Practical planning for industry-data collection:

using guidelines to build action plans in four case-study fisheries

Report of stakeholder workshop held January 24th-25th, Monkbar Hotel, York

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Executive Summary

This hands-on planning workshop was a joint initiative combining the work of Fisheries Science Partnership (FSP) project "Science Strategy for Industry Generated Data" (Cefas, NFFO) aimed at planning industry-science strategies for data poor fisheries, and the "Protocol Guidelines for Industry-Science" tool under development by the Fishermen-Science Interface Programme run by Fishing into the Future.

The workshop brought together a highly experienced and motivated team of individuals, and provided a unique opportunity for fishermen and scientists to sit together and plan and discuss data collection issues in detail, with a common aim of improving the evidence base in practical ways.

Together we addressed the practical issues associated with industry-science data gathering initiatives, a process that was facilitated by trialling the tool developed by Fishing into the Future to support the collection of such data. Four case-study fisheries considered the feasibility of introducing new schemes of data collection by the fishing industry, including: sea bass, brown crab/ lobster, skates and rays, and monkfish.

Each group focused on two parallel issues: i) generating action plans for their specific fishery; and ii) break-testing and commenting on the effectiveness of the Protocol Guidelines as a tool to structure and facilitate this planning process.

1. Introduction

There are increasing demands for data and knowledge on marine resources to effectively underpin management decisions. The fishing industry has considerable and unique capacity to help meet these requirements. However, while their involvement is considered important for the future of fisheries, many people are unclear about what it entails. Indeed, society requires sound sustainable marine management, and an adequate effectively applied evidence base is integral to that. From an industry point of view, the use of precautionary management and decisions on fishing opportunities/access have immediate consequences for business balance sheets and long-term viability. When there is insufficient evidence, the application of precautionary management often entails an opportunity-cost in untapped resources.

Making the best of data collected by fishermen is perhaps more important now than ever. This is because, while the need for better data, improved stock-assessments and real-time fisheries management is growing, research institutes and state-funded research efforts are suffering from reduced funds and capacity. Consequently, industry-led data collection schemes are increasingly encouraged to plug key gaps in stock assessments and supplement existing programmes. These are being encouraged towards regionally coordinated programmes based on sound statistical

design principles as they need to be compatible with existing data collections especially if they are to be combined in some way.

Developing guidelines on how to execute industry data collection programmes will not only assist scientists in making the most out of the information available to them in generating robust scientific evidence, but also empower fishermen, by providing them with the tools and confidence to collect relevant data. Data protocol guidelines will also support managers in establishing effective management measures based on salient information, particularly in cases where little or none currently exists, or where the level of resolution of existing data is insufficient.

With this background of stakeholders working for a common goal to see an enhancement in the information that is used to assess fish stocks and to evidence effective management measures, we co-hosted a participatory workshop under the Fisheries Science Partnership project "Science Strategy for Industry Generated Data" (FSP 50) alongside a separate initiative the "Fishermen-Science Interface Programme" run by Fishing into the Future (FIFT) with the support of the Scottish Pelagic Fishermen's Association (SPFA).

2. Workshop aims and objectives

The principle aim of the workshop was to discuss the practical issues associated with industry-science data gathering initiatives, trial the tool developed by Fishing into the Future to support the collection of such data and develop action plans for introducing new schemes of data collection by the fishing industry in four case-study fisheries including seabass, brown crab/ lobster, skates and rays, and monkfish. By bringing together a highly experienced and motivated team of individuals, the workshop provided a unique opportunity for fishermen and scientists to sit and plan joint data collection schemes to enhance current evidence base.

The specific objectives of this workshop were therefore to:

- Generate coordinated set of targeted actions towards data provision by the industry for each of the four case study stocks (seabass, brown crab/ lobster, skates and rays, and monkfish). This involved ○ clarifying evidence gaps, data quality/ precision etc ○ Practicalities of how data will be collected including appropriate approaches / technologies that can be used
    ○ Barriers to data collection – funding, incentives, etc ○ Actions/solutions to fill data gaps in light of the barriers

- Trial and comment on the effectiveness of the Protocol Guidelines as a tool to structure and facilitate the planning process for industry data collection schemes. The Protocol Guidance Tool is structured to help users think through, and repeat the steps necessary in planning and delivery of successful industry-science data collection initiatives.

