

Report: National Bycatch Focus Group Technical Meeting

Online, 2 – 4pm 21 July 2020

Summary

This report summarises the motivation, approach, and key outcomes from the National Bycatch Focus Group Technical Meeting, held remotely via Zoom on 21 July 2020.

A new, participatory study carried out jointly by the Centre for Environment, Fisheries and Aquaculture Science (Cefas) and the Department for Environment, Food & Rural Affairs (Defra) and in close cooperation with the Cornish fishing industry, aims to test the efficacy of various bycatch mitigation treatments for reducing the instance of cetacean bycatch in Cornish net fisheries. The input of local fishers is crucial to fostering industry buy-in to the study, and participating skippers have been closely involved in the study design to ensure it is inclusive of bycatch mitigation treatments that appeal to fishers. To optimise the study design, a power analysis has been carried out. This technical meeting of the national Bycatch Focus Group (BFG) was aimed at bringing stakeholders together to discuss the outcomes from the power analysis, as described in report produced.

With select BFG members, representatives from Defra, Cefas, and the Cornwall Regional Bycatch Focus Group (RFBG) – who partake in or oversee the study itself – were present and discussed the study and corresponding power analysis report, through a set of pre-submitted questions (see Annex 1).

Constructive discussions between BFG members, Cefas and Defra covered a range of key issues – these and the key outcomes and points of agreement from the meeting are detailed in this report. Cefas agreed to take feedback on board in finalising the power analysis report, and the group agreed on a number of key outcomes that could be considered by the RFBG in future work to reduce bycatch in Cornish fisheries.

Key Outcomes identified from the meeting

- 1) Messaging in the power analysis report will be updated to include some information presented at the meeting, and other answers previously provided by Cefas.**
- 2) There was broad agreement that the study's participatory approach is a good one, however there remained concern that difficulties around providing a statistically significant outcome from the study had not been conveyed to fishers – risking the industry being 'let down' by the end result.** The group agreed that fishers should be at the centre of the study design and implementation. Cefas took on board various comments about the need to communicate some key results from the power analysis to the skippers to allow industry a chance to continue to steer the future direction of the study in light of the findings through increasing the number of vessels and/or reducing the number of treatments.
- 3) The study should report on metrics of success for both the efficacy of bycatch mitigation treatments and the effectiveness of this level of participatory approach.** Cefas agreed with comments that the results of the study would be of interest to the wider programme of work reducing bycatch in UK fisheries, and so undertook to consider how metrics

of success could be reported on for both the efficacy of bycatch mitigation treatments and for the effectiveness of the participatory approach to help guide or shape future work.

4) Ongoing communication is essential – between Cefas and skippers, and between the national BFG group and the local group conducting the study.

There was broad agreement that communication is essential. Cefas confirmed that there will be stringent internal governance arrangements in place in the new, broader Clean Catch UK programme to ensure Cefas and Defra are undertaking sufficient, but not overwhelming communication with both the regional and national stakeholder groups.

5) Future work would benefit from more resources.

As is often the case, this project has made trade-offs in design and analysis because of resource limitations. For future studies on bycatch mitigation, the group recommended reconsidering how resources are used – for example by reducing treatment options, more resources would be available for data validation using electronic monitoring and subsequent analysis.

Participating National Bycatch Focus Group Members:

- Simon Allen, University of Bristol
- Catherine Bell, Defra
- Victoria Bendall, Cefas
- Andrew Brownlow, SMASS
- Rob Deaville, CSIP
- Georg Engelhard, Cefas
- Stuart Hetherington, Cefas
- Bec Kaye, MWC
- Emma Kelman, Defra
- Allen Kingston, SMRU
- Russell Leaper, IFAW
- David Maxwell, Cefas
- Chibuzor Nnanatu, Cefas
- Eunice Pinn, Seafish
- Katrina Ryan, MWC (Chair)
- Joana Smith, NE
- Nikki Taylor, JNCC
- Mariel ten Doeschate, SMASS
- Ruth Williams, CWT

Introduction to the meeting

Catherine Bell, the policy lead for UK fisheries bycatch work for the Department for Environment, Food & Rural Affairs (Defra) opened the meeting with a broad overview of the Defra and Cefas work on cetacean bycatch mitigation efforts in Cornwall. She explained that the work is part of a broad Government drive to develop a stakeholder-led, coordinated approach to tackling cetacean bycatch in UK waters, in a practical and risk-based way. Previous examples of effective collaborative working are being applied to South-west fisheries in Cornwall, a known area for incidental cetacean bycatch.

