Kent Citizen Science Small-Shark Tagging Project

Feasibility Study

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Acknowledgements

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Executive Summary

The following report was developed as part of the 2025 Coastal Explorer Internship Programme (CEIP). The aim of this report is to assess the feasibility of implementing a citizen science small-shark tagging programme in Kent, England. The project would be managed by Adonis Blue Environmental Consultants (ABEC) and work with members of the local recreational angling community. The intended method for data collection would be catch, tag, release, recapture which would be undertaken by local anglers who would be trained to tag and record the sharks, skates and rays they catch, by ABEC staff. Floy tags would be used as simple, cost-effective method of identification. This study explores the feasibility of the Kent Citizen Science Small-Shark Tagging Project proposal.

The UK supports over forty species of shark, of which twenty-one species are resident. Contemporary and historic data was collated from a range of sources to provide initial insight into species presence, abundance and distribution around the Kent coastline – over 8,000 records were collated. Twenty species were recorded locally, with Thornback Ray *(Raja clavata)* and Small-Spotted Catshark *(Scyliorhinus canicular)* by far the most recorded species. Records of species of conservation concern were present locally, including Tope *(Galeorhinus galeus)*, Undulate Ray *(Raja undulata)* and Spurdog *(Squalus acanthias).* Potential species distribution trends are discussed individually in the results section of this report. Eggcase records from multiple shark and skate species, disturbed widely around the Kent coastline, may indicate the importance of local waters as breeding grounds. Ultimately, the limited data surrounding most species highlights the need for a local monitoring programme, to produce a more robust understanding of the presence and abundance of elasmobranch species.

Two interviews with members of the local angling community were undertaken. The aim of this exercise was to understand attitudes towards the establishment of the tagging project in Kent and to further investigate species presence and their potential distributions. Both anglers viewed the potential tagging project in a positive light and said they would be interested in taking part in the programme. It was raised by anglers that the reporting process would need to be as easy as possible, the use of a real-time reporting method, facilitated though a direct messaging service, was discussed as a way to improve ease of reporting and data collection. In terms of ecological insight, declines in Thornback Ray, Blonde Ray and Smoothhound *(Musteluss spp.)* were suggested. An indication that the Greater Thames Estuary may be a Smoothhound pupping ground was anecdotally evidenced. Some of the concerns raised by anglers surrounding species population declines were potentially supported by an investigation into local commercial fisheries catch trends, using landings data from the Marine Management Organisation (MMO). The need to monitor and evidence these population trends adds weight to the argument that a local tagging programme would be advantageous to achieving local protective measures and more effective management.

Project logistics and costs were investigated to determine the considerations and challenges in starting a small-shark tagging programme. A cost-analysis revealed the project to be low-cost to run (£3,550 total initial start-up costs), this is inclusive of ABEC staff training which has kindly been offered by Manx Wildlife Trust. Low project costs are mainly enabled by the fact a full-time staff member would not be needed to work on the project and much of the written

work (e.g. annual reports) would be produced by ABEC's annual cohort of Coastal Explorer Interns (funded by The Crown Estate). It is recommended that initially the project should apply for small grants, of which eleven applicable grants are detailed for future applications. Long-term funding opportunities are discussed to overcome reliance on short-term funding as the project develops, for example developing a blended finance model. Importantly, the project has already benefited from funding from Kent Downes which has been used to purchase 400 Floy tags – this adds to feasibility of the project has it highlights that grant funders are willing to finance the project.

Throughout the study, advice is sought from experienced organisations currently running similar tagging programmes around the UK. Through conversations with experts, best practices are obtained and resources shared, these will be vital to project development. In addition, advice is sought from the Home Office regarding licensing which state that the project's intended methodology for elasmobranch monitoring will not require a license – this is a key enabler for the project.

Opportunities to develop a community engagement arm of the project are explored as the authors believe that the project represents an exciting opportunity to increase local understanding of elasmobranchs. Two opportunities are the discussed. The first is establishing Eggcase Surveys, a Shark Trust initiative. These surveys would represent both an engagement and additional data collection opportunity, whilst also increasing cross-organisation collaboration. The second idea focuses on the projects/ABEC's involvement in local angling competitions, inspired by a similar approach conducted by Manx Wildlife Trust on the Isle of Man. This initiative would hopefully build effective relationships with local anglers and lead to increase angler engagement in the project. ABEC already runs local community engagement activities in Kent so are in a great position to establish similar initiatives as part of this tagging programme.

Ultimately, it is concluded that the project is feasible. There is considerable evidence to suggest a local monitoring programme is needed and there are sufficient resources to support the project in its next steps. Six key project constraints are discussed and the recommended actions to overcome these barriers are detailed – this will help accelerate the project's development and establishment in 2026.

1. Introduction

1.1 Elasmobranchii

Elasmobranchs, inclusive of sharks, skates and rays, are a sub-class of the class Chondrichthyes, cartilaginous fish (Hamlett, 1999). As keystone species, elasmobranchs play a vital role in maintaining healthy and balanced marine ecosystems, acting as mid-to-top trophic level predators (Heithaus et al., 2010). However, around the globe, elasmobranchs species are threatened with substantial population declines, and even extinction, due to anthropogenic pressures (Dulvy et al., 2021).

Anthropogenic threats to elasmobranchs include overfishing, bycatch and climate change. Elasmobranchs are particularly susceptible to such pressures due to life-history traits, which include low reproductive and growth rates (Dulvy et al., 2014). These characteristics mean that populations cannot rebound quickly after declines because individuals take many years to reach sexual maturity, produce relatively few offspring, and grow slowly. This is a particular concern for species such as Smoothhound, *Mustelus spp.*, where slow growth rates may explain population declines in the context of increasing fishing pressure and bycatch by commercial fisheries in the Northeast Atlantic (Farrell et al., 2010).

The waters around the UK provide important habitat for a diverse range of elasmobranch species, including species of conservation concern. UK waters host over 40 species of shark of which 21 species are resident (Shark Trust 2020). Unfortunately, half of the UK shark species' IUCN conservation statuses range between threatened and critically endangered. For example, the UK provides year-round habitat for highly migratory Tope, *Galeorhinus galeus*, which is classified as a critically endangered species globally and has witnessed a significant decline in its Northeast Atlantic population (Walker et al., 2020).

Despite wide acceptance of the crucial ecological role elasmobranchs play in our marine ecosystems, many species remain largely understudied and under protected - particularly around England. As such, a conservation priority for elasmobranchs is to address data gaps to better understand species distribution, behaviour and areas of importance (Brautigam et al., 2015). This will be crucial to achieving meaningful protection and management of these species in the future.

Kent Citizen Science Small-Shark Tagging Project Proposal

To monitor elasmobranch populations around the Kent coastline to better understand species presence, abundance and distribution, the following project is proposed:

- A **citizen science** led small-shark tagging programme run by ABEC
- This would aim to **monitor** local shark, skate and ray (elasmobranch) populations **around Kent**
- Working with trained **recreational anglers** and charter boats to tag and record elasmobranchs using **Floy tags**. This will allow identification of the fish upon recapture.
- Data collection would be underpinned by a **catch, tag, release, recapture method**.

This study will determine whether each of the key aspects of this project proposal will be feasible to implement.

1.2 Elasmobranchs in Kent

In September 2025, the Important Shark and Ray Areas (ISRA) project published key areas identified as critical to elasmobranch survival in the Northeast Atlantic (Jabado et al., 2025). The ISRA project is led by the IUCN SSC Shark Specialist Group and made up of an international group of scientists, conservation practitioners and policymakers. The aim of the project is to identify and map important areas for elasmobranchs worldwide, based on scientific evidence. The locations identified represent areas where species would benefit from protective conservation measures being put in place.

Common Thresher, *Alopias vulpinus,* observed breaching off Dungeness, English Channel. Image taken from the Dungeness Bird Observatory.

In the Northeast Atlantic, three ISRAs have been identified around the Kent coastline (Figure 1). These were:

1. **Outer Thames ISRA** – identified as a Thornback Ray reproductive area (Figure 1a).

2. **Hythe ISRA** – identified as a Thornback Ray reproductive area (Figure 1a).

3. **English Channel Hai-way ISRA** – designated due to the presence of threatened species (such as Tope) and identified as an extensive area which is important for movement of species, such as Starry Smoothhound (Figure 1b).

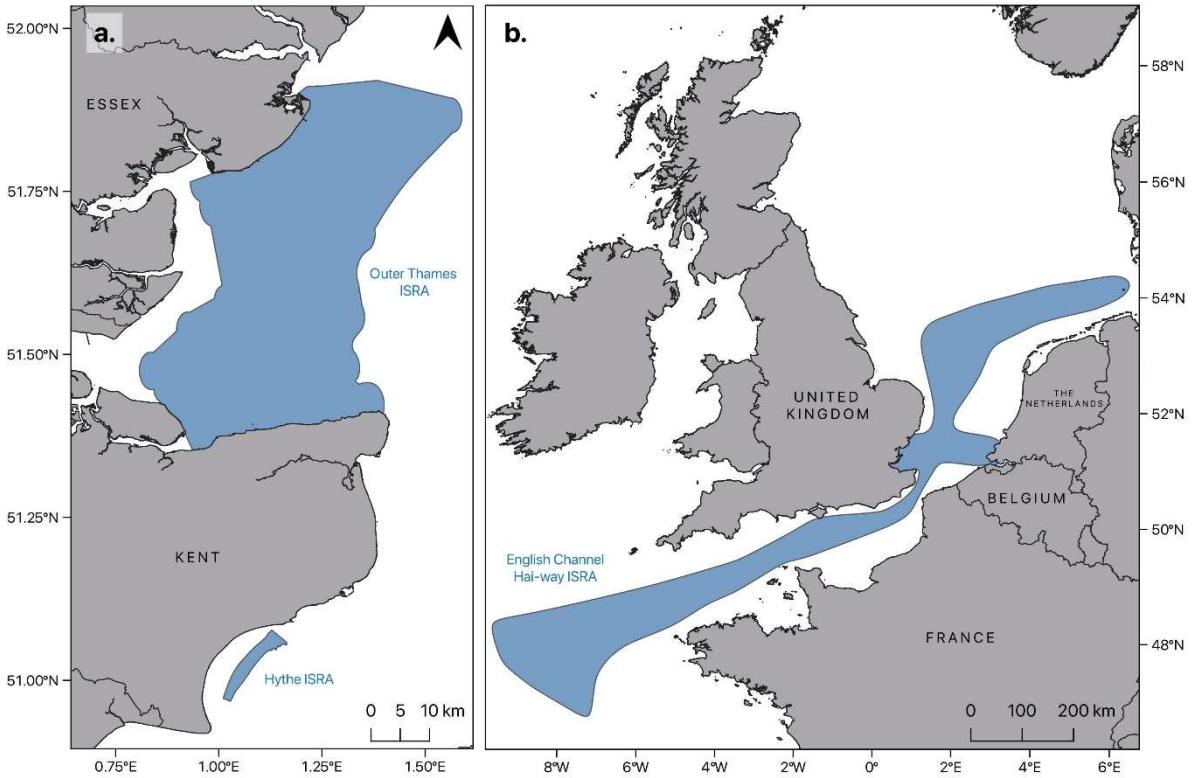

Figure 1 – locations of **a)** Hythe ISRA and Outer Thames ISRA, and **b)** English Channel Hai-way ISRA as identified by the IUCN SSC Shark Specialist Group. Shapefiles provided by IUCN SSC Shark Specialist group.

There is clear evidence that the coastal waters around Kent provide important habitat for elasmobranchs, including species of conservation concern such as Tope (*Galeorhinus galeus*). These areas have been identified as particularly significant for productivity and migration, underscoring their ecological value.

Much of this knowledge has been derived from data collected by CEFAS, highlighting the critical role of robust monitoring in understanding species distribution and identifying key habitats. Despite this, these areas currently lack statutory protection, leaving vulnerable species exposed to ongoing anthropogenic pressures.

Common Stingray, *Dasyatis pastinaca,* caught and released by recreational anglers in the Thames Estuary.

Expanding data collection efforts across the Kent coastline presents a valuable opportunity to enhance ecological understanding, determine the true importance of these habitats, and inform evidence-based management strategies. In the long term, such efforts could support improved species protection and contribute to the development of targeted conservation measures.

1.3 Kent's Elasmobranch Fishing Industry

Kent is a significant region for commercial and recreational fishing in the UK, hosting 13 ports and a fleet of 65 registered fishing vessels, excluding charter boats (Renton & Lee, 2023). This high level of fishing activity is ecologically relevant, as several elasmobranch species are either directly targeted or frequently caught as bycatch in local fisheries.

Kent's waters are covered by two International Council for the Exploration of the Sea (ICES) fishery advisory regions; regions VIId and IVc (Figure 2). The two areas form part of ICES's Northeast Atlantic advisory area within which fisheries management is informed by annual stock assessments and used to determine target permissions and quotas specific to each region.

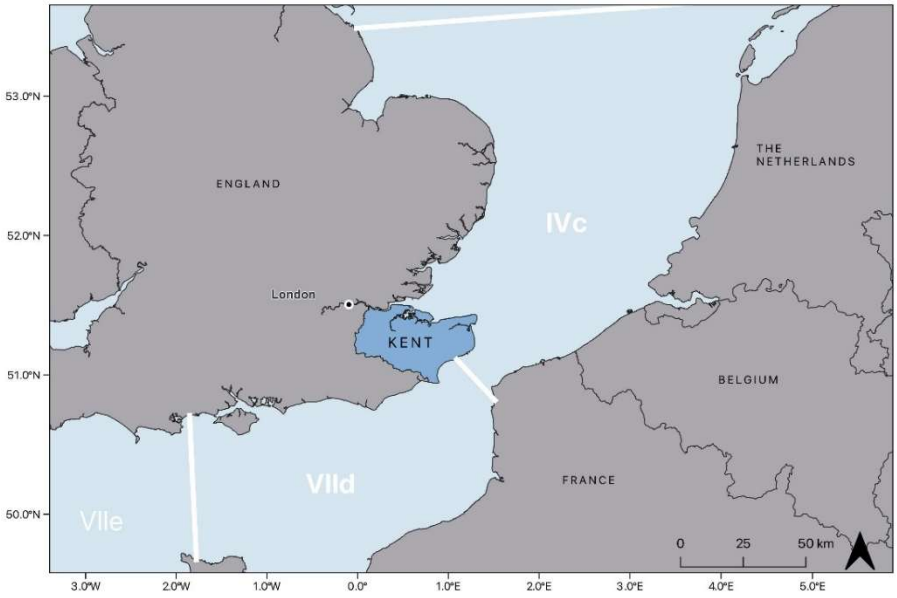

Figure 2 – ICES fishery advisory areas, VIId and IVc, covering Kent's waters.

Locally targeted species include Thornback Ray (*Raja clavata*), Blonde Ray (*Raja brachyura*) and Smoothhound spp. *(Mustelus spp.).* Thornback Ray has become one of the primary commercially targeted species in the region, particularly following the decline in cod stocks. In addition, Smoothhounds are regularly caught as bycatch in demersal otter trawls and gillnets (Renton & Lee, 2023).

