

Report of the 1st EU-UK Expert Workshop on Pollack

Specialised Committee on Fisheries

18 April 2024

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Introduction

A change in assessment method, where the stock moved from the International Council for the Exploration of the Sea (ICES) category 4 (advice based on the ICES Precautionary Approach) to a category 2 ICES Maximum Sustainable Yield (MSY) framework), led to a substantial and negative change in the assessment of the stock resulting in ICES advice for zero catches in 2024. This led to a sharp 86% reduction in the Total Allowable Catches (TACs) agreed by the EU and the UK compared to the TACs set in 2023. In addition, due to the advised zero catch, the EU and the UK agreed that no targeted fisheries are permitted.

The substantive change in the advice has generated concerns from the stakeholders most affected and resulted in questions regarding the underpinning science. Recreational fishing also contributes significantly to the overall catch. This has also led to questions being raised about management of recreational as well as commercial activity.

During the annual consultations for 2024, the EU and the UK agreed to work together in the SCF, including the possibility of making a joint request to ICES regarding identification and quantification of bycatch, and separately the development of a roadmap to support a future benchmark, leading to an improved assessment of the stock. As part of an ICES request, the parties will also seek advice on potential refinements, including the full incorporation of recreational catches.

While the current advice on fishing opportunities for pollack in areas 6 and 7 for 2024 has been shown to be robust to a range of assumptions of recreational catch levels, the EU and the UK noted that recreational catches are likely to be a large component of the total catches. It was therefore agreed to increase our shared understanding of recreational pollack fishing in ICES area 6 and 7 and its impact on fishing mortality, with a view to the development and introduction of proportionate, effective, and non-discriminatory limits for recreational fishing that are likely to reduce fishing mortality subject to the EU and UK regulatory internal processes.

The parties agreed to take forward both workstreams jointly through the SCF as a matter of urgency during 2024. This document provides a summary of the first workshop of technical experts held virtually on 18 April 2024. The primary objective of the workshop was to receive updates on the latest scientific progress regarding commercial and recreational fisheries data associated with Pollack. The workshop focused on identifying the gaps as well as the short and long-term opportunities with the aim of supporting the EU and UK's initiative in formulating a roadmap to facilitate the 2025 benchmark for Pollack in Areas 6 and 7.

Commercial fisheries and ICES assessments

A presentation on the current assessment of pollack in Areas 6 and 7 was provided. The current ICES advice is based on a surplus production model in continuous time (SPiCT) assessment, endorsed at the Working Group SPiCT2 Benchmark in 2023. SPiCT replaces the previous data-poor depletion-corrected average catch (DCAC) assessment which was unable to provide MSY catch advice. SPiCT is increasingly utilized as an assessment tool for stocks characterized by an intermediate level of available data, encompassing catch data and a biomass index. The SPiCT model for pollack in Area 6 and 7 includes landings data (1986 to present) and a survey index constructed using a spatio-temporal model combining four surveys into a single index of abundance. Discard and recreational data are not included, although discards are deemed negligible.

Despite the recent benchmark there are still several concerns around the SPiCT assessment including:

- both the catch and the biomass index exhibit a declining trend, posing a challenge for the model to accurately estimate the scale of Spawning Stock Biomass (SSB) and Fishing mortality (F) relative to reference points due to this one-way trajectory
- the biomass index displays a clear downward trend but lacks precision, potentially overestimating the decline in the stock.
- the estimated fishing mortality trend does not correspond with the observed effort trends
- sensitivity analyses showed that the model was robust to constant recreational catches of 3500 tonnes and recreational catches representing a constant proportion of commercial catches, but the real trend may be very different
- productivity of the stock is assumed to be constant over time
- age data are available but not used in this modelling framework

Despite these concerns, the assessment demonstrates good diagnostics and is robust to a range of sensitivity analyses. All available information indicates that the biomass is currently below B_{lim} (biomass limit reference point), set at 30% of B_{MSY} (biomass that achieves the MSY), since 2015 (Figure 1). Even if the index increases considerably in the coming years, it will take several years before the stock has a possibility to recover to levels above B_{lim} under the current assessment.