Catherine Bell said building relationships to develop trust is key to the current work in Cornwall, especially in the current political context against the backdrop of EU exit, where there is minimal flexibility to introduce new regulations which would require significant enforcement capacity to implement. Moreover, she added that successful policy is created when ‘stakeholders and fishing industry come along with you’ and re-emphasised that the UK Government’s bottom-up approach to reducing bycatch therefore inherently has a regional focus in order to address local issues. Working with South-west fisheries in Cornwall to reduce bycatch, Defra recognises that buy-in and involvement from the outset is key, because all participation by fishers is voluntary in these bycatch reduction studies. Therefore, working with industry to determine what they can practically do on their vessels, and why they are willing to take part, is crucial in securing fishers’ buy-in to the programme – and therefore also to the chances of reducing bycatch in UK fisheries. In concluding, Catherine Bell noted that, Defra and Cefas are confident the bottom-up, stakeholder-led approach will foster buy-in from

fishers, meaning there is a higher likelihood that any successful bycatch mitigation techniques will be taken up by the industry.

Stuart Hetherington from the Centre for Environment, Fisheries and Aquaculture Science (Cefas) and the lead researcher for the Cornish study, gave a presentation about the aims and purpose of the study underway in Cornwall, to give further context to the power analysis report about the statistical ‘power’ of the Cornish study design. The power analysis was circulated to the National Bycatch Focus Group (BFG) in April 2020.

Stuart Hetherington said that the current Cornish study aims to:

- 1) Demonstrate whether pingers and/or lights are practical, robust and effective at reducing bycatch of common dolphin and harbour porpoise in an inshore net fishery on the south Cornish coast – without increasing the bycatch of the other protected, endangered and threatened (PET) species.
- 2) Provide an evidence base for this and other similar net fisheries for practical, robust, effective, scalable approaches in bycatch hotspots to reduce cetacean bycatch, therefore contributing to the ambitions of UK Government policy to reduce and where possible, eliminate cetacean bycatch.

Stuart Hetherington reiterated that this study is not attempting to resolve the issue of cetacean bycatch across the whole of the UK, instead it hopes to deal with a regional issue, locally – using a bottom-up approach study design. The study has been co-designed with the local fishers through the Regional Bycatch Focus Group (RBF) and is now being co-implemented with the fishers who are at the centre of the study. The RBF was originally made up of scientists from Cefas, policymakers from Defra and representatives from the Cornish Wildlife Trust, the Marine Management Organisation, and Cornwall IFCA, as well as the local skippers from Cornwall who are at the centre of the group. Members from Sea Mammal Research Unit, Cornish Sardine Management Association, Arribada (creators of open source conservation technology) and Mindfully Wired Communications have also joined the group to broaden its reach and input.

Having talked the group through the range of research types that can include fishers in the process, Stuart Hetherington stated that the Cornish study is ‘fisher-dependent research’. This means that the study is co-designed with fishers, scientists and policymakers, that scientists then train fishers to collect data, and use Electronic Technology to validate data.

The fisher-dependent research happens while the fishers are at sea anyway – during what Cefas calls ‘Fishing as Usual’ (FAU). Cefas provides the fishers with the mitigation technology to use during FAU, and with technology to collect the data on target catch as well as on bycatch incidents. In order to facilitate this, an App has been produced and provided and cameras have been installed on two of the three vessels.

Stuart Hetherington talked through the process of study development and implementation and highlighted that the power analysis was completed in response to intersessional feedback from the National BFG during the summer of 2019, where feedback was sought over the statistical power of the planned study (see Figure 1).



Figure 1. The Journey: Trust, co-design and implementation of the Cornish study to investigate mitigation treatments to reduce cetacean bycatch

The study is testing three different mitigation devices in five different combinations. Due to the study's bottom-up approach, these five 'treatments' were proposed and agreed with the fishers as the treatments they would be most willing and likely to use after the study's completion.

