BirdLife Malta's Feedback on the Intent and Objectives: Second Update to Malta's marine strategy pursuant to the Marine Strategy Framework Directive 2008/56/EC (MSFD) – 3rd cycle

5th September 2025

BirdLife Malta welcomes the update of the MFSD and acknowledges ERA's efforts in driving this important update forward. Based on the previous updates, we hereby provide feedback on the pressures and impacts on the marine environment and state of the marine environment; how to monitor the descriptors; and measures to improve the Good Environmental Status of the descriptor concerned.

MFSD Descriptor 1: Seabirds

Assessment of Criteria and Indicators

We would like to emphasize the availability of new data from the LIFE PanPuffinus! project on incidental bycatch, which should be considered in this update of the GES under D1C1. In addition, further data collected through LIFE PanPuffinus! and within the framework of the Article 12 cycle (2018–2024) are relevant to updating the GES under D1C2 to D1C5.

Monitoring

We would like to highlight some apparent gaps in the Marine Monitoring Programme (2nd Cycle): Descriptor D1 Biodiversity – Seabirds.

We suggest that the assessment of marine foraging habitat extent through GPS-tracking and vessel based transects is included under Monitoring Strategy "1.3. Seabirds – state of habitats". Such monitoring is critical given that Malta's Maritime Spatial Planning foresees the development of new aquaculture zones and offshore floating windfarms - projects which may alter the marine foraging behaviour of seabirds in Maltese waters. It is therefore essential that monitoring is designed to document any changes both during the construction and operational phases of such facilities. The strategy mentions the eventual possibility of tagging *Hydrobates pelagicus*. Indeed. now GPS-loggers are sufficiently small to obtain foraging data for the species (de Pascalis *et al.*, 2021) and we

encourage specific inclusion of *H. pelagicus* tracking in addition to tracking the larger shearwater species.

While the inclusion of the state of the marine habitat is a beneficial addition, there is still a lack of measures for breeding (terrestrial) habitat condition within the Monitoring Strategy. Measures should include presence of IAS, extent of light pollution and disturbance. Inclusion of specific measurements and monitoring of anthropogenic pressures would improve interpretation of the GES criteria within other criteria. We would like to again take the opportunity to point out the apparent omission of annual reproductive assessment from criterion D1C3 in the Monitoring Strategy. Reproductive assessment is a crucial demographic parameter for breeding seabirds, providing insights into both terrestrial pressures (e.g. IAS predation, disturbance) and marine pressures (e.g. lack of prey). We strongly encourage the inclusion of the reproductive output parameter in the next monitoring cycle(s). While we acknowledge that D1C3 is a secondary criterion, we continue to stress that the inclusion of demographic parameters - specifically adult survival and reproductive performance - is essential within the GES assessment for breeding seabirds.

Suggested measures for habitat condition and reproductive assessment are outlined in the **Long-Term Monitoring Strategy report** (https://era.org.mt/wp-content/uploads/2022/07/GF-Admin-48-2020-Long-term_MonStratReport_Seabirds_final.pdf) - a comprehensive document compiled specifically to provide a detailed monitoring strategy for the five seabird criteria (C1–C5) under the MFSD.

Furthermore, we strongly recommend adopting a more holistic approach and ensuring better integration of data collection and monitoring across the various themes and descriptors. For instance, we encourage the use of seabirds breeding on the Maltese Islands as bioindicators to monitor pollutants derived from marine prey, thereby providing insights into pollutant prevalence within marine food webs. Recent studies highlight significant risks: high exposure to plastics in the Mediterranean (Clark et al., 2023); elevated levels of per- and polyfluoroalkyl substances (PFAS) in *Calonectris diomedea*, with Maltese breeders showing higher concentrations than neighbouring colonies (Michel et al., 2025); and mercury levels in *Puffinus yelkouan* nestlings sufficient to affect growth and survival (Austad et al., in prep). Additionally, diet analysis has shown considerable overlap between shearwater prey and commercially exploited fish species (Austad et al., 2025).

