OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic

Meeting of the Intersessional Correspondence Group on Biodiversity Monitoring and Assessment (ICG-COBAM)

Denmark, Copenhagen: 13 – 16 December 2021

Proposal for threshold values for common indicator BH3 – Region II and III

Presented by UK & DE (BH3 Indicator co-leads)

Issue: This document presents several options and background for threshold values for common indicator BH3 for Region II and III that were discussed by experts and policy leads during three workshops in 2021.

Indicator name	*Extent of physical damage to predominant and special habitats (BH3)*
Status of threshold value	New
If revised or resubmitted provide justification	-
Proposed threshold values	Option 1: The threshold is achieved, when at least **x%** of the area of a broad habitat type is permanently **without anthropogenic physical disturbance** (BH3 disturbance category 0). Option 2: The threshold is achieved, when the area of a broad habitat type which is **highly disturbed** (BH3 disturbance categories 5-9) is less than **Z%** of the total habitat area. Option 3: The threshold is achieved, when at least **x%** of the area of a broad habitat type is permanently **without anthropogenic physical disturbance** (BH3 disturbance category 0) AND the area which is **highly disturbed** (BH3 disturbance categories 5-9) is less than **y%** of the total habitat area. Option 4: The threshold is achieved, when at least **x%** of the area of a broad habitat type is permanently **without anthropogenic physical disturbance** (BH3 disturbance category 0) AND the area which is **highly disturbed** (BH3 disturbance categories 5-9) is decreasing. It should be noted that the thresholds should be applied at regional or sub-regional level once the assessment units have been agreed

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	Proposals for potential values are: x= 10% y= 25% z = 15% BH3 co-leads will present and initial first draft assessments of the indicator using some of the above mentioned threshold values at COBAM 2021. Based on these calculations, the proposed options for threshold values shall be further explored.
Source	Extent thresholds for the conservation of marine and coastal ecosystems have been defined in various international agreements: • Convention of Biological Diversity (CBD), Aichi Target 11: *By 2020, at least … 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape.* For the new global biodiversity framework, the protection of 30% by 2030 is proposed (CBD/WG2020/3/3). • UN Sustainable Development Goal 14: *By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.* • EU Biodiversity Strategy 2030: *The Strategy sets an ambitious objective of establishing a truly coherent Trans-European Nature Network, to include legal protection for at least … 30% of the sea in the EU, of which … 10% of sea to be under strict protection.* • NEAES ***S5.O1:** By 2030 OSPAR will further develop its network of marine protected areas and other effective conservation measures (OECMs)[1] to cover at least 30%[2] of the OSPAR maritime area to ensure it is representative, ecologically coherent and effectively managed to achieve its conservation objectives.* ***S5.O4:** By 2025 at the latest OSPAR will take appropriate actions to prevent or reduce pressures to enable the recovery of marine species and benthic and pelagic habitats in order to reach and maintain good*

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	environmental status as reflected in relevant OSPAR status assessments, with action by 2023 to halt the decline of marine birds. ***S9.O1:** By 2023 OSPAR will deliver a quantitative evidence base on pressures from human activities causing physical loss and disturbance to seabed habitats. On this basis, OSPAR will address and, where possible, reduce these pressures from human activities within its competence and regularly engage with other competent authorities with a view to reducing these pressures within their respective areas of competence in order to help achieve or maintain good environmental status.* • Global Ocean Alliance / High Ambition Coalition The aim is to protect at least 30% of the global ocean in Marine Protected Areas (MPAs) and Other Effective area-based Conservation Measures (OECMs) by 2030. ('30by30 target'). • Habitats Directive Distinction between 'Unfavourable-Inadequate' and 'Unfavourable-Bad' (not between Favourable and Unfavourable or GES and sub-GES) Unfavourable-Bad: *More than 25% of the area of the habitat is unfavourable-bad as regards its specific structures and functions (including typical species)*
Basis	The proposed approach to set up threshold values for BH3 based on undisturbed area are based on extent conservation targets that are widely used in international agreements like the CBD, UN SDGs, EU Biodiversity Strategy etc. and that aim to establish a network of effectively managed MPAs or other effective area-based conservation measures (OECMs) like Benthic Protection Areas (BPAs). Area-based conservation is regarded as essential by conservation scientists to preserve biodiversity (Woodley et al. 2019a). Coverage targets are also popular among policymakers, as they are easy to understand and progress in meeting spatial targets can be easily assessed (Rovellini & Shaffer 2020). In order to identify effective targets for marine protection as well as threshold values for BH3, an evidence-based approach is considered important. **Methods for defining area-based targets** Four main methods are used in conservation planning to inform evidence-based coverage targets for protection: Species-area curves, threshold analysis, systematic conservation planning and heuristic principles. <u>Species-area curves</u> are used to estimate the extent of an area that needs to be protected in order to maintain a proportion of the species that it hosts. Habitat-specific species-area curves account for different species accumulation rates between different habitat types. This method is more precise than the generic species-area curves, but also more data-demanding. However, defining coverage targets with species-area curves has limitations. The method aims to identify the proportion of a habitat required for species representation, but does not consider persistence of

