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# Professional and recreational fishers of Channel/Manche (France,England): Health & Wellbeing, Local Ecological Knowledge, views on current and future fisheries management.

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**Professional and recreational fishers of Channel/Manche (France,England):  
Health & Wellbeing, Local Ecological Knowledge, views on current and future  
fisheries management**

**Deliverable 3.1.1**

Katia Frangoudes (UBO), Eider Graner (UBO), Emmanuelle Quillérou (UBO), Alice Hall (UoP)

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## 1. INTRODUCTION

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Within the framework of task T3.1.1 entitled "Knowledge gathering for acoustic network design and social-benefit assessment" of Work Package 3 aimed at "Society, ecosystem services and governance", semi-structured interviews, focus groups and a quantitative survey targeting professional and recreational fishers as well as local administrations in the Channel/Manche were carried out by the University of Brest (UBO) and the University of Plymouth (UoP). This deliverable has multiples objectives: i) compiling fisher's Local Ecological Knowledge (LEK) to support the identification of locations for acoustic device deployment; ii) reporting opinions of professional and recreational fishers related to current and future management systems to support the design of EBFM road maps, and iii) assessing the level of well-being of the two categories of fishers through qualitative and quantitative surveys focusing on mental and physical health, working conditions, economic situation, etc. The following report is structured along the topics resulting from our data analysis.

## 2. METHODOLOGY

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### 2.1. Semi-structured interviews with French professional fishers

In France, semi-structured interviews (in person) have been conducted by UBO with professional fishers in the Mer d'Iroise (Finistère), pilot site of the FISH INTEL project. A total of 10 interviews were conducted between October 2021 and March 2022. Interviewed fishers are exclusive liners (7), netters (2) and one liner who also fishes with traps. Main target species are pollack, sea bass, monkfish, red porgy, red lobster, abalone, octopus and bluefin tuna. The fishing areas of interviewees are the Iroise Sea, the Bay of Biscay (Audierne) and, more broadly, the Channel (North Finistère). Focus Groups with Normandy, Saint-Brieuc and North Finistère fishers have been organized in collaboration with CDPM 29, CRPM Normandy, IFREMER, LPO and FEM. The data gathered during those focus groups is analysed in this report. Other interviews with territorial authorities, fisheries territorial administration, social maritime services, NGOs, fisheries committees, and auctions directors have been conducted. However, these additional data sets collected will be used to support project publications.

### 2.2. Online quantitative survey and interviews with recreational fishers

An online survey has been carried out by the UBO team from July 13<sup>th</sup> to September 5<sup>th</sup>, 2022. A total of 119 responses have been obtained. Software used for online distribution of the survey were Sphinx iQ2 and Sphinx online. The survey has been distributed to fishing and recreational associations, fishing federations, diving clubs, NGOs with links to local fishers, FISH INTEL project partners, on social networks and to individual contacts. The content of the online survey was based on literature review and 6 semi-structured interviews with recreational fishers in Finistère and Côtes d'Armor.



**Figure 1.** French FISH INTEL pilot sites (blue polygons) with the Iroise Sea (Mer d'Iroise) pilot site location highlighted in the orange circle and the Côtes d'Armor pilot site location highlighted in red.

### 2.3. Quantitative and qualitative survey on English fishers

#### Local knowledge and wellbeing from bass and pollack fishers in South Devon and the Isles of Scilly:

A questionnaire was developed to collect data from both commercial and recreational fishers within the South Devon pilot site and the Isles of Scilly pilot site (Figure 1).



**Figure 2.** UK FISH INTEL pilot sites (blue polygons) with the South Devon pilot site location highlighted in the red circle and the Isles of Scilly pilot site location highlighted in orange.

The questionnaire was split into three sections: A. Fishing Activity (Commercial/ Recreational, Techniques, Experience), B. Health & Wellbeing (job and income satisfaction, physical and mental health and level of stress), C. Views on current and future management (byelaws support, protected areas, and additional management measures).

The questionnaires consisted of both quantitative (Likert scale) and qualitative (Open ended) questions. The questionnaires took place either face to face or over the telephone between February and June 2022. An open Call for Information was circulated by Devon and Severn IFCA, Southern IFCA, the Isles of Scilly IFCA, the Blue Marine Foundation and advertised on social media – participants then volunteered for the survey.

### 3. RESULTS

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#### 3.1. French professional fishers of English Channel: health & wellbeing, LEK and views on current and future management

In order to study the wellbeing of French professional fishers, interviews were structured around 3 main topics: i) job satisfaction and working conditions, ii) economic situation, and iii) adaptation to fisheries management. Their visions related to current and future management are detailed in this section.

##### 3.1.1. Job satisfaction and working conditions

*“The Sea embodies freedom”* according to interviewed professional fishers, because they perceive it as a space without borders. They often compare fishing to hunting because *“you never know what you will catch.”* Uncertainty over catches, diversity in the composition of catches and, of course, high incomes motivate many fishers to practice their job. Fishers interviewed under the FISH INTEL project are members of traditional fishing families, come from traditional fishing communities, or are just people looking for alternative ways of working. The impression of freedom created by the lack of borders or hierarchy is particularly attractive to the latter. Small-scale fisheries and, in particular, hook-based fishing attract more people new to fishing, often with higher education degrees, compared to those working on other fishing fleets (trawls, seines...).

To be a small-scale fisher and specifically use hooks/liner is a conscious choice. Fishers have chosen this job because it is practiced on a daily basis, and they return home every day – usually in the afternoon – and do not work weekends. This leaves them time to be with their family and friends. This type of working conditions cannot be found in other fleets (trawls, purses seines...) where crew and owners spend at least one week at sea. Small-scale fisheries – here liners – consider themselves lucky that way.

*“We are lucky to be liners because we spend all nights at home with our family and, if we fish enough, we don’t need to spend too many hours out at sea (...).”* When catches provide enough income, small-scale fishers can even decide to stay at home for several days to *“enjoy being with their family”*.

Between end of January and end of March, seabass fishing is closed to liners. According to their ecological knowledge, this seasonal closure for seabass coincides with the reproduction season of Pollack as well. During that time, many liners have reported going on holiday either with their family (in February during the school holidays) or on their own. Holidays seem to be an important moment for them and for the family. Fishers using nets can take holidays at other times of the year, and also consider holidays important. Holidays and rests are needed because *“fishing is stressful, it’s all-nighters”* – especially when there is no fish to catch. Only one fisher has reported not taking much holidays:

*“My partner is going on holiday. Last year I took 4 days off. To tell the truth, we planned to get away during spring tides on purpose. Because when tidal coefficients are 115, we don’t work. So I relax.”*

Looking for better income, change of fishing areas, gears and species mean changing of working condition.

Lack of resources – for example for seabass – forces fishers to modify their fishing strategies, either by changing fishing locations, species, or fishing gears. According to them, 20 years ago, it was possible to be an exclusive liner targeting seabass because this species was near the coast all year around. With lower fuel expenditures, fishers could easily make a good living. Since, *“seabass has changed its migration route, and we have been more recently obliged forced to target new species like pollack, red porgy or bluefin tuna, as well as move to other fishing areas”*.

Catching bluefin tuna seems to satisfy mentally fishers who are allowed to fish it, even if economic returns are not that high compared to the time spent fishing.

*“It is awesome to fish bluefin tuna even if you spend time there, in terms of profitability it’s not necessarily good but it’s super rewarding to fish such a fish”*.

