NORTHERN IRELAND MARINE TASKFORCE

Reducing Elasmobranch Bycatch in Northern Ireland Waters

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NIMTF STUDENT PLACEMENT

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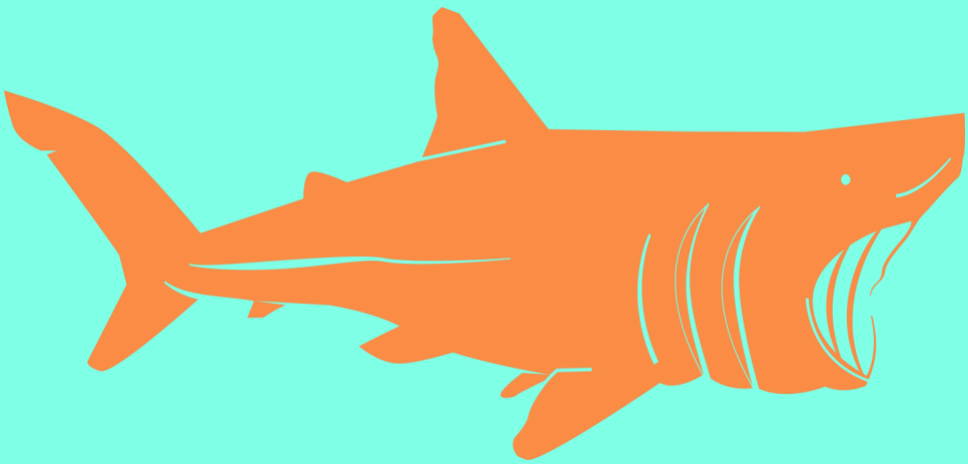
Queen's University Belfast I Undergraduate Research Project

Table of Contents:



Glossary:

AFBI = The Agri-Food and Biosciences Institute, is a leading provider of scientific research and services to government, non-governmental organisations and commercial organisations (AFBI, 2025).

Bycatch = (unwanted catch) marine species caught unintentionally while targeting other species. Including undersized, juvenile, or non-target species that are typically discarded, sometimes dead or dying (MSC, n.d.).
Discarded catch of any living marine resource plus unobserved mortality due to a direct encounter with fishing gear (ICES CM, 2009).

Catch = all aquatic organisms caught and subsequently retained (retained catch) or (discarded catch) (FAO, n.d. b).

CEFAS = Centre for Environment, Fisheries and Aquaculture Science is a UK government executive agency and world-leading scientific research centre (CEFAS, n.d. a).

Chondrichthyan = (class Chondrichthyes), any member of the diverse group of cartilaginous fishes that includes the sharks, skates, rays, and chimaeras (Walford, and Long, 2018).

Discards = portion of the catch that is returned to the sea (usually live or dead) (FAO, n.d. a).

Elasmobranch = is a subclass of the Class Chondrichthyes: Cartilaginous Fishes, which consists of sharks, rays, skates, and chimaeras (Irish Elasmobranch Group, 2018a).

ETP = refers to species which are listed as endangered, threatened or protected under national and international legislation (Southern IFCA, 2018). Often referred to as PET (protected, endangered or threatened).

FEAS = Fisheries Ecosystems Advisory Services, who research, assess and advise on the sustainable exploitation of the marine fisheries resources in the waters around Ireland and on the impacts of fisheries on the ecosystem (Marine Institute, 2021).

Fishery = is an area where fish are caught for commercial or recreational purposes (MSC, 2025).

Fishery Management Plans (FMPs) = plans and policies aimed to secure the long-term sustainability of UK fish stocks (GOV.UK, 2023).

The International Council for the Exploration of the Sea, (ICES) = is an intergovernmental marine science organisation, meeting societal needs for impartial evidence on the state and sustainable use of our seas and oceans (ICES, n.d. a).

Landings = the subset of the catch that is unloaded at a dock, beach or processing facility (brought to shore) (FAO n.d. b).

Marine Protected Areas (MPAs) = are areas of the ocean established to protect habitats, species and processes essential for healthy, functioning marine ecosystems (MMO, 2023).

Metier = a group of fishing activities targeting a similar species or assemblage of species, using similar gear (DCF, 2021).

MCZs = Marine Conservation Zones, are areas that protect a range of nationally important, rare or threatened habitats and species (GOV.UK, 2013).

SACs = Special Areas of Conservation, are areas which have been given special protection for their habitats and species (The Wildlife Trusts, 2020).

SPAs = Special Protection Areas, are areas identified as of international importance for the breeding, feeding, wintering or migration of rare and vulnerable species of birds (The Wildlife Trusts, 2020).

Taxonomy (taxa) = the branch of science concerned with naming, describing, and classifying organisms. grouping species based on shared ancestry and evolutionary relationships (Naturalsciences.be., 2025).

Executive Summary:

The Marine Stewardship Council (n.d.) defines bycatch as marine species unintentionally caught while targeting other species. Similarly, the International Council for the Exploration of the Sea (ICES) describes it as the discarded catch of any living marine resource, including unobserved mortality from gear interactions (ICES CM, 2009). Despite slight differences in emphasis, both definitions highlight the unintended capture and mortality of non-target species.

Bycatch represents a major threat to marine biodiversity, particularly for sharks, skates, and rays (elasmobranchs). Recent assessments indicate that 37.5% of chondrichthyan species (a broader class that also includes chimaeras) are threatened with extinction. Overfishing has been identified as a driver affecting all 391 threatened species and the sole threat for 67.3% of them (Dulvy et al., 2021, p. 4774). WWF for Nature (2021, p. 2) further estimates approximately 100 million sharks and rays are killed annually through targeted fishing and bycatch combined. These mortality levels exceed the reproductive capacity of most elasmobranchs, driving population declines and increasing extinction risk.

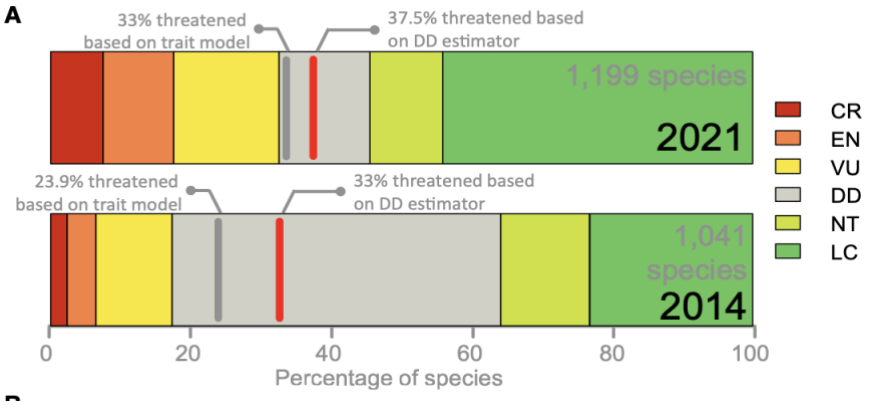


Figure 1: *Comparison of IUCN Red List status for chondrichthyan species between 2014 (n=1,041) and 2021 (n=1,199) assessments. Categories: CR, Critically Endangered; EN, Endangered; VU, Vulnerable; DD, Data Deficient; NT, Near Threatened; LC, Least Concern. Adapted from Dulvy et al. (2021 p.475).*

NI waters reflect this broader global challenge. ICES and the UK Data Collection Framework report that hundreds of elasmobranchs are caught annually as bycatch in local demersal and pelagic trawl fisheries targeting nephrops and whitefish (see **Data**). These interactions disproportionately affect species already classified as Vulnerable (VU), Endangered (EN) or Critically Endangered (CR) by the International Union for Conservation of Nature (IUCN) and listed on the NI Priority Species List such as the Flapper Skate, Thornback Ray and Basking Shark (DAERA, 2023).

Even relatively low levels of bycatch can hinder population recovery, disrupt ecosystem functioning, and undermine wider conservation efforts (Lewison et al., 2004). Many elasmobranchs also have transboundary distributions, migrating across multiple jurisdictions (Fig.2), meaning conservation outcomes in NI depend on coordinated, high-quality management beyond its waters.

Although NI waters account for a smaller proportion of overall fishing pressure compared with the wider Celtic Sea, this does not reduce the need for robust, precautionary measures aligned with international best practice (ICES, 2021 p.4). This will position NI as a leader in sustainable, ecosystem-based fisheries management.

Figure 2: *Map depicting marine areas around UK and Ireland (Worldatlas, 2021).*

Overview:

This brief sets out practical recommendations to reduce elasmobranch bycatch in NI waters, supporting ecological protection and the economic viability of the fishing sector.

Context:

The NI Fishing Sector:

Fleet:

The NI fleet consists of both recreational and commercial fishers, while this report does not differentiate between the two, the fleet is predominantly made up of small to medium-sized commercial vessels (10-25m in length). Operating along a 650 km coastline, in both inshore (within 12 nautical miles; Fig. 4) and offshore grounds (DAERA, 2015; DAERA, 2021c, MMO, 2025). Figure 3 illustrates the extent of NI's territorial waters, stretching from Lough Foyle in the northwest to Carlingford Lough in the southeast (Ritchie et al., 2019). Key fishing ports, Kilkeel, Portavogie, and Ardglass, are highlighted (see red dots Fig. 3) as major hubs of fishing activity (NIFHA.net, 2026).