3. Organisation of the workshop

The workshop was chaired by Barrie Deas, with assistance from Jim Masters and Dale Rodmell. It was attended by a total of 32 participants including 14 from the fishing industry, 6 scientists (Cefas), 2 policy officials (Defra), 3 fisheries managers (MMO, IFCAs), 2 industry scientific officers (SPFA, Pelagic Freezer Trawler Association, PFTA), 2 consultants, 1 representative from FITF, I representative from Seafish and 1 representative from SAGB (Annex 1).

The key sections of the workshop comprised of:

- Four power point presentations on background to the projects, the importance of participatory science and how it has evolved since 2000, attributes of successful industry data collection initiatives, and introduction to the data protocol guidelines.
- Two breakout sessions to discuss and plan industry-led data collection in four case-study fisheries: Brown Crab and lobster, sea bass, skates and rays, and monkfish
- Feedback sessions from facilitators on issues and progress towards action plans for each of the case-study stocks, and suitability and functionality of the protocol guidelines as a planning tool.
  (see workshop agenda, Annex 2)

The ensuing dialogue generated a considerable number of issues and concrete actions to take forward, which are summarised below.

4. Main themes from workshop discussions and presentations

4.1 Attributes of successful industry data collection initiatives

The key attributes of a successful industry data collection initiative include:

- Industry participation: from the grass roots
- Trust and understanding: making sure everyone is on the same page
- Incentives: Carrots are better than sticks
- Resources: it's not free data
- Feedback – fishermen need to see and hear progress

4.2 The value of dialogue and convening people around a common concern

- Getting people together – the right people – and providing an arena within which to explore issues, build relationships and work together to find practical solutions is hugely beneficial.

- Industry-science collaboration needs space and time to be effective, with social interactions being the heart of the matter – resources are needed to support this.

The power and impact of getting people together lasts longer than the time they spend in the room together – new productive relationships can be formed that lead to commitment to resolving issues and finding solutions long after a workshop has ended.

4.3 Simplicity from the outset

- The Data Collection Protocol tool needs to be simplified if it is to be used by other groups
- Language and concepts used need to be accessible for all – possibly supported by diagrams and animations to bring the ideas and process to life.
- It might be sensible to split the process into smaller steps to be completed one-at-a-time, possibly through a series of meetings.

4.4 Training and facilitation

- The role of the facilitator who oversees the planning process is key – and this person needs to be:
  - ➤ Confident and comfortable in using the protocol guidelines
  - ➤ Knowledgeable about their given fishery
  - ➤ Neutral but experienced in the field to keep the process on track
  - ➤ Understanding of their role, the role of the process and the other stakeholders in the room
- Training will be needed for any facilitators (in either facilitation skills or the protocol tool or both) to help ensure the process runs smoothly.

4.5 Coordination, convening and flow of information

- There was recognition of the need for regional/local coordinators to help build bridges between fishermen, scientists and managers and to parent bodies such as Defra and ICES. Employing industry scientific officers similar to those by Scottish Pelagic Fishermen's Association (Steven Mackinson) and Pelagic Freezer Trawler Association (Martin Pastoors) was highly encouraged. ⬜ This would require coordination and convening of resources.

4.6 Structure is important

- The Guidelines provide an effective structure to help move stakeholders through the planning process, bringing people back to the issues at hand and offering a way of navigating blocks and impasses through a focused framework.
- The guidelines provide a structure for the journey of collaborative science – bringing all along on this journey is important and new generations of both

fishermen and scientists need to become familiar with working together as a normal practice in the future.

5. Industry-science data collection plans for case-study fisheries

Discussions in the breakout sessions covered the twin strands on the workshop i.e. deliberation on issues and plans for industry-science strategies for data poor fisheries, while at the same time testing the utility of the protocol guidelines for industry-science data collection schemes. The key points raised for each of the case study stocks were:

5.1 Sea bass

Considerable attention has focused on sea bass with a number of on-going projects. These include a project run by IFREMER looking at the spatial distribution of the sea bass population, a survey based study of recruitment in the Solent; juvenile studies run by IFCAs and projects focusing on fully documented fisheries (FDF) programme.

