Ireland's Marine Strategy Part 2: Monitoring Programmes (Article 11)

Submission by the Sustainable Water Network

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1. SWAN and our submission

The Sustainable Water Network (SWAN) is an umbrella network of 26 of Ireland's leading environmental NGOs, national and regional, working together to protect and enhance Ireland's water environment. Through coordinating the work of the SWAN office with that of our members, SWAN seeks to influence water and water-related policy so as to secure maximum protection for Ireland's aquatic resources, through participation in the implementation of the Marine Strategy Framework Directive (MSFD), the Water Framework Directive (WFD) and other water-related policy and legislation. We are a founding partner of Fair Seas and a member of Seas at Risk and the Irish Sea Network.

SWAN previously responded to the Department of Housing, Local Government and Heritage (DHLGH) on the Public Consultation on Ireland's Marine Strategy Framework Directive Marine Strategy Part 1: Assessment (Article 8), Determination of Good Environmental Status (Article 9) and Environmental Targets (Article 10) in September 2024, with input from our members. We now welcome the opportunity to respond to the Department of Climate, Energy and the Environment's consultation on Ireland's Marine Strategy Part II – Article 11 Monitoring Programmes. The environmental NGOs in our network are the voice of the natural water environment in Ireland, which is the focus of our response to this consultation.

As per our September 2024 response on Articles 8, 9 and 10, our response will follow the order of the report.

Several of SWAN's member organisations have contributed their input to this submission. Please note that capacity and expertise have meant that we are unable to comment in detail on every descriptor.

2. General Comments

SWAN is pleased to see that many of the points we raised in 2024 in response to Articles 8, 9 and 10 are addressed in the 2026 report on Article 11. In particular, we strongly support the encouraging increase in the use of **citizen science** for monitoring. The inclusion of work by SWAN members Coastwatch, BirdWatch Ireland and Irish Whale and Dolphin Group is especially welcome.

Future MSFD monitoring must also consider the value of **local engagement**. Local monitors can be much more responsive and see things in real time as they change or are impacted. Those who are regularly on the water (whether kayakers, leisure craft users or fishermen and women) have an intimate knowledge of the waters they regularly traverse

and could be recruited to support such programmes. As well as gathering new data, an important task can be to ground truth data that may be being collected by technology drones or satellite.

The inclusion of how **marine protected areas** (MPAs) can support MSFD objectives is another important addition, and one where we look forward to continuing engagement with DCEE through our partners at Fair Seas. Linking MSFD monitoring with MPA designation and management will be important to the effectiveness of both, as well as Ireland's Nature Restoration Plan. The importance of taking an **ecosystem-based approach** is mentioned throughout (ie "Article 11 monitoring programmes allows for the monitoring, and hence assessment, of all facets of the ecosystem-based approach model") and SWAN calls for this to be integrated and centred in all marine planning decisions.

SWAN noted data deficiency as a particular challenge in our 2024 response to the Articles 8, 9 and 10 report. We welcome the inclusion of a "**knowledge gaps**" section within each descriptor to highlight continuing gaps and address how they may be addressed. Along with marine citizen science increasingly utilised for monitoring and the increasing use of emerging methodologies, we support the inclusion of data from other sea users (such as fishermen and women, kayakers, anglers and divers) to address remaining gaps.

We welcome the "**climate change**" section within each descriptor, acknowledging the linkages specific to each. The rapidly changing climate, particularly recent reports on the 2026 marine heatwave, emphasise the importance of integrating climate change into the MSFD. With record temperatures during Summer 2026, which are only set to increase, we are already seeing the impacts on the coastal rim. Examples include increased levels of eutrophication that some species and features are vulnerable to, as well as the risk of increasing threats from invasive alien species. Adaptive monitoring programmes and management plans are vital in a changing climate. We would also draw attention to the Fair Seas report A Climate-resilient Path for Ireland's Marine Protected Areas Network, regarding the impacts of climate change and modelling potential future impacts and where best to establish protected areas that are climate refuge areas.

In addition to climate change, the marine environment is under threat from numerous and **interconnected pressures**. The report's "Associated Descriptors and Criteria" section also emphasises that descriptors are deeply linked with each other, and do not stand alone. Some interconnected pressures include:

- Development of offshore renewable energy (ORE)
- Ports
- Shipping, ferries, cruise liners

- Overfishing
- Aquaculture

While many of these pressures are mentioned throughout the report, we must see **pressure-specific monitoring**, particularly where effects are more localised than across the marine reporting units used for MSFD assessment. The Water Action Plan 2024 summarised information on the significant pressures causing risks to water bodies and a similar approach in MSFD should be taken.

Aquaculture

Aquaculture is of specific interest to SWAN, with our evidence-based policy position and recommendations detailing implications for meeting MSFD (and WFD) and objectives. One of our key recommendations called for "future MSFD reports in Ireland to specifically monitor and measure the impact of aquaculture on descriptors including hydrographical conditions, marine litter, eutrophication, seafloor integrity and non-native species. There must be consequences for non-compliance."

We refer to our report and recommendations throughout our response below, as aquaculture can exert pressure on each descriptor to varying degrees. We draw attention to the potential **interactions between aquaculture**, the environment, and MSFD descriptors based on Members States initial impact statements, as described by the European Commission.