NI's principal fisheries include inshore non-quota shellfish (crabs, lobsters, and scallops), Irish Sea pelagic species (notably herring), and mixed demersal fisheries (targeting cod, haddock, plaice, sole, nephrops, and whiting) (DAERA, 2021a). Draft Fisheries Management Plans are currently being developed for these key sectors. Producer organisations such as the Anglo-Northern Ireland Fish Producer's Organisation (ANIFPO) and the Northern Ireland Fish Producer's Organisation (NIFPO), play a central role in quota management, regulatory compliance, fleet coordination, and market access (Seasource, 2017). The mixed demersal fishery is a key source of elasmobranch bycatch, as nephrop trawlers operating on muddy substrates frequently overlap with elasmobranch habitats, increasing the likelihood of incidental capture (NatureScot, 2024).

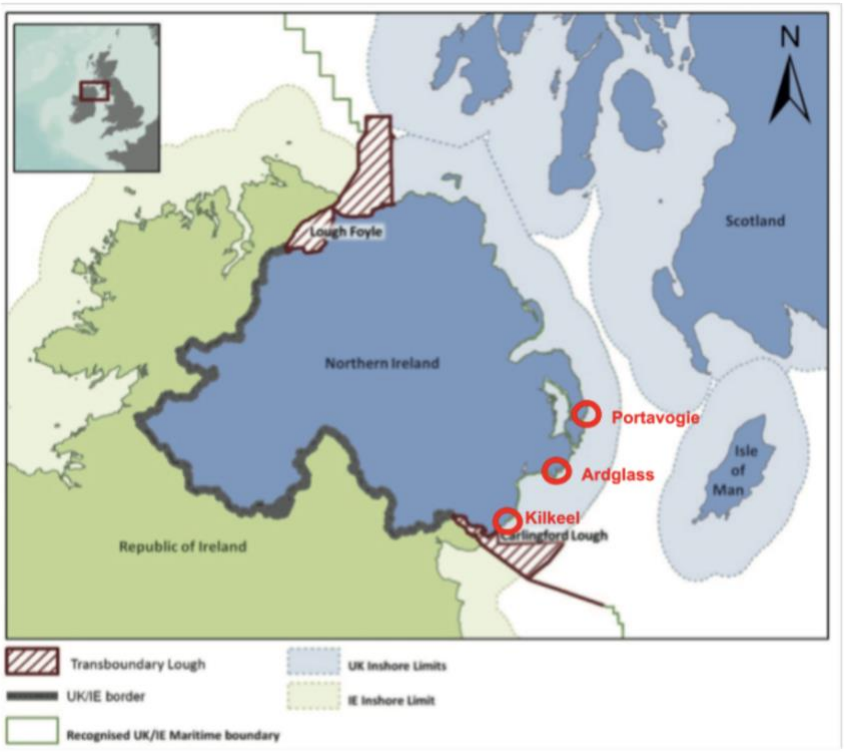


Figure 3: *Map highlighting the two Transboundary Loughs and recognised boundaries (Ritchie et al. 2019).*

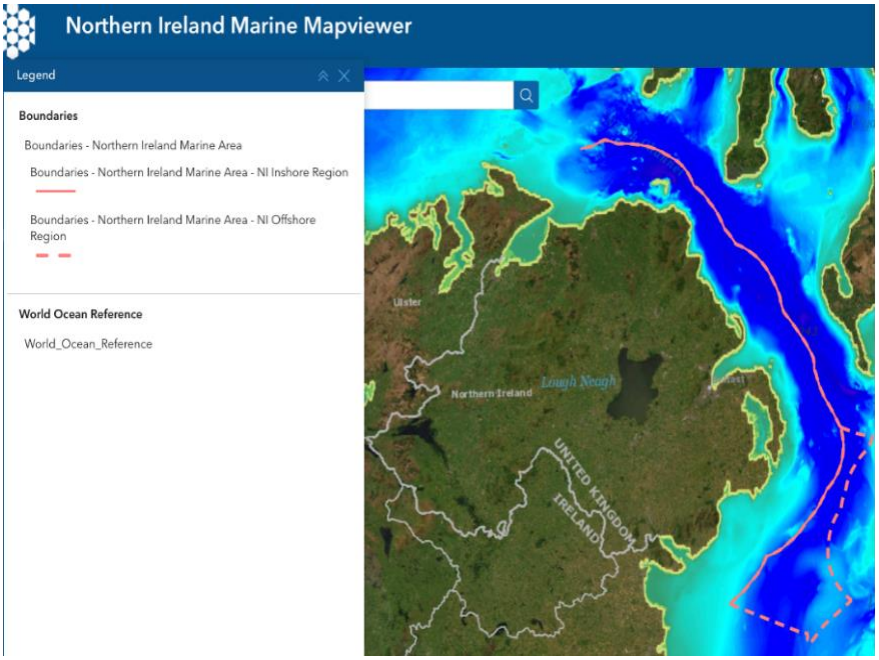


Figure 4: *NI Marine Mapviewer depicting Inshore boundary (red line) (DAERA, 2020).*

Figure 5: *NI map with borders (OpenStreetMap, 2026).*

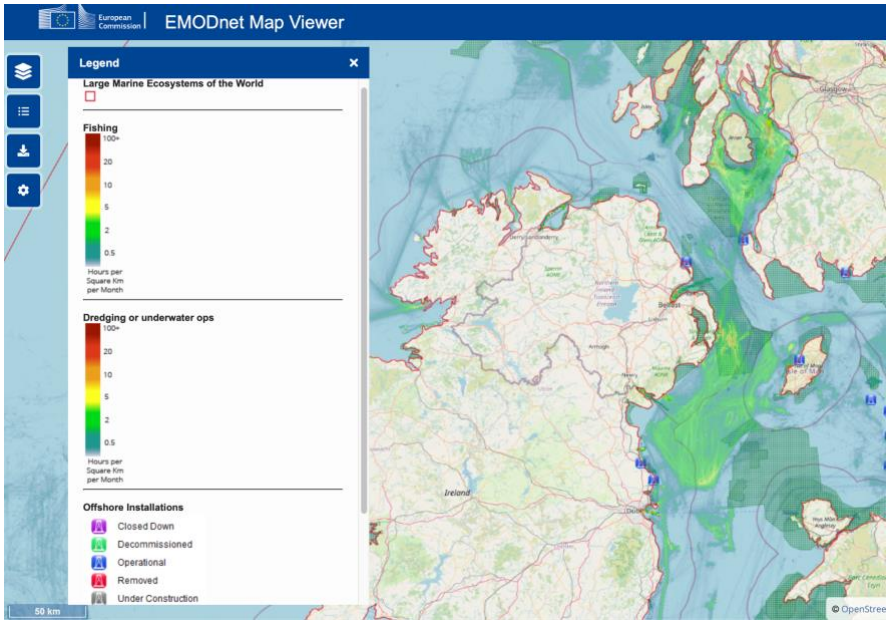


Figure 6: *European Marine Observation and Data network (EMODnet) depicting fishing, dredging or underwater ops and offshore installation activity in NI Inshore/Offshore region (Europe.eu, 2023).*

Stock Assessments:

Stock assessments relevant to NI are collaborative, led by AFBI in partnership with industry, DAERA, CEFAS and the Marine Institute, under the coordination of ICES (AFBI, 2017). These assessments are typically conducted at a regional rather than national scale. The resulting scientific advice informs the setting of Total Allowable Catches (TACs), which are agreed annually through international negotiations to establish sustainable catch limits (Seafish, 2026, p. 3).

Quota Setting and Allocation:

Since January 1st, 2021, UK fishing quotas have been set through a formal Determination issued by the Secretary of State. This legal mechanism establishes annual fishing opportunities, including TACs and quota allocations, based on scientific advice and international negotiations, in consultation with the four UK fisheries administrations. It also reflects the UK's role as an independent coastal state outside the European Union's Common Fisheries Policy (CFP) (Reland, 2025).

Within this framework, DAERA manages NI's allocations to Producer Organisations. NIFPO, within the Northern Ireland Fishermen's Federation and ANFPO distributes quota to individual vessels, typically on a monthly or annual basis (DAERA, 2021b).

Data Collection and Monitoring:

Monthly and annual landings data for NI are published by the Marine Management Organisation (MMO). For example, the "Monthly UK Sea Fisheries Statistics and the Annual Sea Fisheries Statistics Report" (GOV.UK, n.d.).

Fishing Patterns:

Fishing activity in the Celtic Seas region is diverse, concentrated mainly in the Western Irish Sea and to a lesser extent the North Channel (ICES Area VIIa, Fig. 6). Some vessels operate further afield in Areas 7b, 7g, 7j, (Celtic Sea) and 6a (West of Scotland) (Fig.7) and these are split into Functional Units (FU14 and FU15). As the Irish Sea is a semi-enclosed basin, it requires co-ordinated management to ensure sustainable fishing activity from NI and RoI vessels primarily.