The psychological and job satisfaction provided by bluefin tuna fishing is not the same as when you fish other species (e.g. pollack). The working conditions – for example for pollack fishing – are hard because of the many hours of navigation needed to reach new fishing areas and wreck sites, including higher safety risks. High expenditures in fuel, ice, and wage means fishers can lose a lot when they find no fish.

Displacement of fishing operations to deeper waters often leads fishers far from their home harbour. They target wreck sites with concentrated levels of pollack or seabass, or they follow the migration route of seabass. These fishing spots found at 70nm require long hours of navigations. Despite these small vessels are not authorised to navigate further than 20 nm for security and safety reasons, many of them breach this ban. If needed, fishers move to other, further, fishing sites until they find fish to bring home.

*“We would like to earn our living in the 20 miles, but the fish are not here anymore”*.

The financial situation of fishers targeting pollack on wrecks is not really good and, for them, bluefin tuna could be a good complementary source of income. Only two fishers benefit from quotas as the fisheries regional committee allocated this right to the youngest fishers of the district.

*“If I land less pollack and I have the opportunity to fish 3 tonnes of tuna then I earn 40 or 50,000 euros (...) and my turnover for the year is still good”*.

The same fisher avoids going too often to fish on wrecks located in the middle of the English Channel for safety reasons. The risks of an accident at sea are higher when you work alone far from the coast. Often these vessels are employing a crew member.

*“During summer we are two persons on board, I hire a colleague, because fishing means long navigation, sometimes I spend only four hours in the fishing area”*.

Some fishers working alone admitted being afraid during fishing operations far from the coast.

*“For seabass I have one hour and half drive and for pollack I take 2h30-3h to the West within the territorial waters. I have been as far as 70 nautical miles and there you are afraid, you only look to check if the security plane is coming... We had to. Now there is no point: even far away there are no more fish. It amounts mainly to spending money on fuel and nothing else”.*

As seabass and pollack are not present throughout the year, some fishers have diversified their fishing gears to catch other species during the seasonal closure for liners. Fishers are shifting from line to traps, nets, pots, etc.

*“ (..) some colleagues thought, well, we're going to adopt nets, we're not going to stay at home for three months, and that's it. I understand their decision, when there are things to pay for.... Our basic job is to fish! ”*

or

*“The lack of fish forces us to diversify our activity. We don't have many options. I am telling to myself that if the situation is still the same next year I will change my job”.*

One of the interviewees, has said that, nowadays, liners “use traps, nets, pots (...) and some of them deploy nets on their own pollack spots, they don't care (...). One of them admitted that he is no longer a liner but simply a fisher” needing to earn money to ensure family well-being and repay the bank for loans.

### **3.1.2. Economic situation**

Search for new species and fishing areas and use of different gears are alternative solutions adopted by liners as a result from the reduction of seabass and pollack. Fishing is hard work and *“only brave people can do this job”*, with income expected to match the level of efforts deployed. By default, all vessels owners aim to provide all crew members an income on par with their efforts. Nowadays, this is no longer possible, because of the lack of resource and increased price of fuel. Crew members are forced to take a second job during the low fishing season.

*“My crew member is paid based on the share system. In August, his salary was 700 euro and 750 euro in September. I am not sure I will be able to provide him with an income during the new fishing season”.*

Fishers working exclusively on wrecks and targeting only pollack are facing higher economic difficulties due to high expenditures (fuel, ice, oil for engine, ...) and loans to be paid. Sustaining their livelihoods seems to be more difficult than for those who have diversified their fishing activity. However, is this difficulty real or imagined? Can they really not earn enough from their craft?

*“It must be said that, in small-scale fisheries, the situation is not too bad... We are not to complain. We still do well compared to other jobs (e.g. agriculture) and if we lose 1000 euro a month, it is nothing (...). We must look at how much we still earn!”*



According to this fisher, the main issues are firstly how to manage fishing income and its fluctuations and secondly, how to accept the drop in income when all fishers want to keep their purchasing power as high as it used to be.

### **3.1.3. Fisheries Management and changes**

Concerning fisheries management, the following synthesises the main issues reported during professional fishers' interviews and focus groups in the three pilot sites areas.

#### **Perceptions**

Seabass stock is decreasing (according to the respondents the species modified its route due to changes in food distribution), so it was necessary for fishers to diversify their activity by targeting other species that are not under a quota system, such as red porgy (*Pagrus pagrus*), octopus, or species for which quota is never reached like pollack, or even "new" species such as bluefin tuna for which very limited quotas are available to liners.

#### **Contest the seabass regulation**

Past scientific studies and observations showed that the seabass stock of Bay of Biscat and the one of the English Channel are different stocks. This scientific evidence contradicted local fishers knowledge of the stock at the time. Since then, and because of such studies, the two regional seas have applied different regulations for this species (mainly size and a seasonal closure). Recent scientific work, however, showed that the stock of the Bay of Biscay and the Western Channel are actually one and the same. Fishers have been told about these results during focus groups organised by FISH INTEL teams. Their reactions have been highly negative and critical towards European policies and scientific work. This is because many fishers (liners), mainly in Normandy and Bay of Saint-Brieuc, have been obliged to change fishing gears or to buy a new vessel to be able to target new species as a result of legislation in place. They think it urgent to re-discuss the stock assessment model at ICES and initiate the revision of the current EU policy for seabass.

#### **Diversification and conflicts between users**

The decrease of seabass stock has forced fishers to diversify their activity and target pollack, for which France has a large share of the quota. According to fishers, the fishing effort (professional and recreational fisheries) increased over the last few years, and they believe the stock is now overexploited. Many professional fishers are dependent on this species for their livelihood and therefore demand implementation of new regulations (legal size of fish for professional fishers, seasonal closure, etc.), as well as regulation of recreational catches. Fisheries committees have not yet taken these demands into account. This is mainly because the quota for pollack has never been reached, because of the lack of available scientific data demonstrating overexploitation of the stock and because pollack is a very local species that is mostly sold locally.

Professional fishers requested the support of the local MPA and local authorities to organise meetings with both professional and recreational fishers. The local fishers’ committee of Brest was associated to this process.

Professional fishers see bluefin tuna as a possible alternative species to Pollack. For now, they do not have access to this stock, as there are too few available quotas. Bluefin quotas are distributed by the regional fisher’s organisation based on social criteria: priority is given to holders of a license of “exclusive liners” and to the youngest fishers.

### 3.2. French recreational fishers of English Channel: wellbeing and management measures

Within the framework of task T3.1.1 "Knowledge gathering for acoustic network design and social-benefit assessment" of Work Package 3 "Society, ecosystem services and governance", an online survey has been carried out by the UBO team. This survey was addressed to recreational fishers in the Channel (France), and focused mainly on fisher’s well-being, their fishing activity and their opinions on current and future fisheries management measures. In preparation for this survey, 6 face-to-face interviews have been conducted with recreational fishers and presidents of recreational fishing associations in Finistère and Côtes d'Armor (Brittany, France). The aim of the interviews was to understand the main stakes related to this activity in order to prepare the online survey. Below are the results relevant to this report, reporting on fishers’ well-being and opinions on current and future management measures. All the results will be published in French in two formats: a report and posters for recreational anglers who have answered the survey and all clubs and associations that practice this activity in la Manche/Channel. The next French newsletter of Fish Intel will be entirely dedicated to these results. In addition, they will be used to formulate the roadmaps for the establishment of ecosystem management plans.

