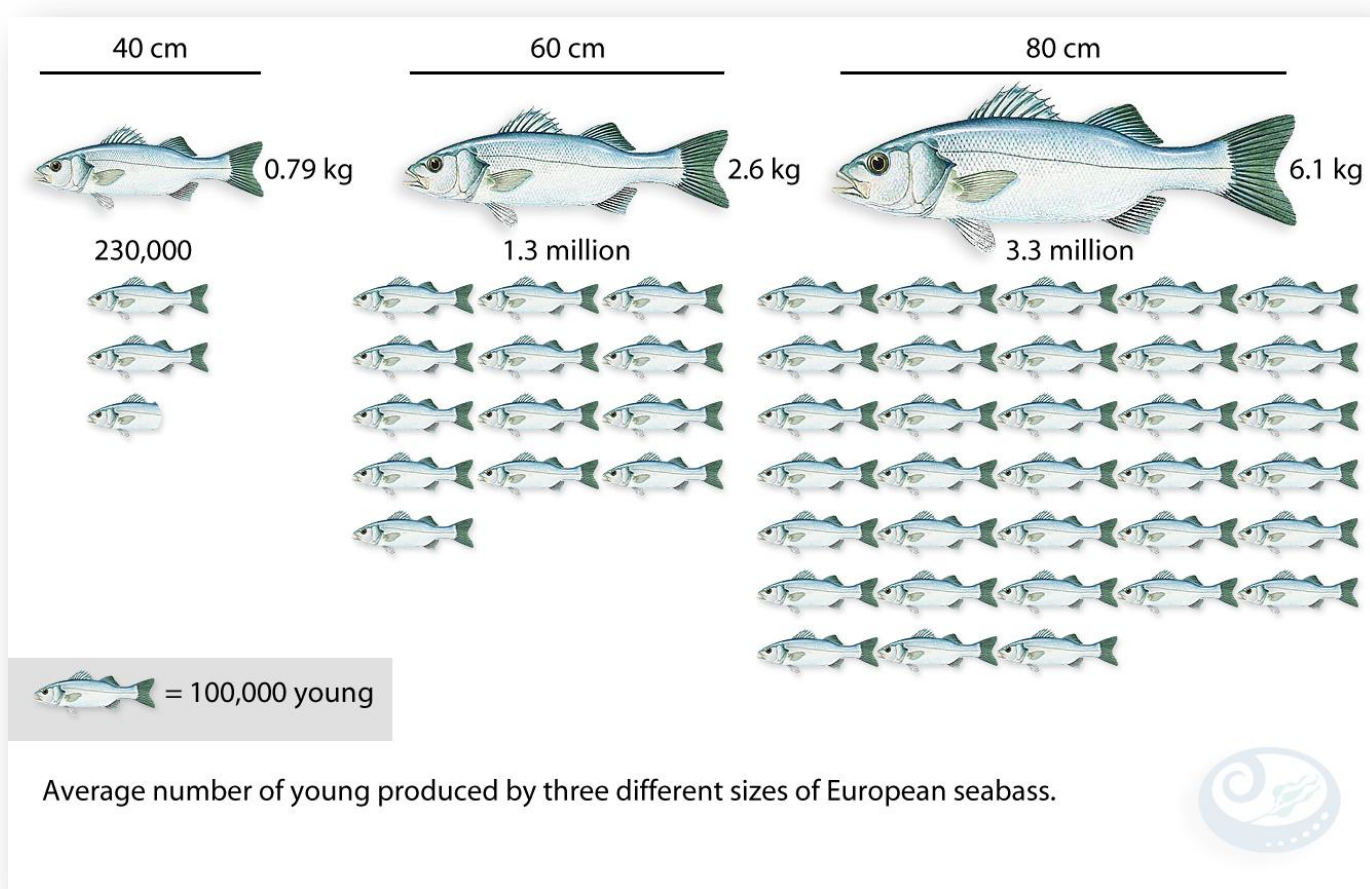
Despite favourable climatic conditions for bass recruitment, there have been no 'bumper' year classes (as there were in 1989, 1995, 1997, 1999, 2002 and 2003) in nearly two decades,. These strong year classes previously acted as a buffer for poor year classes (1985, 1986, 1996, 2010, 2012, 2015 and 2017). Perhaps due to persistent overfishing, there have been no notably strong year classes entering the fishery since the early years of the twenty first century.