Further to these species, a wide range of other elasmobranchs are landed at Kent's ports, often unintentionally. Bycatch remains one of the most significant global threats to elasmobranch populations, and its impact is difficult to quantify due to the diversity of species involved and the complexity of mixed fisheries (Oliver et al., 2015). While regulatory frameworks exist to monitor and mitigate bycatch for cetaceans and seabirds, similar protections for elasmobranchs are notably lacking.

Given Kent's active fishing industry, ecological importance, and current data gaps, the region presents an ideal setting for the introduction of an elasmobranch tagging programme. Such an initiative would enhance understanding of species distribution, movement patterns, and population trends, contributing to more informed local conservation and management strategies.

1.4 Elasmobranch Tagging

Kent citizen science small-shark tagging programme aims to use Floy tags, pictured in *Figure 3*. A floy tag is a narrow, plastic external tag which is brightly coloured and each has a unique code, allowing for individual identification upon recapture. Floy tags are attached to fish just below the dorsal fin, often using a canula or a tagging gun. During tagging, variables including species, length, sex, location and fish condition can be recorded to gain data about each fish.

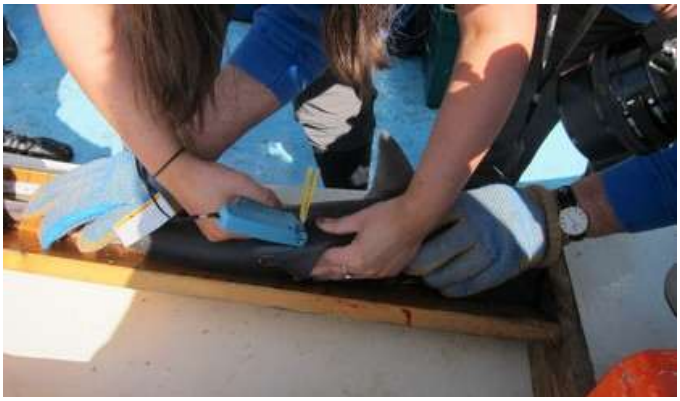

Figure 3 – A Floy/streamer tag being attached to a fish using a tagging gun onboard an angler vessel. Photo taken from the Manx Wildlife Trust Website.

Mark-recapture is an appropriate and widely used method for monitoring elasmobranch species. It has proven effective across many studies in collecting valuable elasmobranch population and distribution data. Bird et al. (2019) analysed data from mark-recapture tagging studies undertaken from 1959-2017 for ray and skate species. Highlights from their findings included a 14.9% return rate for tagged individuals, with the majority of tags being returned from areas less than 50km from their release - showcasing the use of tagging data in understanding movement behaviours of elasmobranch species.

Tagging studies can also gather data which provides insights further than species movement and abundance. Through collecting variables including sex, weight and length, tagging data can work to explore trends such as growth rates and identify potential breeding and nursing grounds, which are particularly important to elasmobranchs given their life history traits.

Tagging studies have collected data which has standardised species growth, for example 331mm/year for Common Smoothound (Ferragut-Perello et al., 2024), advancing species-specific knowledge.

Floy tags are a **simple** and **cost-effective** method which enable catch, tag, release, recapture projects.

1.5 Current and Historic Tagging Programmes

The Kent Citizen Science Small Shark Tagging Programme would aim to emulate the success of various ongoing and historic projects across the UK, which have been definitive in improving the understanding and monitoring of various elasmobranch species in UK waters. There has been a varied approach to elasmobranch tagging across these programmes, some of which have begun to utilise acoustic tagging methods following the initial launch of their projects using simple tagging methods (e.g. Floy tags). This section will detail various programmes of which have inspired ABEC's Kent-based shark tagging project proposal.

Isle of Man Small-Shark Tagging Programme

Launched in May 2013 by the Manx Wildlife Trust (MWT) working on behalf of the Department of Environment, Food and Agriculture, this programme collects data on sharks, rays and skates around the Isle of Man.

Working closely with local anglers, the programme uses identification tags on a catch and release basis. To date, over 57 anglers have received small shark tagging training, and more than 573 individual elasmobranchs from four species - Nursehound (*Scyliorhinus stellaris*), Spurdog (*Squalus acanthias*), Thornback Ray (*Raja clavata*) and Tope (*Galeorhinus galeus*) – have been tagged. Key successes include the recapture of six tagged Tope, one of which was found in the Netherlands in September 2018, suggesting Tope from Manx waters may be migrating across Europe. This highlights the need for international cooperation in shark conservation. The programme also found a higher proportion of females around the Isle of Man, suggesting Manx waters may serve as a nursery ground for Tope. These findings have directly informed the Isle of Man's Biodiversity Action Plan for elasmobranchs.

Greater Thames Shark Tagging Programme

Initiated in 2021 by the Zoological Society of London (ZSL), this project collaborated with local anglers to tag elasmobranchs in the Greater Thames Estuary area using identification and streamer tags, on a catch and release basis.

Major findings from this project included the suggestion the estuary may serve as a nursery and pupping ground for species such as Tope and Starry Smoothhound. Over two years, seven anglers participated in the programme. Although currently paused, ZSL plans to transition to acoustic monitoring in the next phase of the project to further investigate nursery ground usage, prompted by frequent anecdotal reports of juvenile elasmobranchs in the area. Given the geographical overlap between the Greater Thames Estuary and the Kent coastline, the Kent Small Shark Tagging Programme aims to streamline data collection processes in

collaboration with ZSL. This will help ensure consistency in methodologies, reduce duplication of effort, and strengthen the overall evidence base for elasmobranch conservation in the region.

Project SIARC

Project SIARC (Sharks Inspiring Action and Research with Communities) is a multidisciplinary project in Wales that integrates social and biological sciences to research elasmobranchs and their habitats in Wales.

This project engages coastal communities - including commercial and recreational fishers, citizen scientists, researchers, schools and government - to gather data on elasmobranchs and inspire a greater appreciation for the marine environment in Wales.

The work carried out at Project SIARC covers four main aspects:

- Management of two Special Areas of Conservation (SAC) is improved by addressing critical data gaps in the ecology of elasmobranchs using fisher-integrated research.
- Opportunities for involvement in marine conservation in Wales are diversified by developing an inclusive strategy that identifies under-served groups, barriers to their engagement and how to overcome these.
- Promoting citizen science via Eggcase Hunts in collaboration with Shark Trust, archival research, and online identification tools like Instant Wild.
- Inspiring youth to connect with marine conservation through learning about elasmobranchs in their local SAC's, using interactive engagement and 3D printing.

A standout feature of Project SIARC is its community engagement, led predominantly by North Wales Wildlife Trust. Their efforts have significantly boosted public awareness and reporting of elasmobranch records. Given Kent Wildlife Trust's historical collaboration with the Shark Trust, there is strong potential to replicate Project SIARC's eggcase survey model in Kent. This would not only enhance species data collection but also promote coastal community involvement and awareness – a key goal of the Kent Citizen Science Small-Shark Tagging Programme.

The Scottish Shark Tagging Programme

Though discontinued in 2018, this programme remains a benchmark for successful elasmobranch conservation in the UK. It contributed to the protection of over 22 species and played a foundational role in the development of the Isle of Man Small-Shark Tagging Programme, providing training, equipment, and public outreach in the early stages for Manx Wildlife Trust. The programme also raised awareness of the importance of sea anglers in conservation and positively influenced shark fisheries management policy.

Through collaborating closely with both the Manx Wildlife Trust and Zoological Society of London, ABEC hope to strengthen the initial launch and approach of a small-shark tagging programme in Kent through ensuring cohesion across programmes, where possible, and making sure best practices, as used by current and previous projects, are established.

1.6 Why citizen science?

Citizen science is an exciting approach to generating new scientific data, while also representing an important engagement opportunity. Citizen science is powerful and has been shown to facilitate the success of marine conservation projects, particularly by advancing data collection efforts (Kelly et al., 2020).

Recreational sea angling is a popular activity undertaken across the UK. It is estimated that nearly 700,000 people partake in the sport each year nationally, catching over 15,000 tonnes of fish annually – the vast majority of which are returned alive and not retained (CEFAS, 2024). Such significant fishing effort, which often goes unreported, does represent an opportunity to understand local species composition and abundance which can have important implications for conservation and management efforts (CEFAS, 2024).

Recreational angling is undertaken around the Kent coastline, from harbour piers to offshore areas onboard charter boats. Kent's angling community provides both important social and economic value locally. Over 67 registered charter vessels undertake fishing trips for locals and tourists, commonly targeting species such as Bass, Thornback ray and Smoothhound (Kent and Essex IFCA, 2025a). Most vessels operate year-round, targeting different species at different times in the year, with the summer months being some of the busiest, particularly driven by an influx of tourists to the county.

Recreational angling is a popular sport undertaken around Kent and, as such, represents a significant data collection opportunity. Understanding the level of participation from Kent's angling community, as citizen scientists, and gaining their input into the design of a local elasmobranch tagging project will be key to the programme's future development.

2. Aims and Objectives

To answer whether a citizen science small-shark tagging programme and its key project components are feasible in Kent, this study will be structured around **three** key objectives.

1) To **synthesise** what data already exists on elasmobranch distribution in Kent.

2) To clearly **evidence** the need for (or not for) a Kent small-shark tagging programme.

3) To **highlight** the considerations and challenges to starting a shark tagging project.

3. Methodology

3.1 Study Area

Kent is located in southeast England, UK (Figure 4). The county's southern coastline borders the English Channel, whilst its northern coastline borders the Greater Thames Estuary.

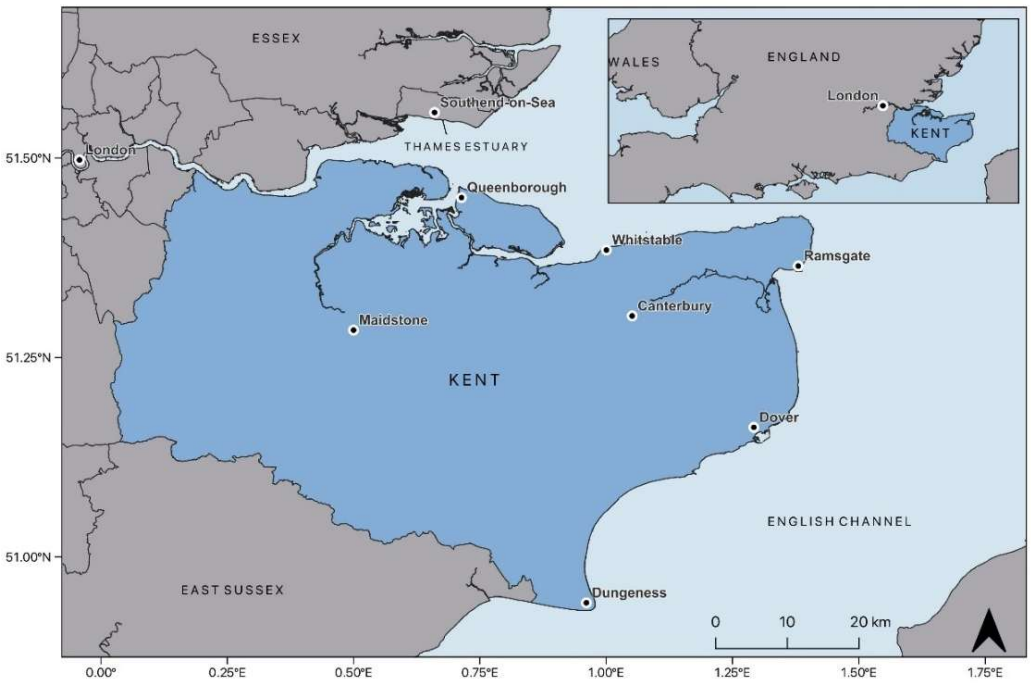

Figure 4 – Location of Kent (in blue), England, UK.

This study encompassed the full stretch of the Kent coastline, from Dungeness to the inner Thames Estuary. Historical elasmobranch data were collected across this entire coastal and marine region, capturing a diverse range of habitats including estuarine zones, sandy beaches, and chalk reef systems. To account for ecological connectivity and species movement beyond Kent's administrative boundaries, the study also included data from adjacent areas including the Essex coastline. This broader scope was intended to reflect the interconnected nature of coastal ecosystems and provide a more comprehensive understanding of elasmobranch presence and distribution in southeast England.

3.2 Data Collection

3.2.1 Historical Data

To establish a historical baseline of elasmobranch presence, a comprehensive review of existing elasmobranch datasets undertaken. The study area was defined as the Kent coastline and surrounding waters, spanning from the Thames Estuary to Dungeness. The following databases were consulted:

The Crown Estate's Marine Data Exchange (MDE)

Data was collated from biodiversity surveys used to inform Environment Impact Assessments for offshore developments around the Kent coastline, these were:

- 2002, Marine Biological Surveys, Gunfleet Sands 1 and 2, Assessment of the fishing activity
- 2007, RPS Group, Gunfleet Sands 1 and 2, Seasonal Fisheries Survey – August
- 2008,Brown and May Marine, Thanet, Elasmobranch Survey
- 2012, RDHV, Thanet, Fish and Benthic Survey
- 2012 EDHV, Thanet, Elasmobranch Survey
- 2014, Brown and May Marine, Kentish Flats Extension, Otter Beam and Bass Net

Trawl Survey
- 2014, Brown and May Marine, Greater Gabbard, Elasmobranch Long Line Survey

Centre for Environment, Fisheries and Aquaculture Science (CEFAS)
Data was collated from three publicly available long-term datasets:
- English Channel Beam Trawl Survey (VIId and IVc) 1988–2013, annual 4m beam trawl surveys in the Southern North Sea and Eastern English Channel.
- Shark Bywatch Catch Data 2012-2015, UK-wide seasonal fishery-dependent elasmobranch surveys.
- Occurrences of sensitive fish species in scientific trawl surveys of the Northeast Atlantic 1983-2020.

These datasets cover extensive areas (beyond the coastal waters of Kent). As such, data were first mapped in QGIS and filtered to include only relevant records within the study area.

National Biodiversity Network (NBN) Atlas
Opportunistic elasmobranch sighting records collated from biodiversity records from Kent districts.

The Shark Trust
This data had been previously filtered by the Shark Trust to include records only relevant to Kent. The datasets consulted were:
- Shark Trust's Great Eggcase Hunt – citizen science led surveys and opportunistic sightings of shark, skate and ray egg cases
- Shark Log Sightings – opportunistic sightings of sharks
- Basking Shark Project (this is in part derived from the Marine Conservation Society's Basking Shark Watch Database 1987-2020) – opportunistic sightings

Dungeness Bird Observatory
Opportunistic sightings from members of Dungeness Bird Observatory. The observatory is situated along the coast, overlooking one of the narrowest parts of the English Channel.

Marine Management Organisation (MMO) Landings
Total live landing weights (tonnes) of shark, skate and ray species caught by UK vessels, between 2009 and present, and landed into Kent ports were collated. Data was collated from 2009 onwards as species-specific reporting was made compulsory for skates and rays, making data after this year significantly more informative.

These data were not georeferenced so were not included within the main dataset. These records have been kept separate and form their own results section (see section 4.2).

3.2.2 Interviews

Two in-person interviews were conducted with members of the local angling community to gather qualitative insights into elasmobranch encounters and perceptions of tagging initiatives. These interviews were undertaken in Queenborough and Dover.