Descriptor	Evidence & mitigation
1. Biodiversity	If unmanaged, escapees, diseases and parasites may have localised effects on biodiversity. These should be addressed through the implementation of the EIA, SEA and Habitats Directives. Siting is a critical factor in reducing the potential impacts on biodiversity.
2. Non-indigenous species	Aquaculture provides a potential route for introduction of NIS; introduction of alien species in aquaculture is regulated by Regulation 708/2007 requiring a specific authorisation for any introduction of alien species.
3. Commercial fish & shellfish	If unmanaged escapees (gene flow), diseases and parasites may have localised effects on wild commercial fish and shellfish.
4. Food-webs	If unmanaged escapees (gene flow), diseases and parasites may have localised effects on food-webs. Siting is a critical factor in reducing the potential impacts on food-webs.
5. Eutrophication	Some impact at local scale, but generally unlikely to occur at sufficient scale at present to have significant impact except in enclosed seas like

	the Baltic that already have significant nutrient inputs. In such cases, Member States may consider the application of nutrient-neutral schemes or other approaches that remove nutrients from the sea
6. Sea-floor integrity	Some impact at local scale due to siltation or scour, but unlikely to occur at sufficient scale at present to have significant impact. This can be mitigated by moving cages, by fallowing areas or by relocation to more energetic sea areas (areas with a greater circulation.
7. Hydrographical conditions	Some impact at local scale due to formation of small-scale features including eddies, but unlikely to occur at sufficient scale at present to have significant impact unless large scale facilities.
8. Contaminants	Some impact at local scale due to contamination by hazardous substances and microbial pathogens, but unlikely to occur at sufficient scale at present to have significant impact. Mitigation comes from the regulatory limits set within food safety legislation. However, these regulatory limits, which are set to protect the health of consumers, are not specifically designed to protect the environment. Therefore, additional action may be necessary to ensure adequate environmental protection
9. Fish & seafood contaminants	Impacts are assessed using regulatory limits set within food safety legislation.
10. Marine litter	Aquaculture may be a source of marine litter alongside urban discharges and fisheries.
11. Underwater energy (e.g. noise)	Some impact at local scale close to cages, but unlikely to occur at sufficient scale at present to have significant impact. Little information available on potential mitigation.

3. Introduction and Ireland's Marine Strategy Part II

1.2 Environmental Status

As reported in 2024 on Articles 8, 9 and 10, **Ireland is failing to meet GES in five of the 11 descriptors**, with one descriptor unknown. This 2026 assessment states "challenges persist for marine biodiversity," with the major pressures coming from overfishing. We reiterate the concern expressed in our 2024 response at the **worrying levels of bycatch and commercial exploitations** of fish stocks. The point raised that "healthy stock levels will only be achieved by **increased action at a European level**" is one which must be repeatedly raised and addressed. This must include Ireland raising the "**joint recommendations**" procedure of Article 11 of the Basic Regulation of the Common Fisheries Policy (CFP) at the European level.

2.7 Marine Protected Areas (MPAs) and expanding Ireland's MPA network

SWAN is a founding member of Fair Seas, and we refer to their consultation response regarding the linkages between MPAs and the MSFD. We wish to reemphasise the main points from Fair Seas' response:

- **Designation must not be conflated with effective management**
- **Monitoring must be linked to conservation objectives and adaptive management**
- **MSFD, MPA and nature restoration monitoring should be coherent and mutually reinforcing**
- **Fisheries management must form part of assessing the effectiveness of protection**

SWAN also fully supports the recommendations made by Fair Seas. We continue to emphasise the importance of Ireland meeting the EU biodiversity strategy target of 10% of our marine areas to be designated as strictly protected.

2.8 Marine Citizen Science in Ireland

Given that our coastal area is of significant scale, over 7,000 kms, engaging citizens through citizen science programmes is essential to monitor and gather sufficient data. Citizen science is an important tool and source of data which can assist in **filling the considerable data gaps**, such as on coastal erosion, invasive species or marine debris.

Citizen observations are captured by many groups such as BirdWatch Ireland, Irish Wildlife Trust, Coastwatch, and Irish Whale & Dolphin Group, with organised species counts at set locations and times and through the recording by citizens to the National Biodiversity Data Centre on a whole range of species. **Academic research projects** in the marine environment often have a citizen science approach where pilots are conducted that gather important information, such as the Living Sea Walls in Cobh. Such initiatives (whether surveying for invasive alien species [IAS], marine debris, or the effectiveness of structures that support marine life) which have a robust methodology could be scaled up with resourcing and training.

SWAN also supports the introduction of a method through which data collected through other local marine focused community projects supported by the River Basin Management Service and others can be incorporated to MSFD reporting.

It is imperative that **funding and training** is made available for expanded monitoring through community citizen science projects that can augment the stretched institutional capacity.

4. Monitoring Strategies (Descriptors)

4.1 Biodiversity

4.1.1 Bycatch monitoring

Seabirds

BirdLife International published a paper in 2024 (Ramírez *et al*.) estimating the scale of **seabird bycatch** in European waters, putting it at some 200,000 birds lost annually to fishing gear. For Ireland, without comparable by-catch estimates available at the time, the estimates presented were either fully or partially derived from scaling-up done by the authors and was based on data available from Northridge *et al*. (2020) similar fishery combined with effort data extracted from the Global Fishing Watch and ICES catch statistics.