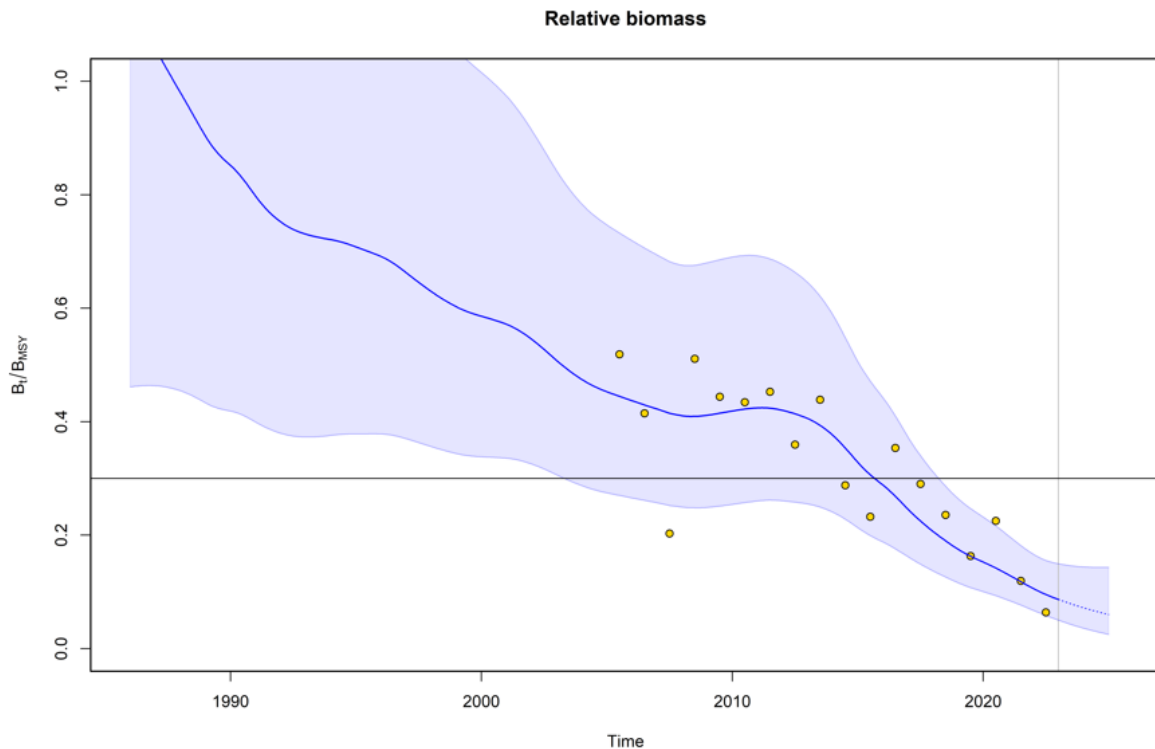


Figure 1: Outcome of the SPiCT model, relative biomass (B/B_{MSY}) of pollack in Area 6 and 7. The figure shows the decline in the relative biomass of Pollack in Area 6 and 7 from the 1980s until 2023.

To overcome certain limitations in SPiCT, a Stock Synthesis model (SS3) is currently in development. This model will enable the utilisation of available age and length composition data from both commercial and potentially recreational catches. It will utilise the same survey index as the current SPiCT model but is designed to manage gaps in sampling data from specific years. Furthermore, it's a multi-fleet model that includes three distinct commercial fleets (UK gillnets; other gillnets, and trawls), each with its own size selectivity. This feature provides the flexibility to incorporate recreational catches as a separate fleet, contingent upon data availability (refer to the recreational fisheries section).

The preliminary model was presented to the ICES Celtic Sea Working group (WGCSE) in 2023 and the working group proposed that the stock should be benchmarked again. ICES has planned for a benchmark in early 2025 with a data compilation workshop late in 2024. Besides the model itself, several data gaps were identified:

1. Unknown volume of recreational catches and trend over time (+survival of released fish).
2. Unknown stock structure – does the assessment area (6,7) make sense?
3. Unknown natural mortality (+trend) due to seals, possibly other changes in productivity (disease, spawning success).
4. Short time series of commercial age or length data (particularly for FR trawl).
5. No commercial indices of abundance.
6. Most under-10m landings have no gear types associated with them.

Stock structure

Presentations from the UK and France showcased the application of genomic and tagging methods to investigate the stock structure and abundance of pollack in the northeast Atlantic. These presentations underscored the limited understanding of the population genetic makeup of European pollack. Studies indicate that juvenile pollack tend to inhabit coastal areas and may undertake short migrations to nearby spawning grounds.

Existing genetic data suggest some degree of genetic differentiation, and that it could well be that pollock in areas 6 to 7 and those in 8 to 9 are the same biological stock. However, the evidence remains inconclusive due to data limitations. The lack of essential information on population structure and habitat connectivity poses a significant challenge and could greatly enhance stock assessment and management efforts.

Detailed summary by country

UK: Close-kin Mark-recapture

The UK has initiated a study using Close-Kin Mark-Recapture (CKMR) on pollack in Area 7.e. CKMR is an innovative genomic technique aimed at determining the population structure and size. Rather than relying on traditional scientific surveys to count individuals, CKMR involves sampling a subset of individuals, genotyping them, and comparing their genetic profiles to identify specific kin relationships, such as parent-offspring pairs (POPs). This approach is rooted in the principles of classical mark-recapture abundance estimation, but with a notable distinction: individuals are not physically marked, released, and recaptured. Instead, mature individuals are "recaptured" either directly by sampling themselves and their offspring (parent-child) or indirectly by sampling at least two offspring (half-sibling). In essence, with CKMR, the expectation is that in a large population, fewer relatives would be detected compared to a small population.

The aim of the project is to produce scientific evidence to support future sustainability of pollack fisheries. The initiative focuses on 2 key aspects:

1. Close-Kin Mark Recapture (CKMR) in ICES Division 7e:

The project, conducted in collaboration with the local fishing industry, targets the identification of spawning areas within ICES Division 7e. With the support of industry participants, muscle tissue samples will be collected from both juvenile and adult pollack in the period May 2024 to February 2025, totalling approximately 3000 individuals. Utilizing genotype-by-sequencing techniques, the project seeks to identify half-sibling pairs (HOPs), parent-offspring pairs (POPs), and estimate population size.

2. Population Genomics of Pollack:

In this phase, the project extends its outreach to involve the wider fisheries community in genetic sample collection. Genetic sampling kits will be disseminated to interested parties, facilitating the collection of muscle tissues from pollack across various ICES divisions. In a positive development, during the workshop, both Ireland and France expressed keen interest to participate in the initiative. CEFAS has agreed to dispatching genetic sampling kits to the relevant institutes and organizations.

Utilizing Whole Genome Sequencing (WGS), for example a genetic analysis method that involves sequencing the entire genome of an organism, alongside the reference genome of pollack, the project seeks to identify population-specific single nucleotide polymorphisms (SNPs) and conduct an in-depth analysis of population structure. This genomic approach promises valuable insights into the genetic diversity and distribution of pollack populations across different regions.

FR: stock identification based on genomics

France (University of Brest, UBO) is conducting a population genomics study (Advanced Communication Systems and Technologies). The study aims at genotyping about 1000 individuals across the entire distribution area of the species, using a low coverage Whole Genome Sequencing (lcWGC) approach. This methodology should be sufficiently powerful to resolve subtle population structuring patterns and will help in the identification of informative genetic markers for further stock identification needs. A total of 808 pollack samples collected all over Europe between 2010 and 2023 have been processed for DNA extraction (Figure 2). More samples collected in 2024 will be added, as well as historical samples caught in 2002 to 2004, to explore the temporal stability of the genetic structure patterns.