Prior to participation, interviewees were asked to sign an informed consent form (Appendix

8.1). Interviews consisted of both closed and open-ended questions. Closed questions focused on themes such as duration of involvement in the angling community, prior knowledge of and participation in tagging projects, and commonly caught elasmobranch species. Open-ended questions explored perceptions of elasmobranch population trends, personal experiences, and initial views on the proposed tagging programme. A full list of interview questions is provided in the appendix of this report (Section 8), Section 8.1 details the closed-questions form, and Section 8.2 provides a list of open-questions used during interviews.

3.2 Data Analysis

Following compilation, collated data was cleaned in Excel and R Studio prior to mapping and analysis in ArcGIS. Interview audio-recordings were manually transcribed.

4. Results

4.1 Dataset Overview

Key dataset characteristics

- Dataset spans **42 years**, from 1983 to 2025.
- 8,427 records which represents **21,965** individual elasmobranchs
- **20** species of elasmobranchs represented (11 shark, 7 skate and 2 ray species)
- Thornback Ray and Small-Spotted Catshark were the most recorded species and represent **95.2%** of total individuals in the dataset.
- **5** species were only recorded once (Blue Shark, Common Stingray, Marbled Electric ray, Roughskin Dogfish and Sandy Ray)
- Dataset is informed by 5 sources; CEFAS records represent **76.8%** of the data.
- **All** records were georeferenced, to varying degrees of precision.

A breakdown of the species recorded around the Kent coastline are provided in *Table 1*. Most records were determined to species level but where they have not been, Genus and Orders have been included to encompass these records.

Table 1 - A breakdown of species recorded around Kent between 1983 and 2025. Total individual counts as well as the most recent record date are provided for each species.

Common name	Scientific name	Individual Count	Most recent recording
Thornback ray	*Raja clavata*	10839	12/09/2025
Small-spotted catshark	*Scyliorhinus canicula*	10077	27/05/2025
Starry smoothhound	*Mustelus asterias*	280	01/05/2025
Spotted ray	*Raja montagui*	172	03/04/2023
Undulate ray	*Raja undulata*	130	30/03/2023
Blonde ray	*Raja brachyura*	129	06/07/2023
Common smoothhound	*Mustelus mustelus*	90	07/08/2025
Smoothhound spp.	*Musteluss pp.*	78	2020
Catshark spp.	*Scyliorhinidae spp.*	47	2020
Spurdog	*Squalus acanthias*	34	2014
Tope	*Galeorhinus galeus*	28	12/09/2025

Skate and ray spp.	*Batomorphi spp.*	14	2013
Thresher shark	*Alopias vulpinus*	14	05/08/2025
Basking shark	*Cetorhinus maximus*	10	20/10/2021
Nursehound	*Scyliorhinus stellaris*	7	2005
Small-eyed ray	*Raja microocellata*	6	26/12/2022
Cuckoo ray	*Leucoraja naevus*	3	26/02/2006
Blackmouth catshark	*Galeus melastomus*	2	2004
Blue shark	*Prionace glauca*	1	2006
Common stingray	*Dasyatis Pastinaca*	1	2003
Marbled electric ray	*Torpedo marmorata*	1	2013
Roughskin dogfish	*Centroscymnus owstonii*	1	07/04/2023
Sandy ray	*Leucoraja circularis*	1	26/07/2005

4.2 Species Records

4.2.1 All species

Elasmobranch records were widely distributed along Kent's coastline, with particularly high concentrations in North Kent and the Outer Thames Estuary (Figure 5). Notable hotspots also appear just beyond Kent's northern boundary, highlighting the importance of considering ecological connectivity in regional conservation planning.

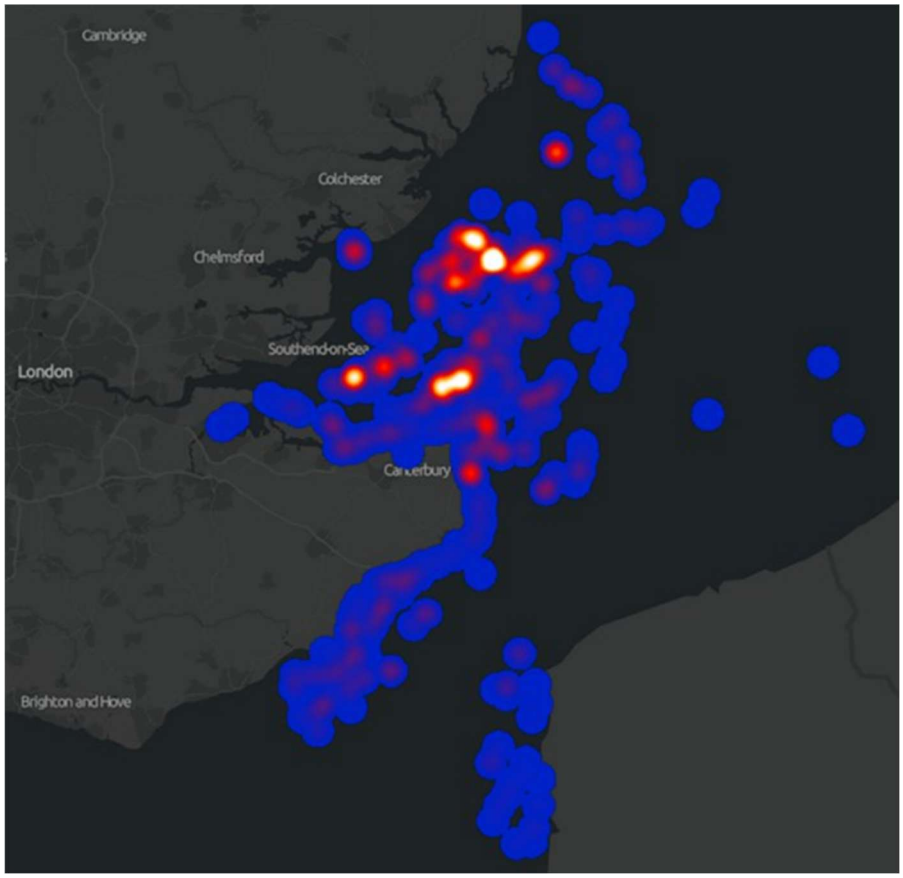

Figure 5 - Heatmap showing the distribution of all elasmobranch species from the collated database. Data sources include CEFAS, The Shark Trust, NBN Atlas, and Marine Data Exchange.

The dominance of Thornback ray and Small-Spotted Catshark records in the database is highlighted in *Figure 6*. Data points situated along the coastline represent eggcase records and sightings from shore, these cover the vast majority of the Kent coastline.

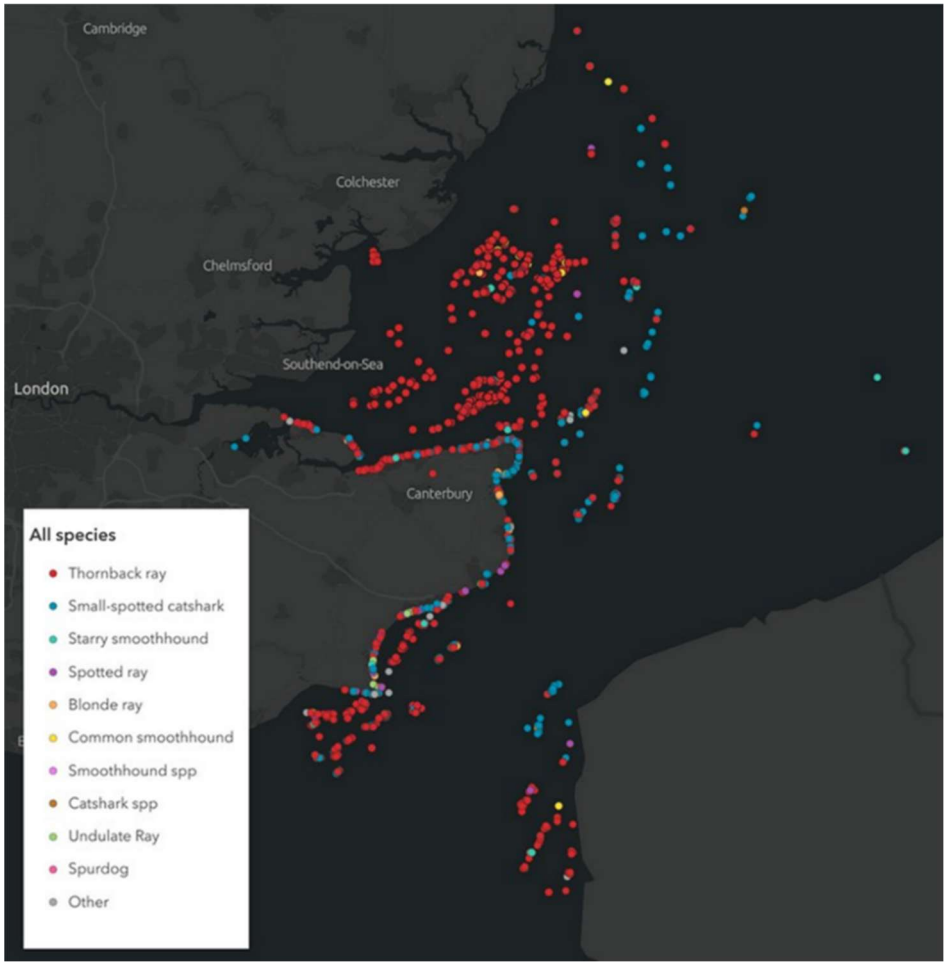

Figure 6 – All elasmobranch species records from the collated database. Data sources include CEFAS, The Shark Trust, NBN Atlas, and Marine Data Exchange.

Species profiles in the following section have been informed by multiple sources, these were: MarLin (2025), The Wildlife Trusts (2025), Kent and Essex IFCA (2025b), Southern IFCA (2025), Cornwall Good Seafood Guide (2025) and ICES (2025). Species icons were downloaded from Cornwall Good Seafood Guide (2025).

4.2.2 Thornback Ray

Thornback Ray, *Raja clavata*, is a common member of the skate family, getting its name from numerous thorn-like spines on its upper surface and along the tail. It is found year-round around the coasts of Britain and is the most abundant ray species in in-shore waters. It is particularly abundant in the southern North Sea, notably in the Outer Thames Estuary and the Wash. It is mainly non-migratory, however often moves close inshore during the spring, and juveniles are more-likely to be found in near-shore waters. This seasonal inshore movement is driven by reproductive activity, facilitating oviposition in shallow coastal habitats, increased water temperatures and enhanced benthic prey availability. Further, ICES outlined that previous tagging studies have indicated that juveniles are non-migratory and remain in inshore nursery grounds. A species summary is provided in *Table 2.*

Table 2 – Life history traits, fishery information and conservation status of Thornback Ray, *Raja clavata.*

Factor	Details
Size	Females = 118cm, males = 98cm
Lifespan	Up to 15 years
Fecundity	140-160 eggs per year
Reproductive frequency	Annual
Habitat	Coastal waters (10-60m) on mixed seabed types
Local target species	Yes, permitted in ICES regions VIId and IVc
Capture methods	Beam trawls, gill nets, bycatch and other
Fishing season	Year-round
Conservation status (IUCN)	Near Threatened

Results from this study indicate a strong presence of Thornback Ray around Kent with over 10,000 individual records collated. Abundance was concentrated across all areas, with strong coverage across the whole of the Greater Thames Estuary (Figure 7). Egg-case presence was also abundant, indicated by shoreline records. Although egg-cases cannot be a true indicator of species presence as they may have been washed up by wide-ranging currents, they may indicate that Kent's waters are important Thornback Ray breeding and nursing grounds.

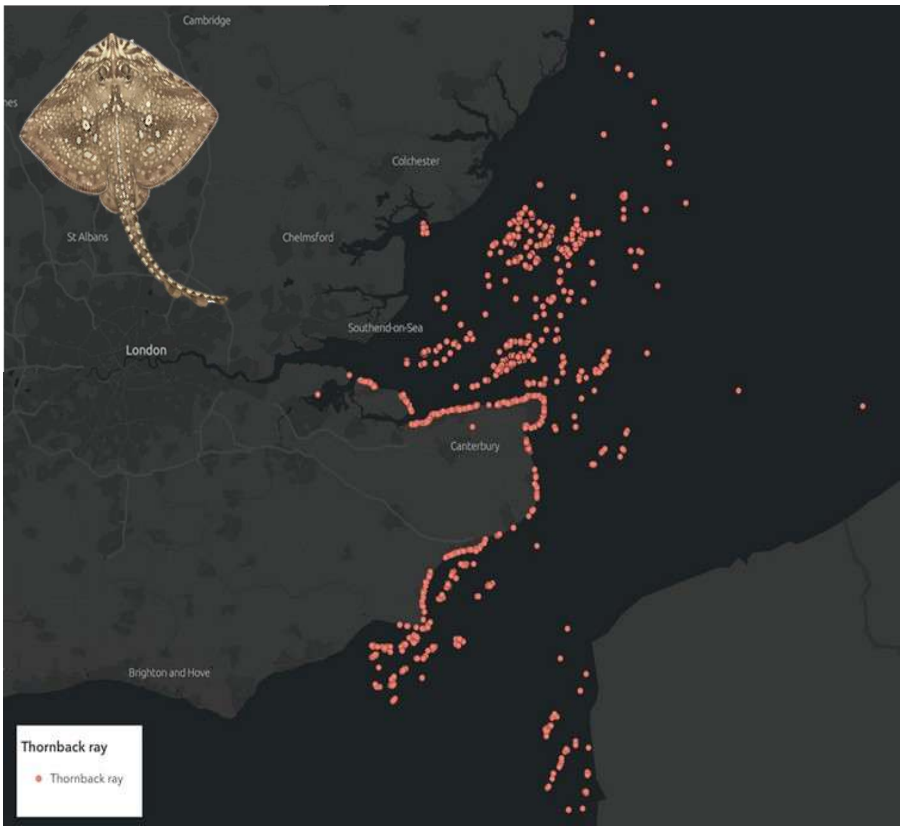

Figure 7 – Plot of all Thornback ray, *Raja clavata*, records from the collated database. Data sources include CEFAS, The Shark Trust, NBN Atlas, and Marine Data Exchange.

4.2.3 Small-Spotted Catshark & Other Catshark spp.

The Small-Spotted Catshark, *Scyliorhinus canicula*, is a common, non-migratory species found year-round around the UK. Small-Spotted Catshark are particularly abundant in shallow, coastal habitats which provide shelter to lay their eggs and function as nursing grounds for their young. This small species of shark (adults can reach up to 1 meter long) feed on macro-

crustaceans, molluscs and benthic fish. Due to its ranging diet, it is often used as an indicator species of ecosystem health. Catsharks are locally targeted, despite their low commercial value, with most fish caught as bycatch. A species summary is provided in *Table 3.*

Table 3 – Life history traits, fishery information and conservation status of Small-spotted catshark, *Scyliorhinus canciula.*

Factor	Details
Size	Up to 100cm
Lifespan	Up to 12 years
Fecundity	29-62 eggs
Reproductive frequency	Annual
Habitat	Shallow, coastal habitats (habitat generalist)
Local target species	Yes, permitted in ICES regions VIId and IVc
Capture methods	Trawls, nets and pots (usually bycatch)
Fishing season	Year-round
Conservation status (IUCN)	Least concern

Small-Spotted Catshark were the second most abundant species represented in the dataset suggesting it is locally abundant. Mapping these records has highlighted a wide-ranging distribution around the Kent coastline, particularly in inshore areas (Figure 8). Many records for this species were eggcases (‘mermaid purses’) found washed-up along the shoreline, suggesting local coastal waters are used for breeding.