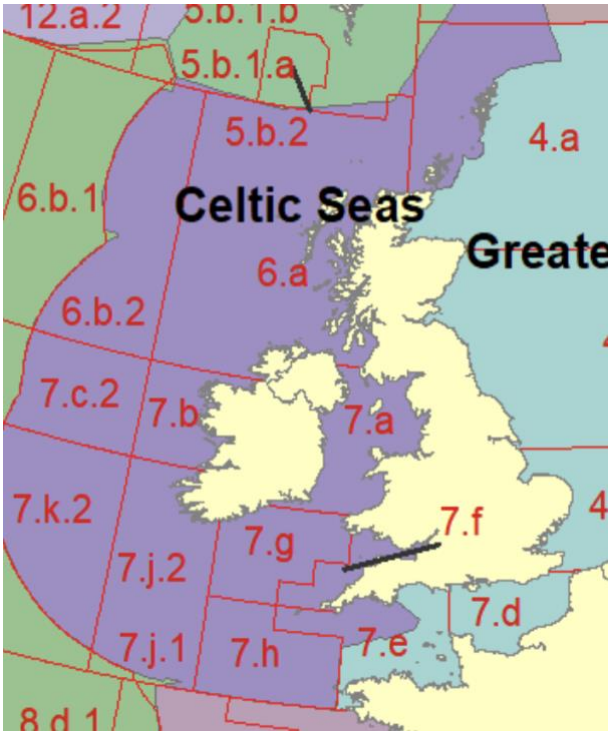


Figure 7: *Map depicting ICES divisions in the Northeast Atlantic relevant to NI fishing activity (ICES, 2019 p.3).*

Figure 6 highlights areas managed through existing and developing FMPs, including the draft Northern Ireland Non-Quota Shellfish FMP (2023) and draft Irish Sea Demersal and Pelagic FMPs due for consultation this year. While these plans recognise that NI waters are ecologically rich and heavily used, they do not yet explicitly address spatial overlap between vulnerable elasmobranch populations and commercial fishing activity. This gap is expected to be addressed through the FMPs and the Northern Ireland Elasmobranch Conservation Strategy.

These challenges are compounded by pressures from resource extraction, maritime transport, waste disposal, climate change, and offshore energy development (Fig. 5) (Ali, 2025, pp. 64–73). In this multi-stressor context, effective bycatch mitigation is essential to reduce additional mortality of already vulnerable species.

Elasmobranchs in NI:

Elasmobranchs are typically associated with tropical and subtropical waters; however, at least 20 species are known to occur in NI waters, with over 70 recorded around the island of Ireland (Fairseas, 2025, p. 1; Clarke et al., 2016, p. 5).

Evidence suggests their distributions are shifting under climate change. With recent CEFAS-led research suggesting that warming seas and changes in ocean salinity around the UK may increase habitat suitability for species such as Basking Sharks, Spurdogs and Thornback Rays (mentioned in **data** sets). This could lead to greater overlap with fisheries, increasing the probability of elasmobranch bycatch (Couce et al., 2025).

Conservation Status of Elasmobranch Data:

The following table summarises elasmobranch species records from ICES data for the Celtic Seas ecoregion (27.6/7) (see Fig. 7), over the period 2017–2024, alongside GOV.UK fisheries and aquaculture data 2021-2024.

These are cross-referenced with:

- Northern Ireland Elasmobranch Conservation Strategy (DAERA, 2024, p. 15),
- Northern Ireland's Priority Species List (DAERA, 2023),
- IUCN Red List (2025),
- OSPAR Commission global assessments (2025),
- Legal protections under the Wildlife (Northern Ireland) Order 1985 and the Wildlife and Natural Environment Act (Northern Ireland) 2011.

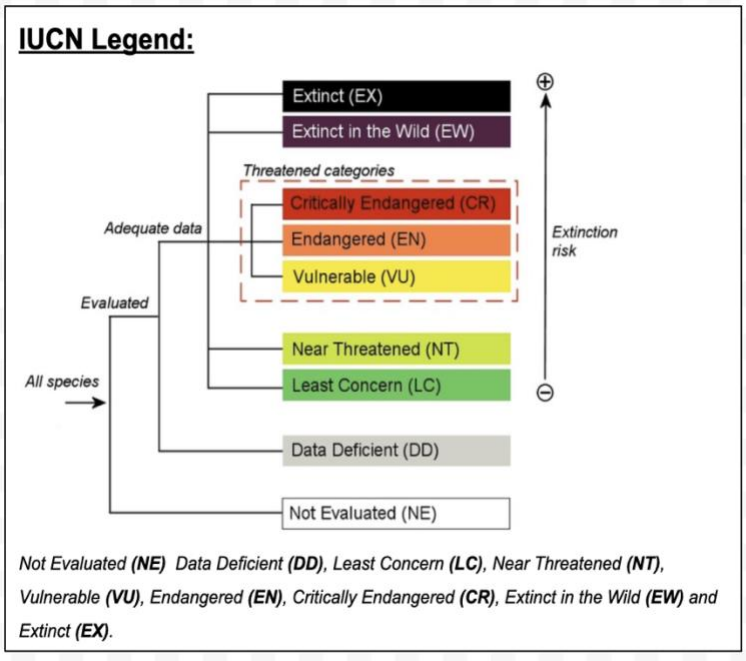


Figure 8: *IUCN (2025) conservation assessment legend.*

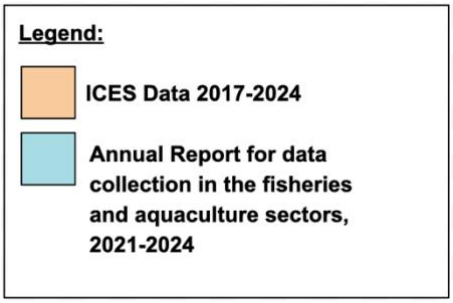


Figure 9: *Legend highlighting which species are from which data set In Table 1.*

Table 1: Elasmobranch Data Cross-Referenced with current Conservation Status:

Species Common Name:	Species Latin Name:	IUCN Red List Status:	OSPAR Status:	NI Elasmobranch Conservation Strategy:	NI Priority Status:	NI Wildlife Order 1985 & Wildlife and Natural Environment Act (Northern Ireland) 2011.
Skates:						
Common Skate Complex Dipturus intermedius ***ICES data only mentions flapper/common (no mention of blue)**	Flapper Skate		Poor (Threatened /Declining)	Yes included - Management	Yes included	Protected at all times.
Sharks:						
Cetorhinus maximus	*Basking Shark*		Poor (Threatened /Declining) (2021)	Yes - Management	Yes included	Protected from being killed, taken or possessed.... extended to disturbing.
Squatina Squatina	*Angelshark*		Poor (Threatened /Declining) (2021)	Yes - Monitoring	Yes included	Protected at all times.
Squalus acanthias	Spurdog (spiny dogfish)		Poor (2021)	Yes - management	Yes included	No mention
Galeorhinus galeus	Tope		Not listed	Yes - management	Yes Included	No mention
Rays:						
Raja Clavata	*Thornback Ray*		Good (2021)	Yes - management	Yes included	No mention

Importance of Elasmobranchs in NI:

Table 1 highlights key elasmobranch species affected by bycatch in NI waters, many of which play critical roles in maintaining marine ecosystem stability. Certain sharks act as apex predators, regulating prey population dynamics and stabilising food webs (Klinard et al., 2025). Some species, such as Spurdog, function as mesopredators, exerting control over lower trophic levels. In the absence of these predators, their role can become amplified, potentially driving trophic cascades and increasing competition with commercially important fish (Diaz-Delgado, 2024). As a result, changes in elasmobranch populations can disrupt community structure and reduce biodiversity (Motivarash et al., 2020; Dedman et al., 2024).

Meanwhile, skates and rays, including the Thornback Ray and the "Common skate" Complex (now recognised as two species, Flapper and Blue skate; although ICES data in this report still treats it as a single group, which further obscures species-specific conservation needs) are particularly important in benthic environments. Their foraging behaviour disturbs seabed sediments, shaping invertebrate communities and influencing nutrient cycling (Flowers et al., 2020). Similarly, their loss can reduce ecosystem resilience, especially in heavily fished areas (see Fig. 6).

Vulnerability is further heightened by certain elasmobranch's sharing life-history traits such as slow growth, low reproduction and long gestation periods (Cortés, 2000). For example, Spurdogs' gestation periods last approximately 22–24 months, limiting population recovery potential (ICES, n.d. b). Although management measures (ICES advice and quotas) are in place, they are often applied at broad regional scales and may not reflect localised bycatch pressures. Consequently, even low but persistent bycatch can hinder recovery, particularly for highly threatened species such as the Flapper Skate.