Initial trials of library construction have been effectively carried out at LEMAR (Laboratory of Sciences of the Marine Environment, Univ. Brest), with sequencing scheduled for summer 2024. Bioinformatics analysis is scheduled to commence in September or October 2024, with preliminary results anticipated by spring 2025. This initiative may also offer insights for the UK's CKMR project as the project will get

approximately 5 million markers (Single Nucleotide Polymorphisms (SNPs)) genotyped per individual. All parties endorsed to pursue collaborative endeavours where feasible.

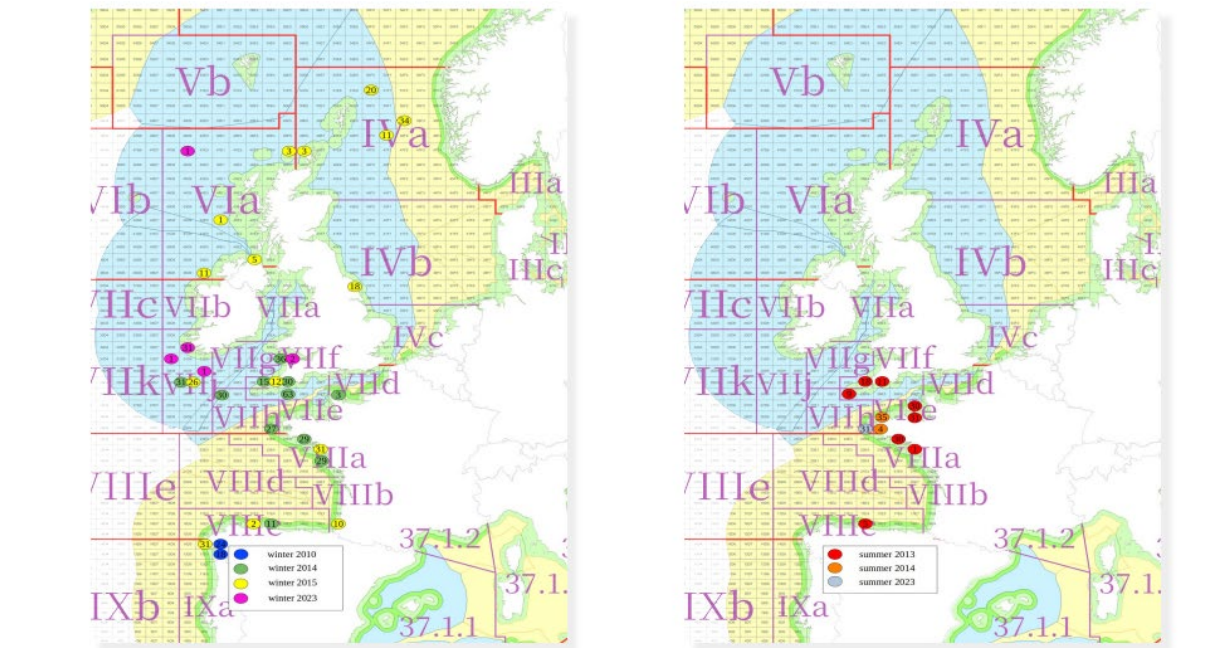


Figure 2: Sampling locations of pollack. The two maps show the sampling locations for pollack from all over Europe that have been processed for DNA extraction. The map on the right shows the sampling locations in winter of 2010 (2 locations in the north of Spain), winter of 2014 (10 locations in the Channel area and 1 in the north of Spain), winter of 2015 (5 locations around the North Sea, 3 locations in the Irish Sea, 1 off the coast of central England, 2 in the Channel, 2 in France and 2 in North Spain), and winter of 2023 (1 location in the west of Scotland, 3 in South East of Wales and 1 in the Bristol Channel). The map on the left depicts the sampling locations for summer of 2013 (3 locations in the South of England, 4 in the North of France and 1 in the North of Spain), summer of 2014 (2 locations in the North of France) and summer of 2023 (1 location in the North of France).

FR: spatial dynamics of pollack

The French national institute for ocean science and technology (IFREMER) conducted a tagging study aimed at analysing the spatial population dynamics of pollack (Gonse and others, 2024). This research utilized both acoustic telemetry and archival tags. Acoustic telemetry offers real-time presence data as fish move within receiver range, removing the necessity for tag recovery. On the other hand, archival tags capture environmental data upon retrieval, facilitating continuous path reconstruction of a fish's movement, especially beyond coastal areas.

In 2022, as part of the Fish Intel project, an extensive network of acoustic receivers were deployed along the French, English, and Belgian coasts in the Channel (Figure 3). A total of 83 pollack were tagged with acoustic transmitters, with 48 of them also double-tagged with data storage tags. Utilising both tagging methods increases the chances of continuously tracking the fish over time, thereby enhancing the accuracy of position verification, especially when the fish is within the range of the receivers. Following post-tagging survival assessment on a subset of 35 individuals, the procedure demonstrated a successful outcome, with a 97% short-term survival rate. By October 2023, the acoustic telemetry network detected 30 out of the 83 tagged pollack at least once.