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	species or ecological functions and processes (Rovellini & Shaffer 2020). Also, it has to be pre-defined how large the proportion of species in the protected area should be. Rondini (2011) calculated species-area curves for marine habitats at EUNIS level 3 in UK waters. It is estimated that 10% of sublittoral soft sediment habitats (A5.1-A5.4) represent about 63-65% of benthic species, while the proportion raises to 79-80% for 30% of the habitat area. Between 20% and 32% of the area of EUNIS Level 3 habitat types are necessary to represent 75% of the species. The author of the study also emphasises limitations and uncertainties to the results that are e.g. based on low sampling effort. An improvement of data tends to also increase the proportion of habitat area necessary to protect a certain proportion of species. The results of the study are intended as a starting point for setting targets that will likely need to be increased in the future. Threshold analyses or the modelling of minimum thresholds of protection identify a level of protection below which undesirable ecological effects take place. Examples of such effects are stock collapses, species loss and regime shifts. A commonly used threshold analysis is spatially-explicit Population Viability Analysis (PVA), which is a species-specific modelling approach with the purpose of calculating which proportion of a habitat is necessary to support a viable population of a certain species. The focus of PVAs is often on keystone species, that are considered representative of a large number of species in the ecosystem. PVA models are difficult to apply to more than one species at a time and the use of one keystone species to represent the conservation requirements of other species can also be an oversimplification (Rovellini & Shaffer 2020). PVA is therefore not considered as suitable to define threshold values for benthic habitats where the interactions and functions of benthic species are generally more important than single keystone species. Systematic conservation planning uses spatially explicit analytical approaches to determine the optimal extent and location of protected areas to achieve conservation outcomes with respect to the protection of a set of ecological features. Also, trade-offs between protection and economic costs for marine activities can be evaluated in the analysis. This approach is mostly used in planning protected area networks and testing the effectiveness of quantitative conservation targets. Systematic conservation planning can also be used to quantify the percentage of a region to set aside for protection (Rovellini & Shaffer 2020). However, at first numerical conservation targets have to be established for each important biodiversity element that shall be protected. Conservation targets may refer to biodiversity values such as rarity or endangerment, representativeness, abiotic features, ecological connectivity and conservation of ecosystem services (Woodley et al. 2019b). As an example, Galparsoro and Borja (2021) used systematic conservation planning to evaluate different protection scenarios and the resulting size of MPAs. One of the pre-defined conservation targets was the protection of 10% of the area of each benthic habitat type. This target was combined with others like 10% protection of the area of highest biological value for all ecosystem components or the greatest potential for providing ecosystem services. It can be concluded that systematic conservation planning may be useful to identify the location of undisturbed areas once the quantitative threshold value has been set or to evaluate if the agreed targets provide an effective protection.

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	When data for quantitative methods like species-area curves, threshold analyses or systematic conservation planning are not available, heuristic principles may be used to define area-based conservation targets or extent threshold values. These principles include expert knowledge and while such principles are subjective to a degree, they should always be rooted in scientific knowledge (Rovellini & Shaffer 2020). Experience has shown that adopting heuristic targets provides a practical solution in the interim until better information becomes available. This is particularly the case when protection levels are well below any target, i.e., near zero, as is generally the case in the oceans (Harris et al. 2019). The heuristic principle, in combination with the best available scientific evidence, is considered at present the best approach of setting extent threshold values for BH3. **Objectives for undisturbed areas of benthic habitats** Science-based estimates of the extent of an area or region that shall be protected vary by the selected conservation values. Each selected conservation element raises the percentage targets. For example, selecting only for endangered or rare biodiversity elements will result in a lower percentage of area than if ecological connectivity, resistance to climate change or ecosystem services are also considered (Woodley et al. 2019b). Studies that include a more complete set of values are universally very high; they estimate percentage targets well over 50% and up to 80%. Studies that include a narrower subset of biodiversity values are lower, but rarely under 30%, and always with caveats that they are minimum or incomplete estimates. As such, protected or undisturbed area conservation targets should be established based on the desired outcomes (Woodley et al. 2019b). Undisturbed areas of benthic habitat types according to the BH3 threshold value are supposed to: • Represent all benthic communities and subtypes of the broad habitat type, • maintain populations of all representative species in natural patterns of abundance and distribution, • maintain natural diversity, productivity and ecological processes, • ensure resilience of the habitat type to environmental and climate change and • provide source populations and enhance recovery outside undisturbed areas. **Review of area-based conservation targets** The threshold for undisturbed area of each benthic habitat type is based on area-based conservation targets like the Aichi Target 11 for the protection of 10% of coastal and marine areas or the ’30 by 30’ target from the Global Ocean Alliance and the High Ambition Coalition. These targets have been extensively evaluated in scientific literature. Conservation scientists strongly agree, that the protection of 10% of coastal and marine waters is not adequate to conserve biodiversity. There is very strong support for large-scale percentage area conservation targets, in the order of 50% of the earth (Woodley 2019a). Noss et al. (2012) concluded that conserving 25–75% of a typical region in a natural state was required to

