

Hooking the attention of the sea angling community

Inland Fisheries Ireland

The Challenge

- Collect data on fish caught and released by recreational sea anglers all around the Irish coastline

The Benefits

- More people proactively engaged in data collection
- Effective retention of anglers in the crowd-sourcing scheme
- Efficient, accurate and consistent data collected from all around Ireland
- Supplementary data to support EU reporting requirements

How can anyone possibly know how many fish are being caught or released by up to 250,000 recreational sea anglers around 3,000 km of coastline? Charged with answering this question, Inland Fisheries Ireland has created a solution based on ArcGIS Hub that is hooking the attention of the angling community and turning anglers into citizen scientists.

The Challenge

To help safeguard fish stocks in European waters and protect marine eco-systems, the European Union (EU) needs to have accurate information about the volume (number and weight) of key fish species caught annually in European waters. Consequently, all EU member states are now required to report, not only on commercial fishing, but also on recreational sea angling.

As the organisation responsible for recreational angling in Ireland, Inland Fisheries Ireland needed to find a way to gather and share accurate data from a representative proportion of the 250,000 anglers who fish in many locations, along more than 3,000 kilometres of coastline. To complement sea angling data gathered by the Inland Fisheries Ireland survey team, a further approach was needed that would allow and encourage anglers to self-report their catches.

The Solution

Inland Fisheries Ireland had been using geographic information system (GIS) solutions from Esri for many years and already had a mobile ArcGIS app that was used by deep-sea charter angling boat skippers for reporting for a Bluefin tuna catch, tag and release programme. With this experience, the organisation came up with a concept for an inclusive GIS-based survey that would engage anglers as citizen scientists. It then appointed consultants from Esri Ireland's Professional Services group to act as advisors and help it deliver this novel method of marine data collection.

A key component of Irish Marine Recreational Angling Survey ([IMREC](#)), the GIS-based solution includes an ArcGIS Survey123 app, which anglers use on their mobile phones, tablets or computers, to capture data on how many fish they caught, what size and species they were, how many fish they released and how long they fished for. All the data captured is then transferred automatically, with no manual intervention, to Esri's ArcGIS Hub Premium, a community data sharing platform that allows multiple stakeholders to contribute and view selected data online. A management dashboard in the Hub allows Inland Fisheries Ireland to monitor data collection activities, see estimated catch rates and identify patterns in the species, volumes and weight of fish caught.

In addition, all of the anglers that join the scheme have a personalised dashboard within ArcGIS Hub Premium on which they can see the data that they have contributed, whether they are shore anglers, small boat anglers or anglers who charter larger deep-sea vessels. Anglers can use their personalised dashboard to create online diaries of their own fishing activities and look back over time to understand where and when they had the most success. Personalised dashboards are not shared with other anglers or people outside of Inland Fisheries Ireland, so anglers can protect the secrecy of their favourite and most successful

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The Benefits

More people proactively engaged in data collection

Inland Fisheries Ireland expects to be able to encourage large numbers of anglers to take part in the IMREC diary-based survey, partly because the Survey123 app is very easy for anglers to use, on any device. In addition, ArcGIS Hub Premium can be scaled up easily to accept data up-loads from more and more participants, allowing Inland Fisheries Ireland to gradually expand the scheme over time. “ArcGIS will enable us to recruit lots of anglers as citizen scientists and crowdsource the large volume of data that we require for EU reporting,” says William Roche, Senior Research Officer at Inland Fisheries Ireland. “With more people collecting data, we will be able to build up a better picture of the state of fish stocks off Ireland’s coast, particularly for anglers.”

Effective retention of anglers in the crowd-sourcing scheme

Through the development of personalised dashboards in ArcGIS Hub Premium, Inland Fisheries Ireland has created an effective way to retain the interest and involvement of anglers in the IMREC survey. Anglers are often keen diarists, and Inland Fisheries Ireland anticipates that they will enjoy using their dashboards to record and visualise their fishing success month after month. “The ArcGIS personalised dashboards will help to make the recording of data a habitual activity for anglers,” Roche explains. “We hope anglers will enjoy entering their catch data and take pride in their role as observers and stewards of Ireland’s fish stocks.”

Accurate, consistent data collected from all around Ireland

As all anglers, all around the country, are using the same Survey123 app to record their data, Inland Fisheries Ireland can have greater confidence in the accuracy and consistency of the data collected. The app accurately records location data, and survey questions can be easily amended if needed. The EU is particularly interested in data on cod, pollock, sharks, rays, sea bass and highly migratory species such as tuna, but Survey123 can be configured to capture data on other species too, giving Inland Fisheries Ireland flexibility for the future.

Supplementary data to support EU reporting requirements

Most significantly, ArcGIS has provided Inland Fisheries Ireland with a feasible and affordable way to capture additional data to complement the other data collected for the EU. Citizen science like this provides broad spatial coverage all around the coastline of Ireland. Linked with data from face-to-face interviews with anglers, the GIS solution minimises data handling and automatically displays reporting information on the management dashboard, which will enable Inland Fisheries Ireland to comply with EU data collection requirements in a very efficient way.

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The IMREC Diary allows anglers to record fishing trips and review previously-logged sessions through their own personalised dashboard.

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