Bycatch:

Bycatch has multiple, often contested definitions. For this brief, the Marine Stewardship Council's (MSC, n.d.) definition is used describing bycatch as unwanted catch; marine species caught unintentionally while targeting others. Although not the primary focus of this report, 'ghost gear' can be considered as "bycatch without the fisher" as it similarly contributes to the mortality of elasmobranchs (Parton et al. 2019; Stelfox et al. 2016). Lost or abandoned fishing gear continues to entangle marine species long after active fishing has ceased (Olive Ridley Project, 2021). This issue is underscored by findings from the Marine Litter Survey 2024, which identified fishing nets, rope, cord, and string among the ten most recorded items of marine litter (Keep Northern Ireland Beautiful, 2024, p. 8).

Bycatch affects a wide range of taxa, and certain mitigation efforts are underway to reduce incident rates. These efforts include enhanced monitoring, gear modifications, handling processes, and the use of spatial or seasonal closures (ISSF, n.d.). Many of these approaches are applicable to elasmobranchs with scope for adaptation and further work to address their specific vulnerabilities.

Bycatch and Sustainability:

Bycatch is widely regarded as a major barrier to fisheries sustainability. This is reflected in its role as a key indicator in the Marine Conservation Society's "Good Fish Guide", which uses a traffic-light system to help consumers and businesses choose sustainable seafood. High bycatch levels lower a fishery's rating, reducing its appeal to both markets and consumers (MCS, n.d.).

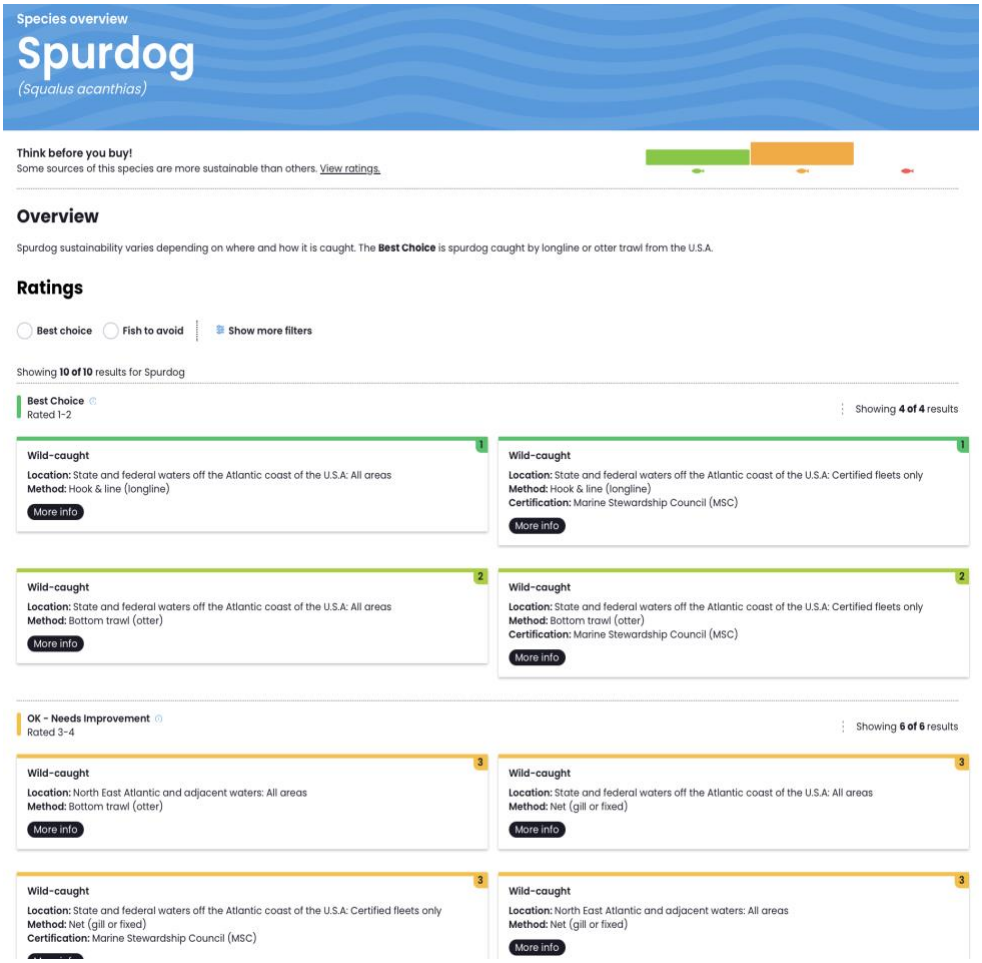


Figure 10: *Good Fish Guide Rating Website, (MCS, 2026a).*

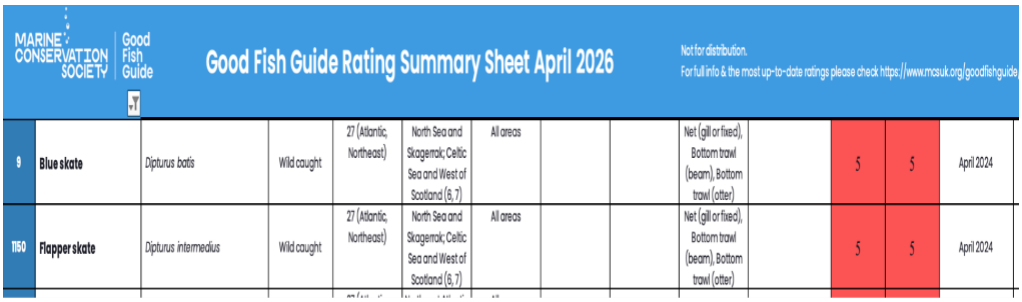


Figure 11: *Good Fish Guide Rating Summary Sheet April 2026 (MCS, 2026b).*

Achieving meaningful reductions in bycatch and improving sustainability scores, remains a major challenge, largely due to the non-selective nature of various fishing methods. Although zero bycatch is an explicit goal in several management frameworks, it is rarely realised in practice. A notable exception is the New Zealand jack mackerel fishery, which recorded a full year without incidental captures of protected species, including seabirds, dolphins, and other marine mammals (Seafood New Zealand, 2024). However, such outcomes remain exceptional.

Across most fisheries, progress is constrained by limited funding, the high costs of modifying gear and practices, insufficient data on bycatch rates, and weak incentives to translate policy into action, for example, under the GOV.UK (2022) Bycatch Mitigation Initiative. While such initiatives are effective in recognising and framing the issue, they are often less developed in terms of clear, operational delivery plans. In contrast, more structured approaches, such as the US's National Bycatch Reduction Strategy Implementation Plan (2020) and Australia's Commonwealth Fisheries Bycatch Policy (2018), provide defined pathways for implementation, monitoring, and accountability. Collectively, these barriers continue to limit progress towards meaningful reductions in bycatch.

What Impact Does Bycatch Have?

Failing to address bycatch carries economic, regulatory, and operational consequences for NI and global fisheries. Its impact extends across multiple stakeholder groups, reinforcing that bycatch mitigation is a cross-sectoral priority rather than a niche environmental issue.

- **Ecological Implications:**

As outlined previously, many elasmobranchs function as key predators and benthic ecosystem regulators. Their removal can alter trophic dynamics, disrupt food webs, and reduce ecosystem resilience as evidenced by Ferretti et al. (2010) and Flowers et al. (2020). Species loss may trigger cascading ecological effects, compromising biodiversity in NI and adjacent waters where resilience is already limited.

- **Legal and Regulatory Implications:**

NI is bound by domestic legislation and international commitments. Persistent bycatch mortality risks compromising biodiversity, destabilising commercial fish stocks and threatens compliance with obligations such as achieving Good Environmental Status under the UKMS (CEFAS, n,d.). These requirements apply to sensitive species, including elasmobranchs, as well as broader commercial stock indicators.

- **Economic Implications:**

In the short-term, species-specific, unsustainable elasmobranch bycatch creates direct operational losses, such as extra time spent handling animals, gear damage, reduced fishing efficiency and profitability (Pinn and Lart, 2022 p.5). In the long-term, high discard mortality of bycaught elasmobranchs could erode populations or shift stocks. Continued bycatch also risks reputation damage, reduced access to premium markets, and weaker eligibility for sustainability certifications that support higher prices and export competitiveness (Pinn and Lart, 2022 p.5). This aligns with growing consumer demand for certified sustainable seafood, including products certified by the Marine Stewardship Council (blue fish logo), up by 1% within the UK and Ireland markets in 2023 (MSC, 2023).

- **Safety implications:**

Bycatch can pose direct safety risks to crews, especially when large, strong, and unpredictable elasmobranchs are involved. Handling them on wet, moving decks alongside hooks, lines, and nets increases injury risk. To reduce these hazards, crews are advised to follow best-practice handling and release guidance, including the Clean Catch Handling and Release Guides (2025) and protocols from AZTI and ICCAT (Murua et al., 2024 pp.9-22). These promote low-contact handling and prioritises in-water release to reduce both crew and animal harm.