Commercial fisheries management based on MSY, has also led to a progressive reduction in fish size. Indeed, this instrument is solely based on tonnage targets and does not consider the preservation of fish stocks' structures, posing a problem for the fish species' ability to cope with the growing risks of climate change, eutrophication of waters and for the maintenance of marine ecosystems. Indeed, the age and size distribution of individuals in the populations of commercially-exploited species is indicative of a healthy population according to the Marine Strategy Framework Directive (MSFD). *Source: More Fish in the Sea! Conference,- 25th April 2023*

Size IS important

It is noticeable that the bass spawning-stock biomass is almost always regarded as being reproductively the same, no matter what its size composition. Many small young females are wrongly assumed to contribute the same to stock productivity as an equivalent mass of what fisheries scientists call BOFFFFs (big old fat fecund female fish) – which are large, older, female fish that are at the peak of their reproductive capacity. These are now relatively rare within the bass spawning stock.

The importance of large female fish within a stock biomass was first reported well over 100 years ago (*Hjort 1914*) but it is only relatively recently that scientists are starting to understand and fully appreciate how important such fish actually are. In a great many fish species, including European bass, BOFFFFs produce more and very often larger eggs compared to smaller but mature sized fish and once hatched, the offspring of BOFFFFs frequently display faster growth and better survival rates. *Source: BOFFFFs: on the importance of conserving old-growth age structure in fishery populations. ICES Journal of Marine Science, Volume 71, Issue 8, October 2014*



As can be seen from the preceding graphic, a European bass that is 80cm in length (approximately 5kgs) produces nearly three times as many eggs as a fish just 20cm shorter and over FOURTEEN times as many as a fish of 40cm (approximately 0.7kgs).

Moreover, BOFFFFs have a tendency towards an earlier and longer spawning season and since large fish are more robust than smaller fish, BOFFFFs can also spawn in locations that smaller fish can't. Thus, BOFFFFs help to ensure individual reproductive success in environments that other fish may not be able to reproduce in.

Similarly, BOFFFFs can survive periods that aren't conducive to successful reproduction and in doing so, enhance recruitment when conditions return to normal. This is termed "the storage effect". It is also known that removing BOFFFFs, by using non-selective fishing methods for example, destabilizes fished populations and increases susceptibility of collapse even after fishing effort is later reduced, further illustrating BOFFFF importance to populations.

So, one can see why it is critically important that as many BOFFFFs remain part of the spawning-stock biomass as possible, in order to maximise recruitment. The Bass Fishery Management Plan would do well to take into account that BOFFFFs are an important element of the stock biomass that can benefit the stock, bass anglers and all fishers alike and adopt a '**Large-Stock**' management objective in order to restore the stock to a more natural stock profile.

Our contention is that a bass FMP must, adhere to the premise that the biology and proven habits of the species should dictate the future management tools that are used to ensure the much needed recovery and sustainable exploitation from both commercial and recreational stakeholders.

The default exploitation target of Maximum Sustainable Yield (MSY) has arguably caused the virtual collapse of the bass breeding stock and only the recent introduction of strict extraction controls on fishers appears to have halted the decline.

Alternatives:

The potential economic benefits of a change in objective, towards a revised target of abundance (Large Stock Strategy) and Maximum Economic Yield (MEY) can be demonstrated from existing economic studies and when combined with a bass FMP, that puts the well-being of the stock as the priority, the latent value of the UK bass fishery could be harnessed for the truly sustainable long-term benefit of our coastal communities.

It is increasingly apparent that MSY - fisheries management focused only on maximising tonnage of dead bass - is the wrong management objective for the bass stock.