#### 3.2.1. Individual data

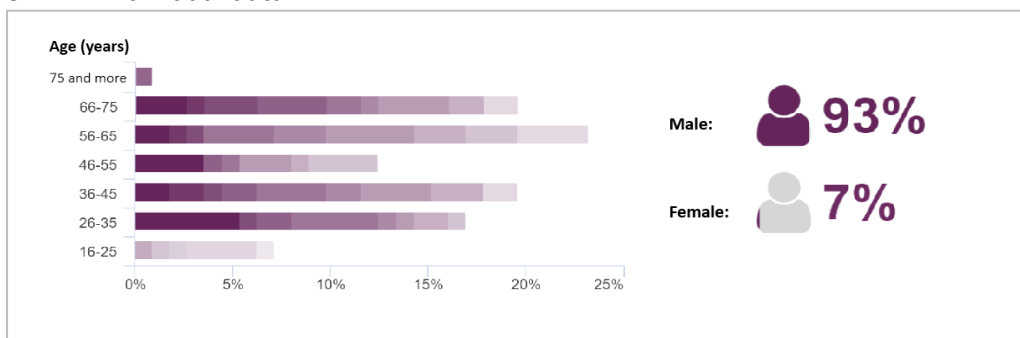
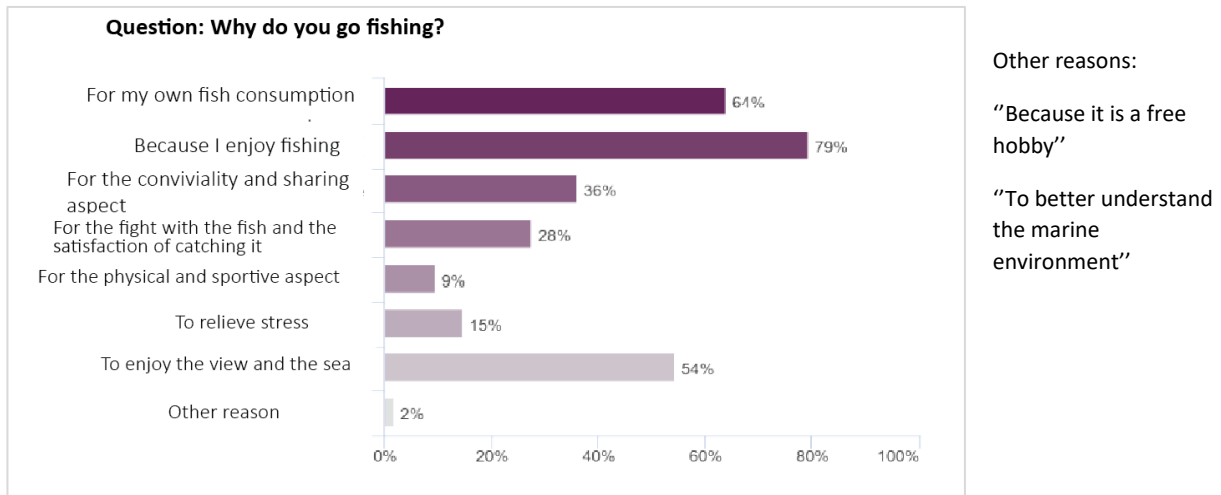


Figure 3. Age and sex of the respondents (Online survey, UBO)

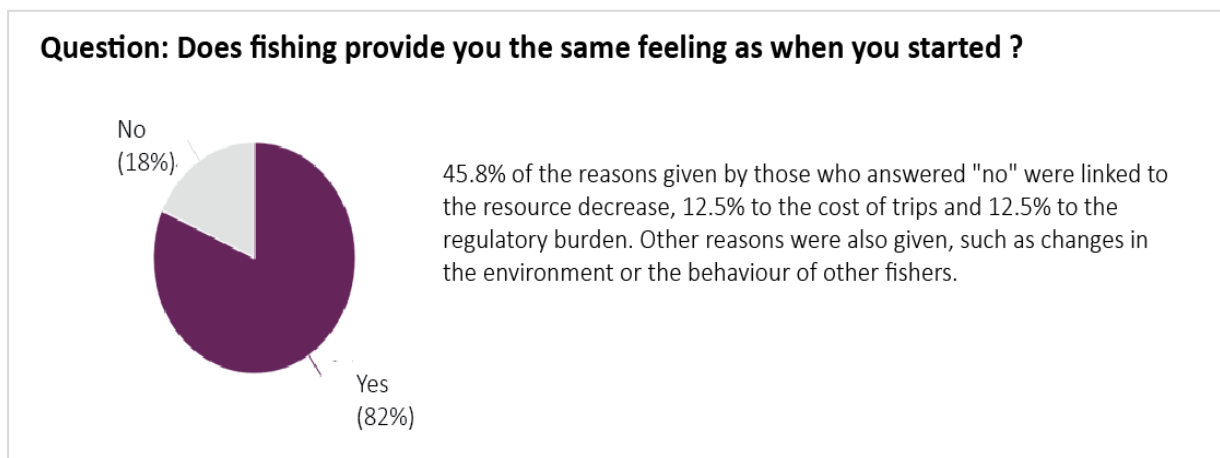
The vast majority of respondents (93%) were men, aged between 56 and 65.

### 3.2.2. Answers related to wellbeing



**Figure 4.** Reasons why French recreational fishers go fishing (Online survey, UBO)

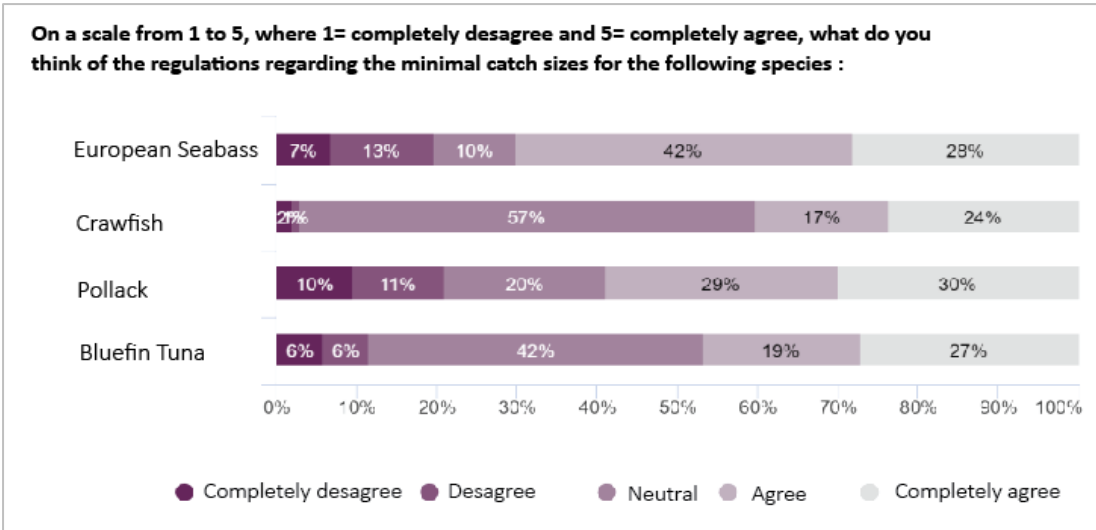
Respondents could choose more than one answer to this question. The most frequently mentioned was the pleasure of doing this activity (by 79% of them), their own consumption of fish (by 64% of them) and to enjoy the view and the sea (by 54% of them). Fishing as a stress relieving activity has only been reported by 15% of the fishers.