Specifically, therefore, we recommend the inclusion of:

- A monitoring programme of sampling from seabirds for heavy metals, PFAS, and other pollutants such as Persistent Organic Pollutants (POPs) under Descriptor D8 & D9 (mobile species). Sampling is easily compatible with monitoring under D1 and ensures minimal disturbance through the use of low-invasive techniques. Ingested plastic in shearwaters under Descriptor D10 – Marine Litter, opportunistically monitored using carcasses from bycatch and light-pollution-induced grounding.
- Under 1.4. *Contaminant Inputs – Acute Pollution Events* (including oil spills) of D8 & D9, we encourage the inclusion of effects on biota. Other forms of contamination, such as fish oils from aquaculture, also require mapping and assessment of impacts.
- Seabirds may also contribute to other criteria, such as the identification of important fish and spawning grounds (and thus potential Fish Revival Areas under D3), compatible with GPS-tracking measures under D1C5.
- Finally, we suggest the inclusion of seabird diets (as well as those of other top predators such as cetaceans) in studies of food webs under Descriptor D4 – Food Webs. Regular monitoring through stable isotopes and DNA metabarcoding of top predator diets can provide valuable insights into shifts within marine food webs (Romero et al., 2021; Austad et al., 2025).

While we acknowledge the critical importance of monitoring the three breeding seabird species of the Maltese Islands, we also encourage the inclusion of other Annex I seabird species that occur in Maltese waters during migration and the non-breeding period. Several *Larus* species and *Chlidonias niger* occur in large and significant numbers, making them suitable indicators. Monitoring these species is compatible with vessel-based transects at sea, as well as land-based counts (as suggested in the Long-Term Monitoring Strategy Report), and should additionally be integrated into bycatch monitoring (D1C1).

Program of Measures

We hereby provide feedback on the previous 'Updates in relation to the 'existing' measures for seabirds' as reported in the first update of the Programme of Measures:

- **Measure M004:** We would like to yet again take the opportunity to stress that large and important colonies of *P. yelkouan* are still not protected by SPA status. These are Majjistral Nature & History Park and Selmunett which are designated as SACs but should additionally be designated as SPAs due to the presence of *P. yelkouan* colonies within these sites. Ta' Isopu in Gozo should be strongly

considered for SPA designation, again based on *P. yelkouan* breeding population in the area. Finally, information on SPAs requires regular updates with knowledge supplied through data collection, including during MSFD cycles. For example, the SPA MT0000030 (https://era.org.mt/wp-content/uploads/2019/05/20180601_MT0000030-Dimitri-Harrux-SPA.pdf) needs update of the *H. pelagicus* colony discovered there and reported amongst others (As reported in the **Seabird Fieldwork Report**: https://era.org.mt/wp-content/uploads/2022/11/Seabird-Fieldwork-Report-2021-public.pdf).

- **Measure M006**: Rodent control needs committed funding as of 2026 with the completion of LIFE PanPuffinus! in 2025. Failure to continue this conservation measure is likely to see an increase in predation rates and a decline in *P. yelkouan*. Rodent control needs to go hand in hand with improved waste management. While some sites (Rdum tal-Madonna) have seen great improvements during the last three years, others are still lacking behind or worsen due to increased visitor pressure. Finally, other IAS such as feral cats need to be adequately recognised and addressed as threats to native fauna including seabirds.
- **Measure M007 & M008**: While we appreciate the continued cooperation between the ERA, Transport Malta and BLM on the issue of the notices to mariners to protect seabird sites we would like to raise some further points. We encourage the issue of a general Code of Conduct for mariners in relation to flora (such as awareness on anchoring and *Posidonia* meadows) and fauna (behaviour around cetaceans and seabirds). The Code of Conduct should in our opinion also include measures boaters should take to keep their boat and places they visit biosecure from IAS. In relation to this, we call for improved awareness and enforcement of the 1nm no navigation zone around Filfla, crucial to its integrity and biosecurity. We also would welcome measures specific to reduction of light pollution from ships in front of seabird colonies and within marine SPAs. Suggestions for such measures compatible with the industry were published in Journal of Ornithology (Austad *et al.*, 2023).
- **Measure M011**: Whilst it is acknowledged that the *Conservation Objectives and Measures for Malta's Marine Natura 2000 sites* include actions such as holding workshops with fishers to promote the use of mitigation measures and improving data collection and recording on seabird bycatch (CM_SB_2), to date there is still no widespread adoption of mitigation measures in high-risk fleets. Through LIFE PanPuffinus, the effectiveness of an aerial deterrent (the Scary Bird) has been trialled, while some fishers have independently used other simple measures. However, these efforts remain limited to the LPP project. A formal management system should be established to ensure the implementation of mitigation measures across all high-risk fleets, with appropriate incentives provided and reflected in the budget.