The Marine Beacon Project is mentioned which has been running since 2024. We would also like to see the **monitoring of seabird mortality** in general expand beyond by-catch within the fisheries, in light of intensifying pressures from climate change, by developing a standardised recording protocol for beached birds to assess seabird mortality and frequency of wrecks. This might include potential citizen science reporting avenues.

4.1.2 Monitoring Programme for Habitats Directive and Birds Directive Species

3. Cetacean Monitoring

The **status of cetacean species** in Irish waters is currently assessed through digital aerial surveys under the ObSERVE program (2015-2017; 2021-2023; 2026 currently underway). This programme is a broad survey design covering the entire exclusive economic zone (EEZ) using well-defined and repeatable methodology and serves to establish a timeline of the occurrence of whales, dolphins and porpoises. It is limited however in that it can only provide a snapshot of distribution and abundance every few years. This has proven sufficient to detect a stark decline in porpoise abundance in almost all areas but is at too coarse a resolution to uncover finer-scale changes, and is likely to entirely miss rarer animals. The use of **Static Acoustic Monitoring** (SAM) devices, in particular click detectors, would enable monitoring of some species in smaller selected areas within the EEZ on a continuous timeline, which when combined with the data from ObSERVE, would reveal far more about distribution changes at relatively reasonable cost. SAM devices are currently deployed piecemeal around Irish waters on a project-by-project basis. SWAN

recommends a **State-led long-term monitoring programme** to establish robust and meaningful timelines.

10. Irish Basking Shark Group Sightings Reporting Scheme

(Note that the previously titled Irish Basking Shark Project is now called the Irish Basking Shark Group [IBSG]).

The report correctly identifies the **IBSG as a key monitoring programme** which works collaboratively with the National Biodiversity Data Centre and the Irish Whale and Dolphin Group to ensure **basking shark sightings** are recorded and stored in a single national database.

In 2026, the group published a study which analysed nearly half a century of sightings data to investigate seasonal and year-on-year patterns in basking shark numbers, whether there are 'hotspots' for the species in Irish waters, and the environmental factors influencing when and where they are seen. This study highlights the **importance of citizen science** for research and monitoring.

A key part of the IBSG's advocacy efforts focuses on the deployment of a Code of Conduct for safe sharing of space between basking sharks and ocean users. Understanding the impacts of activities such as recreational boating and other activities on these animals, at a time when evidence of the importance of Irish waters for the species is mounting, is crucial to minimising our impacts. While monitoring the species is vital for understanding, it is also **key to maintain records of incidents** such as ship strikes and bycatch.

6. NPWS Breeding Seabird Monitoring
7. Seabirds at Sea Surveys
8. Irish Wetland Bird Survey (I-WeBS)

The subsection of surveys and assessments used from the monitoring programme for the Habitats and Bird Directives to provide data for the MSFD includes **multiple surveys of Ireland's marine bird populations** (listed 6-8 above). The inclusion of surveys of multiple types of birds that use the marine environment including seabirds and waterbirds, surveys of birds during different times of the year/during different life cycle periods, and in which BirdWatch Ireland (a SWAN member) participated both as experts and in coordination with trained volunteers is most welcome. We would encourage the **continuation of these assessments**, and **recommend further surveying** be undertaken or included in future

MSFD reporting to **address critical knowledge gaps** on the use of Irish marine waters by birds.

Inclusion of additional surveys of wintering seabirds and marine birds (to include seaducks and divers) in the wider Irish marine environment, tracking work from colonies both within and outside of Ireland to understand the full scope of birds relying on Irish waters, and an expansion of the National Parks and Wildlife Service (NPWS)'s breeding seabird monitoring to include more sites being annually surveyed and greater species coverage across Ireland's coast are recommended in order to **better understand the full use of Ireland's waters** by the variety of bird species that use it. **Proper funding and resourcing of critical agencies**, such as NPWS, would be required to collect this additional data needed to appropriately address and understand Irish marine bird use, both under MSFD and other legal requirements.

Advancements in tracking technology have proven particularly beneficial in identifying **Important Bird and Biodiversity Areas** (IBAs) in the marine realm, combined with surveys and assessments mentioned in the monitoring programme. Since the launch of the IBA concept by BirdLife (then ICBP) in 1979, IBAs have been identified in over 200 countries and territories worldwide and, although not a legal protection mechanism, have been used to directly **inform the designation of thousands of protected areas**, such as under the EU Birds Directive - Special Protection Areas (SPAs). We would **encourage greater recognition of this assessment tool** for targeting conservation areas and actions.

9. IFI Monitoring of Diadromous Species & Habitats

The **full life cycle and pathways of migration that diadromous species** use must be fully factored into monitoring programmes. **Local knowledge** is crucial in this regard and there is an opportunity to engage with heritage fishers to assist with such monitoring. We are aware of fragmentation of habitat of the migration journey on land that interferes and restricts European eels from reaching rivers and lakes. With a small amount of **resourcing and training fishers could be rewarded for such monitoring** which also feeds in to just transition for many inshore fishermen whose opportunities have been thwarted by overfishing, developments and changes to the marine environment.