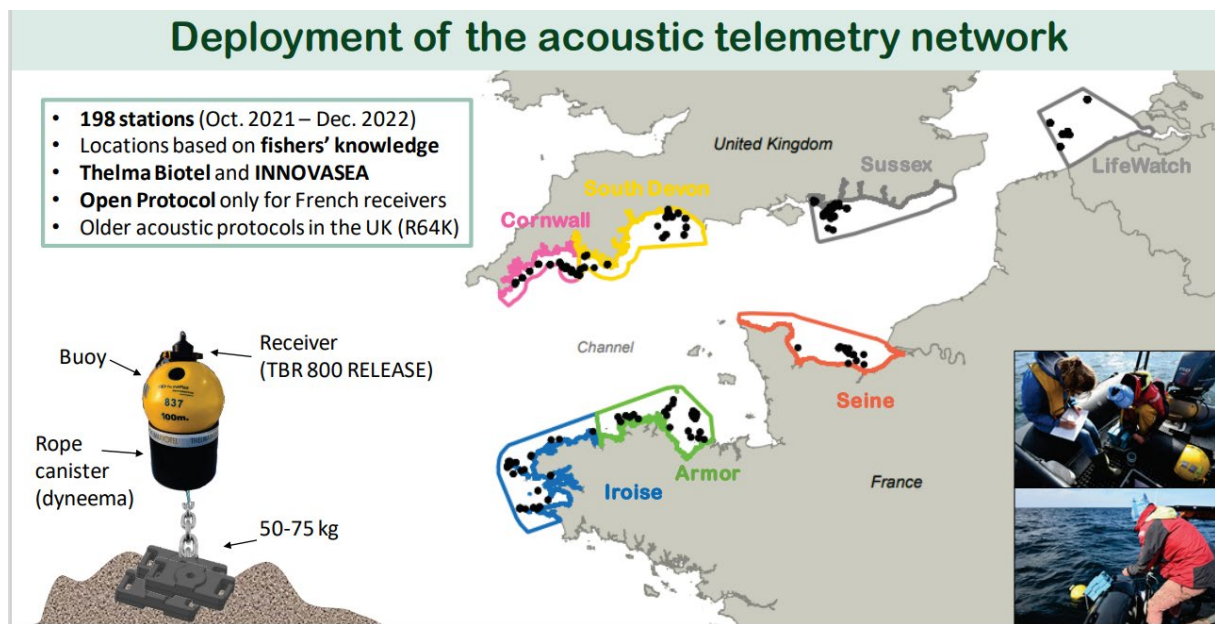


Figure 3: Deployment of the acoustic telemetry network along the French, Belgian and southern English coast. The figure is a map which depicts the areas of deployment of the acoustic telemetry network. In the UK stations are located in 2 areas in the English South West and one in the English South East. In France, there are 3 areas of deployment, 2 in the North West of France and one in the North of France. Finally, stations were also deployed off the coast of Belgium. The map shows the combined 198 stations deployed from October 2021 to December 2022. The map also shows a diagram of an acoustic receiver as deployed with a buoy, rope canister (dyneema) and anchoring weight.

The research observed no significant cross-Channel migration (Figure 4). Seasonal presence within the network varies, with a peak during summer, notably among young fish. By integrating acoustic data with temperature and depth readings, a geolocation model successfully reconstructed the trajectories of 10 recaptured pollack, seven of which were previously detected by the network. This integrated tracking method unveiled coastal movements along Brittany's coast in France, emphasizing the ecological importance of the Iroise Sea for pollack year-round

(Figure 5), especially during summer. Additionally, the geolocation model indicated movements toward the western Channel entrance.

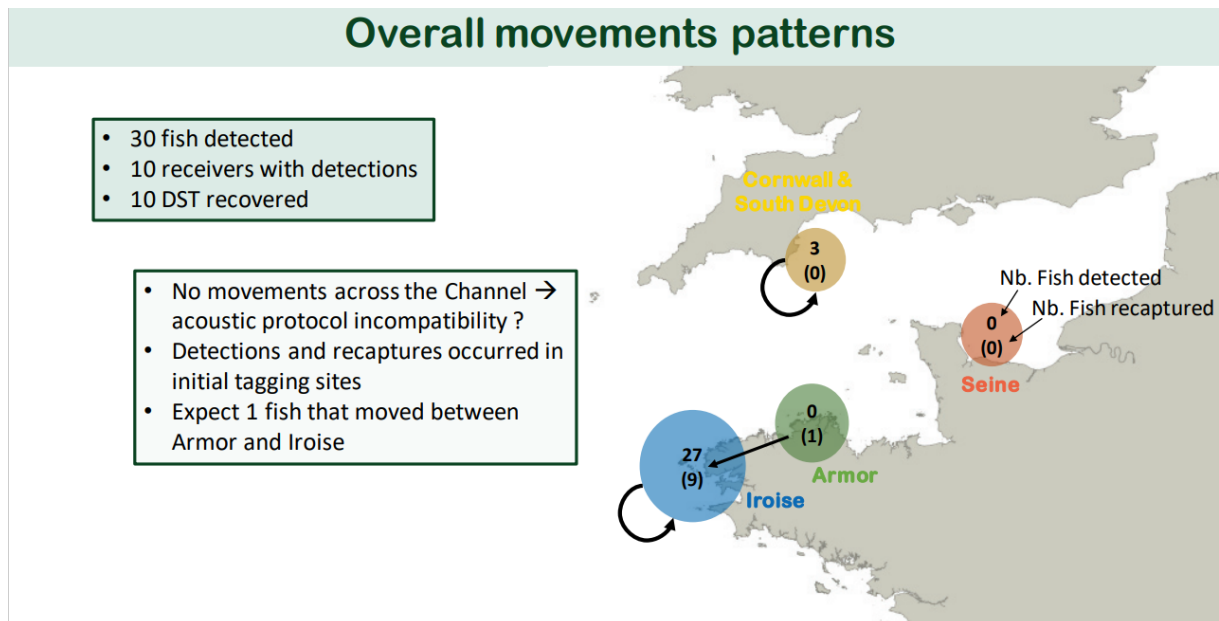


Figure 4: Movement patterns of pollack tagged in the Channel. The map shows pollack movements detected through the telemetry network in the Channel. Overall, there were 30 fish detected, over 10 receivers (the map shows that all detections and recaptures occurred at the initial tagging sites, with the exception of one fish that moved between the Armor and Iroise regions).