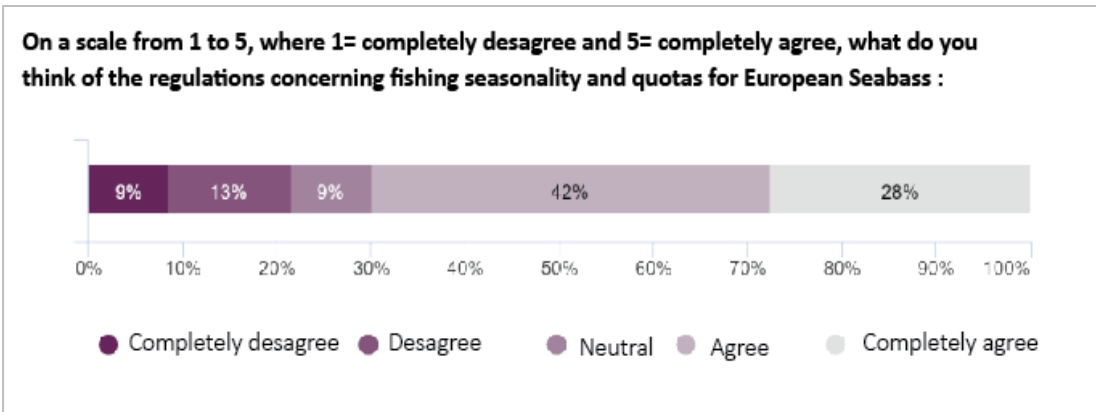
**Figure 5.** Fishing providing the same feeling as when they started (Online survey, UBO)

### 3.2.3. Visions on habitats, resources and management

There were very different opinions regarding the minimal catch sizes for the four studied species. For seabass and pollack, the majority of the respondents “agreed” or “completely agreed” with the current size regulation (70% and 59% respectively). 42% of respondents were neutral regarding crawfish and bluefin tuna. However, 12% “disagreed” or “completely disagreed” with the size of bluefin tuna, and only 2% for crawfish (Fig.6).

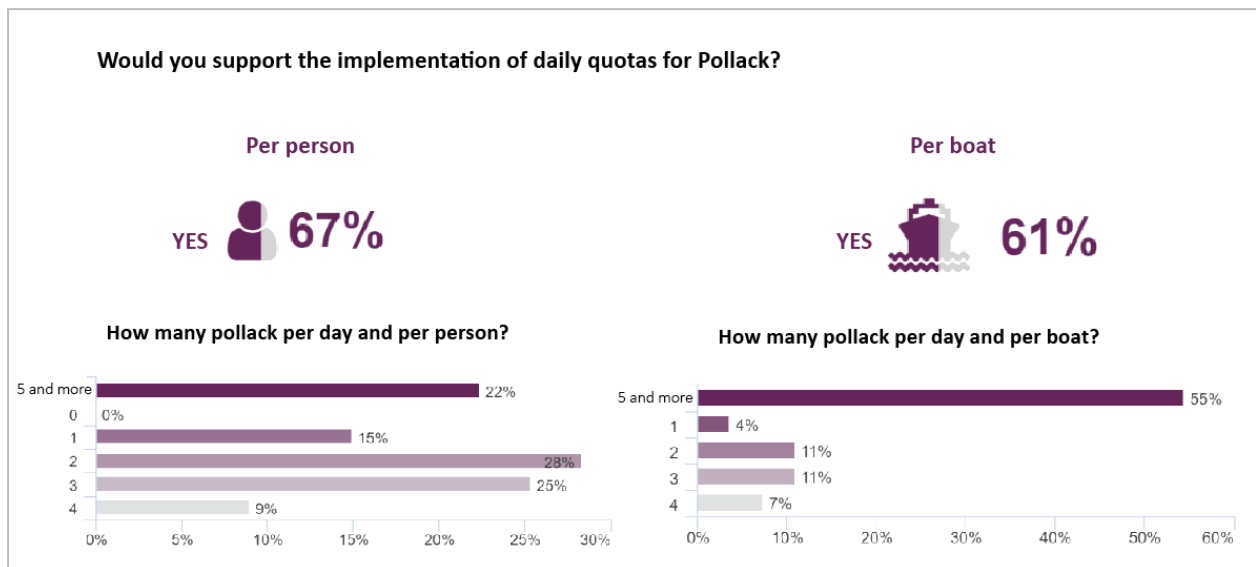


**Figure 6.** Opinions of fishers regarding current regulations on the minimal catch sizes by species (Online survey, UBO)



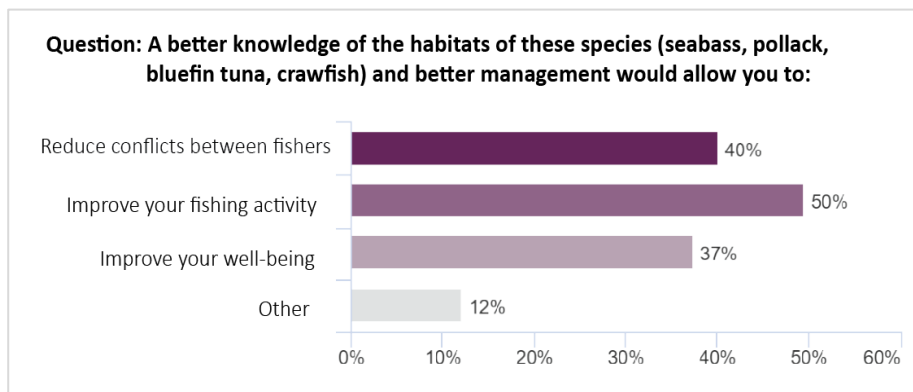
**Figure 7.** Opinions of fishers regarding current regulations on fishing seasonality and quotas for European seabass (Online survey, UBO)

Most of the fishers interviewed (70%) “agreed” or “completely agreed” with the regulations on fishing seasonality and quotas for European seabass. In France, these regulations are applied differently in the north and the south. North of the 48th parallel, no-kill is mandatory for recreational fishers in January, February and December and the daily quota is representing 2 seabass per person. South of the 48th parallel, the quota is the same but there is no closing period.



**Figure 8.** Responses of fishers concerning the implementation of daily quotas for pollack (Online survey, UBO)

More than half of the respondents are in favour of setting daily quota for pollack. With similar proportions, fishers in favour of 3 individuals represent 25%, 28% asking for 2 and 22% those asking for 5 or more pollack per person per day. Regarding quotas per boat, the majority (55%) is in favour of 5 or more pollack per day per boat.

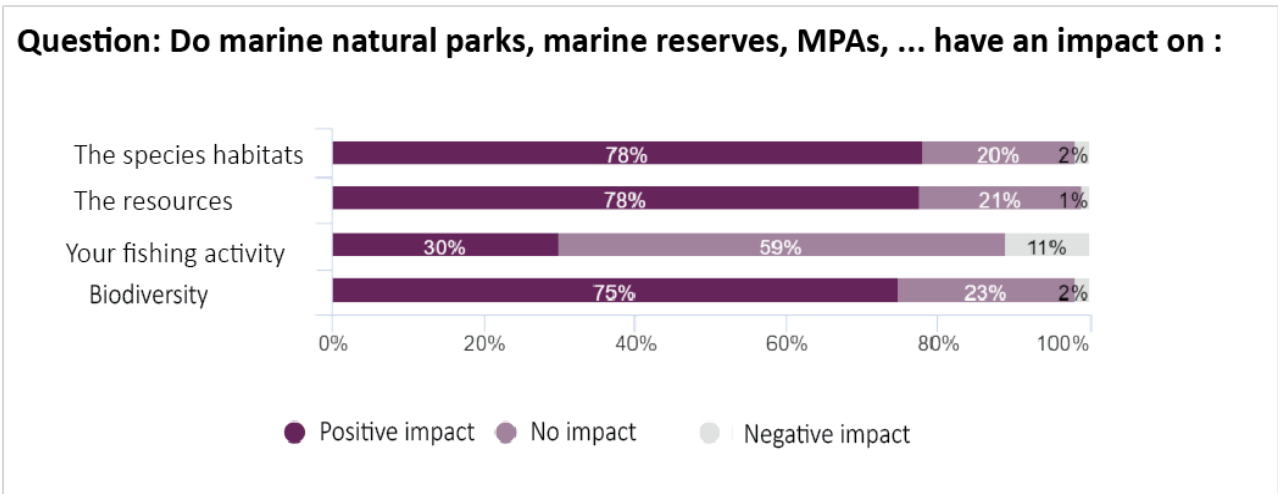


Other:

- "To improve the protection of the resource"
- "To better target the areas that need to be protected"
- "To stop all the trickery"
- "Better communication would help to understand and accept limitations and quotas"
- "To better develop underwater diversity"
- "To preserve biodiversity and protect species"

**Figure 9.** Impacts of a better knowledge and better management (Online survey, UBO)

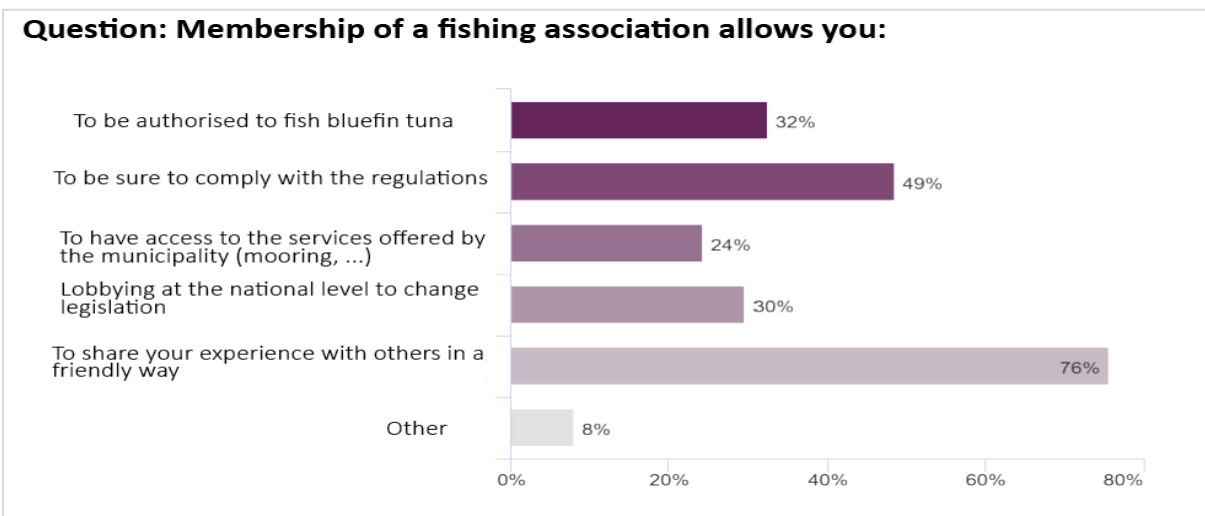
For this question, respondents could choose more than one answer. 50% of them consider that a better knowledge and management for the four studied species would improve their fishing activity. 40% consider that this would contribute to the reduction of conflicts mainly with professional fishers.



**Figure 10.** Impacts of marine natural parks and MPAs (Online survey, UBO)

Regarding conservation tools, fishers consider that they are impacting positively the preservation of habitats, resources and biodiversity. When it comes to their activity, the majority (59%) consider that the protected areas do not impact it.

**3.2.4. Benefits to be organized**



**Figure 11.** Benefits of belonging to a recreational fishers’ organization (Online survey, UBO)

33% of the fishers who responded to the survey belong to recreational fisheries associations. Among the benefits of being member of an association, conviviality and sharing of experiences appeared the most important (for 76% of them), followed by the compliance with regulations (49%). A significant proportion (32%) also mentioned the opportunity to fish for bluefin tuna. In our study area, some recreational fishing associations have access to bluefin tuna quotas which are shared among members.

### 3.2.5. Other issues raised in the questionnaire

In the questionnaire, there was a separate blank where recreational fishers could express their ideas and opinions. This section provides a short synthesis of these opinions by topic.

#### ***Too many rules***

Recreational fishers find regular changes to regulations very oppressive. It is not just fisheries management, but also safety at sea and fishing licences. Some believe that these constraints and rules will put their activity at risk and do not hesitate to remind decision makers of the risk of recreational fisheries disappearance. All of them have noted the lack of communication and information about current regulation of fishing.

#### ***Difficulties of practice***

The practice of recreational fishing remains difficult for many people because of the price of fuel, the cost of buying a boat, docking space for the boat in the harbour but also fishing equipment. As a result, fishing trips are becoming increasingly expensive and therefore more exclusively practiced by those who have the financial means to do so.

#### ***Observations in relation to ecosystem and resources***

Many of the respondents noted a decrease in the resource and that their catches are declining, despite the diversification of fishing techniques. This decrease is explained by a lack of respect at sea and corresponds to *"abuse by professional fishers"* or recreational fishers using *"their zodiacs to fish as much as they can just to show off"*. One fisher said that *"the sea has become a product of consumption and enrichment"*. Some remain positive because, thanks to improved scientific knowledge, users of the sea are changing their philosophy and, as a result, the pleasures provided by recreational activities are no longer limited to catch fish.

#### ***Habitats to protect***

To protect resources and habitats, some suggest expanding integral reserves. Others point out that this type of protection is good for the habitats, but can become problematic, as it will bring in more tourism. Tourists are attracted by such natural areas and their presence endangers the biodiversity and the species protection – contrary to the primary objective of implementing such reserves.

#### ***Perceptions of current and future management system***

Recreational liners did not hesitate to make suggestions for management rules: firstly, to regulate access to this recreational activity, and secondly, to regulate it. These proposals range from introduction of a fishing licence/permit, to training in order to raise awareness about the practice of these activities, similar to those provided by sailing schools. This training should be a compulsory

requirement for the issue of a licence/permit. If a licence/permit is obtained, the cost should be low and those holding a licence should be exempted from the membership of national federations.

Concerning regulation of catches, few of them spoke about the introduction of a daily fishing quota for species other than seabass. Others said that they do not understand why professional fishers are allowed to catch seabass of a smaller size than them.

### Conflicts between users

The coexistence of activities at sea is usually difficult. The use of traps by professionals near the coast prevent them from practising their activity there. These conflicts are stronger now than in the past, and liners stress the fact that *"the sea is not reserved to professional fishers"*. Freediving fishers underlined the fact that they are less organised to *"fight for their interests compare to recreational and professional fishers and are often docked"*.

### Decisions making

Decision-making regarding recreational fishing is being challenged by some recreational fishers because it is based on poor catch data. To improve this data, they suggest the participation of recreational fishers to data collection whenever it is organized in their association.

## 3.3. Quantitative survey on English fishers

### 3.3.1. South Devon Pilot site

#### Fishing activity

Fishers interviewed were from the following home ports: Poole, Weymouth, Lyme Regis, Axmouth, Teignmouth, Torquay, Brixham, Salcombe, Kingsbridge and Plymouth. We received 12 responses in total, 5 commercials, 3 recreational and 4 were both recreational and commercial. The age of respondents ranged from 18-24 to Over 65. The majority of fishers (n=11) used rod and line to catch bass and pollack however two also uses nets and one also trawls for bass at certain times of year (Figure 2).