- **Mitigation MICMTM072_NEW**: The final version of the guidance document on reducing light pressure from both land-based and sea-based activities has not yet been published. In addition, enforcement of the Notice to Mariners regarding restrictions on vessel lighting within SPAs remains insufficient (Not_09_2023; Not_10_2023). Overall, light pollution continues to affect colonies and is still largely unaddressed. This issue merits greater attention and should be comprehensively monitored and mitigated under Descriptor 11 (as detailed below).

MFSD Descriptor 3: Extraction of, or Injury to, Wild Species

Assessment of Criteria and Indicators

A comprehensive assessment of the selected marine species has been carried out, drawing on data from MEDITS, GFCM stock assessment forms, and ICCAT reporting. However, information on the location and status of their breeding, spawning, and nursery grounds remains lacking. To date, no nation-wide assessment of these critical habitats has been undertaken around the Maltese Islands. Such habitats are strong indicators of areas that require targeted fishery management and, ultimately, the designation of strictly protected zones. Because marine species experience different levels of vulnerability throughout their life cycles, it is essential to identify which life-stage habitats are most at risk in order to prioritise monitoring and protection measures. Globally, fish stocks are in decline, and this trend is reflected in local data as well. In the previous update, Table 77 presented the status of spawning stock biomass (D3C2) and age and size distribution (D3C3), showing concerning results: 54% of the assessed species are “Not Good” under D3C2, and 20% are “Not Good” under D3C3, compared to only 10% rated “Good.” Equally troubling is that 68% of species are recorded as “N/A” for D3C3, signalling major gaps in assessment. These findings underscore the urgent need to strengthen fisheries monitoring. Achieving GES of fish stocks will only be possible if management decisions are grounded in robust scientific assessments of key habitats and accompanied by the implementation of appropriate measures.

Monitoring

While substantial data are collected annually through MEDITS surveys, additional non-invasive methods could be applied to monitor breeding, nursery, and spawning grounds. These include tagging and telemetry, environmental DNA (eDNA), underwater visual surveys, acoustic monitoring, and habitat mapping.

Programme of Measures

The Programme of Measures makes reference to the establishment of "Fish Revival Areas," involving temporal and spatial closures of fishing activities agreed upon with fishers for specified periods. While this approach is valuable, such measures should also involve a wider range of stakeholders, including external experts, NGOs, and other marine users. To date, however, these "Fish Revival Areas" have not been implemented, nor have consultations been made public. It therefore remains unclear what these areas would entail or whether any progress has been achieved. In light of this, we recommend that more robust Spatial Protection Measures be adopted. In accordance with Article 13(4) of the MSFD, Programmes of Measures should include spatial protection actions with a strong focus on the designation and effective management of Marine Protected Areas (MPAs).

The statement that "to date, Malta has not proposed Spatial Protection Measures beyond those covered by existing measures, as part of the first and second cycle PoMs. This is due to the fact that the spatial management as developed as part of the Natura 2000 management framework is considered adequate to achieve the objectives of the Directive" is not supported by scientific evidence. While the Natura 2000 network does covers around 35% of Malta's Fisheries Management Zone, these sites largely function as paper parks. Although conservation measures exist on paper, these areas suffer from weak management, limited implementation, and poor enforcement.