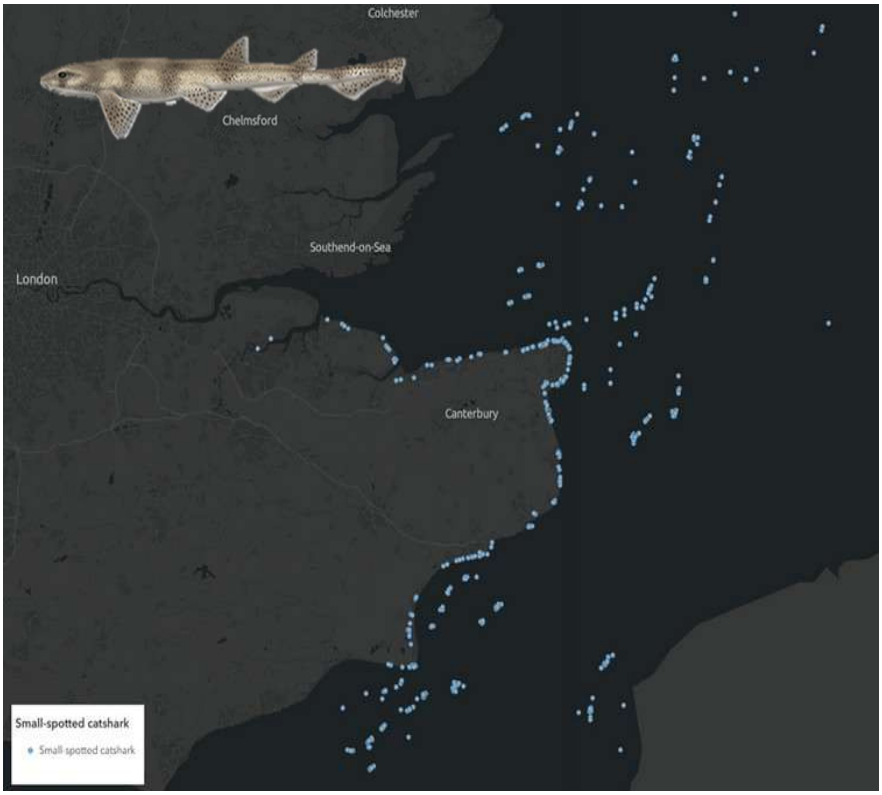

Figure 8 - Plot of all Small-Spotted Catshark, *Scyliorhinus canicula*, records from the collated database. Data sources include CEFAS, The Shark Trust, NBN Atlas, and Marine Data Exchange.

Small-Spotted Catshark made up the substantial majority of *Scyliorhinidae* catshark records. Only seven records of Nursehound, *Scyliorhinus stellaris*, were collated. In addition, two

records of Blackmouth Catshark, Galeus melastomus, were collated. A deepwater catshark species of genus *Galeus.* Nursehound showed a patchy distribution while both records of Blackmouth Catshark were recorded in the Thames Estuary (Figure 9). The small number of records for both these species could suggest they are less abundant locally or highlight the lack of data surrounding these species.

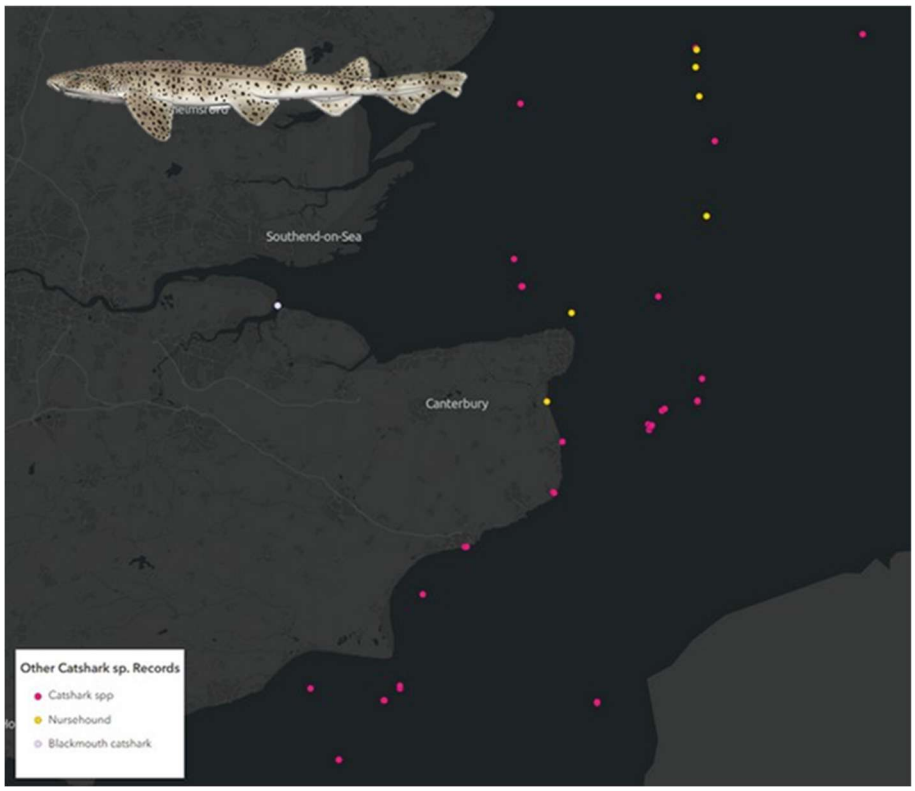

Figure 9 – Plot of Nursehound, *Scyliorhinus canicula*, and Blackmouth Catshark, *Galeus melastomus*, records from the collated database. Data sources include CEFAS, The Shark Trust, NBN Atlas, and Marine Data Exchange.

4.2.3 Smoothhound (Starry and Common)

For this study, Starry (*M. asterias*) and Common (*Mustelus mustelus*) smoothhound records were grouped together. It is often difficult to confidently identify these species apart which leads to the mis-identification of these species. There is also growing evidence to suggest that common smoothhounds are far less abundant around the UK than previously thought and are actually a more southern-ranging species. This has been informed through genetic studies of *Mustelus spp*. present in UK waters (Farrell et al., 2009). Thus, it is likely that most Common Smoothhound records with the dataset are actually Starry Smoothhounds.

Starry Smoothhound, *Mustelus asterias*, is common around the UK but is most abundant along the south and west coasts. The movement of this species is currently unknown. Starry smoothounds are a predominately benthic species and feed on crustaceans present on the seafloor. As a viviparous species, females give birth to live young in the summer following a gestation period of up to 12 months. Bays and large estuaries provide the species with nursery habitat, of which the Greater Thames estuary may represent. Starry Smoothhound are economically important to commercial fisheries and socially important to the local recreational angling community, providing sporting value. Bycatch in bottom trawls is a particular threat to

this species in the Northeast Atlantic. A species summary is provided in *Table 4.*

Table 4 – Life history traits, fishery information and conservation status of Smoothhound, *Mustelus spp.*

Factor	Details
Size	Max. 160cm, Avg. 120cm
Lifespan	13-18 years
Fecundity	6-20 pups
Reproductive frequency	Biennial
Habitat	Coastal sand and gravel bottomed areas
Local target species	Yes, permitted in ICES regions VIId and IVc
Capture methods	Fixed-nets and trawls (usually bycatch)
Fishing season	Year-round
Conservation status (IUCN)	Starry Smoothhound – Near Threatened Common Smoothhound - Endangered

Figure 10 represents 370 *Mustelus* spp. records and highlights Starry Smoothhound as a species found in the northeastern and southern extents of the waters surrounding Kent. Particular hotpots are in the English Channel, around Dungeness, and into the Outer Thames boundary. Of note, a small number of records are present in French coastal waters which may indicate that this species traverses international waters.

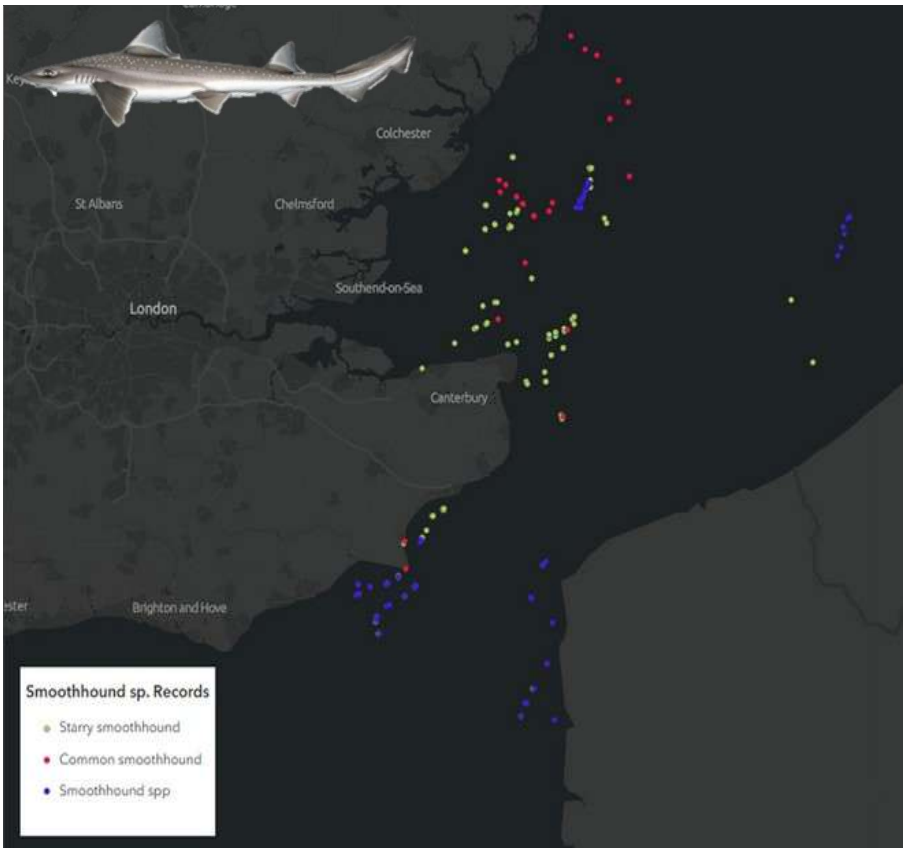

Figure 10 - Plot of all Smoothhound (*Mustelus spp.*) records from the collated database. Data sources include CEFAS, The Shark Trust, NBN Atlas, and Marine Data Exchange.

4.2.4 Spotted Ray

Spotted Ray, *Raja montagui*, is one of the smallest species of skate, found across all of the British Isles, its northerly most range. Spotted Ray is one of the three most frequent skate

species found in the English Channel. Juvenile Spotted Ray take shelter in shallow areas, and particularly high densities have been recorded in the northeast of the English Channel, suggesting it may be an area of importance for breeding and nursing. The species has limited migration, with tagging studies indicating 75% of recaptured Spotted Ray remained within 30 nautical miles of their release sites in the English Channel. Stock size within the English Channel is currently unknown, leading to a precautionary approach to landings for this species as advised by ICES. Tagging of this species will therefore contribute useful data to improve this knowledge. A species summary is provided in *Table 5.*

Table 5 – Life history traits, fishery information and conservation status of Spotted Ray, *Raja montagui.*

Factor	Details
Size	Max. 80cm
Lifespan	Up to 18 years
Fecundity	60-70 egg capsules per year
Reproductive frequency	Annual
Habitat	Shallow, soft grounds deeper than 8m
Local target species	Yes, permitted in ICES regions VIId and IVc
Capture methods	Nets, lines and trawls
Fishing season	Year-round
Conservation status (IUCN)	Least Concern

Spotted Ray was present across all the Kent coastline (Figure 11), although in much less abundance than the Thornback Ray (172 individuals). Most records were from eggcase findings, indicating the surrounding areas may be of importance for nursing and breeding grounds for the spotted ray.

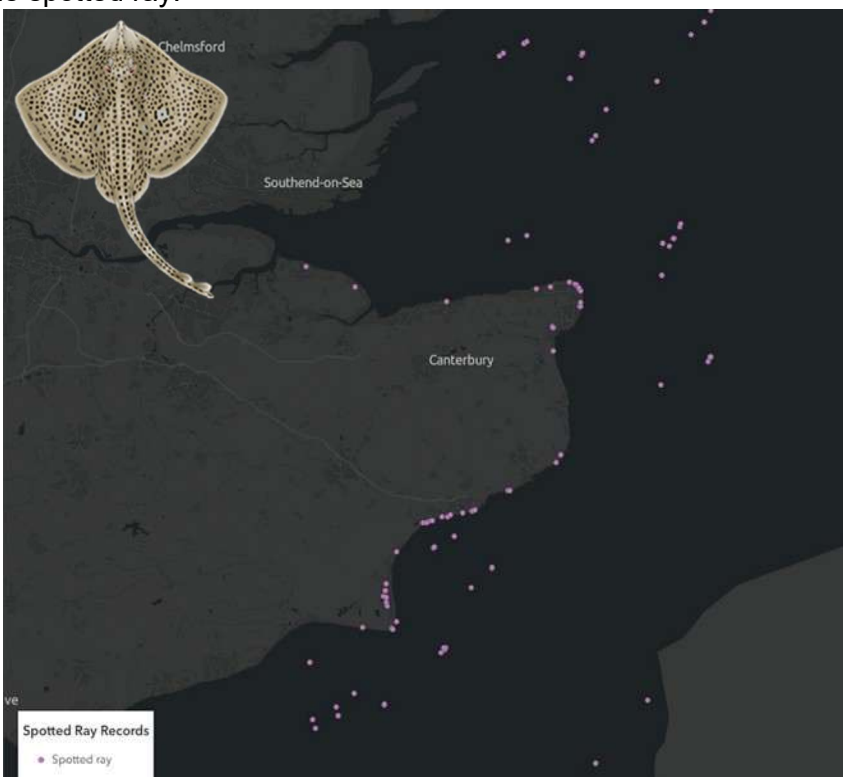

Figure 11 – Plot of all Spotted ray, *Raja montagui*, records across collated dataset. Data sources include CEFAS, The Shark Trust, NBN Atlas, and Marine Data Exchange.

4.2.5 Blonde Ray

Blonde ray, *Raja brachyura*, is of greater abundance in the south and west of England, with the British Isles representing its most northerly range. Blonde Ray is one of the largest skate species and is also much less fecund, making it susceptible to overfishing. Similar to other skate species, Blonde Ray also exhibits site fidelity and limited migration, with studies showing a maximum displacement of 61km. This species occupies a similar geographic range to the Spotted Ray, and therefore the two species are commonly confused. Due to a lack of data for this species, ICES advice states that stock and exploitation status within the English Channel cannot be assessed for the Blonde Ray, making it a potential key target for the tagging programme to improve data and understanding. A species summary is provided in *Table 6.*

Table 6 – Life history traits, fishery information and conservation status of Blonde Ray, *Raja brachyura.*

Factor	Details
Size	Max. 120cm
Lifespan	Up to 15 years
Fecundity	30 egg capsules per year
Reproductive frequency	Annual
Habitat	Sandy grounds less than 150m deep
Local target species	Yes, permitted in ICES regions VIId and IVc
Capture methods	Nets, trawl and rod & line
Fishing season	Year-round
Conservation status (IUCN)	Near Threatened

Blonde Ray was one of the lesser recorded skate species within the dataset (129 individuals). The species was noticeably absent from the Thames Estuary (Figure 12). The species was generally more abundant in waters off the south and east coast of Kent, with several records of eggcases along the shoreline in these areas. These findings align with the limited evidence of this species within the English Channel.