- **National Implications:**

At a broader scale, bycatch contributes to declining ecosystem health. The failure to maintain or restore ecosystems is increasingly recognised as a national security concern. The UK Government's 2026 National Security Assessment, produced by the Joint Intelligence Committee and DEFRA, highlights how accelerating biodiversity loss and ecosystem degradation are pushing natural systems towards critical tipping points. These trends heighten risks to food security, economic stability, and geopolitical resilience (Newman, 2026). While NI bycatch alone is not a primary driver of these macro-level risks, it contributes to the cumulative pressures identified in such assessments.

Project Impact Statement:

Bycatch has long been recognised as a significant conservation issue, gaining prominence with the expansion of industrial fishing from the 1960s. With many species subsequently impacted, including the flapper skate (formerly known as the "Common Skate" complex), which has records of being extirpated from the North Sea since the 1920s (Simpson and Sims, 2016 p.43). While progress has been made in reducing seabird and cetacean bycatch, efforts for elasmobranchs have lagged. This project aims to address the gap by identifying current and future opportunities to reduce elasmobranch bycatch in NI, with potential for wider application in other fisheries.

Co-developed Approach:

The following recommendations are intended as a shared, cross-sectoral endeavour, informed by 13 informal interviews conducted over six weeks with stakeholders from government, industry, conservation, and academia. The project captured a broad range of perspectives and expertise on elasmobranch bycatch. It reflects a collective understanding that reducing bycatch is a shared responsibility, with potential benefits for ecological outcomes, regulatory compliance, and the long-term sustainability of NI's fisheries. While co-developed through stakeholder engagement, implementation will depend on decisions by DAERA and further discussion within relevant working groups on which proposals, if any, are taken forward.

Emerging Management Framework - Post EU MAP and EU Exit:

Various fisheries management frameworks have and will continue to shape, actionable recommendations for elasmobranch bycatch. The UK Fisheries Act (2020), the Joint Fisheries Statement (JFS) (2022), and the retained EU Marine Strategy Framework Directive (MSFD) (2008), now implemented as the UK Marine Strategy (CEFAS, n.d.), collectively provide the statutory and strategic foundations for bycatch governance.

The Fisheries Act (2020) establishes binding objectives requiring authorities to minimise bycatch, apply precautionary and evidence-based approaches, and implement Fisheries Management Plans (FMPs). In Northern Ireland, a devolved Fisheries and Water Environment Bill, expected May 2026 (DAERA, 2025), is likely to refine these obligations. The JFS (2022) operationalises the Act's requirements into UK-wide commitments, recognising bycatch reduction and ecosystem-based management as strategic priorities while setting the framework for the development of FMPs across administrations.

The UKMS adds environmental outcome requirements, particularly under biodiversity Criteria 1 and bycatch mortality indicators. Achieving Good Environmental Status (GES) for biodiversity and sensitive fish species in NI will require targeted elasmobranch mitigation, strengthening the case for practical intervention (CEFAS, n.d.).

Existing conservation instruments, including UK and NI shark, skate, and ray protections, alongside FMPs, Marine Protected Areas (MPAs), and landing obligations, further shape policy implementation. Table 1 compares relevant conservation frameworks and species listings that establish the regulatory baseline underpinning this analysis.

FMPs such as the Southern North Sea and English Channel Skates and Rays (2023) and the draft Celtic Sea and Western Channel Demersal Fisheries Management Plan (2024), alongside MPAs including Strangford Lough Marine Conservation Zone, the Maidens, and Northern Channels SACs, provide mechanisms for spatial management, gear restrictions, and monitoring requirements. Additionally, retained EU landing obligations continue to reinforce bycatch avoidance incentives and underscore the need for accurate species-level recording. Collectively, these frameworks have shaped NI fisheries policy by prioritising bycatch reduction, exposing data gaps, and establishing governance foundations for future elasmobranch-specific management.

Data:

This report's recommendations are informed by ICES bycatch data (2017–2024) and GOV.UK Annual Reports on fisheries and aquaculture data collection (2021–2024). ICES data for the Celtic Seas ecoregion were refined using the following criteria:

- Appears on the NI Elasmobranch Conservation Strategy Species List.
- Meets the type of gear used by vessels within the NI Fishing Fleet.

The following tables summarise annual bycatch and survey observations of elasmobranch species meeting the stated criteria. A key limitation is the inability to define precise spatial locations of reported bycatch or NI landing ports; refinements therefore represent the closest possible approximation.

Data primarily reflects demersal and pelagic trawl fisheries, including retained and discarded components where available. From 2014 onwards, mandatory reporting applies to all ETP species bycatch in pelagic fisheries. However, Marine Stewardship Council (MSC) certification is influenced by a wider set of performance indicators beyond bycatch reporting alone. For further detail, stakeholders are advised to contact NIFF.

Data spanning over multiple years provides an insight into:

- Trends in species-specific bycatch rates,
- Changes in fleet interactions with elasmobranchs,
- Variability linked to métier factors,
- Emerging risks for vulnerable or critically endangered species.

Analysis of this data highlights consistent patterns alongside year-to-year fluctuations that provide invaluable information which aid the development of targeted, evidence-based mitigation policies.

Publications:

2025 advice: *https://doi.org/10.17895/ices.advice.30734714*

2024 advice: *https://doi.org/10.17895/ices.advice.27999401*

2022 advice: *https://doi.org/10.17895/ices.advice.21695375*

UK Annual Report 2021:

https://assets.publishing.service.gov.uk/media/63c7bc108fa8f572a788452e/United_Kingdom_Annual_Report_2021_Text_FIN_202210.pdf

UK Annual Report 2022:

https://assets.publishing.service.gov.uk/media/65a1090fe8f5ec000f1f8c25/UK_DCF_Annual_Report_2022_FIN_20230101 2.pdf

UK Annual Report 2023:

https://assets.publishing.service.gov.uk/media/66bf41eca44f1c4c23e5bd29/UK_DCF_Annual_Report_document_2023_final.pdf

UK Annual Report 2024:

https://assets.publishing.service.gov.uk/media/68de92f1750fcf90fa6ffd60/UK_AnnualReport_2024_final.pdf

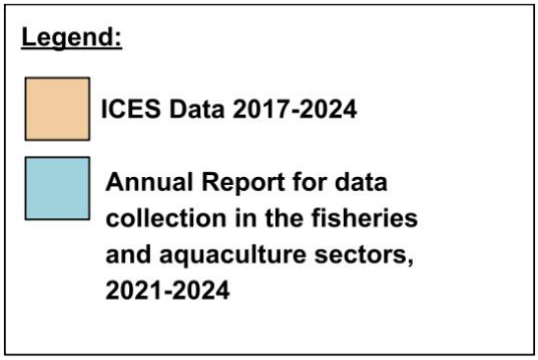


Figure 12: *Legend showing the highlighted data in table, as NI priority species which appear within the ICES data for species which are found under NI-related fishing metiers and species involved in the NI Elasmobranch Conservation Strategy.*

Table 2: Bycatch Data:

Species Latin Name:	Common Name:	Data Sets:	Bycatch/ Incidents:	Metiers/Sampling Involved:
Skates:				
Dipturus Intermedius	Flapper/Common Skate ***ICES data only mentions flapper/common (no mention of blue)***	2023	58	OTT
Diputus intermedius	Flapper/Common Skate ***ICES data only mentions flapper/common (no mention of blue)***	2024 2024	377 121	OTB OTT
Total Bycatch (2017 - 2024) Flapper/Common Skate			**556 individuals**	
Sharks:				
Cetorhinus maximus	Basking Shark	2023	4	OTM
Total Bycatch (2017 - 2024) Basking Shark			**4 individuals**	
Squatina Squatina	Angelshark	2024	1	TBB
Total Bycatch (2017-2024) Angelshark			**1 individual**	
Squalus acanthias	Spurdog	2021	181 247 695 1678	NIR - N3 NIR - N4 NIR - N5 Research Cruise
Squalus acanthias	Spurdog	2022	29 255 1271 2253	NIR - N3 NIR - N4 NIR - N5 Research Cruise
Squalus acanthias	Spurdog	2023	18 259 1280 441 1 1464	NIR - N1 NIR - N3 NIR - N4 NIR - N5 NIR - N7 Research Cruise

Squalus acanthias	Spurdog	2024	58 361 1369 245 962	NIR - N1 NIR - N3 NIR - N4 NIR - N5 Research Cruise
Total Bycatch (2017-2024) Spurdog			**13,067 individuals**	
Galeorhinus galeus	Tope	2021	1 10	NIR - N5 Research Cruise
Galeorhinus galeus	Tope	2022	22	Research Cruise
Galeorhinus galeus	Tope	2023	6	Research Cruise
Galeorhinus galeus	Tope	2024	4 19	NIR - N5 Research Cruise
Total Bycatch (2017 - 2024) Tope			**62 individuals**	
Rays:				
Raja clavata	Thornback Ray	2021	16 1 5 232 280 503	NIR - N1 NIR - N10 NIR - N3 NIR - N4 NIR - N5 Research Cruise
Raja clavata	Thornback Ray	2022	34 2 48 248 417	NIR - N1 NIR - N3 NIR - N4 NIR - N5 Research Cruise
Raja clavate	Thornback Ray	2023	16 329 153 360	NIR - N3 NIR - N4 NIR - N5 Research Cruise
Raja clavate	Thornback Ray	2024	7 5 51 86 171	NIR - N1 NIR - N3 NIR - N4 NIR - N5 Research Cruise
Total Bycatch (2017 - 2024) Thornback Ray			**2,964 individuals**	
TOTAL BYCATCH =			***16,654 individuals***	