Recreational fishing:

- **is the major stakeholder by participation and social and economic benefits;**
- **has the greatest growth potential by far; and**
- **places a very high value on "More and Bigger Bass" as seen by studies into angler satisfaction**

This means adopting a Large Stock Strategy immediately that will produce "More and Bigger Bass" and benefit all stakeholders as outlined below:

- **a more resilient stock (so reducing the chances of another bass stock crash);**
- **higher Catch Per Unit of Effort (and so less fuel and time is expended);**
- **more attractive to sea anglers, driving economic growth; and a higher yield per fish for commercial fishers.**

We urge that the Bass FMP should be aiming for a large-stock objective equal to 60% of the unfished stock size (like New Zealand and Queensland, Australia have adopted) and tasking Cefas to estimate how quickly stakeholders can achieve this stock size with different levels of fishing pressure.

The recreational bass fishery is, by leaps and bounds, the major fishery resulting in around £240m* being pumped into the UK economy, that in turn supports thousands of livelihoods in the recreational fishing industry.

The UK commercial bass fishery typically results in around £5m* of landings, £2.8m** of which is exported, so much of the downstream economic impacts take place in other countries. By comparison; the UK imports 7,261tn** of farmed sea bass which accounts for a value of £32.8million**

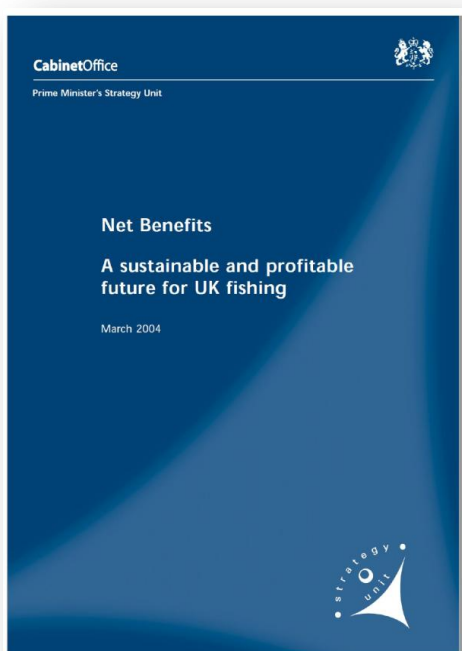
*source: EUMOFA, *Commercial & recreational fisheries for wild sea bass, Economic & market study, 11/2021*

**source: *Compassion in World Farming - food business, 22/09/2021*

No matter which way you compare the two sectors, it is obvious (even if it is troublesome for some to acknowledge) that management objectives for bass (and this is a BASS FMP) should be prioritised for Recreational Sea Angling.

MSY is utterly inappropriate for RSA and arguably, given the track record of MSY as a stock management objective for commercial exploitation, with a track record of failure after failure, there is a compelling case for MSY not being sufficiently ambitious for commercial bass fishing.

Net Benefits: This comprehensive report on the future of UK fishing was compiled by the Cabinet Office of the Prime Minister's Strategy Unit in March 2004.



Extracts from Net Benefits - A sustainable and profitable future for UK fishing. One of the key recommendations within the report was:

"Net Benefits recommends the UK should adopt a large-stock strategy and use this to guide its position in EU negotiations for its key economic species. This will entail reducing catch in the short-term. Fishery managers should explicitly seek to maximise the value of commercial stocks and reduce the volatility of catch."

Annex C: Stock stability analysis:

For most UK stocks the age structure is much more truncated than would occur naturally. This, combined with the natural high variability in recruitment, results in total allowable catch swinging significantly from year to year.

The situation is worst for stocks such as cod where stocks are relatively low compared to historic levels. Current stock strategy is necessarily one of crisis management. Effort has to be cut, sometimes dramatically, to allow for stock recovery. This is undesirable because it makes fishermen's incomes uncertain and volatile.

"Poor stocks contribute to dramatic year-to-year variations in allowed catch and fishermen's incomes."

Net Benefits cont.