The efficacy of these treatments at reducing bycatch of harbour porpoise and common dolphin will be tested by fishers during FAU activity over the course of 25 lunar cycles from when the study commenced in December 2019. There are currently three vessels operating in the study, with a further three due to come on board by October 2020. For the 12 months prior to the study commencing, the same skippers involved in the study were collecting self-reported data on cetacean bycatch – and these data were used as a baseline in the power analysis.

Stuart Hetherington emphasised that the project's ambition is more than just determining which treatment mitigates cetacean bycatch most effectively for Cornish net fishers. The study, and broader ongoing programme, hopes to create a safe space to engage fishers on the issue of cetacean bycatch, by putting fishers at the heart of the process and working with them to determine what approaches are actually going to be accepted by the industry on the water. Cefas hopes the skippers will become 'mitigation ambassadors' who will help spread the word of successful mitigation treatments amongst the industry. This bottom-up, collaborative approach is supported by Defra's commitment to responding to local issues with local solutions and working more closely with the industry to foster voluntary involvement from fishers without formal enforcement processes in place.

Stuart Hetherington concluded with thanks to everyone for their feedback on the study's power analysis, he noted that Cefas have absorbed this input and have worked hard to make the power analysis messaging clearer and made changes in the experimental design.

Key themes: Summary of group discussions of pre-submitted questions

A summary of the group's discussion of pre-submitted questions in response to the aforementioned power analysis report is outlined below, under the key themes that were raised across the eight pre-submitted questions, and the follow-up freeform discussion. The pre-submitted questions are included verbatim in Annex 1.

Power Analysis

The Question and Answer session covered many questions raised in response to the 'power analysis' – a report investigating the sufficient sample size and design required to achieve adequate statistical power to detect a meaningful result. The report was circulated to the BFG by Cefas during April 2020 for comment and has since been revised by Cefas following initial comments from the BFG.

There was broad agreement that it is imperative to avoid a situation where, at the end of the study, there is a gap between what the industry expects from the study and what it actually can deliver with expected bycatch rates – especially considering the length of this study. This view was echoed by meeting participants and is seen as crucial to ensuring longer-term engagement with the issue, locally, from fishing stakeholders. However, Cefas have reiterated that a statistically significant result is not guaranteed, and agreed that this will be continually be communicated with members of the RBFG. Andrew Brownlow (SMASS) encapsulated this as the need to define and communicate metrics of success for the research. Cefas acknowledged that comments provided on the power analysis report, and further questions asked at this meeting were broadly born out of this shared concern about ensuring a practical result. Cefas reiterated that their approach in collaboratively designing the study with fishers was to build trusted relationships with the fishers to cement industry buy-in in order that any result found to be practical and effective at reducing bycatch will actually be taken up by fishers. Additionally, Stuart Hetherington mentioned that due to prior work with the same skippers in the South-west, this means that they are aware of the 'risks' that come with taking part in a study – i.e. that a desired result may not always be achieved – and the skippers involved were still willing to remain engaged in the study despite that risk.

The power analysis showed that with the three vessels currently in the study, to encompass seasonal variation, the study duration should be no less than 25 lunar cycles. Some attendees suggested that preliminary data analysis and reporting back to the skippers could help manage expectations about the results of the study. However, Georg Engelhard (Cefas) stated the importance of not analysing the data based on a too short time-span, as seasonal variations in bycatch rates are likely and he noted that the power analysis showed that 25 lunar cycles should be long enough to account for the seasonal variability. Furthermore, the power analysis showed that with an additional three vessels (expected to join the study in October 2020), the study may be able to be shortened and so completed in October 2021, 12 months after the extra vessels join. David Maxwell (Cefas) referred to Allen Kingston's (SMRU) email comment that the point of the power analysis was to give an idea of what to expect, 'rather than predict exactly what will happen'. Alongside this he noted that the validated data could give the option of haul by haul analysis, and exploratory checking for outliers would be carried out as part of the analysis so a method of skippers recording context and what they considered unusual events would be valuable.