Recommendations:

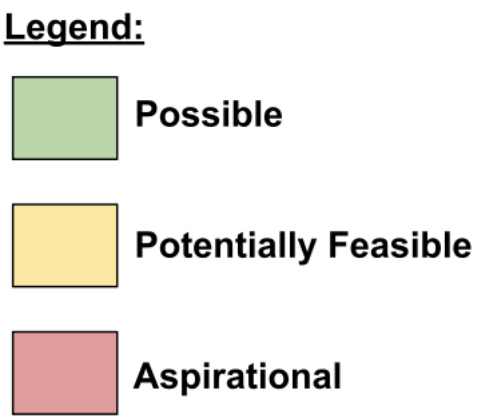


Figure 13: *Legend highlighting how possible each recommendation is.*

The following recommendations outline actions to reduce elasmobranch bycatch in NI. Each colour-coded (Fig.13) to indicate feasibility, based on implementation likelihood, resourcing and interviewee consensus, supported by independent research and personal analysis. The benefits and limitations (tables) of each recommendation further inform its overall feasibility.

Recommendation 1:

'Encouraging alignment of conservation management with other UK and ROI Administrations.'

Aims:

Effective bycatch management requires a shared understanding of elasmobranch conservation status. Recommendation 1 calls for greater consistency in conservation and management across Scotland, England, Wales, Northern Ireland, Isle of Man and the Republic of Ireland.

This is illustrated by the Flapper Skate, protected under the Wildlife (NI) Order 1985, while equivalent protection is absent in Scotland, leading to fragmented management. Aligning measures across jurisdictions would prevent conservation gains in one area being undermined elsewhere and provide clearer guidance for fishers, NGOs, enforcement bodies and the public. Also, supporting joint management, coordinated monitoring and shared data to reduce duplication and improve efficiency.

The Clean Catch UK Spurdog Bycatch Management Programme (2019-2023), demonstrates the value of collaboration, piloting an app to help fishers avoid high-risk areas and reduce discards (Hetherington et. al, 2022). However, this DEFRA-funded initiative was not transboundary, excluding NI and downplaying the countries ecological significance and fishing grounds.

Table 3: Recommendation 1's "Benefits and Limitations":

Benefits:	Limitations:
• **Policy Coherence:** reduces fragmentation across ecoregions, enabling more effective cross-border management. • **Conservation rationale:** strengthens the case of species-specific protective measures. • **Joint initiatives:** facilitates shared monitoring, tagging, research and bycatch-reduction. • **Improved communication:** consistent messaging aids stakeholders understand and regulatory compliance.	• **Different evidence bases:** administrations may rely on varying data, methods or assessment frameworks. • **Democratic Tension:** cross-jurisdictional alignment requires bottom-up engagement. • **Implementation lag:** alignment may necessitate legislative changes, consultations or administration restructuring. • **Risk of misalignment:** uniform policies may lover- or under-protect species where local ecological conditions differ. • **Post-Brexit:** diverging regulatory systems and international obligations further challenge coordination.

Recommendation 2:

'Increased Public Awareness and Engagement on Elasmobranch Conservation.'

Aims:

Effective bycatch mitigation requires co-designed, cross-sector engagement to ensure data and understanding are accurate, sensitive and appropriately communicated to the public.

Recommendation 2 highlights the need to improve ocean literacy, a core pillar of the UN Decade of Ocean Science for Sustainable Development (Shellock, et al. 2024 p.2). The conventional "out of sight, out of mind" perception of marine ecosystems means environmental harm often goes unrecognised until impacts become severe. Raising awareness of elasmobranchs, their ecological role, and the urgency of their protection is therefore essential to reducing bycatch (Irish Elasmobranch Group, 2018b). This requires active engagement with key coastal stakeholders; recreational fishers, local communities, tourism operators and the wider public to foster a shared responsibility for marine conservation.

Sustained funding is essential for education and outreach, spanning initiatives such as NIMTF's "Ocean Advocates Programme" (2026), citizen science projects like the Shark Trust (2021)'s "Great Egg case Hunt" and international campaigns such as Montenegro's #sendthem campaign (Lukovic, 2025). Improving ocean literacy also involves challenging biases that may prioritise other species/taxa over elasmobranchs. Community-led approaches can also be highly effective, as demonstrated by whale shark reverence in parts of India, where fishers are compensated for releasing animals, building a strong conservation ethic all round (Krishna, 2026; IFAW, 2025).

Public advocates are vital, as public concern can drive political action, influencing policy, cultural traditions and on-the-water practices. Previous engagement and education contributed to the development of the Marine Stewardship Council (MSC) standards and exposing misleading market names such as “rock salmon,” for spiny dogfish (MSC, 2023 p.25; Clarke, 2023 p.234).

Table 4: Recommendation 2's "Benefits and Limitations":

Benefits:	Limitations:
• **Greater public understanding:** outreach raises awareness of elasmobranchs and the wider importance of healthy marine ecosystems. • **Enhanced social licence:** broader support increases legitimacy of conservation actions. • **Citizen science potential:** anglers, divers, boat users and coastal observers can contribute valuable data. • **Positive behaviour change:** engagement encourages responsible handling, reporting and best-practice adherence.	• **Limited direct impact:** awareness alone does not reduce bycatch. • **Uneven participation:** citizen science data may be biased or geographically clustered. • **Risk of miscommunication:** oversimplification could lead to misunderstanding. • **Variable reach:** difficulty engaging offshore fleets and non-English-speaking communities. • **Resource-intensive:** effective engagement requires sustained investment.

Recommendation 3:

'Increased Species Identification, Handling and Release Practices.'

Aims:

Recommendation 3 highlights the need for continual improvement in understanding what is caught and how it should be handled. This requires more accurate identification, particularly of visually similar (Flapper and Blue Skate) or ETP species, alongside improved handling and release practices. Initiatives, such as the two-day shark and ray identification workshop delivered by Cefas and Blue Resources Trust in Sri Lanka, demonstrated how targeted training can improve species recognition and strengthen data quality (Roebuck, 2023).

Efforts should be directed towards the implementation of mandatory onboard identification and handling resources, including laminated guides, waterproof ID cards and digital tools (SkateSpotter and FinFinder App, and guides see Fig. 13/14) Integrating species-ID, handling and release training into existing monitoring, observer and compliance frameworks would strengthen data quality across fleets and has been shown to significantly increase post-release survival rates (Wosnick et al., 2023 p.592).

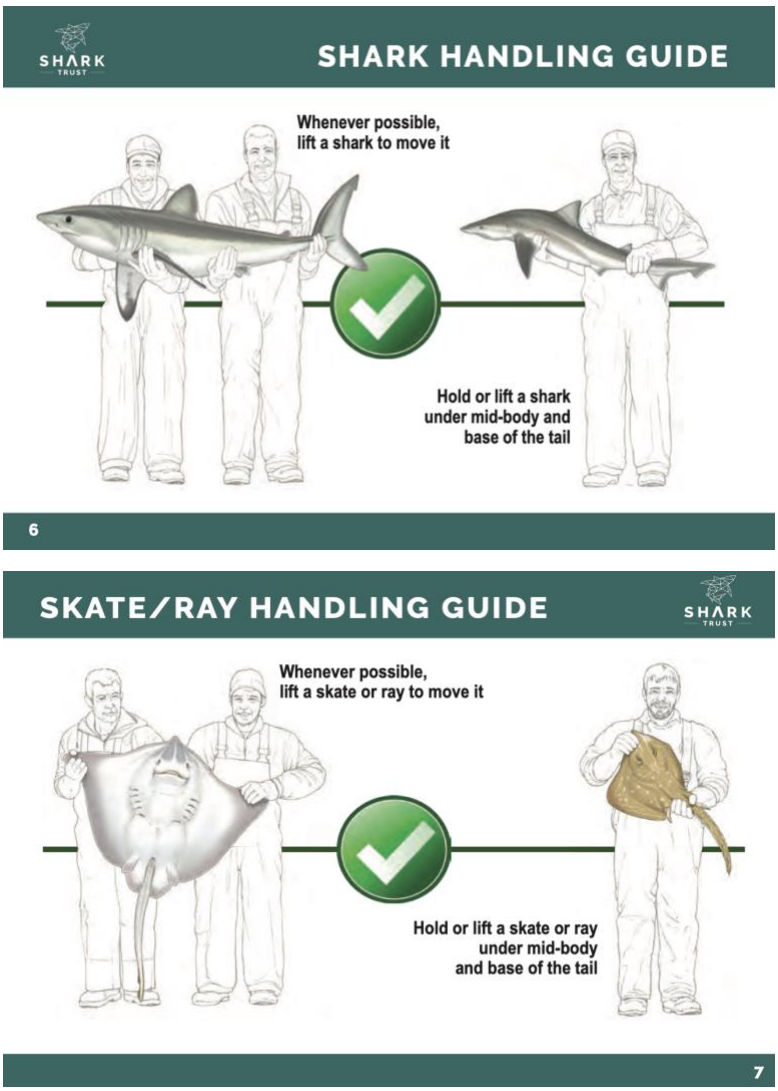


Figure 13: *Examples of Handling and Release guides (The Sharks Trust, 2020).*

Figure 14: *Examples of Identification guides and subsequent conservation measures (SPFA.ie et. al, 2024).*