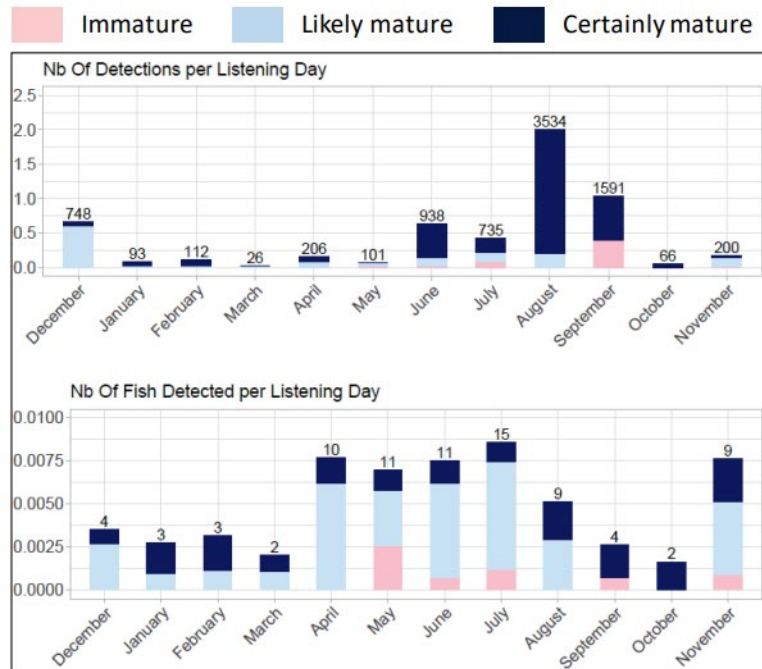


Figure 5: Seasonality of the acoustic detections in the Iroise Sea. The map with embedded graphs provides an analysis of the acoustic detections from the Iroise Sea through 2 graphs. The first graph shows the number of detection events, which increases from June to September, with the highest number in August. The second graph shows the number of fish detected each day, which increases from April to August, and again in November.

Next steps commercial

The next steps on commercial pollack focus on the elements that could be used to inform the stock assessment and thus, could potentially be tackled in the data compilation in November 2024. Additionally, they focus on identifying the initial steps that would need to be taken in the longer-term data elements for subsequent benchmarks.

Regarding the stock structure, uncertainties persist, and genetic research remains ongoing. The group advocated for a collaborative approach among institutes to enhance the analysis. Sequencing data will be obtained at Univ. Brest during the autumn 2024. This means that the first population genetic structure results will be available during the Spring 2025 (although unlikely that full genetic analysis will be available in time for the 2025 benchmark). ICES highlights that a comparable approach to the one used for seabass in the past where multiple benchmarks were needed. This suggests that additional benchmarks should be anticipated beyond 2025, as new data and scientific understanding become available, potentially leading

to later adjustments in the current stock structure. ICES noted the existence of a joint request from the EU, Norway, and the UK regarding cod genetics. There might be an opportunity to leverage the findings of that request to plan the genetic sampling and analysis of pollack.

Natural mortality is a critical factor in fish stock assessment, representing the rate at which fish die from natural causes like predation, disease, and aging, independent of fishing activities. It's vital for accurately estimating population dynamics and overall stock abundance. However, determining natural mortality poses challenges. While it typically increases with younger ages compared to older ones, exploring its values is crucial, especially with potential variations over time, such as seal predation on pollack which may have increased in recent years. Addressing this requires dedicated, long-term data collection and multispecies modelling, potentially through the ICES Working Group on Multispecies Assessment Methods (WGSAM).

A request has been made for an extended time series of commercial age or length data to support the assessment process. Specifically, there's a focus on acquiring French trawl data. France has expressed willingness to explore this data further, although uncertainties remain regarding the feasibility of obtaining more detailed and extensive records. Similar feedback was provided regarding the request to allocate landings from vessels under 10 meters in length to specific gear types.

The abundance index currently used in the SPiCT assessment has a low precision. The four surveys used to obtain a single index of abundance do not fully cover the spatial distribution of the stocks, in addition, catches of pollack are low. In such cases, it could be interesting to investigate developing commercial indices of abundance as a complementary source of data. While scientific surveys provide standardized and systematic assessments of fish populations, commercial indices offer insights from the perspective of actual fishing activities. The integration of both data sources may enhance the accuracy and reliability of the stock assessment. This is becoming a more common approach to be used and the group discussed the option of setting up a dedicated workshop on the use of commercial data for building biomass or abundance indices. ICES Working Group for the Bay of Biscay and the Iberian Waters Ecoregion (WGBIE) developed Landing Per Unit Effort (LPUE) routines for the assessment of sole (8ab), whiting (89a) and pollack (89a), using data from French fleets (gillnetters and trawlers). The potential of this approach could be tested to provide a biomass index for pollack in Areas 6 and 7. To allow such indices to be of value to the new assessment such working group should be set up relatively quickly. This workshop can be organised by ICES as part of the lead-up to the benchmark.

Recreational fisheries

Presentations on the magnitude and issue of recreational catches were made by the UK, Ireland, and France. These all provided estimates of catches including

associated errors, but also highlighted the challenges in generating robust estimates of recreational catches and potential biases. There are challenging practicalities involved in generating recreational catch data through on-site and off-site surveys, with significant efforts however made to generate representative data with known errors and assessment of bias that can be assessed through sensitivity analysis. In addition, it is a challenge to bring together national estimates as different approaches have been used. Despite the uncertainty, recreational catches are a significant source of pollack mortality and one of the key priorities is to include recreational catch as an input for the stock assessment. This will require work during 2024 in order to have a combined time series of catch data. Both the UK and France have time series of data back to 2018 (FR) and for the UK from 2012 (onsite), with continuous annual estimates since 2016 (diary). For Ireland, data from a pilot study between 2019 and 2021 is available, with a full data collection programme now in place.