There is a high level of uncertainty inherent in the fisheries ecological system, stock assessment process and management process. These factors can combine to produce management decisions which may at best vary a lot from year to year, or at worst be inaccurate or distrusted. Fishermen are not able to plan business activities in the medium to long term.

An alternative approach to stock management would be to maintain a high biomass of key economic species by reducing fishing effort so that a much smaller proportion is removed in any year. In Iceland, the stock management strategy is to remove just 25% of the biomass, in Faeroes 33%. Currently, in most EU fisheries more than 60% of the biomass is removed each year.

"A large-stock strategy brings valuable stability in long-run catches, and the system is more robust to biological uncertainty and non-compliance by fishermen."

The 'large-stock' rule brings many benefits.

- There is greater stability in the catch since variation in annual recruitment volatility is buffered. Catch and effort levels can be set with much less annual variation.
- There is also a much lower probability of stock decline and the need for drastic management intervention.
- The mean age, and hence size, of fish and price are increased.

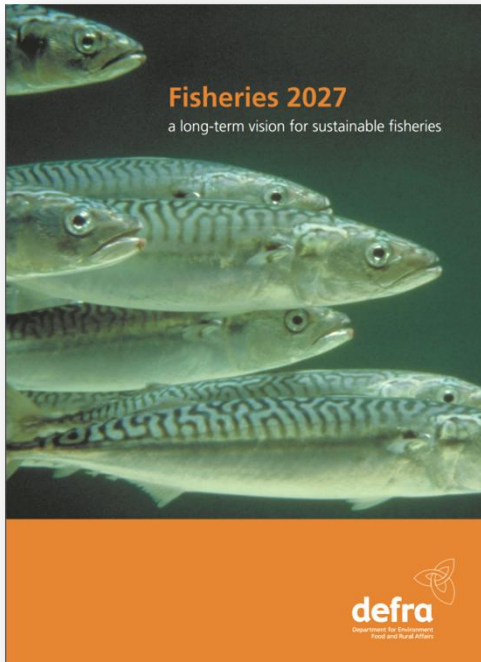


Figure C.3 demonstrates the buffering effect of having older fish in the population.

At the lower fishing mortality there is a larger population of older fish, and catches are much less dependent upon sharp fluctuations in recruitment. Consequently, fluctuations in catch are smoothed, and there is a less pronounced variation between minimum and maximum catch.

Source: *Net Benefits - A sustainable and profitable future for UK fishing*, March 2004 - Cabinet Office

Fisheries 2027 - a long-term vision for sustainable fisheries



Published in 2007, this was another 'root and branch' review of UK fisheries policy, setting out a 20 year plan and was based on stakeholder surveys. We are less than 4 years away from 2027.

Within the report's Foreword Jonathan Shaw MP, Minister for Marine, Landscape and Rural Affairs wrote:

'Fisheries 2027 – a long-term vision for sustainable fisheries' will guide future fisheries policy and provide direction for everyone with an interest in marine fisheries. You – our stakeholders – have helped us to prepare this vision. I hope that you will share our commitment to it.'

The report contained a number of Vision Statements including:

In 2027:

1. Economic returns are optimised

In most cases fish stocks and access to use them, either commercially or recreationally, are managed to maximise the long-term economic return to society.

2. There are rights of access to fisheries coupled with clear responsibilities

Recreational and commercial fishermen share access to fisheries. Economically efficient commercial operators have access to most of the resource; some of the resource is used to deliver wider social benefits and for recreational purposes.

3. Stocks are plentiful and sustainably harvested

Catch levels optimise the long-term economic benefits including ensuring that stocks are not over-exploited.

4. Fishing activity contributes to coastal communities

Fisheries contribute to the local economies and culture of coastal communities. Fishing communities are resilient and diverse enough to withstand fluctuations in the availability of fishing opportunities. Recreational sea anglers will continue to enjoy their sport and the potential for growth will be realised.

Source: *Fisheries 2027 - a long-term vision for sustainable fisheries* - Published by DEFRA - 2007

Maximum Economic Yield as a Bass FMP objective.

MEY would be a better management objective than MSY for UK bass stocks going forward.