For the third cycle of the PoM, Malta should therefore commit to scientifically grounded and ambitious Spatial Protection Measures, developed with full stakeholder involvement. Properly implemented MPAs can deliver substantial ecological and socioeconomic benefits, including spill-over effects that enhance fishery catches, improvements in fish size, and long-term economic gains for fisheries (Castello, 2024). Effective management is crucial for the sustainable use of marine resources and for safeguarding both fisheries employment and food security.

Levels of protection should be clearly defined, ranging from no-take zones and permanent closures to multi-use zones and gear restrictions. Evidence from international case studies demonstrates that such measures - particularly no-take MPAs - yield consistently positive outcomes for biodiversity and fisheries alike (Costello, 2024).

MFSD Descriptor 11: Energy, including underwater noise

Assessment of Criteria and Indicators

While underwater noise has previously been assessed under Descriptor 11 of the MSFD, we recommend that artificial lighting be explicitly included in this descriptor as well. The ecological impacts of artificial light on coastal habitats warrant greater attention. Light pollution is a recognised and significant environmental pressure, acknowledged both by the European Commission and within national legislation, such as the Environment Protection Act.

The rapid expansion of artificial light at night (ALAN), largely driven by inadequate planning, highlights the urgent need to evaluate its effects on marine ecosystems in Maltese waters. A recent study on Malta's infralittoral assemblages demonstrated how ALAN disrupts natural light–dark cycles, influencing community structure and eliciting species-specific responses. Conducted in Ċirkewwa harbour - an area with high light intensities - the study confirmed that increased illumination significantly alters benthic community composition (Grillo et al., 2024).

Shipping is another important source of ALAN. A local study investigated whether ship lighting near coastal cliffs affects colony attendance in the *P. yelkouan*). The findings showed that direct illumination from vessels increased cliff-face brightness and significantly reduced the number of birds entering colonies per hour. Such impacts are likely to have both short- and long-term consequences for breeding success, physiological condition, and overall colony viability (Austad et al., 2023).

Given these documented effects, mitigation measures to limit light pollution from coastal infrastructure and commercial shipping should be prioritised to safeguard marine habitats and vulnerable seabird populations.

Monitoring

Monitoring of ALAN in sensitive habitats should involve the deployment of sky-quality meters (SQM) to record sky darkness at strategic locations. SQM are placed facing cliff faces at colony sites to record light levels to which nesting seabirds are exposed to at night. This would allow detection of seasonal variations in light intensity, such as the summer peak linked to increased boating activity. Sites facing bunkering areas should also be prioritised, as they are likely to experience significant fluctuations in ALAN

exposure. The Long-Term Monitoring Strategy Report provides detailed guidance on how SQM should be used and where (pg. 65-66).

Program of Measures

A nation-wide Plan of Action for monitoring, reducing overall sky illuminance, and implementing long-term mitigation strategies is urgently needed. Although an official guidance document has been drafted on the "Reduction of Light Pollution in the Maltese Islands", the final version has never been published. While these documents provide useful guidelines for reducing light pollution, they fall short of outlining a clear, coordinated plan for managing sky illuminance across the Maltese Islands.

The plan should prioritise the phased replacement of high-intensity street and building lighting with ecologically sensitive alternatives, alongside strict regulations for new developments and fittings. In addition, regulations should require vessels operating near Natura 2000 sites to restrict lighting to only what is necessary for navigation, to prevent direct illumination of sensitive habitats. Additional measures should include redirecting strobe and spotlights from entertainment venues away from sensitive cliff habitats (e.g. Café del Mar) and limiting light-intensive activities in others (e.g. Popeye Village).

Priority sites requiring action include Għar Lapsi, Golden Bay and Ġnejna (affecting the south face of Ras il-Waħx), Mġarr ix-Xini, and Ras il-Qala in Gozo.