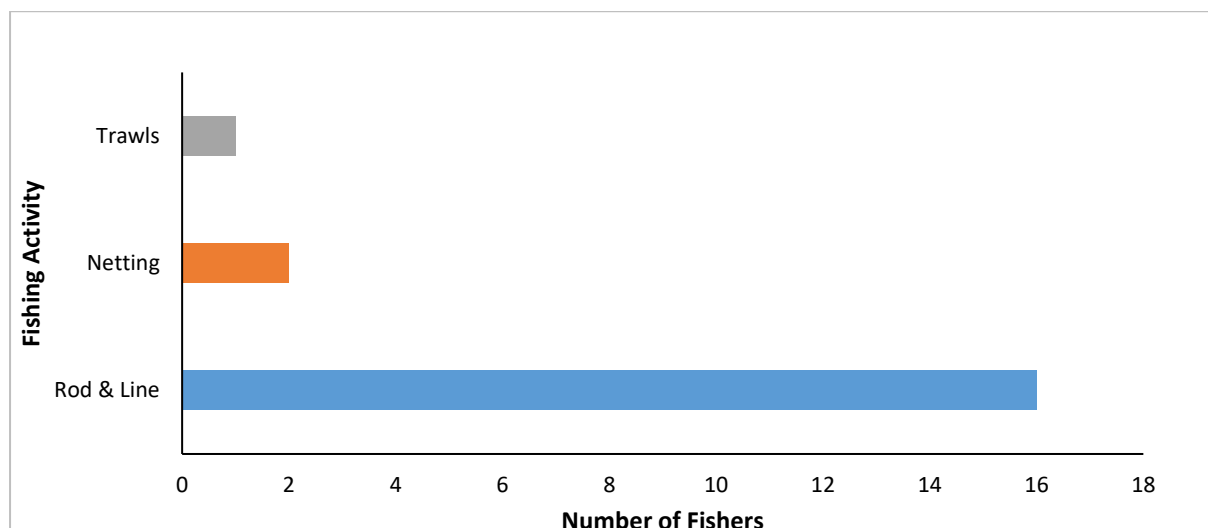


Figure 12 Fishing methods use to catch bass and pollack in South Devon region



## Health and Wellbeing

### Income Satisfaction

58% of fishers agreed that fishing supports their income satisfaction, the remaining fishers were recreational. Comments include “Main income “and “Issues with Quota”.

### Life Satisfaction

94% of fishers agreed that fishing supports their life satisfaction. Comments included “Fishing can be frustrating at times with changing regulations”, “Nothing makes me happier than fishing” and “A hobby I enjoy with friends”.

### Physical, Mental Health & Stress

62.5% of fishers agreed that fishing supports their physical health, 18.75% gave a neutral response and 18.75% disagreed. Comments included “Fishing takes its toll on the body”, “Strenuous at times” and “Keeps me active”.

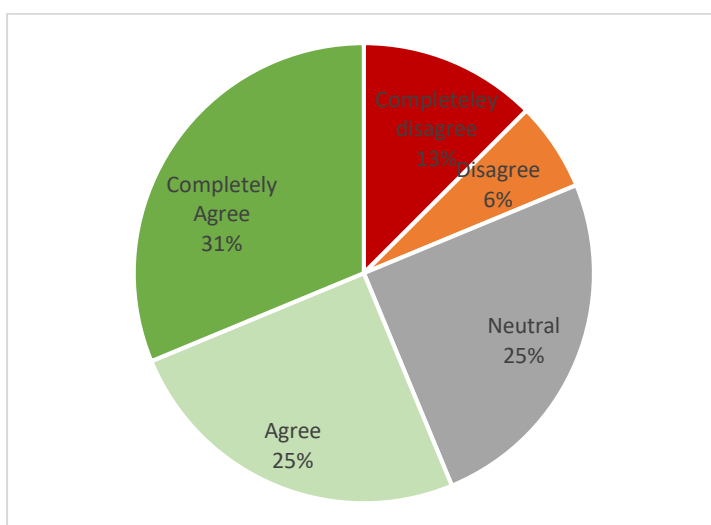
100% of fishers stated that fishing supported their mental health. Comments included “Good to be outside in the fresh air”, “Fishing is a good stress relief”, “Fantastic to be out on the sea fishing”.

22% of fishers stated they had very high levels of stress, 28% neutral and 50% no-low stress levels.

### Views on current and Mental management

#### Devon and Severn IFCA bylaws

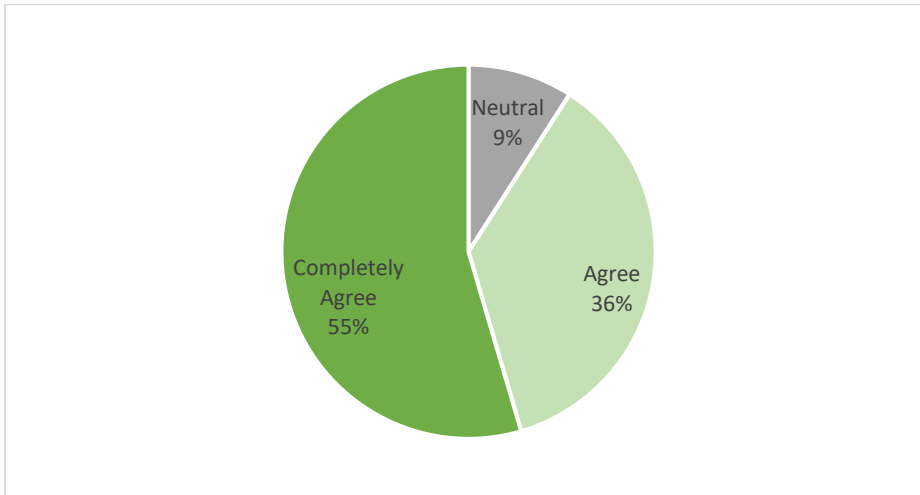
19% of fishers disagreed with the Devon & Severn IFCA byelaws, 25% were neutral and 56% supported them (Figure 3). Comments included “Why is there a difference in minimum landing sizes between Devon & Severn and Southern IFCA?”, “They do not listen to the fishers”, “Closed wrasse fishery without investigation”, “A lot of byelaws go over the top”, “Too slow to respond to developments”.



**Figure 13** Current levels of support for the Devon & Severn Inshore Fisheries and Conservation Authority District current Byelaws. On a scale of 1-5, where 1 = completely against and 5 = completely support.