SWAN **welcomes the specific inclusion of Atlantic salmon (*Salmo salar*) within the monitoring programme** and the recognition that **effective assessment of this species must extend beyond freshwater**. The draft describes an established monitoring programme across Ireland's salmon rivers, incorporating fish counters, angling returns, fry abundance surveys and assessment against river-specific conservation limits. This provides an important basis for assessing the status of individual salmon stocks. However,

monitoring of freshwater abundance alone cannot provide a complete understanding of the pressures operating on salmon throughout their life cycle. The **marine and transitional-water components of the monitoring programme should therefore be sufficiently developed** to identify where losses occur and, as far as possible, the pressures contributing to those losses.

The draft importantly acknowledges the **value of targeted studies** designed to characterise the marine migration pathways of juvenile salmon in inshore and coastal waters and specifically identifies the investigation of potential survival bottlenecks, including aquaculture impacts, thermal impacts and infrastructure development.

SWAN strongly supports this approach. We believe, however, that such work should **develop beyond individual targeted studies into a coordinated and adequately resourced long-term programme** capable of examining salmon movements and survival from freshwater, through estuaries and into coastal waters.

Telemetry and Identification of Survival Bottlenecks

Acoustic telemetry and related tagging technologies have considerable potential within such a programme. The draft itself recognises acoustic telemetry as an established monitoring technique in relation to European eel, demonstrating that this methodology is already accepted within Ireland's Article 11 monitoring framework. A **coordinated salmon telemetry programme** could identify migration routes, the timing and speed of migration, areas of delayed passage and locations associated with elevated losses. When combined with environmental and pressure data, this could considerably **improve understanding** of where significant mortality is occurring.

SWAN therefore **recommends the development of a coordinated national salmonid telemetry programme, linking freshwater, estuarine and coastal monitoring**. Particular attention should be directed towards estuaries and coastal migration corridors where salmon may encounter multiple pressures. Telemetry results should, where possible, be integrated with temperature and oceanographic information, food-web and prey data, fisheries activity and bycatch information, infrastructure and other relevant anthropogenic pressures. Given that the draft itself identifies aquaculture, thermal conditions and infrastructure as potential survival bottlenecks worthy of investigation, these **pressures should be explicitly incorporated into the design** of future monitoring studies.

Sea Trout

SWAN also considers that the monitoring framework should give **greater attention to sea trout**. Sea trout occupy freshwater, estuarine and nearshore marine environments and consequently have the **potential to provide particularly valuable information on**

environmental conditions and pressures operating within coastal waters. Their use of inshore areas also means that monitoring needs to be capable of connecting changes in freshwater populations with conditions encountered during their marine migration.

We therefore **recommend that consideration be given to incorporating sea trout into appropriate telemetry and coastal monitoring programmes** alongside Atlantic salmon. A programme capable of examining movements, residency, survival and the use of estuarine and coastal habitats could help identify areas where sea trout are exposed to particular pressures. The draft material we have examined does not provide the same explicit monitoring framework for sea trout as it does for Atlantic salmon, and we believe this represents an issue that should be addressed rather than assuming that monitoring of Atlantic salmon will adequately represent the ecological requirements of sea trout.

4.1.3 Inland Fisheries Ireland Sampling Programme

3. Wrasse Monitoring Programme

SWAN **welcomes the proposed development of a dedicated Wrasse Monitoring Programme**. The need for such a programme is particularly important because the draft acknowledges that the status of Ireland's principally inshore wrasse species is currently unknown, while at the same time recognising that wild wrasse are harvested for use as cleaner fish to control sea-lice infestations in farmed salmon. The draft proposes that the emerging programme consider angling information, commercial catches and independent surveys.

The **scale of cleaner-fish movements reinforces the need for effective ecological monitoring**. The draft records that in 2023 there were 26 approved national movements of wrasse involving up to 295,000 fish. It also describes health screening and veterinary requirements associated with the movement of wild cleaner fish into aquaculture establishments. These controls are important, but monitoring the movement and health status of fish entering aquaculture facilities is not, in itself, sufficient to determine whether their extraction is having an ecological effect on the wild populations from which they are taken.

This is particularly significant because the draft itself identifies the need for further work to assess the status of coastal fish subject to exploitation, expressly including wrasse. SWAN considers that the **proposed programme should therefore establish baseline information** on the abundance, distribution, age and size structure and recruitment of wild wrasse populations in areas where significant extraction takes place. Monitoring should also be capable of detecting localised depletion and assessing whether removal affects the ecological functioning of inshore habitats.

Precautionary Approach to Wrasse Extraction

There is a wider issue which should not be overlooked. Wild wrasse are being extracted from the marine environment as part of the **salmon farming industry's response to sea-lice infestation**, while the draft monitoring programme acknowledges that the status of these inshore species is presently unknown. In our view, this creates a **clear requirement for a precautionary approach**. The absence of adequate population information should not be interpreted as evidence that current levels of extraction are sustainable.

