POLLACK F.I.S.P.

Pollack Fisheries Industry Science Partnership

UNIVERSITY OF PLYMOUTH

PROFESSIONAL BOATMANS ASSOCIATION PBA

Marine Biological Association

UNIVERSITY of York

ANGLING TRUST

Cefas

Department for Environment Food & Rural Affairs

Our Project Partnership

The Pollack Fisheries Industry Science Partnership (FISP) has collected data about pollack in Dorset, Devon and Cornwall. The results can feed into future fisheries assessments and provide the evidence needed for sustainable fisheries.

The project is a multi-disciplinary collaboration between charter skippers, recreational anglers and researchers led by Dr Emma Sheehan's research group at the University of Plymouth. The project is run in collaboration with the Professional Boatman's Association, the Marine Biological Association, the University of York and the Angling Trust with support from Cefas. Dr Simon Thomas (University of York) and Dr Bryce Stewart (Marine Biological Association) are leading the fisheries data collection and social science aspects of the project.

We would like to thank the many people who have contributed – this work wouldn't have been possible without the data and insights provided by a wide variety of people, particularly from the fishing community.

*"Over the years, **the average size of the pollack and the volume of fish we've been catching have both reduced**. This is a problem for the local people who rely on pollack for their livelihoods. **We need more information to tackle the problem**, and I'm proud to be working with skippers along the south coast to collect the data we need."*

Dave Uren
Professional Boatmans Association

University of Plymouth · Professional Boatmans Association · Marine Biological Association · University of York · Angling Trust · Cefas

Tracking Pollack Movement

Dr Thomas Stamp from the University of Plymouth fitted 120 pollack with tags that emit a unique high-frequency 'ping'. These tags can be detected by receivers on the seabed, and the University of Plymouth has around 200 receivers along the south coast of England as part of the Fish Intel Network.

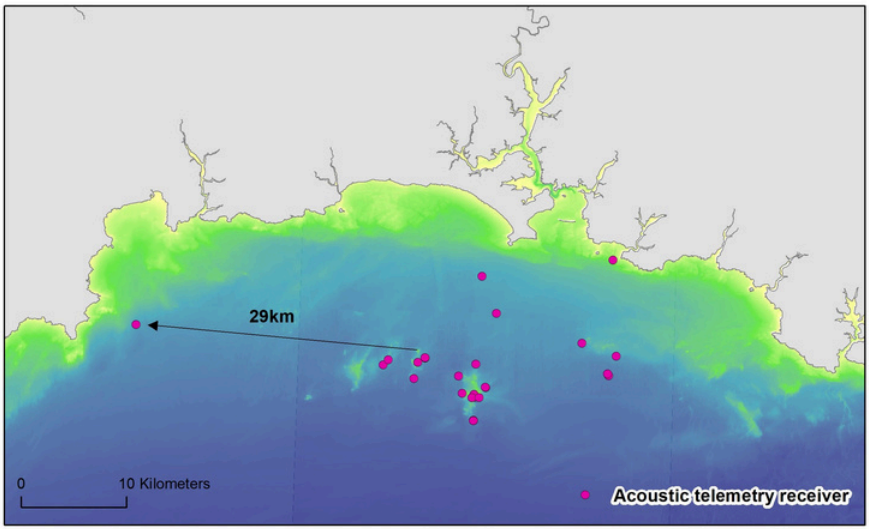

Figure 1: The placement of receivers around Plymouth. The furthest we have detected a pollack moving is 29km.

The pollack we tagged around Plymouth have shown complex behaviours. We found that many of our tagged fish spent long periods in a small area. Some fish were detected almost continuously by the same receiver for weeks on end, showing that they are resident in an area of just a few hundred metres.

Individual pollack often moved between different areas of the same reef. Sometimes this movement had a regular pattern over a day and night cycle. Other fish showed more complex patterns, spending days or weeks in one location before moving to a different part of the same reef or to another nearby reef.

We haven't yet detected a pollack more than 30 kilometres from where it was tagged. However, sometimes individual fish moved away and weren't re-detected, so we don't know where they have gone. They could be nearby in an area where we don't have a receiver, or they may have moved further afield.

Several fish have left and then reappeared over 6 months later – one even returned to exactly the same location. We are part of a European tracking network, so we will learn if our pollack are ever detected on receivers elsewhere in Europe. In the future, we hope to expand our network of receivers to answer questions such as whether pollack move to deeper waters further out to sea.

*"**Our tags last for about four years, so the pollack we tagged in 2024 will still be providing data in 2028**. I'm excited to find out where they move over the coming years – if they leave the area covered by the Fish Intel Network, **where do they go? Do they come back to exactly the same mark?"***

Dr Thomas Stamp
University of Plymouth

Even fish who were resident in a small area were far from sedentary. We fitted 30 Pollock with depth tags, so we could study how they moved within the water column. They made large vertical movements, sometimes rapidly moving 20 to 30 metres up and down. These movements are likely to include times when they are chasing food.