There was some concern around the quality of the skippers' self-reported data, and Cefas assured meeting attendees that the fishers' data would be validated and that trusting the fishers was essential to successful ongoing collaboration with the industry. Eunice Pinn (Seafish) queried whether there were data from the long-running Bycatch Monitoring Programme that could be used to help build a more robust baseline of bycatch and possibly cross-check the fishers' self-reported data. Chibuzor Nnanatu

(Cefas) reiterated that steps were taken to account for the various sources of variability including those due to methods of collection of data used in the power analysis. He also emphasised that ‘we are lucky to have data from the same fishermen and the same study site’, as there is an opportunity to see a direct comparison in bycatch rates before the treatments were applied, as well as the direct comparison built into the actual study design itself: where a treated net is paired with a non-treated net. Additionally, Stuart Hetherington mentioned that some of the Bycatch Monitoring Programme data were cross-checked against the self-reported data, which showed the self-reported data to be accurate and therefore further boosting Cefas’ confidence in the skippers’ reporting.

In light of comments about the relatively low numbers of bycatch in the 12 month self-reporting period, Chibuzor Nnanatu reassured the group that the power analysis was completed to account for the random and non-normal distribution of the data available, as well as the other uncertainties raised by participants including: how to manage the low effect-size cause by low bycatch rates, and how bycatch rates may vary between vessels.

Cefas agreed that there are some additional edits they can make to finalise the power analysis report – by making the language clearer around:

- 1) The fact that 5 treatments were chosen by the industry to support industry inclusion in the study and increase the likelihood of the success of the study.
- 2) The fact that if conducted over 25 lunar cycles, the study is predicted by the power analysis to be powerful enough to detect differences in bycatch probabilities between nets without mitigations and nets with mitigations.
- 3) How variability in bycatch probabilities across different vessels was assessed in the power analysis.

There were suggestions made about how trade-offs could be made in the study design to either 1) decrease the length of the study, or 2) increase the chance of proving the efficacy of a certain treatment. Given the focus on inherent trade-offs within the study design throughout the discussion, this theme itself is unpacked in more detail in a section below.

Designing a study so fishers will be invested in the process, and the results

Throughout the discussion on the power analysis, it became clear that many queries were based around concerns about whether the study was designed to best ensure a robust result, within a practical study method. In particular, there was concern expressed that 25 lunar cycles is a long time for a project to run, and if a non-significant result was found at the end of the study, fishers would be particularly disappointed and feel ‘let-down’ that their efforts had not amounted to a concrete ‘solution’ to the self-identified bycatch issue around Cornwall.

This concern was compounded by questions raised by Simon Allen (University of Bristol) and others around the number of treatments in the study. A question was whether with such low instances of bycatch in the baseline data, there would be enough ‘detail’ in the current study design to truly determine which of the treatments was the most successful at reducing bycatch.

Cefas participants wholeheartedly agreed that fishers should be at the heart of the study – and reiterated that the collaborative, fisher-led study design was employed to truly invest fishers in the process. Given that fishers had themselves identified Cornwall as a bycatch ‘hotspot’ – even though, as Catherine Bell explained, this is perhaps not the case in reality – it is even more crucial that the study does produce a meaningful result. Stuart Hetherington explained that five treatments are being used in the study because these were the ones specifically requested by the skippers. Cefas has understood that with the current number of treatments, unpacking which treatment is most effective, was much less likely than being able to compare mitigation as a whole against fishing as usual. Andrew Brownlow

thanked Cefas for contextualising the experimental design with the additional information presented during this meeting about the skipper's involvement, and agreed that any agreed mitigation or treatment needs to have buy-in from the industry. Andrew Brownlow also asked whether conducting some preliminary data analysis could help communicate about the predicted efficacy of certain treatments, to the fishers i.e. if one treatment was 'already' proving more effective than others.

Georg Engelhard confirmed that the current data collection suggests that the study is progressing steadily but reiterated that due to the low instance of bycatch and possible seasonal variation, Cefas are not looking to complete early analysis. Chibuzor Nnanatu seconded this, noting the power analysis results suggested that more data – at least 12 months – is needed before any statistically significant results should be reported, to avoid any misleading results.