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	conserve biodiversity. A review by Woodley et al. (2019b) concluded that calls for the global protection of a minimum of 30% and up to 70% or even more of the land and sea are supported in the literature whether through studies based on species-area curves, systematic conservation planning or minimum system size approaches. O'Leary et al. (2016) reviewed conservation targets for the marine environment and stated that their research strongly indicates that 10% is only a waypoint toward effective ocean protection and governance, and not the endpoint. Even the more ambitious target of 30% may not be enough to meet all of the multiple objectives expected of MPA networks. In the 2014 World Parks Congress, the International Union for the Conservation of Nature (IUCN) acknowledged that 'many delegates argued that these [percentage area targets] should be around at least 30% of the planet for no-take reserves, 50% overall protection, and 100% of the land and water managed sustainably' (Rovellini & Shaffer 2020). Percentage area targets have been determined from both a policy and a scientific perspective. The review by Woodley et al. (2019b) showed that science-based estimates always produce higher percentages than policy-based estimates. Svancara et al. (2005) found that policy-driven targets were on average close to 10%, whereas science-based targets were on average three times higher (30–40%). At present, the scientific consensus is that a higher proportion of the seas needs to be protected, with common estimates around 30–50% (Rovellini & Shaffer 2020). **Benefits for benthic habitats from undisturbed areas** Undisturbed areas for benthic habitats are considered essential for various reasons. A large number of studies have shown that the establishment of no-take zones in MPAs can enhance resilience and recovery of benthic habitats, communities and trawled fish populations inside the MPA and in some cases outside the protected area (van Denderen et al. 2016). No-take MPAs have the most benefits for biomass, abundance, species richness and body size of protected animals (e.g., Lester et al. 2009, Costello 2014, Costello and Ballantine 2015, Sala and Giakoumi 2017). Positive effects were recorded both for target and non-target benthic species (Sciberras et al. 2013). No-take MPAs have the potential to rebuild stocks through enhanced recruitment and spill-over effects, buffer marine systems from human disturbances and maintain the ecosystems upon which fisheries rely (Stewart et al. 2008). MPAs, by protecting biodiversity, make a significant contribution to achieving healthy and functional marine ecosystems and, consequently, to providing ecosystem services that humans benefit from (Galparsoro and Borja 2021). An important function of effectively protected MPAs can also be to help restore already degraded ecological communities and replenish species to conditions that reflect less human impact (IUCN-WCPA 2008). **Combination of undisturbed areas with reduction of physical disturbance outside protected areas** Undisturbed areas can have positive effects on neighbouring areas with regard to e.g., regeneration potential. However, high disturbance outside protected areas may likewise have a negative effect on benthic species within protected areas (Stephenson et al. 2019). Closing areas to fisheries