SWAN therefore **recommends that the State establish scientifically supported population baselines and appropriate sustainable-exploitation parameters** for wild wrasse used by the aquaculture industry. The monitoring programme should examine not only the numbers moved into aquaculture facilities but also the **consequences of their removal** from the wider marine ecosystem. This would ensure that an intervention intended to manage one environmental and fish-health problem within salmon aquaculture does not inadvertently create additional pressure on poorly understood wild coastal fish populations.

Integration under the MSFD

More generally, sections 4.1.2 and 4.3.1 demonstrate the **importance of integrating biodiversity monitoring with monitoring of fisheries** and other human pressures. The DCF programme collects information on fishing activity, landings, discards and accidental bycatch and evaluates the effects of fisheries and aquaculture on the ecosystem. These datasets should, where appropriate, be integrated with species-specific monitoring, telemetry and environmental data rather than considered independently.

For migratory salmonids in particular, the objective should be to create a monitoring system capable not simply of demonstrating that a population has declined, but of **helping to establish where in the lifecycle losses are occurring and which manageable pressures may be contributing to those losses**. The inclusion of salmon migration studies and the proposed new Wrasse Monitoring Programme are positive developments, but we believe the opportunity should now be taken to **establish a more comprehensive, integrated and long-term approach to monitoring the interaction** between protected migratory fish, exploited coastal species, fisheries, aquaculture and a changing marine environment.

Salmon and Sea Trout Existing Telemetry

SWAN welcomes the recognition in the draft Monitoring Programme of **targeted studies examining the marine migration pathways of juvenile Atlantic salmon** and identifying potential survival bottlenecks, including those associated with aquaculture, thermal impacts and infrastructure development. Ireland already has considerable experience in

the use of acoustic telemetry to study the migration, distribution and survival of Atlantic salmon and sea trout through projects such as COMPASS, SMOLTRACK, Salmonid West and SeaMonitor. Rather than relying principally on individual research projects of limited duration, this existing expertise and evidence base should be developed into a **coordinated, adequately resourced and long-term national salmonid telemetry programme**, linking freshwater, estuarine, coastal and, where feasible, offshore monitoring. Such a programme should **integrate telemetry results** with temperature and oceanographic conditions, fisheries interactions, predation, infrastructure and aquaculture activity, with the specific objective of identifying migration routes, survival bottlenecks and the pressures contributing to mortality. This would allow Ireland's MSFD monitoring programme to **move beyond documenting changes in salmon abundance towards identifying where losses occur and providing the evidence necessary to target effective conservation measures**.

4.2 Descriptor 2 - Non-indigenous Species

Aquaculture was identified by DHLGH's 2024 report as a pressure on this descriptor and the European Commission table referenced above has also identified **aquaculture having a large degree of interaction** with this descriptor. Given this, there must be **specific monitoring of ecosystems near aquaculture operations**. One of the main aquatic species farmed in Ireland is the Pacific oyster, which has been found taking hold in wild ecosystems. We note the role of The Shellfish Associated Species Inventory (SASI) to monitor aquaculture production areas.

4.3 Descriptor 3 - Commercially Exploited Fish and Shellfish

Regarding commercial fisheries, we support the submission made by our member organisation Irish Wildlife Trust (IWT) and reinforce shared **concern around inadequate measures to address fishing pressure in the Nature Restoration Plan**, which is closely linked to the MSFD objectives. We particularly add our voice to IWT's point that **Joint Recommendations will be vitally important** to achieving GES across several indicators.

The "wrasse movement monitoring" section (under 4.1.3) notes that "The MI Fish Health Unit continues to work with industry to develop protocols to reduce the risk of disease introduction to aquaculture establishments by wild cleaner fish." However, the reports fail to consider the introduction of **disease and parasites from farmed fish** to wild populations, particularly vulnerable populations of salmon and sea trout.

4.4 Descriptor 4 - Food Webs

We agree with the assertion made that '*marine food webs and their elements represent one of the most difficult MSFD descriptors to evaluate and to monitor*'; however, more needs to be done to **better understand this critical descriptor and its knowledge gaps**. A better understanding of Ireland's complex marine food webs is **critical to ensuring biodiversity health and growth**.

Seabirds

We rue that **Irish monitoring of birds is not already used in assessment of higher trophic guilds**, given that many seabird species are heavily reliant on particular species of fish and greatly impacted by changes in prey availability and abundance (Caldwell *et al.*, 2026), but support the incorporation and '*inclusion in future Irish MSFD D4 assessments*' of more data on Irish birds into D4 assessments.

To better understand the prey fish available for foraging seabirds and other higher trophic guild species, we **propose that further fish stock assessments and monitoring to be expanded to include new species**, including critically important prey species, and to other areas in Ireland's marine environment, to include areas known to be critically important for foraging birds. The Marine Institute does fish stock assessments and monitoring for commercially viable fish species using a variety of methods, such as acoustic surveys, some of which can be used to survey other important prey fish species as well. We would **suggest using acoustic surveying for fish species that are important prey species for seabirds**, such as sandeel (*Ammodytidae*) and sprat (*Clupeidae*). We would also **support the addition of spatial distribution modelling of important prey species using both literature-support desk studies and limited ground-truthing** to provide critical information on the location and density of prey fish in Irish waters, such as the modelling done on sandeels in Northern Ireland (Runya *et al.*, 2024).