Eunice Pinn acknowledged Cefas' desire to keep the study industry-led and seconded their commitment to the approach. She also cautioned that having no meaningful result of the study would be 'as good as having had mitigations imposed as a top down approach' and mentioned that improved communication with fishers about the likelihood of having no statistical results should be prioritised. This sentiment was echoed by ongoing discussions – and the question of whether Cefas was open to reducing the number of treatments in the study was echoed by a few participants.

Here, adding quasi-controls of inactive pingers was ruled out for the current data collection because it would increase the number of treatments and hence reduce the statistical power. In support of this, Allen Kingston said there were cases of bycatch being observed when pingers stopped operating so were inactive.

The group agreed that the participatory approach was crucial to having fishers' buy-in into the process and into the results of the study. They also agreed that this meant not only having a treatment that works but having one that was 'seen by industry to work': in that it was proved to reduce bycatch specifically in Cornish waters.

Given the focus this study has on the participatory approach, Andrew Brownlow suggested that perhaps the study actually has two categories for metrics of success that can be reported on – the efficacy of mitigation treatments and the functionality of the participatory approach and so the 'reliability' of the data. Cefas agreed that the study could potentially also provide 'results' on the success of the participatory approach. Additionally, Cefas noted that the ongoing communication was perhaps better with the RBFGB due to that relationship being critical to the success of the study itself, but acknowledged that communication with the national BFG could be more transparent in the new, wider Clean Catch UK programme.

Cefas were appreciative of the comments about the participatory approach, and stated that future communications about this study in context with the broader work on marine wildlife bycatch reduction in the UK would focus both on clearly promoting the important role of fishers, and on having a robust governance system for keeping the national group informed of progress.

Trade-offs and Transparency

Cefas agreed that, having listened to the group's feedback, there are some trade-offs in the study design that could be considered, in order to reduce the length of the study and/or improve the chances of showing the efficacy of a certain treatment. Furthermore, the group agreed that these trade-offs can be presented to the skippers in order to give them a choice about the future design of the study and so continue the participatory approach of the work. The trade-offs discussed were:

- 1) Increase the number of vessels taking part in the study, to keep its power while decreasing the overall length of the study

- 2) Decrease the number of treatments being tested in the study, to increase the likelihood of proving that a specific treatment is effective at reducing bycatch.
- 3) Increase the electronic monitoring in the study

In response to questions about the number of vessels in the study, Cefas reminded the group that an additional three vessels (taking the total number involved in the study to 6) were due to join the study in October 2020. The group also questioned whether communicating some specific results of the power analysis – i.e. the length of the study could be shortened if more fishers took part – could lead to the participating skippers encouraging their colleagues to also take part in the study, if they knew that they could get an ‘answer’ sooner by having more participants. Cefas agreed this was a good point and undertook to raise this in the next meeting with the RBF.

When considering whether continuing the study to test if the five treatments were effective at reducing bycatch, the group had concerns about whether the low rates of baseline-bycatch would mean that the efficacy of each of the individual treatments would be statistically significant. Some discussions around previous studies into the efficacy of lights and pingers at reducing common dolphin and harbour porpoise bycatch proposed that the combination treatments (using both) may in fact be the ‘same’ as just using pingers (as Allen Kingston noted that there is less evidence suggesting that lights have an effect on some cetacean species).

The point about communication and transparency was again raised with relation to this trade-off – with Simon Allen and Andrew Brownlow agreeing that a smaller and more robust study – i.e. with fewer treatments – should be prioritised. Cefas agreed that they would consider this point of view whilst also presenting some key results of the power analysis to the skippers e.g. the study duration could be shortened if a larger number of vessels were to participate.

Since the meeting however, Stuart Hetherington has sent an email to Mindfully Wired, explaining that the combination treatment was one specifically suggested by skippers as they believe the lights attract fish and so increase their target catch. In designing the study, the skippers voiced that if this combination treatment did prove to both increase catch and reduce bycatch, it would be the treatment most likely to be taken up by fishers into the future. Catch volume and location information about target catch is therefore being captured in the study design alongside bycatch information, to monitor the impact of the treatments on target catch, and also to analyse any ‘usual’ aggregations of species that may cause increased likelihood of a bycatch event.