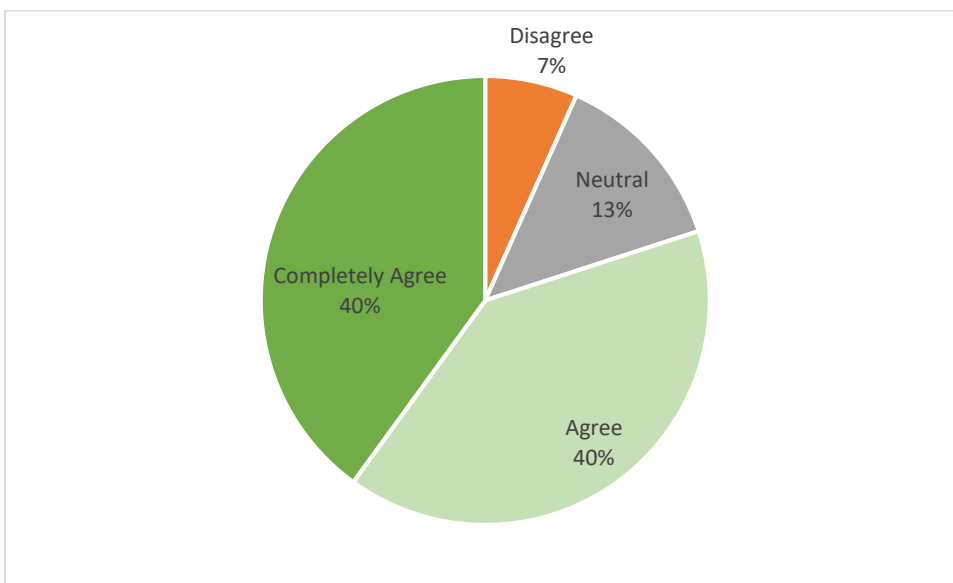
*Southern IFCA Bylaws*

91% of fishers agree with the Southern IFCA byelaws and 9% were neutral, the remaining fishers did not fish inside the Southern IFCA district (Figure 4). Comments included “They have fallen into line with Devon & Severn IFCA sizes” and “National Laws”.



**Figure 14** Current levels of support for the Southern Inshore Fisheries and Conservation Authority District current Byelaws. On a scale of 1-5, where 1 = completely against and 5 = completely support.

*Compliance with the Bylaws*



**Figure 15** On a scale of 1-5 do fishers stick to the rules, where 1 = noncomplete compliance and 5 = complete compliance, how would you rank levels of compliance at this time with the Inshore Fisheries and Conservation Authority District Byelaws.

The general consensus on the compliance with inshore fisheries and conservation authority district byelaws was good, 80% either completely agreed or agreed that fishers are compliant (Figure 5). Comments included *“people make mistakes but largely comply”, “commercial more likely to be compliant that recreational due to fines”, “recreational anglers are not aware of rules, more education needed”*.

#### *Bass nursery areas*

Overall bass nursery areas were seen very favourably, 94% of respondents supported these areas. Several fishers had observed the benefits of these areas since they were introduced. Comments included *“Agree with the science but enforcement is important- beach fisher not monitored”, “Bass also use the Axe which is not included”, “In Salcombe it has had a huge positive impact and there are a range of sizes withing the harbour now”*. The one unsupportive fisher stated that more evidence is needed on the consequences of BNA to other species such as flounders.

#### *Recreational bass limits*

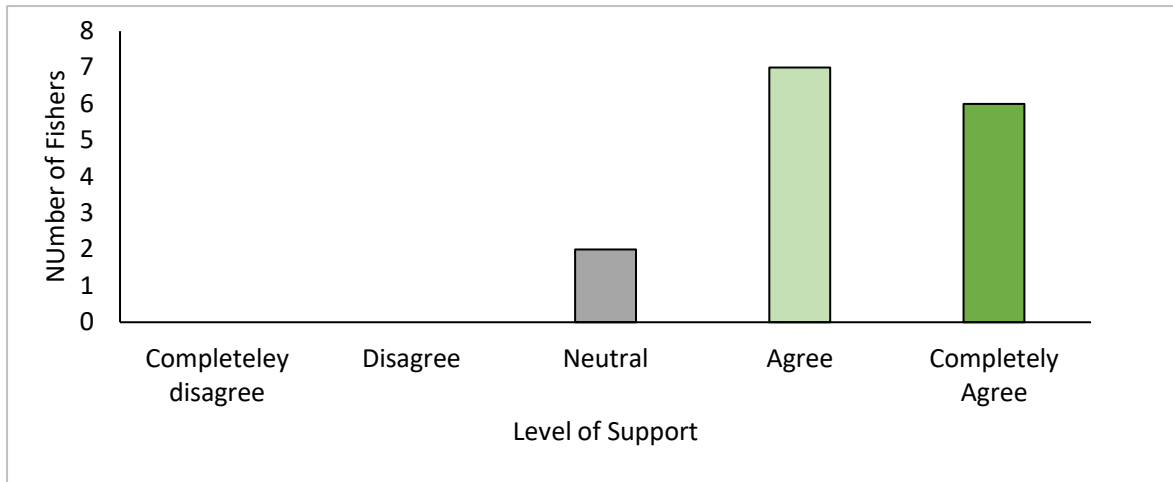
Most fishers agreed with the current recreational bass limits however some suggested there should be an upper size limit as well as a minimum size limit. It was also flagged that the closure periods for recreational and commercial fishing are not the same. The consensus was that people understand the current rules and they should not be changed too regularly.

#### *Minimum conservation size*

81% of fishers supported minimum conservation reference size limits and 50% suggested that there should also be a maximum landing size, particularly for bass. The recommended maximum sizes for bass ranged from 50-80cm.

#### *Essential fish habitat*

When asked if it was important to protect essential fish habitat (breeding, spawning, feeding, and juvenile grounds) from specific fishing techniques and or activities thirteen out of sixteen fishers agreed/ completely agreed and two remained neutral, none disagreed (Figure 6). Comments included *“It is common sense”, “Nets should be removed from bass fishery- rod and line only”, “This should be done through gear technology not gear bans-restrict number/length of gear”, “If areas were to be taken away from him it would significantly affect his fishing but he understands the importance.”*



**Figure 16** Level of support for protecting essential fish habitat from specific fishing techniques/ activities.

We asked the fishers to identify important habitats for juvenile and adult bass and pollack within the region. Juvenile bass habitat was identified as estuaries and shallow inshore waters including Salcombe estuary, Chesil Beach, Dartmouth Estuary. Adult habitat for both bass and pollack were identified as deep wrecks and reefs. Little information was known about juvenile pollack habitat but several fishers mentioned they aggregate to spawn on deeper wrecks over winter.

### Proposals for management

Various management ideas were suggested for both commercial and recreational fishers, these have been summarized in Table 1. The main areas of concern were the netting for bass and pollack, particularly during pollack spawning season.

Measure	Commercial	Recreational
Remove nets from bass fishery	✓	✓
Reduce quota for pollack in spawning season	✓	
Introduced quota for all species	✓	
Increase enforcement for recreational fishers		✓
Introduce gear restrictions- number, size length limits	✓	✓
Align the bass nursery areas closure periods for commercial and recreational.	✓	✓
Introduce a maximum landing size for bass (slot size)	✓	✓
Prevent pollack netting during spawning season	✓	
Work closely with the fishers on the ground- co management.	✓	✓
Marine Protected Areas need to be marked on charts		

**Table 1** Suggested management ideas for commercial and recreational fishing.

### Greatest Threats

When asked what the greatest threat to fish stocks currently are the most common answer was overexploitation by commercial fishing, particularly from French & Dutch trawlers in the Channel. The exploitation of pollack during spawning season was also mentioned several times as was the increase in number of seals locally. Rising sea temperatures altering the distribution of bait fish was also highlighted as an important concern.

### 3.3.2. Isles of Scilly pilot site

#### Fishing activity

Fishers interviewed were from the following home ports: St Marys, Brhyer, St Agnus. We received 7 responses in total out of a total of 9 crawfish fishers. Crawfish are targeted seasonally, and all fishers used tangle nets to catch crawfish.

#### Health and Well-being

##### *Income satisfaction*

100% of fishers agreed that fishing supports their income satisfaction, 15-30% of income is based on crawfish landings. Comments include *“lobsters are the wages, crawfish are our bonuses”*, *“Landing June-Sept 80% contribution”*.