To give a sense of the level of recreational catches, in 2022 the UK estimated a total of 583 tonnes caught in ICES areas 6 and 7. This is broken down by ICES division, with the majority (45%) originating in division 7e. It is estimated that 54% of the catch (317t) was released with a mortality rate of 35%, resulting in a removal (landing plus fish that die on or after release) of 378t. Survival estimates are considered uncertain and further work is required to provide more robust estimates, and also to investigate measures to reduce release mortality through improvements to handling and use of release devices. For the same year (2022), recreational catches in France were estimated to be 847 tonnes (including 145 tonnes released) on the Atlantic coast (for example, for ICES divisions 7d, 7e and 8a). This also includes catches originating in ICES Divisions 8a, which ICES considers to be a separate stock from the Celtic Seas and Channel stock. Between 2021 and 2023, 71% of French recreational catches from the Atlantic coast are considered to be from Division 8a. For Ireland shore and private boat catches in the Eastern region (divisions 7a and 7g) were estimated at 535 tonnes in 2022 with an estimated 76% (409t) released. Countrywide, Irish charter boats caught an estimated 143 tonnes, of which 41 tonnes (29%) were released. Irrespective of the uncertainties surrounding the precision of the estimates, total removals by the recreational sector are considerable.

The UK recreational data (Figure 6) shows an increase in catches between 2012 and 2016 to 2023, but these are not directly comparable as they were collected using different survey approaches. Where a consistent approach has been used from 2016-23, both the retained and released components fluctuate, but cannot be considered to be different as the confidence intervals overlap. The French data (Table 1) shows a marked decline in the last two years compared to the preceding estimates between 2018 and 2021, but it is unclear whether these changes are within the bounds of error. The estimate from 2008 was collected using a different approach to the current survey, so should not be considered directly comparable. Recreational angling catch estimation is a relatively new activity in Ireland. The pilot study 2019 to

2021, and subsequent surveys in 2022 and 2023, identified some refinements related to sampling for each angling element (shore, small boat and charter vessel sector). As the methodology has evolved these refinements have been incorporated to improve sampling efficiency and data collection for future on-site surveys aimed at improving catch estimate quality.

It was proposed that ICES should organise a separate workshop as part of the benchmark process to compile the best available information on recreational removals; a similar process is taking place for the 2025 seabass benchmark. The workshop should aim to provide a time series of removals (taking into account best available information on survival of released fish as well as the uncertainty around the estimates) and identify a range of scenarios for the period where no quantitative data are available. Length frequency distributions, ideally on an annual basis, should also be compiled.

Detailed summary by country

UK

Catches of pollack by sea anglers in the UK have been collected using a variety of methods. In 2012, an onsite shore and private boat survey was combined with a charter boat diary to provide retained and released catches. Each year since 2016, an offsite diary programme has been used to estimate catches and provide a consistent time series of pollack catches for England and Wales. [Visit the Sea Angling Diary website](#). The diary estimates were much higher than the onsite survey, so can be considered a conservative worst case, with the onsite Catchwise [survey](#) underway to assess and correct for bias in the diary estimates. In addition, the Pollack FISP project is working with a consortium of ten charter boats to provide data on historical and current catches, biological data, and behavioural studies. Data from the sea angling diary was used to illustrate an approach to provide estimates of pollack removals for England and Wales in 2022. Finally, methods for inclusion of recreational fisheries in advice were highlighted alongside suggestions for how to approach the next benchmark.

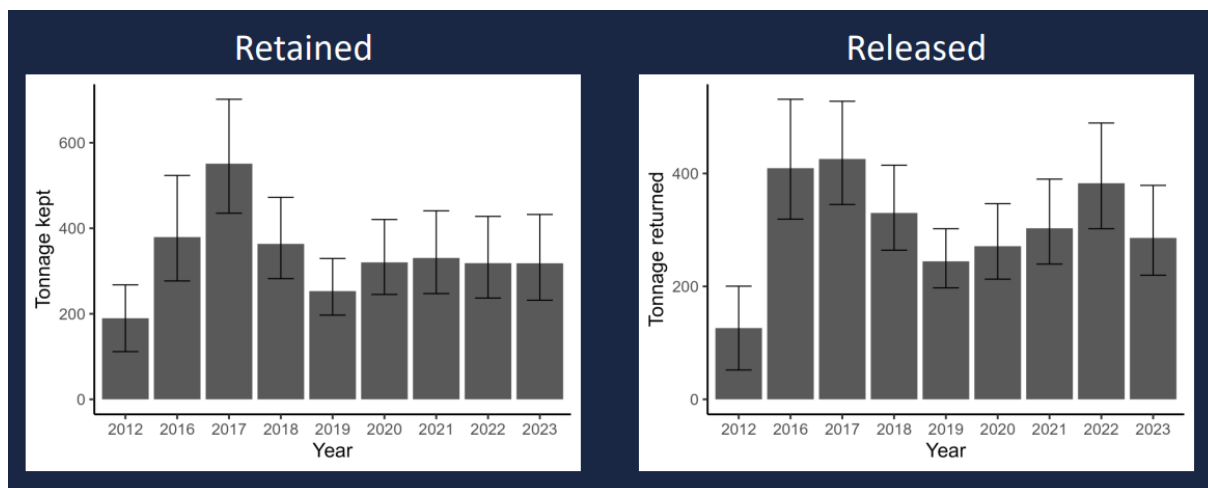


Figure 6: Time series of recreational catches (retained and released) for the UK for the period 2012 to 2023. The image consists of 2 graphs. The first graph shows the yearly tonnage of retained pollack recreational catches from 2012 to 2023. The amount of retained catches increases from around 200 tonnes in 2012 to more than 500 tonnes in 2017. The tonnage then drops to around 400 tonnes in 2018, dropping further to below 300 tonnes in 2019. From 2020 to 2023 the tonnage stays relatively stable around 350 tonnes. The second graph shows the yearly tonnage of released recreational pollack catches. The returned tonnage in 2012 was approximately 120 tonnes, rising to around 400 tonnes in 2016 and 2017. The tonnage then shows a decreasing trend dropping to around 220 tonnes in 2019. In recent years there is an increase in the returned tonnage with a peak of around 360 tonnes in 2022, dropping to approximately 300 tonnes in 2023.