Key issues related to sea bass include:

- The catches of recreational and semi-professional fishermen are unrecorded.
- Nursery and juvenile areas are not documented (not caught by fishermen given size of netting).
- Survivability of caught and discarded fish is not known. This is important given the enforced level of discarding at the present time.
- Landings data from MMO can be misleading due to the structure of the inshore fleet that keeps changing, with wholesalers owning boats and selling when prices are best.
- The question was raised about logbooks for the under 10m fleet to record data but there would need to be incentives.
- Problems were foreseen over the potential use of data made available for science being used for enforcement purposes.
- The reproduction of data year on year was probably problematic for the inshore fleet since many vessels were polyvalent and therefore did not have the same pattern year-on-year.
- The question was raised as to whether the plan needed to be fishery led because of the exclusion of juveniles and the activities of recreational anglers and charter vessels responsible for at least 30% of catches.
- As a result, a study of survivability in the context of the Landing Obligation probably offered the best way forward.

The sea bass group therefore effectively discarded the idea of fishery wide data collection since such a significant proportion was accounted for by undocumented recreational fisheries. As a result, discussion focused on the issue of survivability

and description of an action plan that would feed into existing planning and funding applications.

> There is a three-year extension to the Defra R&D programme on C-Bass and this could act as a source of funding.

- A proposal could also be written to target funding from the European Maritime and Fisheries Fund (EMFF).
- Possible immediate incentives: (i) catch app for younger fishermen. The app could be used to collate information and process into graphs etc. which also translates science into a tool fishermen can use to change on-water practice; (ii) direct payment for fishermen to collect the data.
- Long time-scale needed which might undermine motivation.
- There will be immediate actions but this might not translate into commercial benefits in the short-term.
- The question remains, how about Juveniles and protecting them and their areas? Sea bass nursery areas are coming under review and provision should be made for informing the relevant authorities e.g. Environment Agency and IFCAs.

5.2 Skates & Rays

The main issues related to skates and rays include:

- Problems with the variability of specific species within areas, leading to data gaps.
- Generic issues with a multispecies TAC for a wide area.
- Other member states reporting poor levels of small-eyed ray.
- Divergence in the evidence and its interpretation leading to no ICES advice and a general lack of consultation.
- Thornback ray seem to be increasing, whilst the situation for blonde and undulate ray was not as positive. Greater level of sampling was needed on the South Coast.
- In the Bristol Channel, small-eyed and blonde ray seem to be doing well.
- The need for biological parameters was considered with reference to catch data, underlining the need for standardisation of areas and gears to enable meaningful assessments of stock abundance.
- Existing data was discussed with particular reference to survivability (tanks, storage, tagging vs. vessel vitality), as well as stock structure and the identification of important grounds
- There was need for a package of overarching schemes to provide a framework for data dealing with abundance, CPUE and biological details (observers ageing and sexing) but it does need to be cost effective.
- It was important to distinguish between the knowledge gap and the data gap.

A major problem with skates and rays was the perception that there was a gap between local experience and regional data: so much depends upon the target

audience. In addition, there are problems due to the quota reductions which mean that it may be difficult to generate statistically valid data when too few vessels are targeting stocks, e.g. in Bristol Channel. Nonetheless, there is scope to design action plans which should focus on distribution, survivability and reproduction / recruitment.

- The focus should be on blonde ray but this could also be used as an opportunity to efficiently collect data from other species as well.
- Corroboration of results is required with independent sources to provide assurance of the validity of industry generated data.
- A forum is needed to bring together the MMO / IFCA / Industry and scientists on this issue.
- There is need for communication and identification guides to support the process as well. A good handling guide and other resources are available that have been rolled out across all fisheries.
- Industry-science ICES links need to be developed especially through appointment / employment of regional points of contact for all of the above.
- Resource requirements mean that fishermen need to be available to carry out the project and the MMO needs to be aware and allow fish to be caught in the first place.
- Avoid cycles of reducing the TAC on account of limited data as this will impact on evidence gaps = less certainty = lower TACs. This ultimately undermines the motivation to improve the fisheries.
- Long-term partnerships are needed to support effective projects.
- Stock units are important – not restricted to Bristol Channel, but this is a focal area where data is more readily available.
- Tangible bolt-ons will improve cost / benefits of industry research – e.g. information about other environmental factors and measures.
- A conduit is needed into ICES to pass information on and take this forward – this could be the responsibility of an appointee e.g. half Cefas, half industry?