Maximum Economic Yield (MEY) is the value of the largest positive difference between total revenues and total costs of fishing (including the cost of labour and capital).

Typically, mortality rate FMEY is slightly below FMSY, resulting in marginally less than the maximum sustainable yield. However, much less fishing effort is used, with fewer associated costs, to take the maximum economic yield, and higher biomass levels reduce fluctuations in fishing opportunities.

Consequently, it is an economically attractive option, i.e. a cheaper way of ending up with almost the same amount of fish.

It is also environmentally more desirable as it reduces environmental pressures such as engine emissions and negative impacts on the wider marine environment.

Source: Pew Trust, MSY for Dummies. OCEAN2012 Transforming European Fisheries

As recreational fishing for bass is demonstrably by far and away the most sustainable and economically superior activity, the Bass FMP should focus on growing this sector and phasing out unsustainable capture methods, such as netting for bass.

- **2014 - Blue Marine Foundation** - *The final economic output per tonne of bass retained in Sussex is almost 40 - 75 times higher for recreational bass fisheries than for commercial bass fisheries. The employment generated per tonne of bass retained is 39 -75 times higher for recreational bass fisheries than for commercial bass fisheries.*
- **2017 - Cefas** - *total expenditure by sea anglers = £1.94 billion, total jobs supported by sea angling = 16,313. Sea anglers in England and Wales released 80% of the bass that they caught*
- **2021 - European Market Observatory for Fisheries and Aquaculture Products** - *UK recreational angling expenditure on bass fishing calculated to be between 188 and 282 million Euros compared to commercial first sale value of 5.3 million Euros*

We suggest supporting existing bass netting practitioners to adapt to Hook & Line or convert their business models towards guiding / charter for anglers and other tourism related activities (seal /dolphin / bird watching etc.) with suitable grants made available for vessel conversion/ replacement and for retraining. Diversification and retraining are constant in most business environments and commercial fishing should be no different to farming, the construction industry or manufacturing.

Pursuing the failed fishery management objective of MSY is not a suitable 'priority' for the Bass FMP if we are to achieve the ambition of a "World class" bass fishery. We are reminded of the quote:

"The definition of insanity is doing the same thing over and over and expecting different results"

Instead of pursuing the failed MSY management objective for bass, we need to move urgently towards a Large-Stock strategy, which will provide a more robust breeding stock, with a higher proportion of larger, more productive fish.

The Bass FMP should be aiming for the wholly achievable target of a restored bass stock, equal to the historic biomass of the mid-1980's, mid-1990's and 2005 to 2012 and providing 'More Bucks Per Bass'.

Why Wait?

To move to a Large-stock strategy and achieve MEY in the shortest timeframe possible.

Several actions detailed within the draft Bass FMP should be prioritised and brought forward from the medium- long term (3-5 year) to the short- term (1-2 years).

Medium-long term (3-5 years):

- Consider outcomes from the ICES benchmarking exercise in 2025 and implications for future stock management/harvest strategies.
- Following conclusion of the ICES benchmarking exercise, review and propose new research to assess alternative harvest strategies for bass that prioritise societal and ecosystem benefits (e.g. Maximum Economic Yield, large stock strategy, maximum societal benefits) with a view to maximising the efficiency, profitability and sustainability of bass harvesting in line with other FMP goals.

Why Wait for the ICES benchmarking to conclude before commencing new research to assess alternative harvest strategies? There is sufficient evidence (e.g. as detailed within this paper) on the past failures of MSY objectives for bass and for the potential benefits of adopting a Large-Stock Strategy and MEY , which would maximise efficiency, profitability and sustainability. Why kick this can down the road until 2025 before proposing new research?

Goal 2: Ongoing protection of the juvenile and spawning bass stock

Actions to achieve this goal:

Short term (1-2 years):

- Maintain existing bass nursery areas but keep under review as evidence evolves.
- Commission a comprehensive maturity study and impact assessment for the most suitable timing and duration of closed seasons to protect the spawning Northern stock.