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	may also lead to a displacement of fishing pressure (Hilborn 2018). It has been contended that establishing no-take MPAs alone is not sufficient to benefit biodiversity and that efficient management of areas outside MPAs is also required to meet conservation needs. A reduction of fishing efforts and destructive fishing methods should complement the designation of MPAs or OECMs for effective marine conservation (Rovellini & Shaffer 2020). Improving management outside protected areas may ease the performance burden for MPAs and also lower the eventual target for no-take areas (O'Leary et al. 2016). It is therefore proposed to combine the BH3 threshold value for undisturbed areas with a threshold value for the extent of high disturbance. 'High disturbance' in the sense of the indicator assessment is defined as the disturbance categories 5-9 (OSPAR CEMP Guideline 2017). The disturbance categories are a product of habitat sensitivity (composed of resistance and resilience towards a specific pressure) and the exposure to a specific pressure (at present: surface and subsurface abrasion). Each category provides an approximation of the relative impact on the habitat with regard to e.g., habitat structure, species richness, abundance or biomass. As an example, disturbance category 4 includes a habitat with high sensitivity that is fished with a very low intensity (SAR ≤0.33) as well as a habitat with low sensitivity that is subject to high fishing intensity (SAR >1). Both combinations are considered as low disturbance. In turn, a medium fishing intensity (SAR >0.66-≤1.00) in a habitat with medium sensitivity will result in high disturbance (category 5). Fishing pressure on a habitat with low sensitivity will always be assessed as low disturbance, whereas fishing in a habitat with high sensitivity will always result in high disturbance. Both extent values, for undisturbed area and for maximum extent of high disturbance, are considered necessary in order to have healthy and ecologically functioning benthic habitat types.
Regionality	The thresholds are proposed for regions II and III due to better data availability in these regions. There is a separate process needed for region IV. In regions I and V, the indicator has not yet been assessed. The indicator leads are planning focussed meetings with OBHEG to discuss the way forward and testing of BH3 in regions I, IV and V.
Consensus and robustness	The national threshold values used by DE and UK have been discussed as proposals for regional thresholds at a first threshold workshop in March 2021 with OBHEG members. Further discussions took place on workshops in July and November to explore further options for Regions II and III. Most of the participating CPs agreed on the use of a quantitative threshold value although concerns were raised due to the lack of scientific data and knowledge gaps. CPs expressed their preference for one of the options or proposed new options. As consensus could not be reached, it was agreed to have an additional workshop in At the November workshop it was agreed that indicator co-leads shall present assessment outputs at COBAM 2021 for testing proposes only and to support further discussions. Workshop participants also suggested to explore the use of a trend threshold.

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Policy consideration	BH3 is a common indicator for OSPAR regions II, III and IV. The assessment methodology for BH3 was agreed on by CPs in 2016 and applied for the Intermediate Assessment 2017. However, no threshold values for the extent of physical disturbance have been established so far. BDC 2019 agreed that expert groups should identify and consolidate thresholds to be used in the QSR 2023. A two-stage threshold dialogue was agreed for benthic habitats' assessments with consultation between technical experts as a first step and subsequently a second round with technical experts and policy leads (BDC 2018). At ICG COBAM 2020, Germany and the UK as indicator co-leads presented a time plan for developing a threshold proposal for BH3. ICG COBAM agreed on developing a BH3 threshold as a priority area of work for ICG COBAM in the meeting cycle 2021/2022. The time plan included a first technical OBHEG workshop that was held in March 2021 and a second meeting between experts and policy leads in July 2021. As participants expressed the need for further discussion, a third workshop took place in November. The outcomes of the discussions and suggestions from participants were used to refine the threshold proposals. At ICG COBAM in December 2021 the BH3 threshold proposal shall be reviewed and discussed with a view to prepare a submission to BDC 2022. The agreed thresholds shall be used to assess the status of benthic habitats in the QSR 2023.

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Appendix: Proposed Disturbance Thresholds for Regions II and III

Please note, the following draft content detailing trial threshold values were taken from the 2021 BH3 assessment draft submitted for review via ICG COBAM, 2021.

Proposed Disturbance Thresholds

Several options for the establishments of thresholds have been proposed to guide discussions and options with policy leads. This assessment is currently presenting the results from each of the options to support further discussions.

The following thresholds were tested in Regions II and III this assessment:

- At least 10% of the area of a broad habitat type is under low disturbance (categories 0-4)
- At least 10% of the area of a broad habitat type is permanently without anthropogenic physical disturbance (category 0)
- The area which is highly disturbed (categories 5-9) is less than 25% of the total habitat area

Please note, for the current assessment the 0-disturbance category is only considered where C-square surface or sub-surface data values have a SAR of 0. Those areas without any SAR data (empty c-squares) are not included at this stage of analysis.