Ireland

The Irish Marine Recreational Angling Survey (IMREC) began in 2019 to estimate angler catches as required under the EU DCF. No angler registration system exists in Ireland, for a sector where shore, private boat, and charter angling are the main angling platforms. Annual catch estimates, for shore and private boat angling, are derived from angler population and fishing effort data, combined with Catch Per Unit Effort (CPUE) data collected during probabilistic creel surveys. An onboard sampling programme allows for estimation of retained charter angling catch. A web-based voluntary angling diary confirms pollack's prominence in angler catches. Knowledge deficiencies persist, including moderately imprecise annual effort estimates, especially for private boats, and a lack of post-release survival data.

France

Since 2017, two-stage off-site surveys have been conducted in mainland France with the objective of assessing the volume of catches of the principal recreational species, including pollack. Between 2019 and 2021, catches along the Atlantic coast

decreased from 2165 tonnes to 1087 tonnes, with a further decline to 591 tonnes in 2023 (Table 1). Based on a recent logbook survey of 74 panellists (excluding spearfishers and charter boats) between 2021 and 2023, catches were estimated at 932 tonnes (712 tonnes retained, 220 tonnes released). These data are used to estimate catches at ICES division level (Figure 7). Over the above period, 218 tonnes and 163 tonnes were caught per year on average in the eastern and western Channel respectively. The observed trend indicates a significant decline in the quantity of fish caught by recreational fishermen along the Atlantic coast.

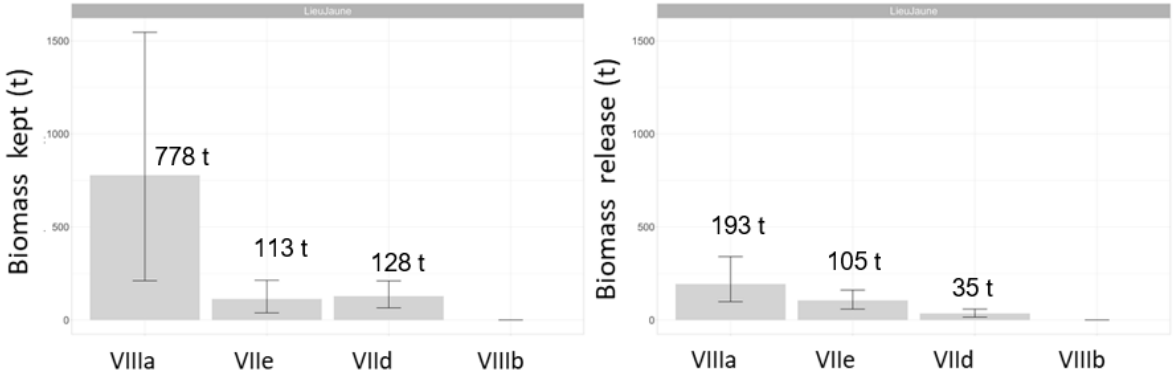


Figure 7: Retained and released French recreational catches by ICES Divisions for the period 2021-2023. The figure is made up of 2 graphs, showing the breakdown of the biomass of pollack from French recreational catches that was kept (on the left) and released (on the right). The majority of pollack biomass that was kept originated from the 7a region (778 tonnes), followed by 7d (128 tonnes) and 7e (113 tonnes). The highest biomass kept also originated from 7a (193 tonnes), followed by 7e (105 tonnes, and 7d (35 tonnes).

Pollack (<i>Pollachius pollachius</i>)	French commercial landings in tonnes, divisions 8a and 8b	French commercial landings in tonnes, divisions 4b, 4c, 7a, and 7 d to 7h	Total French commercial landings in tonnes	Total retained recreational catches in tonnes	Percentage of commercial landings
Year					
2008	1732	1606	3338	3500	105%
2009	1371	1686	3507	No data	No data
2010	1170	1859	3029	No data	No data
2011	1475	1801	3276	No data	No data
2012	1131	1430	2561	No data	No data
2017	1219	960	2179	No data	No data
2018	1220	819	2039	1933	94%
2019	1189	550	1739	2165	124%
2020	1174	584	1758	No data	No data
2021	987	584	1571	1087	70%
2022	805	494	1299	702	54%
2023	No data	No data	No data	591	46% (2022)

Table 1: The table provides French landings data for Pollack in areas 8a, b and areas 4b,c, 7a,d-h alongside estimates of French recreational catches for the same area.

Next steps and key tasks from the expert workshop

ICES timetable to benchmark

For benchmark in 2025 for WGCSE in 2025.

This is the current timeline as we understand it from ICES for the benchmark for 2025:

- November 24: Data compilation workshop – all new data to be used in the upcoming benchmark should be ideally ready by then
- January 25: Benchmark meeting
- February 25: Benchmark report submitted
- March 25: Benchmark assessment approved by Benchmark Oversight Group (BOG) and Advisory Committee (ACOM)
- April 25: Newly benchmarked assessment updated by WGCSE
- June 25 New assessment used for 2026 advice

It was noted in the workshop that an option could be to delay the benchmark for WGCSE until 2026 in order to allow for input of additional data, however it was also raised by ICES that this benchmark could be an iterative process and that having a benchmark in 2025 would keep momentum going whilst not ruling out the possibility of subsequent benchmarks within the next couple of years, as data from the various projects increases and therefore further improving the assessment.