Source: Defra - Bass FMP English & Welsh waters FiAG FMP subgroup– 09/05/2022

Evidence already exists that new bass nursery areas (BNAs) could be designated to further protect juvenile bass. In 2018 Cefas conducted a review of existing and potential BNA sites and published a report in 2020.

Responses were received from eight IFCA's and the MMO, that included 48 proposed amendments to the existing BNA legislation (39 new site designations, five changes of extent, and four no longer required)

*Source: Presence of European sea bass (*Dicentrarchus labrax*) and other species in proposed bass nursery areas - Cefas 2020*

Why Wait for 3-5 years to review the evidence for local spatio-temporal closures to protect spawning bass?

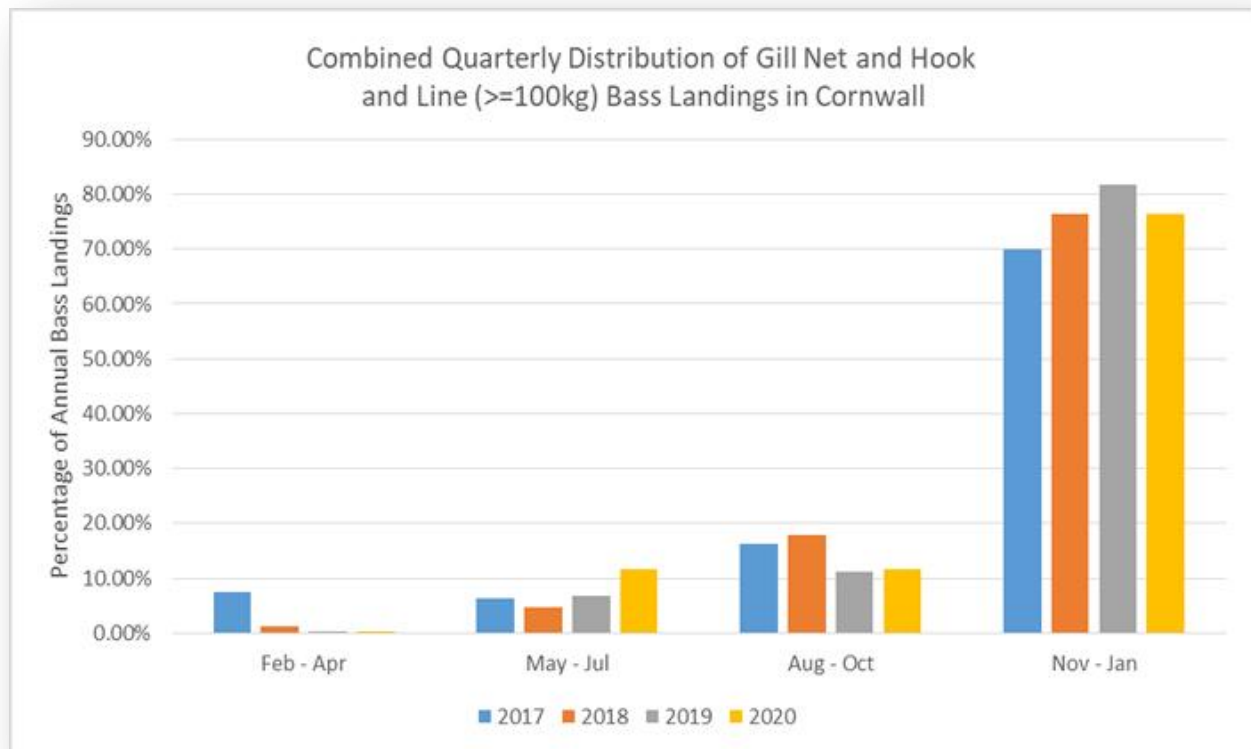
Medium-long term (3-5 years):

- Maintain the existing 42cm MCRS while reviewing appropriate size limits for the bass stock, e.g. a MCRS or slot sizes for commercial and recreational hook and line gears (for which survivability and selectivity are highest) whereby fish above and below a certain size are returned to the breeding stock.
- Review the possibility of local spatio-temporal closures to protect spawning bass as evidence evolves/allows.
- Increase research to better understand the relationship between environmental factors, in particular the impact of climate change, on the recruitment of juveniles to the bass stock.
- Develop best-practice handling guidance to improve fish survival from commercial and recreational fisheries.