##### *Life satisfaction*

100% of fishers agreed that fishing supports their life satisfaction. Comments included *“More fun than catching lobsters”*, *“More fun than hauling pot”*,

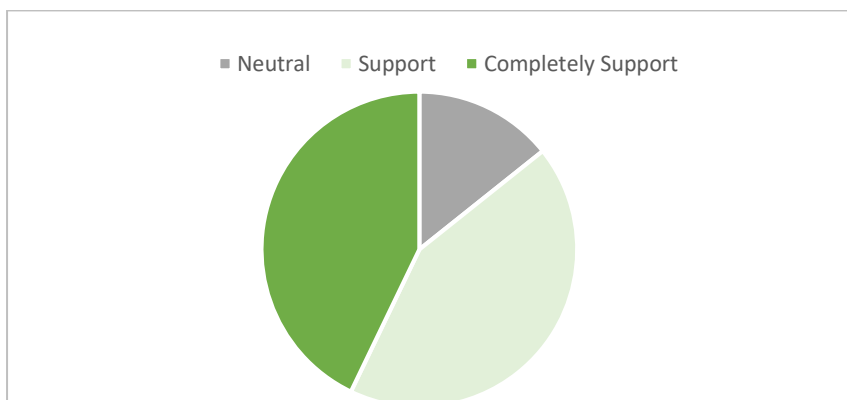
##### Physical health

100% of fishers agreed that fishing supports their physical health. Comments included *“Nets is a work out, more so than pots”*, *“always active”*, *“supports mental health as well”*.

#### Views on current and future management

##### IFCA Byelaws

86% of fishers supported the Isles of Scilly IFCA byelaws, and 14% were neutral in their support to the byelaws. Separate of the fisher are either on the IFCA committee or have been involved in the byelaws. Comments includes *“Not keen on hobby tags for pots”*, *“Wouldn’t want them to increase”*, *“Would like the dredging byelaw to be removed. Demand for wet fish on Scillies is high.”*



**Figure 17.** Current levels of support for the Isles of Scilly Inshore Fisheries and Conservation Authority District current Byelaws. On a scale of 1-5, where 1 = completely against and 5 = completely support.

### Compliance with byelaws

The general consensus on the compliance with inshore fisheries and conservation authority district byelaws was good, 100% either completely agreed or agreed that fishers are compliant.

### Minimum conservation reference sizes

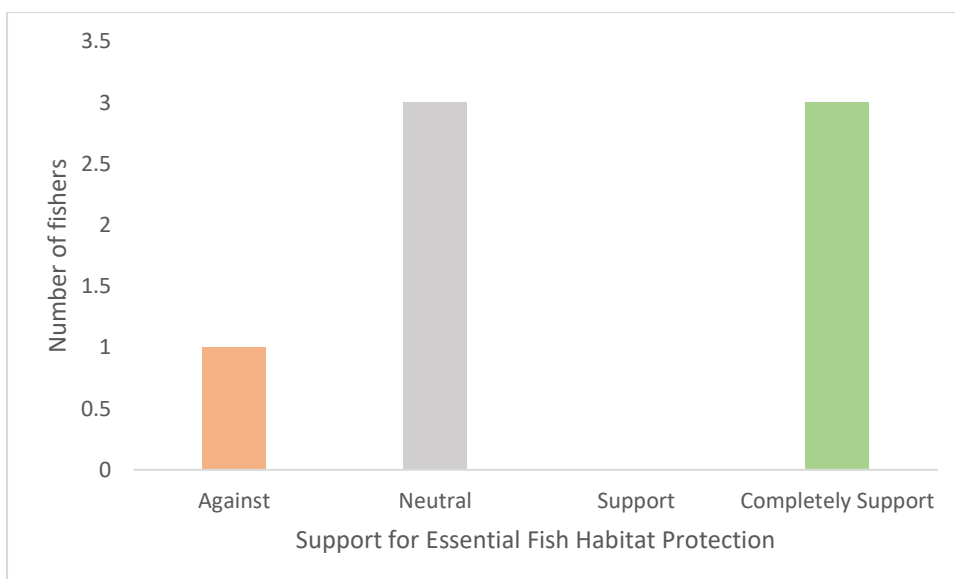
86% of fishers supported minimum conservation reference size limits and some suggested that the minimum landing size could be increased. Comments included *“No size limit over 6nm”*, *“Damaged are kept when voluntary”*.

### Notching

When asked if fishers supported the idea of v-notching crawfish only 2 out of 7 supported the idea. The remaining fishers commented *“No- might kill them. Very sensitive.”*, *“No-wouldn’t work too soft. Tails damaged.”*, *“Not needed and hard to do on crawfish.”*

### Essential Fish habitat

When asked if it was important to protect essential fish habitat (breeding, spawning, feeding, juvenile grounds) from specific fishing techniques and or activities 43% of fishers agreed, 43% were neutral and 14% disagreed. Comments included *“Lack of evidence for areas where species lay eggs etc. Impossible to know.”*, *“Hard to do with crawfish.”*, *“Support but needs consultation from ground up. In favour of no fish zone which would be changed every 3-4 yrs.”*, *“Would not want no fish zones. Small island and limited for space already.”*, *“Protecting status quo in favour. Agree strongly with co-management”* (Figure 18).



**Figure 18** Level of support for protecting essential fish habitat from specific fishing techniques/ activities.

### Proposals for management

Various management ideas were suggested; these have been summarized in Table 2. The main areas of concern were:

Measures
Closed areas
Worried about no take zones such as Lundy. Co management wanted
Leave it as it is. Natural fluctuations.
Weather is a natural conservation. Short season anyway Aug-Dec and only neap tides
No fish zones.
Increase the rules for outside of 6nm
Better working with merchants. Don't label fish as sustainable
Increase the rules for outside of 6nm

**Table 2** Suggested management ideas for Isles of Scilly

### Greatest threats

When asked what the greatest threat to fish stocks currently are the most common answer was Humans and overfishing. Particular concerns were around trawling and increased fishing intensity with large boats.

## 4. FUTURE PERSPECTIVES

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Fishers' local ecological knowledge helped to identify essential habitats, seasonal fishing, nursery areas, minimum conservation size, impact of conservation tools to the biodiversity and fishing activity. Acoustic devices in France and England (partly) have been deployed based on this knowledge. Such local ecological knowledge constitutes essential information for drafting proposals of ecosystem-based fisheries management (EBFM). Fishers' views on current and future management will guide the drafting of EBFM road maps to be discussed during the next round of workshops scheduled in January 2023 in French and English pilot study cases with commercial and recreational fishers, scientists, and authorities.

Economic satisfaction of fishers is an important aspect to assess the success or not of management rules at local and regional levels. Job satisfaction, physical and mental health, stress and working conditions are aspects informing decision makers on the social pillar of sustainable development of fisheries. FISH INTEL is a very short project of 23 months, making it impossible to fully assess its impacts on fishers' wellbeing and health, helping to document a first step for future work in this area to support longer term changes and assessments. These first results can be considered as a baseline for those who would like to go further and consider other areas which are also important to expand on this topic. For example, this work can contribute to establishing "Fisheries community's profiles" as required by the European Union (see Social Data in EU fisheries, STECF 19-03, Social dimension of the CFP, STECF 20-14, <https://ec.europa.eu/jrc>). The guidelines for the realisation of "Fisheries Communities Profile" prepared by UBO within FISH INTEL and submitted as part of the previous reporting is also part of this objective set up by the European Union.





## FIGURES AND TABLES

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