5.3 Monkfish

The problem with monkfish is that there is one TAC for two species which are only easily distinguished at sea such that identification using landings is not an option. There is a 10-year time series data for monkfish from the South West. The question is how useful these data are towards distinguishing the two species? It would be possible for fishermen to separate the two species and put them into separate boxes at sea and to allow for on shore measurements. It was noted that in Portugal there is a premium for black monkfish which encourages separation of the species. One idea was to resurrect the outline of the old project provided it could be deemed sufficiently robust for scientific purposes.

The importance of a track record in this fishery for the period 2003 - 2011 is underlined since ICES has been assessing the species separately from 2014.

The following comments were made:

- Levers of power operate in a triangle and interactions/bridges need to be built between science/policy/management/fishermen.
  Need someone from ICES to advance the plan to ensure that it is robust (the group will be contacting ICES stock assessment scientists about this directly).
- On-board separation of monkfish is essential and then gather information on different populations from there (black and white monkfish).
- Policy will determine management implications.
- Roles of technology and other resources – should be possible to use automated identification of fish in the future.
- Grading process could develop length/frequency and weight data sampling protocols – need to tap into this potential.
- Incentives could include quota, involved in the management process and/or direct payment.
- Training will be needed for crew to help in fish identification.
- Feedback language will be very important e.g. infographics etc. that may illustrate trends better than other more dry methods of communication.
- Feedback needs to take place on two levels – immediate and annual (for the policy-makers).
- Communication is important. Out to wider audiences and needs a communications plan for the sector as a whole to inform social-media platforms etc.
- Previous FSP has stopped but a new scheme could be more commercially viable.
- The big question is how many vessels will be needed to carry out such a project?
- ICES Advisory Committee schedule needs plugging into the programme design to ensure integration.

5.4 Brown Crab

A number of data issues were raised related to the brown crab fishery including:

- Basic information on effort is not currently available.
- Further questions on how to define potting effort.
- Crab is a non-quota stock so it is not closely monitored.
- There is a need for indices of abundance and catch rates.

As a result there is a lack of institutional structures into which data can feed into. This situation means that there is difficulty in obtaining authority to make decisions. In addition, there are problems over artificial boundaries to jurisdictions. Thus, individual IFCAs have their own Byelaws and Regulatory Orders, whilst offshore there is a transnational regional approach. The importance of future proofing any data collection framework was underlined to allow for institutional evolution.

For all this to happen there needs to be agreed aims. These are difficult to obtain currently as there is mistrust among bodies and differing agendas.

The key issues discussed were:
- Lack of formal assessment / dynamic management scheme to feed data into is a major stumbling block for this fishery.
- Collecting all information needed all of the time is too much of a burden.
- Need an understanding of what is needed for practical management – what is the minimum for practical change to occur?
- Data Ownership – Data Protection Act and how it gets used for potential commercial benefit.
- Who gets to control and use the data?
- Engaging with fishermen is key – and the team has started devising a workshop programme.
- Programme needs to be delivered at locations where the fishermen are working to improve attendance.
- A Pathfinder Project in Holderness will do targeted data collection and could be a good platform to gain practical experience.
- This is a fishermen driven approach and also a good starting point to apply to other regions. Each region will be different; therefore 'road maps' will be different for each region as well.

6. Action plans for the case study stocks

In summary,

- The plan for sea bass is to measure survivability since a large part of the fishery was not accounted for by commercial fishermen. This plan is being carried forward.
- The proposal for monkfish envisaged returning to the historical surveys and adapting them to current circumstances.
- The skates and rays group decided to concentrate on a single species, blonde ray, and establish a plan that would build on existing data.
- Given the absence of a clearly defined national management structure for brown crab at present, it was decided to focus at the local IFCA level.