These insights are being shared with policy makers, to help support informed decisions about sustainable fishing.

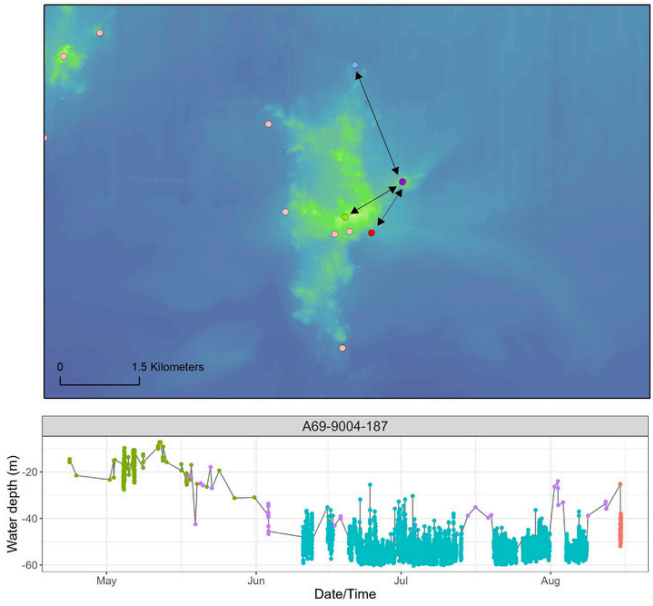

Figure 2: The movement of an individual pollack at the Eddystone, near Plymouth. The colour of each point on the graph corresponds to the colour the receiver where the fish was detected, as marked on the map above. The graph shows the fish moving between different parts of the reef over the course of summer 2024. It also shows the fish making rapid changes in depth.

Increasing Survival in Catch-and-Release Angling

Pollack are very sensitive to the pressure change when they are caught and reeled to the surface. Most pollack caught below 20 m show symptoms of barotrauma – their eyes bulge and their stomachs protrude from their mouths. We investigated how this affects fish survival, and what can be done about it.

We fished from boats using lures, and caught pollack at depths ranging from about 20 m to 70 m. Each fish was measured and then quickly released at the surface. Only 46% of these fish swam away, meaning that over half died at the surface. The deeper a fish was caught, the less likely it was to survive.

This is a major barrier to catch-and-release angling, but our work also demonstrates that there is a solution.

As part of our fish-tagging study, we worked with local fishermen to create a system for quickly returning fish to depth. We used a video to monitor each fish's recovery in a cage, and found that fish were much more likely to survive if they were released in this way. When they were released at depth, 81% swam away.

Our fish tracking work confirmed that survival was high: 72% of tagged fish released at depth have been detected by our receivers at least seven days later. Survival may be even higher, as some fish may have moved out of range of our receivers so not been detected.

Recently, descending devices such as SeaQualizers have become more easily available to buy in the UK, which is good news for catch-and-release angling. These allow fish to be released at depth, so can be a powerful way to increase pollack survival.

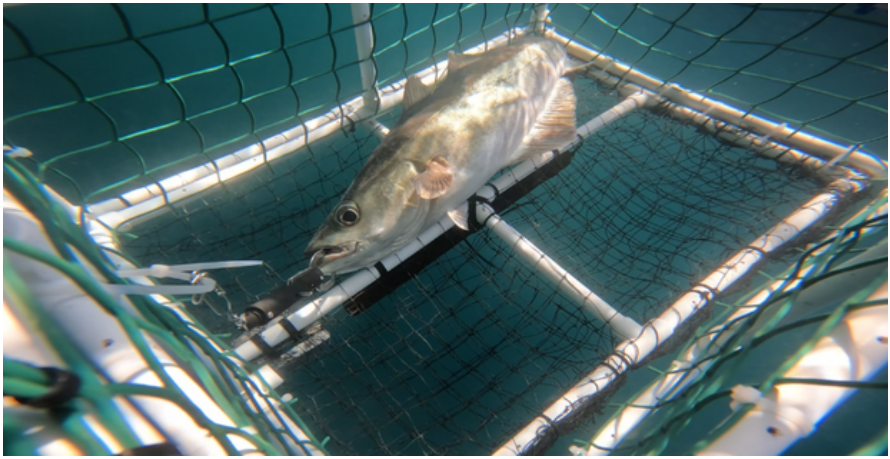

Figure 3: A pollack recovering from barotrauma at depth.

Results from Interviews and Workshop Focus-Groups

Recent analysis of social science data has focused on examining suggestions from the fishing community community about potential future management measures for the recreational pollack fishery. This has included the responses provided during focus group discussions in our February 2024 workshop, and from the 11 interviews conducted to date. In all cases there was a mix of commercial and recreational fishers involved.

Most people questioned so far would support a closed season during the pollack spawning period (January to March). There was also some support for an increase in minimum size, with several participants mentioning 50 cm. There was much less and mixed support for a recreational daily bag limit.