Additionally, the current survey and monitoring work is geographically located in the south and west regions of the Irish marine EEZ, but many nesting seabirds in Ireland nest along the **east coast in the Irish Sea**. An expansion of this acoustic surveying for other fish species that are important to wildlife such as seabirds and into other marine environments that host large quantities of seabirds would **allow for the use of this already occurring monitoring to help address knowledge gaps in the food web** of top apex predators in the Irish marine environment. Also, some foraging surveys and diet data have historically been collected at regularly surveys seabird colonies along the east coast, which offers additional insight into the use and consumption of different prey by seabirds, a higher trophic guild group. In time, this data on the prey fish availability and abundance can be paired with seabird productivity monitoring already happening in the Irish Sea and elsewhere in Ireland to better understand how prey fish availability effects seabird

reproduction and population growth. SWAN **recommends that further study and funding is put forward to addressing the critical knowledge gaps** that still remain in the MSFD reporting of D4 Food Webs. With **effects on marine ecosystems due to climate change**, understanding these relationships will become critical to ensuring biodiversity health in the future.

4.5 Descriptor 5 – Eutrophication

DHLGH's MSFD report in 2024 identified aquaculture as a pressure on this indicator, due to the **input of nutrients and organic material**. This is largely due to **open-net salmon farming**, which allows uneaten food and fish waste to fall below cages into the surrounding water, causing eutrophication.

Another potential source of eutrophication is **high density bivalve culture**, especially mussel bottom culture, where carbon and nutrients stored in pseudo faeces and sediments are resuspended as the mussels are thinned and again as they are dredged up for sale. Currently there appears to be **no adequate monitoring program shadowing this nutrient accumulation in sediments and the release** in sheltered bays like Wexford Harbour due to this mussel culture. Combined with discharges from the Wexford Sloblands around the estuary brought down the Slaney River, the nutrient load is significant. Although loss of seagrass in Wexford Harbour can be traced back by locals who witnessed it to industrial discharges, reestablishment of these previously large beds would **require nutrient loading to be addressed**.

The Coastwatch Autumn Shore Survey also uses Merck field test kits to estimate **Nitrate concentration**. Results mirror the EPA reports of raised and high nutrient levels along the East and South coast, especially in estuaries. They also agree with the Timoleague catchment results quoted linking rainfall and high nutrient losses from land. Given that results for broadly both official monitoring and citizen science have agreed for decades, Coastwatch has gone into **extra test validation checks** this year to ensure data could be included in future to broaden our knowledge on inflow nutrient status and pinpoint the odd hotspot. The results and long-term analyses are to be presented in a January 2027 Coastwatch workshop.

4.6 Descriptor 6 - Sea-floor Integrity

We agree with the authors that there is **not enough information currently available on this descriptor** and believe the **monitoring programme needs to be significantly expanded upon**.

Many forms of dredging and dumping at sea associated with ORE are likely to increase and require careful monitoring. **Port maintenance dredging** has a known impact on seafloor

integrity. With climate change we are already experiencing **stronger shifts of sediment** and are likely to see the need for more dredging. It would be important to **use port monitoring data and expand on the same to monitor seafloor integrity**. Especially on plough dredging there appears to be very little data in Ireland. Port capital dredging has a much larger impact as entire areas as estuaries adjust to deeper channels. While for these schemes a lot of data is gathered for the licensing process, subsequent actual **impact monitoring should be strengthened**. This overlaps strongly with food webs and biodiversity, and any monitoring program should reflect this.

SWAN also shares IWT's concern that **vessels under 12m were not included in analysis of seafloor disturbance**. Though many vessels of this size engage in seafloor-disturbing practices, such as **dredging and bottom-trawling**, they are not required to have an onboard Vessel Monitoring Systems (VMS) on board. Thus, **seafloor disturbance may be higher than current reporting shows**. SWAN supports IWT's recommendation for **effective monitoring of small-scale vessels** in the marine environment, in order to accurately assess the status of marine ecosystems.

There must be **monitoring specific to shellfish aquaculture**, which was identified in DHLGH's 2024 MSFD report as one of the main three activities causing loss to the seabed in the Irish marine environment, leading to damage of sea-floor integrity.

4.7 Descriptor 7 - Alteration of Hydrographical conditions

While coastal erosion is only mentioned in the report under contaminants (noting that storm magnitude and frequency may lead to greater coastal erosion and related pollution runoff), **coastal erosion may also affect hydrographical conditions, and should be considered in monitoring**. The Office of Public Works have a new initiative "See It, Snap It, Send It" that citizens can contribute to for coastal erosion. However, to engage the spatial coverage required it is important that this is rolled out in a more organised manner by resourcing those with existing citizen science monitoring programmes or establishing new ones for community groups to get involved with.