Several locations, however, require immediate mitigation measures:

- **St. Paul's Bay**: Severe light spill affects the Rdum tal-Madonna cliffs, home to Malta's largest colony of *P. yelkouan*. The area, heavily developed since the 1980s, is now densely populated and lined with hotels and tourism businesses that remain brightly lit at night. This creates intense glare that reaches the northern cliffs of the island. St. Paul's Bay has also been identified as one of Malta's seabird grounding hotspots caused by artificial light (Crymble *et al.*, 2020).
- **Armier** and adjacent establishments are increasing in urban sprawl and use of light pollution affecting colonies around the channel and Rdum tal-Madonna.
- **Dwejra** (Gozo) is part of a Dark Sky Heritage area and as such needs improved enforcement to curb the increase in light pollution affecting seabird colonies at the site.

- **Ċirkewwa and Mġarr harbours**: These areas impact Kemmunett, Ta' Ċenċ, and Ras il-Qammieħ. Ċirkewwa, identified as a major light pollution source in the study by *Grillo et al.*, has spill-over effects on Ras il-Qammieħ. Although no nesting seabirds are currently recorded at Ras il-Qammieħ, light pollution from the Ċirkewwa ferry terminal affects nearby Yelkouan Shearwater colonies around the Gozo Channel and any attempts to breed in the area. Large rafts of birds were recorded in front of the cliffs in 2025 through infrared camera monitoring (BirdLife Malta, unpublished).
- **Ħal Far industrial estate**: Identified as one of Malta's seabird grounding hotspots linked to excessive artificial lighting.
- **Xlendi Bay (Gozo):** The promenade and expanding hotel infrastructure have resulted in increasing light pollution in recent years, making Xlendi another recognised hotspot for light-induced seabird groundings.

MFSD Descriptor 8: Contamination

Assessment of Criteria and Indicators

With the enactment of the new Sulphur Emission Control Area (SECA) in the Mediterranean, it is expected that more commercial vessels and cruise ships will utilise exhaust gas cleaning systems (EGCS) to comply with the restrictions of the SECA. For example, in the region of Taiwan where SECA has already been implemented since 2019, it was forecasted that about 40% will use alternative fuels, and about 22% will choose to install scrubbers and continue to use high-sulfur fuels by 2024. Currently, the discharge of scrubber wash water from ships i.e. the discharge from is not banned in Maltese waters. In addition, there have not been any assessments to identify the impact of the release in scrubber wash water and what the level of contaminants arising from this wash water is. Scrubber wash water discharge contaminants in the water including the persistent organic pollutants polycyclic aromatic hydrocarbons (PAHs) such as Benzo[a]pyrene and others, heavy metals, nitrogen and sulphur compounds (Chen *et al.*, 2022). Essentially, scrubber technologies redistribute pollutants from the air into the marine environment. The three major types of effects in the marine environment are ecotoxicity and bioaccumulation, acidification and eutrophication (Hassellöv, 2023).

Linking this descriptor to what was highlighted earlier under Descriptor 1 regarding PFAS levels in seabirds, it is concerning that *C. diomedea* nesting in Malta showed the highest PFAS concentrations among Mediterranean colonies in a recent study, suggesting the presence of local pollution sources (Michel *et al.*, 2025).

Monitoring

Ports could conduct ongoing water and sediment monitoring for acids, PAHs, PFAS, heavy metals, nitrates, and nitrites. Ports could also keep a record of all ships that call on the port that used scrubbers within the port boundary and require ship officers to report the amounts of fuel consumption and scrubber discharges that occurred in the port (Ospiva, Georgeff & Comer, 2021).

In addition, we strongly encourage further research into both terrestrial and marine sources of PFAS contamination, which may include inadequate hazardous material storage, poor waste management, and illegal dumping of hazardous waste.

Program of Measures

Malta should prohibit scrubber discharges in waters under its jurisdiction. This should include open-loop discharges as well as closed-loop bleed-off water. If closed-loop scrubbers are used, they should be operated in zero-discharge mode. Jurisdictions could offer on-land reception facilities to properly dispose of sludge and water collected by closed-loop scrubbers. Malta, as a prominent flag state, should lead by example and ban scrubber wash water within its territorial waters (Ospiva, Georgeff & Comer, 2021).

Identified industries and entities responsible for releasing PFAS contaminants should also be held accountable and required to improve their practices.

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