Analysis of Historic Data

Lots of people have told us that the size of pollack has declined, and this is backed up by historical data. We compiled measurements of 202 pollack from angling club logbooks and records of trophy catches, which gave an insight into when the declines began. This graph shows the decline in size of fish caught from wrecks and reefs. No declines have been observed in the size of fish caught from the shore.

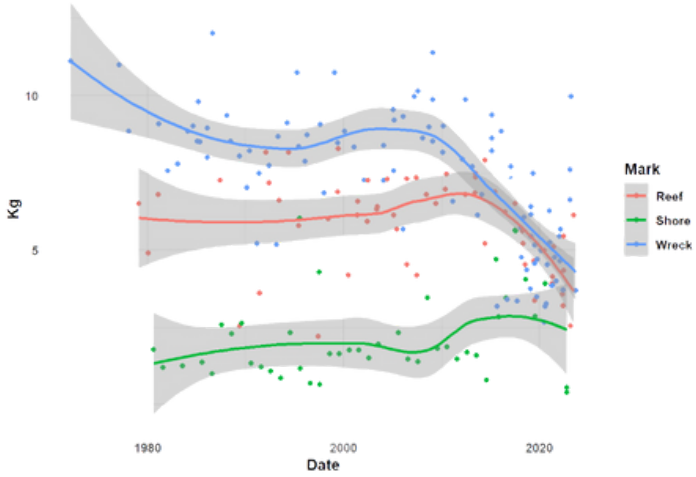

Figure 4: The weight of pollack recorded in angling club logbooks and trophy catch records.

CPUE and Biological Data

Sixteen charter skippers contributed data to the project, providing information that scientists couldn't collect alone. This data came from trips covering a wide area, leaving from ports between Weymouth and Penzance. Fish were caught at locations ranging from within 200 metres of the shore to over 50 miles from land.

The average size of pollack they recorded was 56 cm. The largest fish was a whopping 114 cm! On average, larger fish were caught further from shore and to the south and west of the study area, which corresponds with depths of over 60 metres.

Catch Per Unit Effort (kg per trip) varied throughout the year – it was lowest from November to January and highest in the spring and early summer. CPUE was similar in 2022 and 2023, then higher in 2024. It is too early to say whether this is a long-term trend.

During the spawning season, the number and size of the fish caught was lower when the Sea Surface Temperature was higher.

The skippers also identified stomach contents from some of the pollack they caught, and have found a big variation in what the fish have been eating. We have more samples to identify, but our provisional results from fish caught in 2022-2024 show that their diet is highly variable. For example, sandeels were an important food source in spring 2022, but weren't recorded in other years. Herring was the most common species we recorded in 2023, whereas sprat dominated in 2024. Mackerel was important in October-December in both 2022 and 2023, but not in 2024. This could indicate that the preferred prey in the run-up to the spawning season isn't always available.

What Data Did We Collect?

126 pollack tagged

802 fishing trips

15,995 pollack measured

343 otoliths collected

Age and Growth

The length data provided by charter skippers allowed us to estimate the age of the pollack being caught. We estimate that 95% of pollack are mature when they are 50.1 cm long, which corresponds to an age of 2.9 years.

We are refining this estimate by analysing otoliths. Otoliths were collected during the onboard catch sampling over the past two years. Forty-four of these pairs have now been fully aged and processed, and 160 of them weighed. We have discovered a very strong relationship between otolith weight and age, which is allowing us to predict the ages of the entire sample. This will be confirmed as we process more otoliths. So far, the oldest pollack sampled was 9 years old, but the majority are 5 years old or less (Figure 5). Given that pollack can reach a maximum age of at least 15 years this age structure is indicative of a population under heavy fishing pressure.

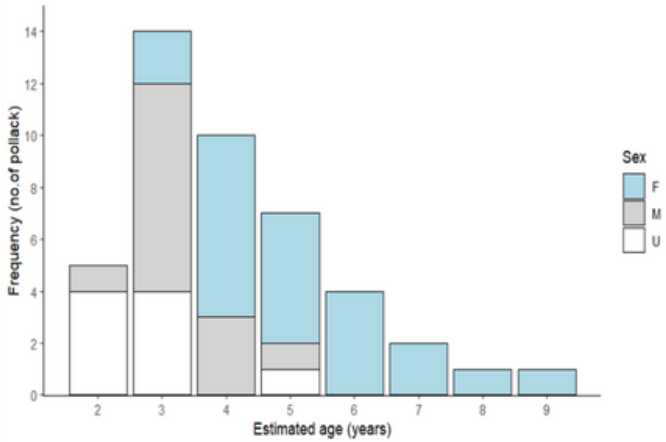

Figure 5: The number of fish recorded in each age category. Females are marked in blue and males are marked in grey. The sex of the fish marked in white was unknown.

"We have really valued the input of everyone who attended our workshop or spoke to us in an interview. ***There is clearly a huge amount of support for ensuring that pollack fishing is sustainable."***

Dr Bryce Stewart
Marine Biological Association