Figure 12 - Plot of all Blonde Ray, *Raja brachyura*, records from the collated database. Data sources include CEFAS, The Shark Trust, NBN Atlas, and Marine Data Exchange.

4.2.6 Undulate Ray

Undulate Ray, *Raja undulata*, is listed as Endangered across its distribution under the IUCN's red list and has a limited abundance in the southern North Sea. However, it is frequently recorded in the English Channel. Following concerns over the species population status, the UK was granted limited bycatch quotas in 2015 for areas where Undulate Ray is abundant. As such, the species is often caught as bycatch by a range of different gear types including gill, entangling and trammel nets, and demersal trawls. Recreationally, this species is also particularly sought after, thus its return is encouraged by the Angling Trust. Like other skates, this species also exhibits low fecundity rates making it susceptible to overfishing and inshore areas which are important for breeding and nursing. The species exhibits high fidelity rates within the English Channel, suggesting it may be of importance as a breeding and nursing ground, with the breeding season for this species in the UK assumed to be from March to September. A species summary is provided in *Table 7.*

Table 7 – Life history traits, fishery information and conservation status of Undulate Ray, *Raja undulata..*

Factor	Details
Size	Max. 120cm
Lifespan	13 years
Fecundity	30-70 egg capsules per year
Reproductive frequency	Annual
Habitat	Soft sediment, inshore waters less than 100m
Local target species	Targeting permitted in ICES area VIId only (seasonal closures and size limits in place)
Capture methods	Trawls and nets
Fishing season	Fishery closed between May-August
Conservation status (IUCN)	Endangered

The distribution of Undulate Ray records were predominantly in the English Channel, along the southern coastline of Kent (Figure 13). This aligns well with evidence that the English Channel is an important area for the species. Although Undulate Ray was well-evidenced within the dataset (130 individuals), all records are eggcases (located along the shoreline). This high abundance of egg cases may indicate that Kent is an important location for breeding Undulate Ray. However, strong currents may bring eggcases in from areas beyond Kent's waters and therefore this cannot be determined without further evidence of live Undulate Rays within the area.

Figure 13 - Plot of all Undulate ray, *Raja undulata*, from the collated database. Data sources include CEFAS, The Shark Trust, NBN Atlas, and Marine Data Exchange.

4.2.7 Tope

Tope, *Galeorhinus galeus*, are found around the UK but most commonly in the south and west of the country. Tope are a migratory species and a summer visitor to the waters surrounding Kent. The species has been shown to travel substantial distances across international waters during migration, motivated by food resource abundance and breeding. In the summer period, females move inshore to give birth to live young, following a gestation period of 12 months. There is currently a lack of evidence that supports UK coastal waters as an important nursery area for this species.

Tope is listed as Critically Endangered on the IUCN Red List and is a priority species in the UK. The species is particularly vulnerable to fishing pressure due to slow life-history traits and the length of the species' reproductive cycle. As such, Tope are subject to additional protections in the UK and can only be caught by recreational fishers by rod and line methods - they are prohibited from being retained. A species summary is provided in *Table 8.*

Table 8 – Life history traits, fishery information and conservation status of Tope, *Galeorhinus galeus.*

Factor	Details
Size	120-185cm
Lifespan	45 years (max average)
Fecundity	Broods up to 20 pups
Reproductive frequency	Biennial
Habitat	Sand/gravel bottom shallow areas (<50m)
Local target species	No, targeting prohibited
Capture methods	Rod & line only (recreational fisheries)
Fishing season	Summer
Conservation status (IUCN)	Critically Endangered

There were relatively few records of Tope (21 in total) in our dataset, potentially suggesting this species is less abundant around Kent. The majority of these records were collected off the east of the Thanet coastline as part of Environmental Impact Assessments for proposed off-shore developments (Figure 14). Thus, this result could be a product of sampling effort rather than highlighting an area regularly utilised by this species. More data would be needed to determine the true abundance and distribution of Tope around the Kent coastline, this holds particular importance given the species' conservation status.

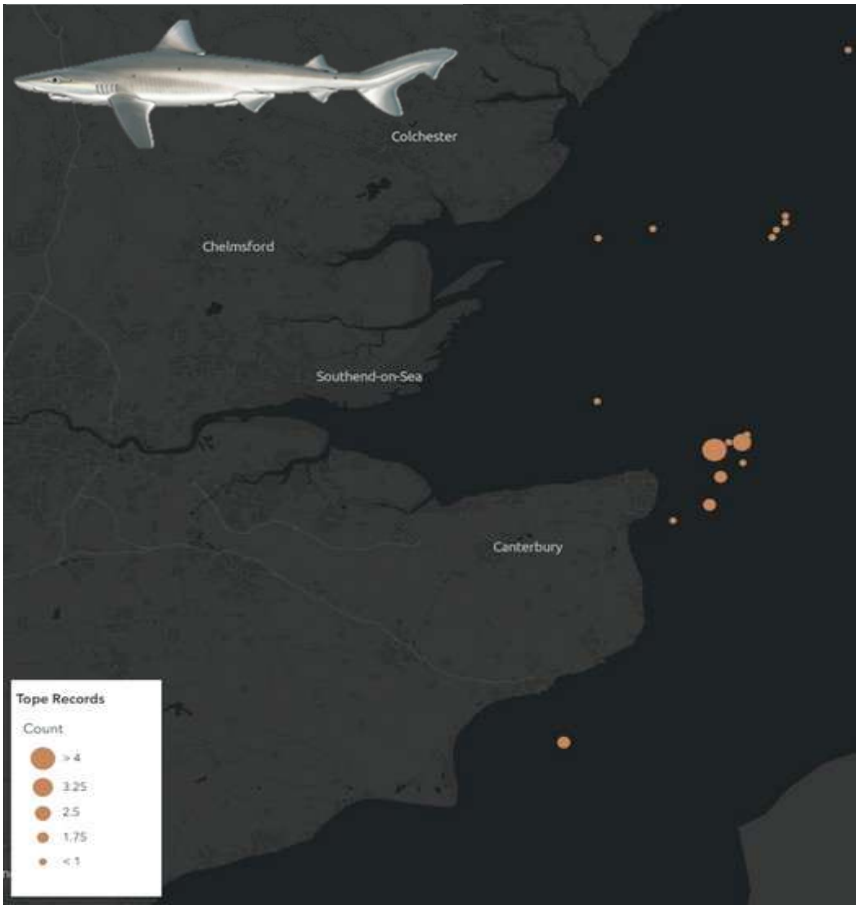

Figure 14 - Plot of all Tope, *Galeorhinus galeus*, records from the collated database. Data sources include CEFAS, The Shark Trust, NBN Atlas, and Marine Data Exchange.

4.2.8 Common Thresher

Common Thresher, *Alopia vulpinus*, are present in temperate and tropical waters worldwide in coastal and open ocean environs. Common Thresher is a large migratory species of shark which is present around the UK during the summer months, feeding on the summer abundance of pelagic fish. The species pups in spring and summer months after a nine-month gestation period. Inshore areas provide nursery habitat for pups, however, little is known about which habitats are utilised by this species for nursery provision.

Common thresher sharks are particularly vulnerable to overexploitation and bycatch from unsustainable fishing methods by commercial fisheries. The global population has declined up to 50% over the last 77 years and it is believed that the North Atlantic population is similarly in decline – more evidence is needed to determine the extent of this. A species summary is provided in *Table 9.*

Table 9 – Life history traits, fishery information and conservation status of Common Thresher, *Alopia vulpinus*.

Factor	Details
Size	Up to 1.6m
Lifespan	Up to 75 years
Fecundity	2-6 pups
Reproductive frequency	Annual
Habitat	Coastal and open waters
Local target species	No, targeting prohibited.
Capture methods	Longline and gillnets (bycatch)
Fishing season	Summer
Conservation status (IUCN)	Vulnerable

Only 14 records of Thresher Shark were represented in our database, the majority of these were present off Dungeness (Figure 15). This may suggest the English Channel is an important commuting area for the species. However, it is important to note that most of these records came from the Dungeness Bird Observatory and may be a product of sampling effort rather than highlighting area preference.

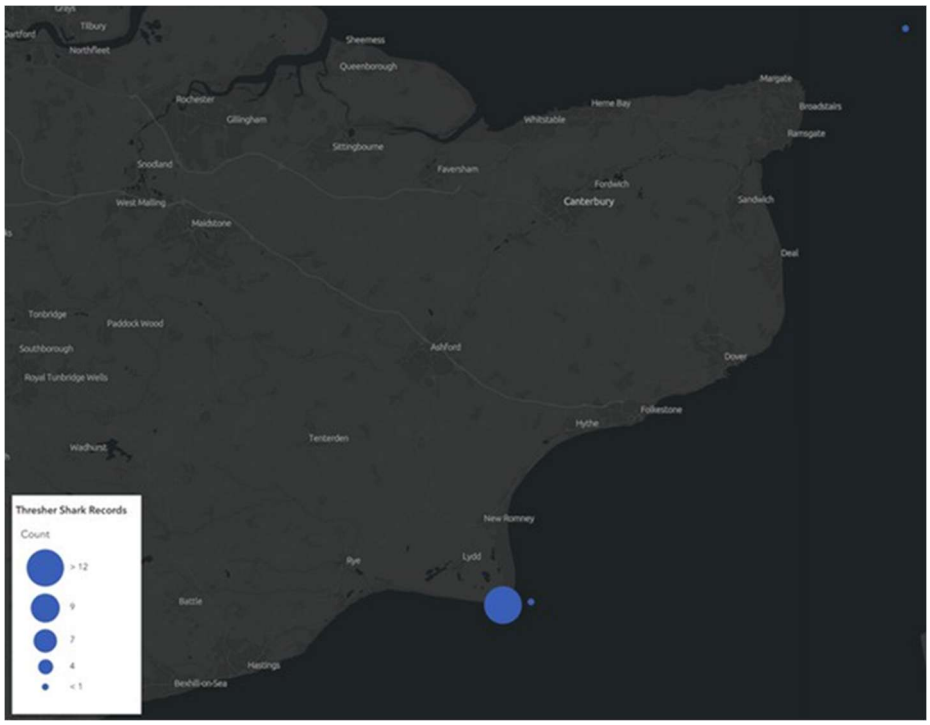

Figure 15 - Plot of all Thresher shark, *Alopia vulpinus*, records from the collated database. Data sources include CEFAS, The Shark Trust, NBN Atlas, and Marine Data Exchange.

4.2.9 Spurdog

Spurdog, *Squalus acanthias*, is a slender shark which can be identified by spines in front of its dorsal fin. These spines are used to defend itself and can be harmful if handled incorrectly. Spurdog is most common within waters that are 10-200m deep and can be found throughout the whole of the North Sea, however it is less common in the southern North Sea. It is a highly migratory species and is commercially targeted, though mainly caught as bycatch in trawl fisheries. The stock was assessed in 2021 which outlined declines in abundance due to historic exploitation and the biological characteristics of slow and low fecundity. Fisheries for this species were closed from 2011-2023, which have since reopened with the latest (2024)

ICES advice showing stocks have continued to increase. A species summary is provided in *Table 10.*

Table 10 – Life history traits, fishery information and conservation status of Spurdog, *Squalus acanthias.*

Factor	Details
Size	Up to 600cm
Lifespan	38 years (max)
Fecundity	2-6 pups
Reproductive frequency	Annual
Habitat	Coastal and open waters
Local target species	Yes, targeting permitted in ICES regions VIId and IVc, with size limits in place
Capture methods	Longline and gillnets (often bycatch)
Fishing season	Summer
Conservation status (IUCN)	Vulnerable

In total there are 34 records of Spurdog within the dataset, most of these were located in the very outer limits of the Greater Thames Estuary (Figure 16). Collecting more records for this data-limited species would be useful to determining its true distribution and abundance around the Kent coast, particularly given its vulnerable conservation status.

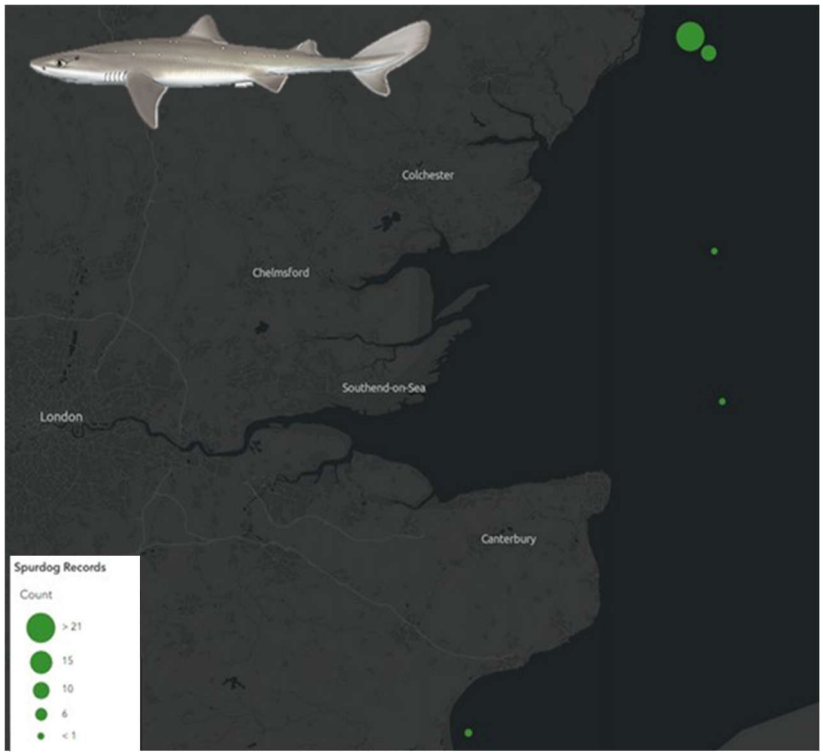

Figure 16 - Plot of all Spurdog, *Squalus acanthias*, records from the collated database. Data sources include CEFAS, The Shark Trust, NBN Atlas, and Marine Data Exchange.

4.2.10 Data-Limited Species

Figure 17 illustrates the eight remaining elasmobranch species with ten or less total records. This could potentially indicate that these species are rarely present in Kent's coastal waters, however, it is difficult to make informed conclusions around the abundance and distribution of these species due to limited data. The lack of data surrounding these species adds weight to the argument that an elasmobranch monitoring project is needed to build a stronger base of understanding of these species' populations and distribution.