Table 5: Recommendation 3's "Benefits and Limitations":

Benefits:	Limitations:
• **Improved data quality:** better species identification enhances catch reporting, stock assessments and risk categorisation. • **Better regulatory compliance:** supports correct identification of ETP species and appropriate handling and release guides. • **Stronger enforcement:** reduces intentional or accidental mis-recording and increases confidence in catch data. • **Low-cost, high impact:** ID guides, stickers and apps are inexpensive, scalable and easy to distribute.	• **Identification difficulty:** species can be hard to distinguish, especially in poor conditions. • **Crew workload:** identification and best practices may be deprioritised under operational demands. • **Accessibility barriers:** materials must be clear, multilingual and suitable to varying literacy levels. • **Regular updates:** resources require ongoing revision as knowledge and regulations evolve. • **Time/resource burden:** taking photos/checking guides adds small but cumulative delays. • **Enforcement constraints:** limited capacity to ensure practices are followed.

Recommendation 4:

'Funding for further better Data Collection, Transparency and Sharing.'

Aims:

Data underpins evidence-based decision-making and sustained funding is essential to generate high-quality information to inform legislation. In NI, data collection is primarily carried out by AFBI, especially Marine Observers, Loughs Agency, Ulster University, Queen's University Belfast, and DAERA Enforcement. However, further investment is needed, as observers not only record bycatch but assess compliance with crew and animal welfare standards. Expanding these roles through ring-fenced funding would improve data quality, timeliness and information flow between fishers and other stakeholders.

Additional funding could enhance collaboration platforms such as Co-Fish (Conservation and Fisheries Partnership Group) and proposed stakeholder forums for knowledge exchange (NIMTF, 2018). Although Co-Fish currently operates without dedicated funding, targeted investment would support its objectives of fostering collaboration, identifying evidence gaps and promoting marine research across NI (Stephenson et al, 2022). To maximise the value of these platforms, an independent oversight body could further manage data governance, ensuring transparency and neutrality. With adequate funding and coordination, shared data will support more consistent and informed bycatch management decisions.

Table 6: Recommendation 5's "Benefits and Limitations":

Benefits:	**Limitations:**
• **Better evidence base:** higher-quality data improves stock assessments, risk evaluations and hotspot detection. • **Supports co-management:** transparency builds trust between fishers and regulators. • **Improved response capability:** enables early detection of emerging issues. • **Reduces duplication:** prevents multiple agencies collecting the same data.	• **Investment required:** digital platforms, training and ongoing support incur costs. • **Data sensitivity:** information sharing may raise GDPR concerns or make stakeholder feel targeted. • **Technical challenges:** varying digital literacy and poor offshore connectivity limit uptake. • **Standardisation issues:** inconsistent recoding practices across fleets and sectors.

Recommendation 5:

'Review and implement more species focused Elasmobranch conservation strategy actions.'

Aims:

Recommendation 5 focuses on strengthening and implementing species-focused measures from the 2024 Elasmobranch Conservation Strategy, using available data to prioritise targeted research for data-deficient species. This includes targeted action on 3-4 high-risk species e.g. Flapper Skate, Spurdog and Thornback Ray by 2028 (see **Data** section). For example, Spurdog is addressed in the Sea Fisheries (Amendments) Regulations (2026), which highlight the need for continued monitoring following the removal of the 100cm maximum landing size and consideration of introducing a Minimum Conservation Reference Size (80cm-85cm) to protect individuals before maturity. This illustrates how species-specific measures can be embedded within existing frameworks, including FMPs, UKMS obligations, and MPA management. Hence why, this recommendation calls for dedicated funding for practical, on-the-ground conservation measures derived from the 2024 strategy and delivered by 2030.

Table 7: Recommendation 5's "Benefits and Limitations":

Benefits:	**Limitations:**
• **Strategic coherence:** unifies fragmented actions under one framework. • **Evidence-led prioritisation:** focuses effort on priority species with clear, measurable targets. • **Improved accountability:** provides timelines, indicators and greater transparency. • **Cross-sector legitimacy:** co-development with stakeholders strengthens buy-in. • **Alignment:** supports consistency with wider conservation obligations (OSPAR).	• **Time/resource intensive:** requires consultation, drafting and alignment with NI/UK marine strategies. • **Funding uncertainty:** without dedicated resources, the strategy risks remaining aspirational. • **Data gaps:** insufficient evidence still exists for multiple species. • **Policy overlap:** potential duplication with MSFD, UKMS and FMPs. • **Implementation challenges:** success depends on stakeholder commitment. • **Effective management framework**: measures should incorporate 'failure analysis' to asses impact.

Recommendation 6:

'Introduce 'Move On' Rules for Bycatch Hotspots.'

Aims:

Recommendation 6 proposes introducing "move on" rules, requiring vessels to leave an area and notify others when elasmobranch (priority species) bycatch thresholds are exceeded. This approach draws on the MSC's area-based, dynamic management protocols, where high catch levels trigger vessels to move 5-10 nautical miles to reduce pressure (MSC, 2022). Such measures aim to limit bycatch and avoid full fishery closures, as demonstrated in Spurdog management in English waters (MMO, 2014). This approach has been pioneered by BATmap, a Scottish system that records bycatch in real time and triggers automated alerts when predefined thresholds are exceeded, enabling vessels to avoid high-risk areas (BATmap, 2024). Such measures may also benefit fishers seeking to avoid Spurdog, which can damage gear due to their spiny dorsal fins.

Table 8: Recommendation 6's "Benefits and Limitations":

Benefits:	**Limitations:**
• **Immediate reduction in bycatch:** displaces effort away from high-risk areas before further species are caught. • **Hotspot identification:** data collected highlights potential areas of concern for follow-up management. • **Digital integration:** compatible with existing VMA and electronic reporting systems.	• **Enforcement at sea:** requires monitoring or trust-based compliance. • **Threshold setting:** careful calibration to avoid unnecessary disruption. • **Fleet variability**: vessel relocation may be impractical in crowded grounds or poor conditions. • **Economic cost:** reduced catch and increased fuel expenditure.

Recommendation 7:

'Long-term funding for implementation testing of pilot/novel methodologies to address data gaps across Elasmobranchs.'

Aims:

7a: Introduce Elasmobranch mitigation methodologies:

Informed by the ELASMO project involving Queen's University Belfast and DAERA, this recommendation proposes that vessels operating in areas with elasmobranch presence be equipped with electronic sensory deterrent devices. These emit electromagnetic signals to trigger avoidance response, deterring elasmobranch from interacting with fishing gear (QUB, 2020). This should be considered alongside other emerging, still preliminary mitigation measures such as light-based deterrents and modified mesh or panel designs.

Example 7b: Post-release tagging programme:

Building on initiatives such as SeaDeep, this recommendation promotes elasmobranch tagging to assess movement and identify hotspot areas for priority species (Oceanographic, 2024). Expandable to satellite tagging post-release to assess post-bycatch survivorship. This would further strengthen data collection and monitoring, aiding Spurdog projects with NIFF and DAERA. Although specific skills and licencing are required, many tagging projects are non-invasive. Their success relies on collaborative, fisher-led participation, supported by training in safe handling and tagging. Overall, this strengthens evidence-based management, enabling DAERA to adapt licence conditions as new data emerges.

Table 9: Recommendation 7a's benefits and limitations:

Benefits:	**Limitations:**
• **Direct bycatch reduction:** deters elasmobranchs from approaching fishing gear. • **Immediate action:** provides an operational, on-the-water mitigation tool. • **Supports co-management:** fisher participation builds trust with regulators.	• **Participation:** success depends on fisher engagement. • **Licensing:** implementation requires navigation of licencing processes. • **Technology acceptance:** fishers may be cautious about new equipment or vessel modifications. • **Funding and Resource:** ring-fenced funding needed to support development and roll-out

Table 10: Recommendation 7b's: benefits and limitations:

Benefits:	Limitations:
• **Survivorship data:** provides robust evidence on post-release mortality to refine handling and gear. • **Fisher engagement:** builds trust and encourages stewardship alongside VMS/REM implementation. • **Spatial insights:** identifies hotspots, corridors and seasonal risks. • **Leads to management:** supports licence conditions, closures and gear trials.	• **Cost:** tags, receivers and vessel time require significant funding and skilled personnel. • **Participation:** success depends on fisher willingness and tagging skills. • **Licensing:** capacity to administer, implement and monitor. • **Species-specific challenges:** tag retention, stress sensitivity and conservation concerns vary by species. • **Data interpretation:** influenced by tag type, handling and environmental conditions. • **Funding and Resource**: ring-fenced funding to support development and roll-out.