At the meeting, the group agreed that presenting more information to the skippers to collaboratively determine a forward plan of action was a way to respect the participatory approach, whilst also acknowledging the statistics at play. This agreement should be noted by Cefas when talking to skippers about potentially removing treatments – but the broader context about the skippers’ preferred treatments should be considered too, as keeping all five treatments in the study may ultimately provide an end result that is significantly more likely to be taken up by fishers.

Allen Kingston and Mariel ten Doeschate (SMASS) asked about the coverage of electronic monitoring of vessels in the study, and how the footage was going to be analysed. Cefas explained that two of the three vessels in the study currently have electronic monitoring on board, and 100% of the footage would be reviewed.

Cefas thanked the group for the discussion and their helpful suggestions and undertook to consider how these trade-offs can be best presented to skippers, so that industry views can be incorporated into the ongoing study design and implementation – noting that either way, changes would be unlikely to be made before 12 months of data was collected and exploratory analysis on this carried out.

Communication

Although included throughout the summary of other key themes above, it is imperative to acknowledge some key points about communication for the study and broader bycatch programme of work, moving forward.

Firstly, the group agreed that communicating some key findings from the power analysis to the involved skippers may help guide the future design and implementation of the study. Specifically, Cefas agreed that they would tell the skippers:

- 1) Transitioning to having fewer treatments in the study may increase the likelihood of having a more statistically significant result, and
- 2) Having more vessels in the study could reduce the overall length of the study, therefore getting a result, sooner.

Secondly, Eunice Pinn referenced a case studies report completed by the seabird bycatch programme of work, mentioning that a report of this sort is a good vehicle for capturing the current state of play for seabird bycatch mitigation and monitoring. Stuart Hetherington recalled the 'Hauling Up Solutions' workshop and subsequent report did capture many of these issues for cetaceans but agreed that having some formal reports – that were not scientific papers – are useful tools for communicating about the status of programmes.

Finally, the group agreed that channels for communication between the Cornish RBF and the National BFG could be improved, to ensure stakeholders in both groups had insight into the workings of the other group. Cefas and Defra agreed, and noted that new governance arrangements for the broader bycatch programme of work would help to streamline the methods, opportunity and extent of information sharing between the groups.

In concluding the meeting, Catherine Bell thanked everyone for their time and input – remarking at the great commitment of the group in working towards reducing cetacean bycatch in UK fisheries. She also signposted that with the implementation of new Government policies around bycatch, the current BFG will be reworked in a new body that also considers reducing bycatch of other PET species.

There will be more formal information circulated to the meeting participants about the upcoming changes to the BFG, but rest assured that in the new Clean Catch UK programme of work, a robust governance structure will help guide routes of communication between Defra, Cefas and the stakeholder groups moving forward.

Conclusions and next steps

This meeting report, and the key outcomes outlined will be used by Cefas and Defra in finalising the power analysis report, and in communicating with both the BFG and Cornish RBF about the current study to investigate treatments to reduce cetacean bycatch in Cornish fisheries.

The report will be presented to stakeholders for information as part of the new 'Clean Catch UK: Joint Action to Reduce Wildlife Bycatch' programme of work, to be announced and commenced by Defra and Cefas in Autumn 2020.

Annex 1: Pre-submitted Questions

1. Do the initial data allow you to be confident that the current experimental design has the power to show a statistically significant effect between treatments by the time the study comes to an end?

and

Can an indication be provided of the volume of data collected in the trials to date?

2. When you modelled the study, did you look at what effect heterogeneity could have on the power to detect a difference in treatments, and if not what changes might be needed for the work going forward to ensure it delivers what is required?
3. Please can you elaborate on the previous explanation that ‘the event of bycatch is more likely to occur when more dissimilar vessels fish in Mevagissey Bay than with more similar vessels’ and that ‘as vessels become more different, the likelihood of bycatch increases’?
4. Is it not fishing effort rather than vessel type/dissimilarity, that warrants comparison?
5. With 5 treatments being trialled in a fishery, shouldn’t the number of treatments be reduced to increase the statistical power?
6. Is a quasi-control (of inactive mitigation devices) missing from the study design? Add: in no way like the idea of adding another control. BUT strictly speaking, having anything on a net may be the thing that stops a cetacean coming for the next.
7. What is the timeline for the study?
8. If there are incidence of bycatch rates above a more typical background rate, will these data be treated separately in the analysis?