4.8 Descriptor 8 – Contaminants

SWAN **welcomes the continued use of established Water Framework Directive (WFD) and OSPAR monitoring programmes** as the principal basis for assessing contaminants under Descriptor 8. The integration of WFD monitoring in transitional and coastal waters with OSPAR Coordinated Environmental Monitoring Programme (CEMP) monitoring of contaminants in water, sediment and biota provides a valuable basis for assessing both current concentrations and longer-term trends. In particular, the **use of multiple environmental matrices is important** because contaminant behaviour varies

considerably: some substances are most appropriately assessed in the water column, while persistent and bioaccumulative substances may be better detected and assessed through sediment or biota. Long-term OSPAR datasets are therefore particularly valuable in assessing whether concentrations are declining and whether regulatory measures are effective.

However, SWAN considers that the Descriptor 8 monitoring programme should be **strengthened to ensure that it is capable not only of assessing compliance with an established list of regulated substances,** but also of **identifying changing contaminant pressures, emerging pollutants, cumulative effects and the effectiveness of measures to reduce contaminant inputs.**

4.8.1 Water Framework Directive (WFD) priority substances and other relevant pollutants in transitional and coastal waters monitoring programme

SWAN supports the use of the WFD priority substances programme as a core component of Descriptor 8 monitoring. The Draft Monitoring Programme states that chemical status is assessed in approximately 12 coastal and 30 transitional water bodies and that hazardous substances in water are sampled monthly during one year of the six-year monitoring cycle. The **report should provide a clearer explanation of how this methodology was adopted** (i.e. if the frequency and chosen sites are sufficiently representative for identifying intermittent or seasonal pollution and assessing the effectiveness of measures throughout the six-year marine strategy cycle).

Monitoring should be designed to **capture seasonal or intermittent variations in the use, discharge and environmental concentrations of contaminants**. A more **targeted, risk-based approach** of this kind would be consistent with both the Draft Monitoring Programme and the wider WFD framework, which distinguishes between surveillance, operational and investigative monitoring. It would also help **ensure that monitoring provides a sufficiently robust evidence base** for assessing water-body status and for directing measures to where they are most needed.

This issue has become more important following the adoption of Directive (EU) 2026/805[1], which amends the WFD, Groundwater Directive and Environmental Quality Standards Directive. **The statement on p.158 of the Draft Monitoring Programme that the European Priority Substances legislation "*is currently being amended*" is now out of date and should be revised.** The Directive entered into force in May 2026 and substantially extends the pollutants addressed under EU water legislation, including

[1] Directive (EU) 2026/805 amending Directive 2000/60/EC, Directive 2006/118/EC and Directive 2008/105/EC as regards water pollutants.

additional PFAS, pharmaceuticals and bisphenol A, while revising EQS for a number of existing substances. It also explicitly recognises the need to consider groups and mixtures of substances, including sums of pharmaceuticals and bisphenols.

Importantly, the amendment to the Directive **requires Member States to establish a supplementary monitoring programme for newly identified surface-water priority substances by 22 December 2027**, rather than waiting for the next full WFD monitoring cycle. It also strengthens provisions relating to monitoring frequency, requiring monitoring to take account of anthropogenic and natural variability and, where substances may exhibit short-term seasonal peaks, to be carried out at shorter intervals where necessary. SWAN therefore **recommends that the final MSFD monitoring programme clearly describe how Ireland will incorporate Directive (EU) 2026/805 during the present MSFD cycle and how the supplementary WFD monitoring programme will feed directly into Descriptor 8 assessments.**

4.8.3 OSPAR Coordinated Environmental Monitoring Programme (CEMP) of concentrations of hazardous substances in biota, sediment and water

SWAN strongly **supports Ireland's continued participation in the OSPAR CEMP and the monitoring of persistent contaminants in sediment and biota**. This monitoring is an important complement to WFD water-column monitoring, particularly for substances that persist in the environment, accumulate in sediments or biomagnify through marine food webs. OSPAR's long-term datasets also provide an important regional context for assessing whether contaminant concentrations are declining and whether existing controls are effective.

The **expansion of monitoring to include PFAS and copper is welcome**. However, the final Monitoring Programme **should provide greater clarity on the scope of this monitoring**, including the specific substances monitored, the environmental matrices used, sampling frequency, spatial coverage and the assessment thresholds applied.

This is **particularly important for PFAS**, where the regulatory and scientific evidence base is developing rapidly. PFAS are persistent in the environment and a number of compounds are capable of accumulating in biota and marine food webs. Their inclusion within both WFD and OSPAR monitoring creates an important opportunity for greater consistency between freshwater, transitional, coastal and marine assessments.

SWAN also recommends that the final Monitoring Programme provide a clearer overview of the CEMP monitoring network itself. While sampling locations are presented in the Draft, relatively little information is provided on how stations were selected, which substances are monitored at each station, the frequency of sampling,

the environmental matrix used, or whether the existing network is considered sufficient to detect national and regional trends.

A concise table presenting this information would significantly improve transparency and would make it easier to assess whether there are important spatial, temporal or substance-specific gaps within the programme.

Box 4. Screening for contaminants of emerging concern (CECs)

SWAN welcomes the acknowledgement in the Draft Monitoring Programme that current regulatory monitoring covers only a limited proportion of the chemicals that may be present in the marine environment. The **identification of contaminants of emerging concern, chemical mixtures and the limited availability of marine-specific ecotoxicological thresholds as significant knowledge gaps is particularly important**.