Recommendation 8:

'Elimination of "vulnerable" or higher-category elasmobranchs as bait.'

Aims:

Elasmobranchs are sometimes used as bait but rarely recorded, obscuring the scale of use and undermining conservation, particularly for endangered species. Current legislation including the Wildlife (NI) Order 1985 and the Wildlife and Natural Environment Act (NI) 2011, provides vague guidance on ETP species as bait; with Flapper and Blue Skate and both Angel and Basking Sharks protected at all times (Schedule 5, Wildlife Order, 1985), but Angel Sharks and both Flapper and Blue Skates able to be killed or taken by certain methods (Schedule 6, Wildlife Order 1985) with no reference to other elasmobranchs or bait-use regulations more broadly. Interview consensus indicated that species of lower conservation concern, such as lesser-spotted dogfish are routinely used as bait in pot fisheries. This ambiguity permits inconsistent interpretations and weakens enforcement, particularly as many are first caught as bycatch.

Table 11: Recommendation 8's benefits and limitations:

Benefits:	Limitations:
• **Protection:** prevents removal of vulnerable/ETP species, (already under pressure from bycatch/habitat loss). • **Ecosystem stability:** maintains populations and preserves biodiversity. • **Reduces unreported mortality:** improves stock assessments and management accuracy. • **Legal clarity:** removes ambiguity and aids enforcement agencies. • **Encourages sustainability:** promotes manufactured baits, fish offcuts, other sustainable alternatives.	• **Enforcement challenges:** difficult to monitor with limited resources. • **Displacement risk:** alternative bait species may become overexploited. • **Limited data:** bait use is poorly documented and evidenced. • **Economic impacts:** short-terms costs to fishers relying on elasmobranchs as cheap bait (compensation needed). • **Narrow scope:** does not address broader elasmobranch mortality from habitat degradation or illegal finning. • **Stakeholders buy-in:** outreach and education essential for compliance.

Recommendation's Conclusion:

These recommendations provide a practical foundation for reducing elasmobranch bycatch in Northern Ireland. Their effectiveness is interconnected: improved data strengthens scientific understanding resulting in awareness and informed decision-making. With strong existing evidence, coordinated action is now essential to drive meaningful progress.

Additional Stakeholder Engagement Themes:

The following themes were identified but not fully analysed and highlight areas for further discussion.

- **Climate change impacts:** shifting species distributions and ocean conditions may alter bycatch patterns.
- **Fishing sector pressures:** reduced quotas, stock declines, rising fuel costs, and post-Brexit regulations continue to affect the industry.
- **Spatial squeeze:** fishing activity is increasingly concentrated into smaller areas due to environmental and regulatory pressures.
- **Implications for mitigation:** these combined pressures may limit fishers' capacity to prioritise bycatch reduction.

Conclusion:

These recommendations are intended as a foundation for future action to reduce elasmobranch bycatch in Northern Ireland. They have been developed in recognition of growing sectoral pressures and limited data availability. Nevertheless, a stronger voice for elasmobranchs and wider marine life is clearly needed. The public has the potential to drive meaningful change in policy and management, yet this remains constrained by significant gaps in ocean literacy and public awareness. Strengthening understanding and engagement with marine conservation is therefore essential for long-term change.

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Appendix:

ICES Bycatch Data 2024:

Ecoregion:	metier L4:	Species Latin Name:	Common name:	Reported bycatch 2024:	monitoring effort (DaS) 2017-2024:	Fishing effort (DaS) 2024:
celtic seas	GND Gillnet (Drift)	dipturus intermedius	common skate	11	85	96.3618344
celtic seas	GNS Gillnet (Set)	dipturus intermedius	common skate	15	1951.842726	16231.55434
celtic seas	GNS Gillnet (Set)	squatina squatina	angelshark	3	1951.842726	16231.55434
celtic seas	GTR Trammel Nets	dipturus intermedius	common skate	127	527.7380098	2931.097812
celtic seas	GTR Trammel Nets	squatina squatina	angelshark	16	527.7380098	2931.097812
celtic seas	OTB Bottom Otter Trawl	dipturus intermedius	common skate	377	5283.61074	56696.29592
celtic seas	OTT Otter Twin Trawl	dipturus intermedius	common skate	121	1452.100822	10637.06871
celtic seas	TBB Beam Trawl	squatina squatina	angelshark	1	1660.201952	7814.25964

ICES Bycatch Data 2023:

Ecoregion:	Mertier:	Species latin name:	Species Common Name:	Reported bycatch 2017-2023:	Monitoring effort (DaS) 2017-2023:	Fishing effort (DaS) 2023:
Celtic Seas	OTT Otter Twin Trawl	amblyraja radiata	thorny skate	17	1329	10729
Celtic Seas	OTM Midwater Otter Trawl	centroscyllium fabricii	black dogfish	3	1002	1931
Celtic Seas	OTB Bottom Otter Trawl	centroscyllium fabricii	black dogfish	25	4505	56825
Celtic Seas	OTB Bottom Otter Trawl	centroselachus crepidater	longnose velvet dogfish	1	4505	56825
Celtic Seas	OTM Midwater Otter Trawl	cetorhinus maximus	basking shark	4	1002	1931
Celtic Seas	GTR Trammel Nets	cetorhinus maximus	basking shark	1	366	2001
Celtic Seas	GNS Gillnet (Set)	cetorhinus maximus	basking shark	1	1479	15232
Celtic Seas	OTM Midwater Otter Trawl	chlamydoselachus anguineus	Frilled shark	5	1002	1931
Celtic Seas	GTR Trammel Nets	dasyatis pastinaca	blue stingray	27	366	2001
Celtic Seas	OTM Midwater Otter Trawl	deania calceus	birdbeak dogfish	24	1002	1931
Celtic Seas	OTB Bottom Otter Trawl	deania calceus	birdbeak dogfish	3	4505	56825
Celtic Seas	GNS Gillnet (Set)	dipturus intermedius	flapper skate	3	1479	15232
Celtic Seas	OTT Otter Twin Trawl	dipturus intermedius	flapper skate	58	1329	10729
Celtic Seas	OTB Bottom Otter Trawl	dipturus nidarosiensis	norwegian skate	36	4505	56825
Celtic Seas	OTB Bottom Otter Trawl	etmopterus princeps	great lanternshark	11	4505	56825
Celtic Seas	OTM Midwater Otter Trawl	etmopterus princeps	great lanternshark	7	1002	1931

Celtic Seas	GND Driftnets	hexanchus griseus	bluntnose sixgill shark	6	69	4
Celtic Seas	GNS Gillnet (Set)	hexanchus griseus	bluntnose sixgill shark	1	1479	15232
Celtic Seas	OTM Midwater Otter Trawl	hexanchus griseus	bluntnose sixgill shark	1	1002	1931
Celtic Seas	OTB Bottom Otter Trawl	hexanchus griseus	bluntnose sixgill shark	23	4505	60148
Celtic Seas	OTM Midwater Otter Trawl	scymnodon ringens	knifetooth dogfish	1	1002	1931
Celtic Seas	OTM Midwater Otter Trawl	somniosus microcephalus	greenland shark	3	1002	1931
Celtic Seas	SSC	tetronarce nobiliana	atlantic torpedo	3	245	2511
Celtic Seas	TBB	tetronarce nobiliana	atlantic torpedo	13	1446	7574
Celtic Seas	OTB Bottom Otter Trawl	tetronarce nobiliana	atlantic torpedo	10	4505	60148
Celtic Seas	GTR Trammel Nets	torpedo marmorata	marbled electric ray	1	366	2001
Celtic Seas	OTB Bottom Otter Trawl	torpedo marmorata	marbled electric ray	177	4505	56825
Celtic Seas	TBB	torpedo marmorata	marbled electric ray	2	1446	7574

ICES Bycatch Data 2022:

Ecoregion:	Mertier 3:	Monitoring method:	Species Latine Name:	Species Common Name:	Total reported observed effort (days-at-sea)	Incidents:	No.Specimens:
Celtics Seas	Bottom Trawls	SO	Amblyraja radiata	Thorny Skate	73.78	2	229
Celtics Seas	Pelagic Trawls	SO	Deania calceus	Birdbeak Dogfish	40	5	7
Celtics Seas	Bottom Trawls	VO	Etmopterus spinax	Velvet Belly Laternshark	55	1	1

Celtics Seas	Pelagic Trawls	SO	Etmopterus spinax	Velvet Belly Laternshark	40	1	1
Celtics Seas	Bottom Trawls	VO	Hexanchus griseus	Bluntnose sixgill shark	55	1	2