Annex 1: Workshop participants

	Name	Affiliation
Brown Crab and lobster		
Industry	Mike Cohen	North Sea
Industry	John Balls	South West
Industry	Mike Roach	North Sea
Seabass		
Industry	Pete Williams	South Coast
Industry	Ted Legg	South Coast
Industry	Dave Cuthbert	NUTFA
Skates and Rays		
Industry	Scott Wharton	South West
Industry	Paul Gilson	South East
Industry	Tony Delahunty	South Coast
Monkfish		
Industry	Andy Wheeler	South West
Industry	Steve Mosely	South West
Science Leads		
Crab and Lobster	Ewen Bell	CEFAS
Bass	Victoria Bendall	CEFAS
Skates and Ray	Jim Ellis	CEFAS
Monk	Georgina Greenhalgh	CEFAS
Others		
Monkfish	Phil McBryde	Defra
Crab and Lobster	Rachel Mason	Defra
Crab and Lobster	Matt Elliott	MMO
Skates and Rays	Libby Ross	DSIFCA
Seabass	Tom Clegg	KEIFCA
Crab and lobster	Colin Bannister	SAGB
Crab and lobster	Phil MacMullen	Seafish
Seabass	Martin Pastoors	PFA
Project Team		
Skates and rays	Dale Rodmell	NFFO
Skates and rays	Stephen Mangi	Cefas
Crab and Lobster	Tom Rossiter	Succorfish
Monkfish	Nathan de Rozarieux	Consultant
Seabass	Elizabeth Bourke	NFFO
Skates and Rays	Barrie Deas	NFFO

Skates and Rays	Stuart Hetherington	Cefas
	Jim Masters	FITF
	Steve Mackinson	SPFA

Annex 2: Workshop programme

Agenda			
Day 1 - 24ᵗʰ January			
12pm	Lunch		
12:30	Welcome and introductions		Barrie Dees / Dale Rodmell
12:45	Introduction	Background to projects	Stephen Mangi / Jim Masters
13:00	Industrygenerated data	Issues to consider when collecting data	Martin Pastoors
13:30	Review of past projects	Examples of best practice in planning industry-science projects	Tom Rossiter / Elizabeth Bourke
13:45	Data protocol guidelines	Introduction to data protocol guidelines and how we will use them today	Steven Mackinson
14:15	Break		
14:30	Planning Session (1)	Planning industry science in four case-study fisheries	Brown Crab – Ewen Bell Bass – Victoria Bendall Skates and rays – Jim Ellis Monkfish – Georgina Greenhalgh
16:30	Break		

16:45	Feedback	Feedback from each case study on progress made with plans	Brown Crab – Ewen Bell Bass - Victoria Bendall Skates and rays – Jim Ellis Monkfish – Georgina Greenhalgh
17:25	Summary remarks	Concluding proceedings for the day	Barrie Dees / Dale Rodmell
19:30	Evening meal		

DAY 2 – 25th January			
08:45	Arrival		
09:00	Re-orientation to task	Reviewing progress from previous day and setting targets for the remaining sessions	Barrie Dees / Dale Rodmell
09:15	Planning Session (2)	Case study – further development	Brown Crab – Ewen Bell Bass – Victoria Bendall Skates and rays – Jim Ellis Monkfish – Georgina Greenhalgh
11:00	BREAK		
11:30	Evaluation	Reviewing case-studies road-maps; horizon scanning issues for science, industry and policy	Martin Pastoors / Stephen Mangi
12:30	LUNCH		
13:15	Guidelines assessment	Evaluation of the suitability and functionality of the protocol guidelines as a planning tool – headlines for improvement	Jim Masters / Stuart Hetherington

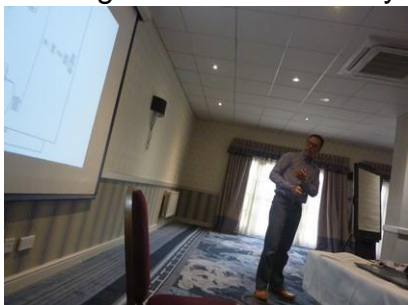| 14:00	Group discussion	Final remarks, thoughts, take-home messages and actions	Barrie Deas / Dale Rodmell
15:00	Close		

Annex 3: Photographs

Delegates listen to experiences of working on science-industry interface

Martin Pastoors presents

Steve Mackinson presents the data collection tool

Monkfish case study group

Skates & rays case study group

Brown crab case study group

Plenary discussion

Victoria Bendall feeds back from the sea bass case study group

Jim Ellis feeds back from the skates and rays group