Leading up to the data compilation and benchmark workshops, ICES should organise at least 2 separate workshops: one on estimating commercial CPUE indices and one on compiling recreational data (the 'standard' data compilation workshop, planned for late 2024 will likely be focused on biological and commercial data).

Below is a summary of the key data gaps identified and discussed in the workshop and the associated short and long-term tasks to address these gaps set out in the tables. This will form the basis of the EU and UK's roadmap to facilitate the 2025 benchmark for Pollack in Areas 6 and 7, as well as future subsequent benchmark.

The immediate priority is to generate a time series of commercial catches for inclusion in the ICES stock assessment, this will be more achievable if the stock synthesis model (SS3) is used as it can better deal with data gaps between years and uncertainty estimates. There is a consensus between the EU and UK that this work should be supported and progressed in time for the ICES data compilation workshop in October or November 2024, meaning that the recreational catch estimates should be completed by October 2024.

Short term actions (immediate task list ahead of next benchmark)

Data-gap or item	Owner or Lead	Aim	Task	Outcome	Timescale	Progress
Age or length data	Hans Gerritsen	Incorporating a longer time series of data from France and Ireland, if available. Additionally estimate all data at lower level of disaggregation to reduce loss of sampling data (ICES Benchmark)	Contact data providers and draft text for data call for ICES benchmark.	An extended time series of commercial age or length data to be used in the stock synthesis model (Data Compilation or Benchmark)	Autumn 2024	On-going

Data-gap or item	Owner or Lead	Aim	Task	Outcome	Timescale	Progress
Recreational data	Kieran Hyder or ICES professional officer	Collating, combining, and analysing recreational data for use in the benchmark	Set up a dedicated workshop to collate, combine, and analyse catches, lengths, and post-release mortality data for the recreational "fleet" (WGRFS recreational fishing specialists and stock assessors from WGCSE)	Recreational data incorporated in the assessment process and advice (Data Compilation or Benchmark)	Oct or Nov 2024 with room for improvements ahead of benchmark	On-going

Data-gap or item	Owner or Lead	Aim	Task	Outcome	Timescale	Progress
Commercial indices of abundance	Paul Bouch or Hans Gerritsen ICES professional officer input, Paul Gatti, Youen Vermard	Investigate developing commercial indices of abundance as a complementary source of data to the surveys used (ICES Benchmark)	Set up a dedicated workshop on the use of commercial data for building biomass or abundance indices. To allow such indices to be of value to the new assessment such working group should be set up relatively quickly	The integration of commercial indices together with existing scientific surveys may enhance the accuracy and reliability of the stock assessment. (Data Compilation or Benchmark)	To be determined (tbd) ICES professional officer input (ideally the data should be available for the benchmark data compilation workshop at the end of 2024)	Tbd ICES professional officer input

Medium to longer term actions (to inform potential future benchmarks)

Data-gap or item	Owner	Aim	Task	Outcome	Timescale/progress
Natural or depredation mortality	Stock Assessor or Colm or ICES professional officer to engage WGSAM	To establish projects that gather data to determine natural mortality of pollack	Tbd – Colm or ICES professional officer to engage WGSAM to determine suitable projects	Improved data on natural/depredation mortality of pollack to feed into stock assessment	Not started but longer-term outputs (to be started in the short-term) – this will require more studies and funding
Stock structure or genetics: CKMR and population genomics	David Murray and Gregory Charrier	To improve data to determine stock structure and size of pollack (starting in 7e)	CEFAS to dispatch genetic sampling kits to the relevant institutes and organizations	Improved understanding of stock structure of pollack to inform future benchmarks	Tbd – David and Gregory meeting – but on-going, unlikely genetic analysis completed in time for 2025 benchmark (Sequencing completed by the autumn 2024; first results of data analyses expected during Spring 2025)

Data-gap or item	Owner	Aim	Task	Outcome	Timescale/progress
Stock structure: Combined acoustic and archival tagging	Mathieu Woillez and Paul Gatti	To provide evidence about migration strategies and pollack stock structure	Ifremer to engage larger tagging studies	Improved understanding of pollack stock structure and provide exchange rates between stocks for stock assessment if relevant	On-going, preliminary tagging study published, additional work to be done to increase sample size, unlikely analysis completed in time for 2025 benchmark
Post-release mortality in recreational fisheries	Kieran Hyder & Willie Roche or Diarmuid Ryan	Generate post-release mortality estimates for pollack. Noting that a significant portion of the catch is released, further studies into post-release mortality or survivability are warranted to reduce uncertainty	Kieran Hyder to raise with WG to discuss what study would be required, including timescales	Not applicable	Not started, tbd – Kieran to discuss with WGRFS in June

Overarching actions for ICES:

Identify ICES professional officer for pollack benchmark.

Identify or engage other relevant ICES working groups likely required to input:

- Natural mortality – WGSAM [note that significant work on the data (both predator diet and abundance) would be needed to improve the M estimates so this is unlikely to happen in the next few years]
- Genetics – stock ID SIMWG, genetics WGAGFA
- Commercial data – WGCATCH
- Recreational data – WGRFS

References

Gonse M, Laurans M, Magin J, Odaka T, Delouis JM, Martin S, Garren F, Lazard C, Drogou M, Stamp T, Davies P, Hall A, Sheehan E, Woillez M. Combining acoustic telemetry with archival tagging to investigate the spatial dynamic of the understudied pollack, *Pollachius pollachius*. J Fish Biol. 2024 Apr 25. doi: 10.1111/jfb.15750.