These issues **should be treated as a core element of the monitoring programme rather than as a separate research issue**. There is now substantial evidence that **targeted monitoring of a limited number of regulated substances cannot, on its own, provide a complete picture of chemical pressures** in aquatic environments. Approaches such as suspect and non-target screening, passive sampling and effect-based monitoring can provide important complementary information, particularly for substances that are not yet routinely regulated or monitored and for mixtures of contaminants[2][3].

SWAN therefore recommends that the final Monitoring Programme establish a clearer process for moving contaminants identified through research and screening programmes into routine monitoring where there is evidence of environmental risk.

Ireland's participation in the OSPAR–NORMAN CONnECT project is particularly relevant in this regard. The project has identified a wide range of contaminants of emerging concern in marine sediment and biota across the OSPAR region, including pharmaceuticals, personal-care products, PFAS and plant-protection products. **Research and screening programmes such as CONnECT should function as an early-warning and prioritisation mechanism for statutory monitoring**. Where a substance is repeatedly detected, occurs at concentrations of concern or is associated with known ecological risks, there should be a transparent pathway for considering its inclusion within routine national monitoring. Without such a mechanism, there is a risk that emerging contaminants will continue to be

[2] Brack, W. et al. (2017). *Towards the review of the European Union Water Framework Directive: Recommendations for more efficient assessment and management of chemical contamination in European surface water resources*. Science of the Total Environment, 576, 720–737.
[3] Brack, W. et al. (2019). *Effect-based methods are key: the European Collaborative Project SOLUTIONS recommends integrating effect-based methods for diagnosis and monitoring of water quality*. Environmental Sciences Europe, 31, 10.

identified through research programmes without being systematically incorporated into monitoring or management.

SWAN also **supports the proposal to explore the use of passive sampling techniques**. Passive sampling can complement grab sampling by integrating contaminant exposure over time and can improve the detection of substances present at low or variable concentrations.

However, **the final Monitoring Programme should move beyond a general commitment to "explore" these methods. It should identify a clear timetable for pilot monitoring, the priority contaminant groups to be considered, how results will be quality-assured and how passive sampling data could ultimately feed into national assessment.** Scientific literature supports the value of passive sampling for monitoring emerging contaminants in marine waters, while also highlighting the need for appropriate calibration, standardisation and validation[4].

4.9 Descriptor 9 - Contaminants in Seafood

SWAN does not have expertise in this area.

4.10 Descriptor 10 - Marine Litter

Aquaculture was identified by DHLGH's 2024 report as a pressure on Descriptor 10, and we call for **localised monitoring around aquaculture operations**.

4.10.4 All Ireland Coastwatch Survey

An example of the importance of citizen science is the requirement under the OSPAR methodology for Marine Litter which is very limited requiring monitoring of just 4 locations x 100 metre sections monitored four times a year. We **welcome the fact that the Department will now take into account the data being gathered under the Coastwatch Autumn Survey** which will supplement this Marine Litter Data for MSFD as well as for the Single Use Plastics Directive, having monitored banned items since 2020 in advance of the legislation coming into force.

4.11 Descriptor 11 - Underwater Noise

The IWDG **remains concerned that regional sound pressure level (SPL) thresholds for level of onset of biologically significant effects (LOBE) have not been established**. Against a background of ever-increasing anthropogenic noise, expected to jump yet more

[4] MacKeown, H. et al. (2022). *The study of polar emerging contaminants in seawater by passive sampling: A review*. Chemosphere, 299, 134448.

in light of the planned development of ORE in Irish waters, failing to agree a metric to measure effects on receptors limits the scope to manage and assess underwater noise.

The use of "**Bang Days**" based on seismic survey licensing in the previous assessment is a crude device but was sufficient to determine status in the context of 3-D geophysical surveying for oil and gas west of Ireland. **Windfarm surveying and construction will require a more focussed approach appropriate to the scale of the activities**. Levels of noise under D11C1 must not exceed 20% of the area of the habitat of a receptor organism, and in this case an appropriate scale for habitat would be the Irish Sea basin, or Celtic Sea area, certainly not the entire EEZ. The Irish Sea basin in particular receives transboundary impulsive noise inputs from other jurisdictions, which should also be taken into account.

The use of modelling incorporating tracked vessel movements from EMODnet as the main driver is a reasonably effective but somewhat limited method to estimate continuous noise status under D11C2. It will however **not capture continuous noise from other industrial processes associated with ORE**. These may include **drilling, vibrocoring, vibropiling, rock placement, dredging** etc. It is hoped that the new Irish Marine Acoustics Platform (IMAP) project currently underway at UCC will add vital empirical data to the assessment, breaking from the current modelling-only approach.

A further weakness of the current methods of assessment is the inability of the Irish State to detect and measure acoustic activity arising from Naval exercises by other States either operating in the Irish EEZ, or making noise which propagates into it. Mid-frequency Naval Sonar used for submarine hunting operates at frequencies and SPLs sufficient to injure and disorientate deep-diving cetacean species and has been found responsible for multiple fatal mass stranding events worldwide. An **array of calibrated broadband hydrophones deployed in deep waters off the western shelf edge would detect naval sonar and other military activities**, and have the **added benefit of detecting the occurrence of cryptic and rare deep-diving cetacean species**.