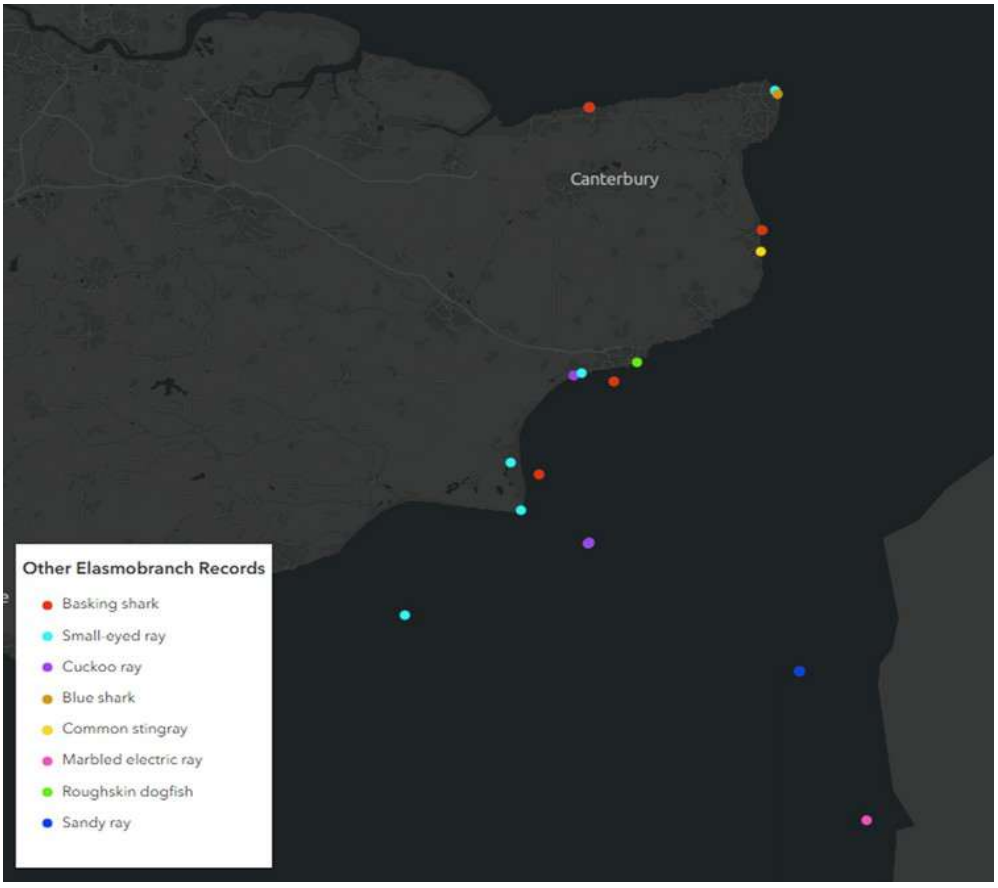

Figure 17 – Distribution of elasmobranch species with ten or less total records from collated database. Data sources include CEFAS, The Shark Trust, NBN Atlas, and Marine Data Exchange.

4.2 Insights from MMO Data

Commercially Valuable Species

Thornback ray was the most landed species into Kent ports between 2009 and 2025, with a total of 1743.2 tonnes (live weight) landed over the time period. Smoothhound were the second most commercially-valued (by live landing weight) elasmobranch species, with 511.1 tonnes landed between 2009 and 2025. This was followed by Small-spotted catshark (148.3 tonnes) and Blonde ray (89.2 tonnes). These substantial landing quantities suggest that these species are economically valued by fisheries operating in the area and provides insight into the pressures local populations of these species face.

Species Presence

The MMO database provided insight into the species present (and therefore caught) around the Kent coastline and confirmed species which had been identified in the five other data sources. Outside of these databases, landings records also indicated the potential presence of Arctic Skate, Amblyraja hyperborea, and the critically endangered White Skate, Rostroraja alba. Arctic Skate were landed in 2021 and between 2024-25 in Dungeness and Whitstable. White Skate were only landed into Ramsgate port in 2022. Misidentification can be an issue with landings data, so confirming whether these species are present locally through a monitoring programme would be advantageous.

All Species Trend

An overall declining trend in shark, skate and ray landings into Kent ports between 2009 and 2024 was observed (Figure 18). This trend raises concerns around the population status of commercially important elasmobranch species around the Kent coastline. However, species abundance is not the only factor which can influence landing trends. Changes in landings can also be driven by the market value of fish, changes in fishing effort and TACs.

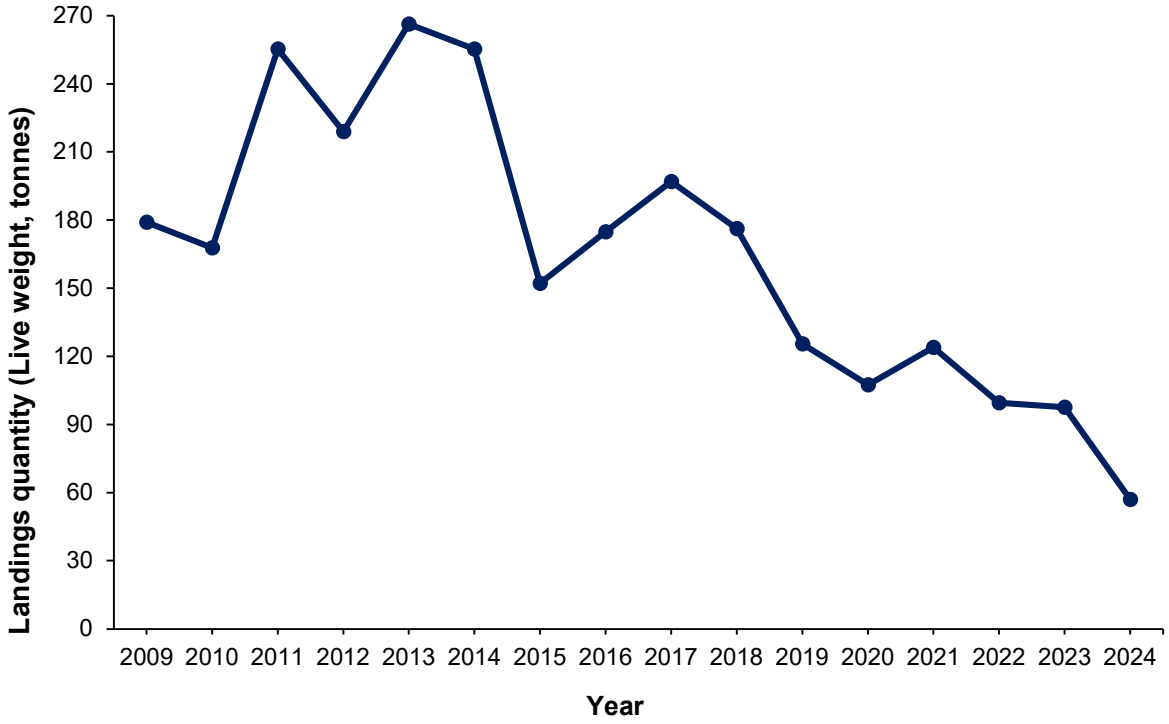

Figure 18 – Landing quantity (live weight in tonnes) of sharks, skates and rays from UK vessels into Kent ports between 2009 and 2024.

Species Spotlight - Thornback Ray

Landings of Thornback Ray into Kent ports have declined substantially over the last 12 years, since their peak of 214.4 tonnes in 2013 (Figure 19). In 2024, 19.8 tonnes of Thornback Ray were landed. Kent fishers have previously voiced their concerns around the decline in the Thornback ray population present around the Kent coastline (Renton and Lee, 2023), which this trend may support. Further, insights from interviews carried out with local anglers, as part of this study, also raised concerns of decline in Thornback Ray abundance, particularly in deeper waters (see section 4.3). Inshore, recent increased abundances of Thornback ray have been noted anecdotally by non-commercial, recreational anglers (Kent & Essex IFCA, 2024).

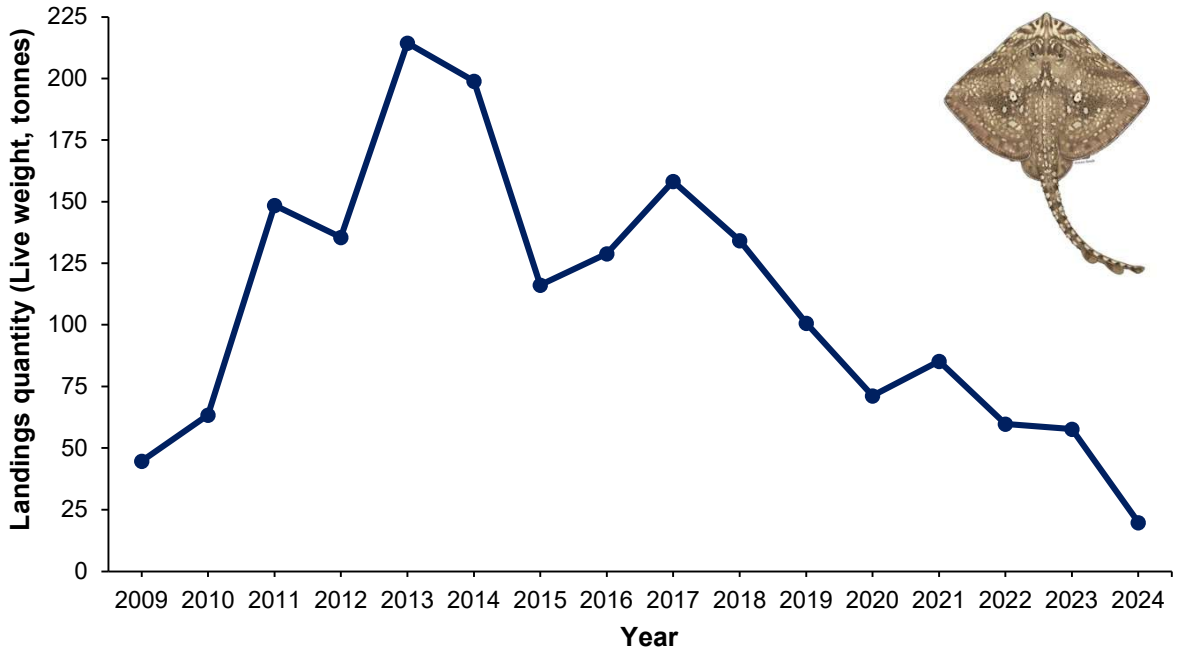

Figure 19 – Landing quantity (live weight in tonnes) of Thornback Ray from UK vessels into Kent ports between 2009 and 2024.

It is important to note that despite legislative changes in 2009 which required species-specific reporting of skates and rays; 76.5 tonnes and 32.5 tonnes of "Skate and ray" were landed in 2009 and 2010, respectively. This may have masked the actual quantity of Thornback Ray landed during these adjustment years.

Species Spotlight – Common Thresher

MMO data also provided insight into the gear types used to target each species. Use of drift and fixed nets landed the most elasmobranchs (in terms of total live tonnage) between 2009 and 2025. This gear type was used to target the majority of landed Thornback Ray, Smoothhound, Blonde Ray and Catsharks (*Scyliorhinus* spp.).

Drift and fixed nets were the only fishing method which resulted in the landings of Thresher Shark into Kent ports over the time period. Common Thresher is prohibited from being targeted in ICES areas IVc and VIId (Figure 2), therefore, these landings must have been bycatch. Bycatch in drift/fixed/gill nets are a particular threat to pelagic shark species, such as Common Thresher and Blue Sharks, and unsustainable fishing practices have led to significant declines in populations of these sharks (Rogan & Mackey, 2007). This finding raises a local bycatch issue surrounding the use of drift and fixed nets.

4.3 Angler Interviews

Interviewee Profiles

Both anglers were long-term members of the local angling community, having fished locally for between 30 and 60 years, one of which had been involved in a shark tagging project before. One interviewee was based in Queenborough and the other in Dover.

Catch Experience and Observations

Q. What shark, skate and ray species do you catch most often?

"The good news is this year, there has been quite a few small ones which means they [Smoothhounds] are pupping well"

Both anglers mentioned that they caught Small-spotted catshark and indicated that they were in high abundance. Alongside Small-spotted catshark, Thornback Ray was the other main catch of the angler in Dover.

Smoothhound was the main target species for the angler in Queenborough. Common Stingray was another species caught in the Thames Estuary, it was suggested that this species were present in low abundance. Neither of these species were mentioned by the angler in Dover. Nursehound was another species present in the Thames Estuary but in very low abundance, as the angler stated that they had only ever caught one Nursehound in the area.

Q. Have you ever caught or seen a rare or unusual shark, skate and ray species that stands out in your memory?

"[Thresher shark] was seen inshore within the Dover area early in the Summer"

Both anglers mentioned that they had seen Thresher sharks. The angler in Dover mentioned that they are more often seen on the "*French side*" of the English Channel and that one had been sighted inshore near Dover in the summer of 2025.

Q. Have you noticed any changes in your catch over recent years?

"There used to be loads of Blonde Rays around here, but you don't see many of them now"

Nursehound, Blonde Ray and Tope were all mentioned as having decreased in abundance by the angler in Dover. Nursehound had never been caught in high abundances locally, however, at present they are very rarely caught. Blonde Ray, however, used to be in high abundance during the summer in the area. The decline of this species has occurred at least over the last 20 years, according to the angler.

Thornback Ray were noted by the angler in Queensborough as a species which had significantly declined in the Thames Estuary, having "disappeared" from the area and were now only present inshore. They mentioned that this decline had been observed in other areas of the UK, such as the Bristol Channel. They suggested that Small-Spotted Catshark were not in decline and should not be of conservation concern.

"I have massive concerns about Smoothhound because at the end of the day it's my business... if they're gone, my business is gone. It's in my interest to protect them."

Smoothhounds in the Thames Estuary were also noted to have declined quite significantly in size. The angler indicated that the Thames Estuary was an important nursing area for the species, mentioning multiple times that they had caught Smoothhound pups in the area.

Q. What do you think might be causing these trends?

> *"100% overfishing"*

Commercial overfishing was believed to be the main cause of Smoothhound decline in the Thames Estuary, driven by the lack of protective measures for this species and the price of the animals at market.

Climate change was suggested as a cause of elasmobranch declines, particularly as sightings of novel species, such as Atlantic Bluefin tuna (noted by both anglers), have increased around the Kent coastline. The anglers attributed this to warming seas and the northward range expansion of these species.

Interest in a Tagging Programme

Q. If the project developed into a tagging programme, would you want to be involved and why?

Both anglers said that they would like to be involved in the project if it was established. Both cited elasmobranch conservation and fishing/sport value as main motivations for wanting to be involved in the project. One of the anglers also stated that another motivation was an interest in finding out more about sharks, skates and rays.

Q. Do you think a tagging programme would be beneficial to elasmobranch conservation?

> *"I think it would be beneficial, you can see what's going on with the species and keep an eye on them"*

Both anglers thought the project would be beneficial to local elasmobranch conservation. However, one of the anglers did express their concern that the project alone would not be enough, suggesting that support from well-known public figures and from commercial fisheries would be needed to achieve conservation objectives.

Additionally, a concern was expressed over the efficiency of capture-tag-recapture. The point was raised that it is likely that many of the recaptured animals would be caught by commercial fishers who may lack an incentive to report. They said this may be due to concerns over the passing of information to a conservation organisation, which may be used to restrict fishing access. They suggested that a monetary incentive for reporting would help overcome this issue.