Considerable evidence already exists within the MMO's commercial bass landings data to confirm that the current closed season for commercial fishers is ineffective, both in timing and duration.

The MMO's data of bass landings into the main fishing ports of Devon and Cornwall, confirms that migrating, pre-spawning bass are landed in the multiples of tonnes during November, December and January, when the closed season is 1st February to 30th March. By then, most mature adult bass will be offshore, forming pre-spawning aggregations. Approximately 75% of the annual bass landings occurs within November, December and January, as bass make their way towards their over-wintering grounds in the Western Approaches of the English Channel.

The current commercial closed season is ineffective and not fit for purpose and needs to be realigned with the peak period of vulnerability i.e. the three months when bass are migrating through Devon and Cornwall's inshore waters.



Source: Analysis of MMO bass landing data 2017 to 2020 - Save Our Sea Bass -2020

If the bass fishery in Devon and Cornwall was closed from 1st Nov - 31st January the bass would be able to complete their spawning migrations and vastly contribute to the spawning stock biomass. They would also stand a chance of returning to their home waters in the following spring. Isn't it also about time the 'unavoidable' bass by-catch loophole was closed once and for all by attaching a realistic limit of say 10% of the total catch landed?

Why Wait until the medium to long term to develop best-practice handling guidance, to improve fish survival from commercial and recreational fisheries? This action need not be put on the back-burner for 3-5 years.

We know that the survival rates for the catch and release of bass in recreational fisheries is between 90% to 95% and where the vulnerabilities lie in returning unwanted, surplus or undersized fish in vigorous condition. Survival rates can be further improved, through education, by encouraging behavioural change or method / tackle modifications, to reduce deep-hooking, prolonged air exposure time and modifying the types of baits and hooks used.

An excellent best practice bass handling guide has been produced by USA publication '**On The Water**' and is available on-line, in text or video formats: <https://www.onthewater.com/help-stripped-bass-survive-catch-and-release> and is also available in PDF: https://www.onthewater.com/wp-content/uploads/2020/05/StripersForTheFuture_2020.pdf

There is significant scope to involve sea angling clubs and the recreational tackle trade in sponsoring, creating and circulating best-practice handling guidance for UK bass. **Why Wait**, when this could be a quick and easy win?

About BASS

The Bass Anglers' Sportfishing Society was formed in 1973
We are a fishing club and an organisation dedicated to the
restoration of the European Sea Bass stock in UK waters

The society's members encourage the conservation, research
and protection, as well as improve and educate others in the
techniques of angling, for our premier sporting sea fish

We promote scientific research into bass biology and ecology
and offer bursary funding for projects involving individuals,
groups and students at postgraduate level

Citizen Science

Our members collaborate and assist with university-led research to better
understand the habitat requirements of juvenile bass and their movements
within estuaries and coastal environments. As part of this work we have assisted
in the capture of bass for tagging and provided scale samples for analysis.

In partnership with marine conservation groups, members participate in recording
marine strandings and beach clean-ups, as well as juvenile bass surveys to assess
year class strength and provide information for University and Cefas-led research
on bass recruitment.

We have supported and coordinated bass tagging studies to expand
and confirm knowledge of the seasonal migrations of bass.

Fighting for Bass

Campaigning for the restoration of bass stocks is our raison d'être.
We have lobbied government at UK and EU level and have been
instrumental in bringing destructive fishing methods, such as pair
trawling for bass, with its associated cetacean bycatch, to a halt

We have been instrumental in raising the MCRS to allow more bass to
reproduce and replace those lost through natural and human activities

We campaign to restore an abundant and healthy bass stock to support a
sustainable fishery where recreational angling is given due recognition



www.ukbass.com

In collaboration with Bass Angling Conservation