Barriers and Support

Q. Are there any barriers that might prevent you from getting involved in the project?

"You've got to make it easy for us"

Complicated catch reporting practices and busy business periods were cited as barriers which may prevent anglers getting involved in the project.

Project recommendation – Real-time reporting

Discussing these barriers further, it was agreed the reporting barrier could be overcome through a method that allows quick, real-time reporting. Messaging through WhatsApp or email, where pictures could also be shared, were suggested as a method which would improve the ease of reporting. Both anglers would be happy to use a messaging service or email to report.

Additionally, an agreement that there would not be a year-round expectation to tag would prevent alienating anglers who could only be involved in the project at certain times of the year.

Q. Do you have any concerns about the impact of tagging on the animals or the fishing experiences that you run?

"When I explain to them [customers] at the start of the day, if you catch Smoothhounds I would like to tag them and record them, for the future… they all agree"

Neither angler had concerns over the impact of tagging on elasmobranchs. One did raise the point, from experience, that a small minority of their customers have expressed disinterest in tagging, largely due to the time it takes out of their paid day trip. However, the majority have been interested in tagging and are happy for skippers to take the time to tag animals when caught.

Collaboration and Communication

Q. What would make you feel valued and respected as a contributor to the project?

Recognition was the main factor cited as important to feeling valued as a contributor to the project; for example acknowledging charter boats in public-facing documents and project media. Additionally, simply undertaking the tagging work was enough and there was an urgency to start contributing. A want to be regularly kept updated with the progress of the project and any results (e.g. information on recaptures) was expressed.

About data use

Neither angler was concerned about data handling. Both were happy to provide exact locations (e.g. coordinates) of their catches. However, they would prefer that these were not publicly reported. This was raised due to a concern that commercial fisheries may find these locations and "*wipe out*" the fish in these areas.

5. Discussion

5.1 Cost Analysis of a Shark Tagging Programme

This section outlines the estimated cost requirements for establishing and operating a shark tagging programme. The analysis will support future applications for funding and grant opportunities.

A cost analysis was undertaken to determine the start-up and annual running costs of shark tagging programme. The estimated initial annual cost to set up and run the project is approximately £3,550, as detailed in Table 11. Main costings include staff training and associated travel costs, of which a 2-3 day trip to the Isle of Man is proposed where Manx Wildlife Trust staff have kindly offered to train ABEC staff in safe tagging procedures and how to run angler training sessions. Another main costing is tagging equipment, including Floy tags, which will likely need to be regularly ordered. A cost saving for the project is that no staff member will be required to work on it full-time. Much of the annual project reporting will be drafted by ABEC's yearly cohort of two Coastal Explorer (CEIP) Interns, funded by The Crown Estate. If established, it is hoped that future intern projects will involve working on the tagging programme.

In subsequent years, costs are expected to decrease because one-off expenses, such as staff training, will not recur. Given the relatively modest funding requirement, the programme is well-positioned to secure support through short-term grants.

Table 11 – Programme Cost Analysis Breakdown.

Project Component	**Cost**
Staff salaries or stipends	£0 – Yearly reports and main work carried out by CEIP interns (funded by TCE)
Angler training session (2 per year)	£400 per day per staff (charity rate) x 4 = £1600 per year
Staff training (one-off)	£550 – Travel to Ise of Man (inclusive of travel, training and overnight stay)
Room hire for workshops (2 days per year)	£200
Vessel hire for training (2 days per year)	£300
Tagging equipment (mats, tagging guns, etc.)	£100 (£20 per mat)
Floy tags	400 tags = c.£600
Sponsorships – rewards funding	£0-200 (potential sponsors: e.g. KWT)
Total cost	**£3,550**

5.2 Potential Funding Sources

Funding will need to be sourced in order to launch and develop a successful shark tagging programme. Using knowledge gained from the Blue Finance Conference 2025 and online sources, a comprehensive list of potential funding sources has been collated (Table 12). This information can be used in conjunction with the estimated price breakdown of launching the programme to apply for relevant grants and funding streams. Details on application information as well as deadlines have been provided to facilitate future funding bids.

Short-Term Funding Opportunities
To launch the shark tagging programme, it is recommended to secure initial funding through short-term conservation grants and local environmental funds, such as the Sea-Changers Grant and the Save Our Seas Foundation grants (Table 12). These sources typically support projects with clear ecological benefits and strong community engagement. Additionally, small-scale corporate sponsorships from businesses linked to marine industries could provide supplementary funding.

The project has already benefitted from a small amount of grant funding (£1150) from Kent Downes. This funding was used to purchase 400 FD-94 Anchor (Floy) tags, with the remainder yet to be spent. This does highlight that grant funders are interested in the project and are willing to finance it – this supports the project's feasibility. Applying for multiple small, one-off grants may facilitate the establishment of the project in the short term.

Long-Term Funding Opportunities
As part of the Coastal Explorer Internship, authors attended the Blue Finance Conference 2025, London to explore marine conservation funding options relevant to a shark tagging project. The conference provided valuable insights, emphasising the need for projects to begin adopting innovative approaches to secure funding and long-term success.

One key theme discussed was blended finance - an approach which combines public, philanthropic, and private capital within a single investment structure. By improving the risk-return profile for investors, blended finance makes it more attractive for funders to engage in projects that deliver environmental and social benefits - unlocking larger sums of capital for conservation initiatives. While this model is typically suited to large-scale projects, it could be considered in later stages, as the shark tagging programme develops. Should this route be taken, external expertise from consultants, such as Athena Blue which specialises in mobilising private investment for marine conservation, may be beneficial.

Corporate partnerships were another major topic of discussion at Blue Finance 2025. A notable example shared was Oyster Haven, a project which aims to restore native oyster reefs. The project has secured significant funding from Purina (a global pet food brand) who hope to benefit from the recovery of fisheries which the restored oyster reefs will promote - a compelling business case for the sponsor. Using a similar approach, the shark tagging project could explore partnerships with companies that have a vested interest in healthy marine ecosystems, which elasmobranchs play a vital role in maintaining.

Finally, community benefit emerged as a critical factor for attracting funding. Many funders prioritise projects that deliver both ecological and social outcomes. To meet this expectation, the shark tagging programme aims to develop a strong community engagement component, including eggcase surveys and participation in angler competitions (see section 5.4). These initiatives will enhance the project's social impact and improve its chances of securing initial funding.

Table 12 – Grant funds applicable to the Kent Citizen Science Small-Shark Tagging Programme.

Name of Fund/Funding Body	Value/Max Amount Available	Summary/Purpose	Contact/Application Process	Links	Deadline/Cycle Dates (If published)
Esmee Fairburn Fund	Minimum amount £30,000, no maximum amount	Foundation which make a range of available grants for charitable work in the UK, including Nature grants. The fund is particularly interested in conservation/restoration projects with long-term benefits to both nature and local communities.	Submit an Expression of Interest through website.	Apply for a grant | Esmée Fairbairn Foundation	
Save Our Seas Foundation	Small Grants average $5,000	Since 2003, the Save Our Seas Foundation has been dedicated to protecting life in our oceans, especially sharks and rays. They support passionate and innovative researchers, conservationists and educators around the globe by funding their projects and helping them to tell important scientific and environmental stories. Various grants available (small grants and keystone grants). Small Grant is designed for 20-18 months. Shark Conservation Fund (SCF) aims to end the global overexploitation of sharks and rays, underpinned by four key objectives: 1) Protecting 100 vital shark and ray areas by 2030, 2) Regulating internation trade in sharks and rays, 3) Protecting the most endangered species, 4) Combating unsustainable fishing practices.		Keystone Grants - Save Our Seas Foundation https://saveourseas.com/grants/funding-applications/small-grants/ https://www.sharkconservationfund.org/	Keystone Grant applications open in March-April 2026. The funding cycle is biennial. Stage 1 involves completing an online form. Small Grant applications open in May 2026.
Finance Earth - UK Nature Fund	Amount unknown - likely large funding amount.	An organisation who unlock private investment for conservation projects. Big Nature Impact Fund, a blended finance solution for the UK's natural capital market that aims to help address the climate and nature crises. The Fund will support high-quality Nature-based Solutions (NbS) projects and enterprises that deliver social and environmental impact, while generating financial returns for institutional investors driven by the sale of a range of ecosystem services.	info@uknaturefund.com	Home - UK Nature Impact Fund https://finance.earth/fund/uknature/?iid=retail	Contact email to apply.

Name of Fund/Funding Body	Value/Max Amount Available	Summary/Purpose	Contact/Application Process	Links	Deadline/Cycle Dates (If published)
Finance Earth - Fisheries Improvement Fund	Amount unknown.	A new funding solution for Fisheries Improvement Projects.	fif@finance.earth	Fisheries Improvement Fund - Finance Earth	Seeking proposals for new funding. Email contact to arrange discussion.
Species Recovery Programme	Amount unknown	For over 30 years, the Species Recovery Programme has worked with partners to save many of England's most threatened species from extinction. In the Environment Act 2021, the government set out new, legally binding targets around species. The Species Recovery Programme now directly contributes to these targets, focusing on the long-term biodiversity goal of reducing species' extinction risk by 2042, relative to 2022 levels. While achieving these targets will depend on landscape-scale approaches that restore natural ecosystem functioning, the Species Recovery Programme complements these measures by providing targeted action for threatened species with bespoke needs, to prevent national extinctions.	N/A	Species Recovery Programme: call for ideas funding opportunity - GOV.UK	Funding now closed but keep an eye on Gov website for new calls.
National Lottery	Varied amounts based on fund chosen.	Funding provided which works to improve habitats or conserve species, as well as helping people to connect to nature in their daily lives.	Contact us | The National Lottery Heritage Fund	https://www.heritagefund.org.uk/funding/national-lottery-heritage-grants-250k-10m/expression-interest https://www.heritagefund.org.uk/funding/how-to-apply	Must submit an expression of interest form before starting funding application.
Horizon Europe UKRI	Amount unknown.	Funding which supports research in any field, along with agriculture and environment.		EU Funding & Tenders Portal	Use link to search for calls for funding applications.

Name of Fund/Funding Body	Value/Max Amount Available	Summary/Purpose	Contact/Application Process	Links	Deadline/Cycle Dates (If published)
Endangered Landscape and seascape programme	Up to $120,000	The Endangered Landscapes & Seascapes Programme supports partners to restore landscapes and seascapes across Europe for the benefit of nature and people, building a healthier and more hopeful future.	elsp@jbs.cam.ac.uk	Funding Opportunities | Endangered Landscapes & Seascapes Programme	Applications now open, ending on 20th January 2026. Can sign up for updates for other funding opportunities.
John Ellerman Foundation	Amount unknown.	An independent and endowed medium-sized grant making foundation supporting UK charities to advance wellbeing for people, society and the natural world.		ellerman.org.uk/apply-for-funding https://ellerman.org.uk/apply-for-funding/am-i-eligible	Apply using link on website. Applications open now.
The Waterloo Foundation	£100,000 - £150,000 spread over multiple years. One-off and multi-annual grants (usually for up to five years) are provided.	Under the Foundation's marine programme, the foundation supports initiatives that work to halt and restore declining fish stocks by: 1) stopping destructive and illegal fishing and 2) supporting sustainable and small-scale fisheries. Applications for local projects should demonstrate that they will positively impact upon the marine fisheries they are working to protect. Project requirements are outlined here: https://waterloofoundation.org.uk/environmentmarine/	applications@waterloofoundation.org.uk	Environment Marine - The Waterloo Foundation	The two deadlines for applications to our Marine programme fall on the 1st March and 1st September every year
Sea-Changers Grant	Main grants between £500-£2,500 Small grants up to £500	Run grant programmes for a range of marine conservation initiatives.	info@sea-changers.org.uk	Marine Conservation Grant Applications | Seachangers	Main grants have two grant rounds per year, deadlines for applications are 31st March and 30th September each year. Small grants you can apply anytime and get a quick decision. Need to fill out application form to apply.

5.3 Licensing and Ethical Considerations

Licensing

The Animal (Scientific Procedures) Act 1986 (ASPA) is the main legislation that protects animals used for scientific purposes and is regulated by the Home Office's Animal in Science Regulation Unit (ASRU). ASRU is responsible for issuing licenses under ASPA.

ABEC were of the understanding that current elasmobranch tagging projects in England operated under this Home Office license and, as such, reached out to ASRU for licensing advice. After supplying a detailed brief covering the project's aims and methodology, ASRU provided advice that the use of Floy tags for monitoring purposes will **not** require licensing.

This finding adds significant weight to the project's feasibility as the licensing procedure and lengthy application and processing time would have been a substantial barrier to the establishment of the project.

Ethical Considerations - Animal Handling and Angler Safety

This project will need to follow strict ethical guidelines and safety procedures to ensure the wellbeing of both the fish and the anglers undertaking tagging.

Garzon et al. (2025) recently showed that post-release survival of sharks caught in catch-and-release recreational fisheries in the UK is high (>95%), when caught by experienced anglers following best practice guidelines. This study focused on three species which are regularly caught by recreational anglers in the UK - Blue Shark (*Prionace glauca*), Porbeagle (*Lamna nasus*) and Tope (*Galeorhinus galeu*). Best practices for catch and release shark angling suggested by Horton et al. (2023) include the use of non-stainless steel circle hooks and reviving sharks prior to release. Anglers partaking in the project will be informed of and trained using these recommendations and strict guidelines.

ABEC have been kindly provided tagging manual resources from Manx Wildlife Trust, which are shared with anglers to ensure safe tagging practices are undertaken.

Details of the resources include:

- Minimum size classes for each species, to ensure immature fish are not harmed
- How to use tagging guns safely (tagging the animal at a 45-degree angle)
- Important details on how to recognise when an animal is stressed and tagging should therefore be ceased.

These tagging procedures are detailed in the Scottish Sea Angling Conservation Network's training manual for tagging elasmobranchs (SSACN, 2013). Academic research and published guidance from established tagging programmes would be used to inform the project's safe tagging procedures. A leaflet on safe tagging procedures will be produced and provided to each trained angler for it to be kept onboard their vessel for future reference.

The safety of anglers would be an equal priority of the project and this would be one of the focusses of the training sessions run by ABEC staff with anglers. This project would be subject to the usual risk assessment procedures. The project would also look to provide protective

equipment to anglers, if they do not already own this - this will require suitable funding to facilitate. Specialised protective equipment could include a long-handled 'T-bar' which can be used to remove hooks from the animal at a safe distance, as suggested in the Scottish Sea Angling Conservation Network's training manual for tagging elasmobranchs (SSACN, 2013). Additionally, cushioned mats to place the fish on during tagging procedures and for the use for comfortable kneeling of the angler will be provided to ensure the safety and comfort of both the angler and fish.

5.4 Cooperation, Education and Engagement

Angling Community Attitudes to a Tagging Programme

To understand the perspectives of the angling community on a potential shark tagging initiative in Kent, we conducted two interviews with local anglers (see section 4.3 for detailed insights).

Both interviewees expressed strong interest in participating should the programme be introduced, citing elasmobranch conservation and fishing/sport value their primary motivation. Further, strong anecdotal evidence has been gathered from both ZSL and MWT that anglers have been positively engaged in respective tagging programmes. This positive feedback suggests a promising foundation for stakeholder engagement, indicating that anglers are likely to support and actively contribute to the project.

To build on this initial interest, further outreach and interviews are recommended to deepen understanding of angler interest and establish a committed cohort of anglers to the programme. A more targeted engagement approach in areas such as Ramsgate and Dungeness, which each have a large angler community, could expand the number of anglers involved and increase the spatial coverage of the project. Face-to-face engagement (as opposed to remote communication) should be prioritised to start building the relationship between ABEC staff and members of the local angling community.

Project Collaboration Opportunities

Through ongoing engagement, ABEC has established strong relationships with ZSL, MWT and Project SIARC – all of which have successfully implemented shark tagging programmes (see section 1.5). These collaborations have provided valuable insights to guide the development of ABEC's own initiative.

Key outcomes from engagement include:

- **Resource sharing -** MWT has provided tagging manuals and other informative documents to support programme development.
- **Training support -** MWT will host and train ABEC staff on delivering angler workshops and conducting effective shark tagging.
- **Data Alignment -** ZSL has shared its elasmobranch reporting form for use with anglers – this will ensure data alignment and consistency with the Greater Thames Shark Tagging Project.
- **Future Collaboration -** ZSL is entering a development phase and has expressed interest in aligning efforts with ABEC's project.
- **Survey Materials -** Project SIARC may supply eggcase survey resources with ABEC to enhance community engagement.
- **Expert Advice -** All projects have offered guidance on navigating project complexities, including legislation, licensing, and data sharing challenges. These insights have informed the recommendations and next steps outlined in this report.

These outcomes highlight the promising potential for both project support in the early stages, along with scope to build collaborative initiatives with other organisations which will strengthen data collection efforts.

Community Engagement Opportunities

Sharks are a widely misunderstood species, perceived often as dangerous predators by the public. Research into public attitudes towards sharks shows that increased knowledge and participation in marine conservation projects significantly improves positive perceptions (Giovos et al., 2021). One of the aims of the shark tagging project is to work to enhance public understanding of elasmobranch species in Kent's waters.

Adonis Blue Environmental Consultants already deliver several successful public engagement programmes, including Shoresearch and the Kent Dolphin Project, which promote knowledge sharing and support the improvement of Kent's marine environment. Building on this foundation, there is considerable scope for the shark tagging project to develop targeted community engagement and outreach initiatives.

Eggcase Hunts

Eggcase records provide valuable indicators of species presence, offering insight into oviparous (egg laying) species in British waters with species-specific identifiable characteristics (Figure 20). Since 2003, the Shark Trust has collected eggcase data through its Great Eggcase Hunt, which engages the public in shark conservation by conducting eggcase surveys. This large dataset has proven powerful in identifying potential skate spawning and nursery areas around the UK (Ellis et al., 2024). In Jersey, citizen science led eggcase surveys have revealed oviparous elasmobranch species presence and has highlighted spatial and temporal reproductive trends around the island (Scotts et al., 2025).

The Shark Trust has also collaborated with other organisations, such as Project SIARC, a multidisciplinary initiative operating across Wales. As part of this project, North Wales Wildlife Trust has successfully run eggcase hunts in partnership with the Shark Trust. As a member of the Wildlife Trust network and with strong connections to both North Wales Wildlife Trust and the Shark Trust (who provided shark data for this report), ABEC is well positioned to implement a similar scheme in Kent. Through leveraging the established volunteer base across ABEC from both Shoresearch and Kent Dolphin Project volunteers, ABEC could develop an eggcase survey initiative in collaboration with the Shark Trust. This approach would:

- Strengthen the shark tagging project by collecting species-specific data
- Increase local understanding of elasmobranch species
- Enhance the overall knowledge base of the project
- Build collaborative partnerships with key organisations

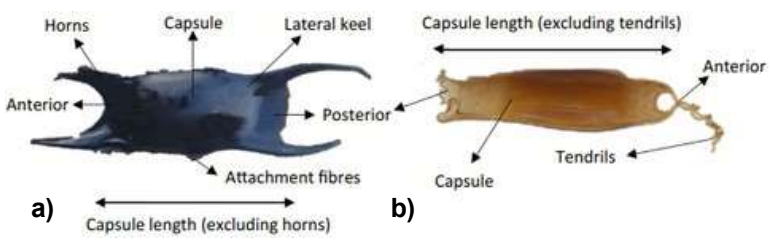

Figure 20 – Image of a) Undulate ray, *Raja undulata,* and b) Small-spotted catshark, *Scyliorhinus canicular*, eggcases. Adapted from Scott et al. (2025)

Angler competitions

Angling festivals are major events within the angling community, with hundreds held across the UK each year. One notable example is the Thames Estuary Boat Competition, which takes place in May in Queenborough on the Isle of Sheppey. The catch and release event follows long standing rules, targeting species such as Smoothhound, Thornback Ray and Bass. Typically, around 15 boats and 50 anglers participate, and the event has been previously sponsored by Penn, Navionics and Tronixpro.

These festivals present an excellent opportunity for project outreach and engagement. ABEC should explore the possibility of sponsoring the Thames Estuary Boat Competition and incorporate this into future funding plans. Sponsorship would not only attract new anglers to the programme but also provide a valuable platform to share knowledge about conservation and management efforts for elasmobranchs in the region. This approach could strengthen community ties and raise awareness of the shark tagging projects objectives while also representing a potential data collection opportunity.

Manx Wildlife Trust has successfully adopted a similar approach through its “Top Taggers” competition, which rewards anglers for their involvement in tagging initiatives. Introducing a competitive incentive in the programme could significantly boost engagement and participation among anglers and should be explored further.

We believe a community engagement arm of the project aligns with the values of Kent Wildlife Trust Group and would provide an exciting education, engagement and data collection opportunity which would help increase the positive impact of the project for both local communities and elasmobranchs.

6. Conclusions and Recommendations

Is a citizen science small-shark tagging programme feasible in Kent?

We believe that ABEC is in a position to feasibility run this project alongside members of the local angling community, having detailed the evidence and resources available to the project in the discussion above.

In summary, the project presents the following opportunities which we believe will help excel the project in its next stages of development, these are:

Evidence to suggest a biodiverse community assemblage of elasmobranch species around the Kent coastline, however the current understanding is heavily outweighed by a small number of species. There is significant scope to learn more about data-limited species and expand ecological understanding of these species locally. This represents an exciting opportunity to contribute to the conservation of local species in the long-term.

Preliminary interest from the local angling community.

Low-cost project to run which has already benefited from short-term grant funding.

Floy tags, used for monitoring purposes, will not require a Home Office license - a key project enabler.

Opportunity to align efforts with ZSL's Greater Thames Shark project to increase data collection locally - collecting the same variables (such as sex, length, width of the animal) and a focus on Smoothhound, Tope, Spurdog and Thornback Ray is recommended to achieve alignment.

Community engagement and education opportunities which will expand influence of project.

Collaboration opportunities with wider Wildlife Trusts and external organisations (e.g. Shark Trust).

Opportunity to explore other data collection methods as project develops (e.g. Baited Remote Underwater Video systems) - this could represent a CEIP project opportunity.

Going forward the project will need to overcome some barriers. These constraints and the recommended actions to overcome them are detailed in *Table 13*. These recommendations will ensure the feasibility of the project during its next stages of project development in 2026.

Table 13 – Constraints of the project going forward and the recommended action to overcome these barriers.

Constraints	Recommended Action
Robust data reporting	The use of a real-time reporting method, facilitated by a direct messaging service, has been recommended as a way of improving the ease of reporting and, thus, ensuring sufficient data collected. Use of a direct messaging service could also facilitate the sharing of photographs of the animal while being tagged – this could help provide information on the condition of the animal and confirm species identification, if needed. It is important, however, that additional variables are collected during the tagging process and this **must** be communicated to the anglers involved. The variables collected from each animal should be: **species, sex, length, condition** and the presence or absence of **umbilical scars.** This will provide information about the species and age of animals present at different locations around the Kent coastline. **Location, time and date of catch** must also be recorded to enable the exploration of spatial and temporal trends in species presence. Methods and rationale for collecting each of these variables should be a focus of training sessions, to ensure anglers are confident collecting this data. Additionally, anglers should be provided with the equipment necessary to record these variables (e.g. measuring tapes and tagging mats). Collecting these variables will produce informative data and will align this project with the data collection efforts of other tagging programmes around the UK.
Achieving a suitable recapture rate to ensure meaningful species insight	As most recaptures are likely to be landings from commercial fisheries, it is important to build a good relationship with local commercial fishers to incentivise reporting. Advertising the project widely amongst the local fishing community, collaboration with Kent and Essex IFCA and, if funding allows, setting aside funds for a financial incentive for reporting could all help overcome this barrier. Non-monetary opportunities should be prioritised, examples of these are detailed by Calheiros, 2024.
Expanding angler involvement and long-term engagement	Development of an engagement strategy which prioritises face-to-face engagement will facilitate the development of effective relationships between ABEC staff and members of the angling community. Once the project is set up, regular communication with anglers (e.g. quarterly emails) about project progress will be important for this. These updates should include information on recaptures – this was expressed, during interviews, as information anglers would like to be communicated with them. Ramsgate and Dungeness present themselves as areas to target for angler recruitment, increasing the spatial coverage of the project.
Securing long-term funding	Keeping project costs low, where possible, and employing innovative financial strategies (e.g. a blended finance model) later on in project development. This could help the project overcome reliance on short-term grants.
Data sharing agreements	It is important that data sharing agreements are established with each angler involved in the project and anglers are asked what data they would be comfortable with sharing. Exact locations of catches/recaptures, if reported, should **not** be shared publicly – indicative locations should be presented (e.g. indicative locations within 1km^2 areas). Data use transparency will be key to achieving trust from anglers and their continued involvement in the project.
Ensuring tagging best practices are maintained throughout	Training sessions and refreshers should be run regularly (e.g. annually) and a priority of these sessions should be communicating safe tagging procedures and angler safety practices. Caution should be aired around tagging large, sensitive species (e.g. Common Thresher) and if any angler feels uncomfortable tagging such species, it must be advised that tagging is ceased and the animal released in these cases. Repeating messages such as this are important - the safety of the animal and angler **must** always come first. Resources on tagging best practices should be created and shared with anglers for them to retain onboard their vessels for future reference. PPE should be provided to anglers if they do not already own this, this should be included within the projects budget if required.

7. Limitations

This report uses the best available data to inform its findings; however, there are multiple limitations and knowledge gaps that should be acknowledged. While the dataset provides valuable insights into species presence and indicative distribution, several factors constrain its reliability for assessing abundance trends and informing management decisions.

Temporal Representation

Although the dataset spans a substantial period, it is most representative of the last 25 years. This temporal bias limits the ability to infer long-term species abundance trends or historical population changes.

Species Representation Bias

The dataset is heavily dominated by Thornback Ray (*Raja clavata*) and Small-spotted catshark (*Scyliorhinus canicula*). This imbalance is likely driven by dominant sampling methods within the dataset (primarily beam trawling) which target demersal species. Consequently, some species are significantly under-represented, making it difficult to draw robust conclusions about their relative abundance and distribution.

In addition, caution should be aired around making direct conclusions about species presence from eggcase records owing to the fact eggcases may have been washed-up by wide-ranging currents. There is literature to support the usefulness of eggcase records (e.g. Scotts et al., 2025) and as such potential, not conclusive, presence and species behaviour may be inferred from these records.

Sampling Effort and Spatial Bias

Uneven sampling effort across locations may have skewed recorded species presence, with areas receiving more intensive effort appearing as potential “hotspots.” For example, data sourced from the Marine Data Exchange (MDE) largely originated from fisheries surveys conducted for Environmental Impact Assessments related to offshore wind farm developments. Increased fishing effort in these areas could artificially inflate species occurrence, creating unintended spatial bias.

Implications for Interpretation

Due to these limitations, the dataset cannot reliably inform abundance trends or provide a fully accurate picture of species distribution. However, it remains valuable for highlighting species presence and identifying indicative patterns around Kent. Importantly, the dataset reveals significant local data gaps, particularly for species with limited recordings. This strengthens the case for establishing a dedicated local monitoring programme to improve data quality and support evidence-based management and protection.

8. Appendix

8.1 Copy of Angler Questionnaire

Kent
Wildlife Trust

Kent Citizen Science Small Shark Tagging Programme

This short questionnaire will be used to help inform the feasibility of establishing Kent Wildlife Trust Group's citizen science small-shark tagging programme.

Please read the following statement:

The data provided will be stored and managed by Adonis Blue Environmental Consultants (ABEC) which is part of Kent Wildlife Trust Group. The data provided may be used in research outputs. Where these outputs are shared publicly, the data will be anonymised. Your personal information will only be collected and stored so we can contact you in the future and will not be shared publicly.

By signing below, I confirm I have read and understood the above statement and consent to my data being stored by ABEC and used as part of this study.

Signature

.....	.....	.....
Name of participant [IN CAPITALS]	Signature	Date

Kent Small Shark Tagging Project Feasibility Study - Angler Questionnaire

Angler Background

Full Name

How many years have you been part of the Angling community?

Do you own an angling-related business?

- ❑ Yes
- ❑ No

If yes, what is the name of your business?

Do you take part in angling competitively?

- ❑ Yes
- ❑ No

What are your main motivations for wanting to be involved in this project?
Select all that apply.

- ❑ Shark, skate and ray conservation/protection
- ❑ Fishing/sport value
- ❑ Interest in finding out more about sharks, skates and rays
- ❑ Learning to tag animals
- ❑ Business opportunities.
- ❑ Not interested.
- ❑ Unsure.
- ❑ Other – *please specify*

If this project developed into a tagging programme, would you want to be involved?

- ❑ Yes
- ❑ No
- ❑ Unsure

If no, could you provide a reason?

Have you taken part in any tagging projects before?

- ❑ Yes
- ❑ No

8.2 Angler Interview Open-Questions

Catch Experience and Observations

1. What shark, skate and ray species do you catch most often?
2. Have you ever caught a rare or unusual shark, skate and ray species that stands out in your memory?
3. Can you describe any elasmobranchs you've encountered in this area? (Species, size, location)
4. Have you noticed any changes in your catch over recent years? If yes, what kind of changes have you observed? (e.g. species trends, abundance, size).
5. Do you think elasmobranch numbers are increasing, decreasing, or staying the same?
6. What do you think might be causing these trends?

Interest in the Tagging Programme

7. What are your initial thoughts on the idea of a shark tagging programme?

Barriers and Support

8. Are there any barriers that might prevent you from getting involved in this project?
9. Is there anything that would make you feel more confident or comfortable about taking part?
10. Do you have any concerns about the impact of tagging on the animals or the fishing experience?

Collaboration and Communication

11. What would a successful tagging programme look like to you?
12. We want to build the best collaborative relationship possible with anglers like yourself. What would make you feel valued and respected as a contributor to the project?
13. How would you prefer we communicate with you? (e.g. quarterly email updates, WhatsApp group, in-person meetings)

Data Use and Transparency

14. Do you have any concerns about how your data might be handled?
15. What kind of information would you like to receive in return for your participation?
16. Is there any other information you would like before deciding to, or not to get involved?

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