Proposed Disturbance Thresholds: 2009 to 2020 Assessments

Threshold of 10 % based on the extent of disturbance categories 0 to 4 per broad habitat type area: 2009 to 2020

The extent of low disturbance (categories 0-4) was extracted and measured using a threshold of 10% of area of broad habitat type (EUNIS Level 3) for regions II and III. During the 2009 to 2020 assessment period, with the exception of Sublittoral mud, all of the focal habitat types (Sublittoral coarse sediment (A5.1), Sublittoral sand (A5.2), Sublittoral mud (A5.3), and Sublittoral mixed sediment (A5.4)), were subject to low disturbance in more than 10% of their total area within the two OSPAR Regions analysed, and therefore, met the 10% threshold based on low disturbance (Figure i). However, the 10% disturbance threshold was missed for Sublittoral mud by less than 2% in both Regions (Region II: 8.35%, Region III: 9.33%). In contrast, the greatest percentage of habitat area under low disturbance was observed in Region III for Sublittoral coarse sediment where over 90% of the habitat area in the Region was under low disturbance. Additionally, the greatest variation in the percent of a single habitat under low disturbance was observed in Sublittoral mixed sediment.

While over 80% of this habitat area was under low disturbance within Regions III, only 18.59% was under low disturbance in Region II.

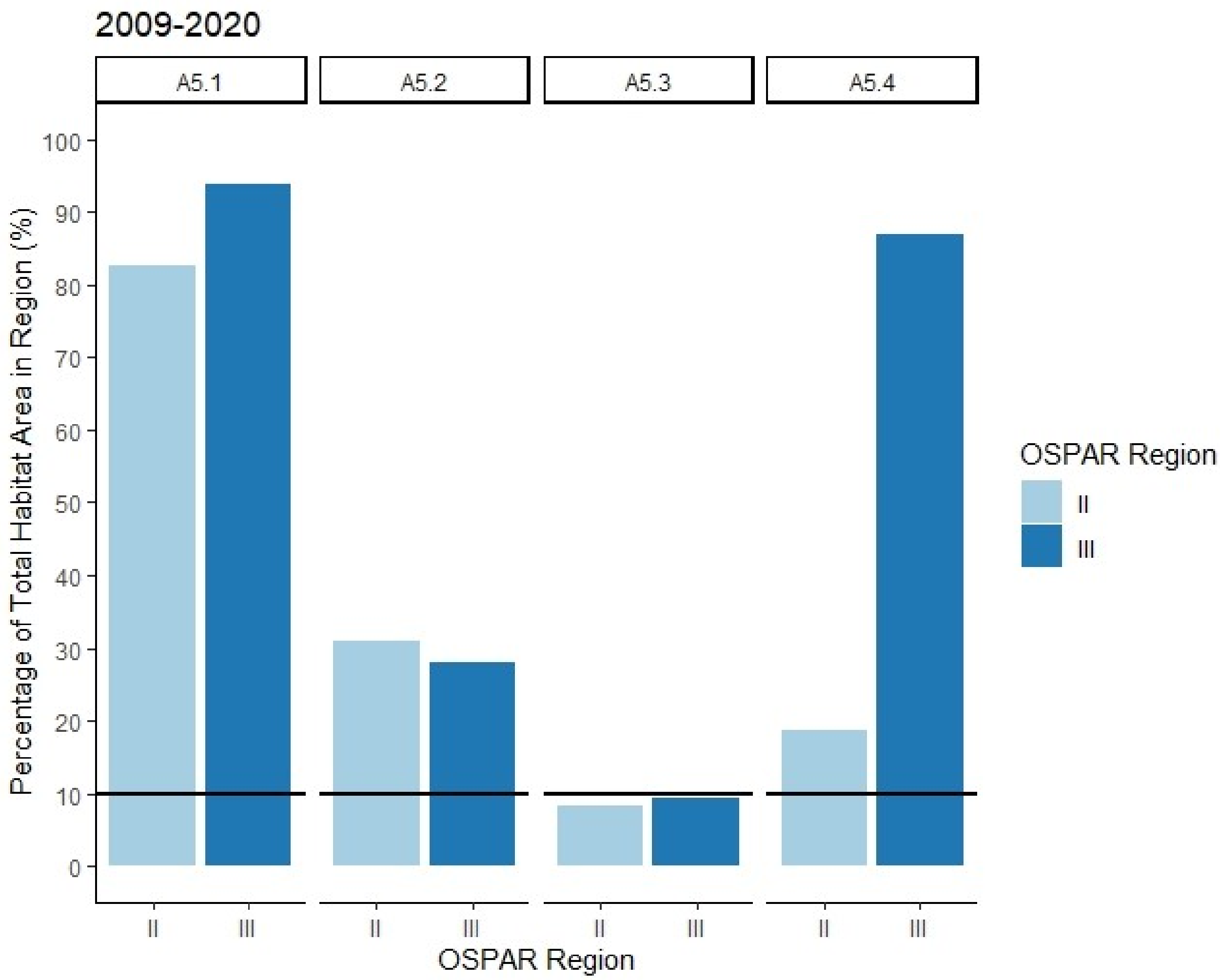

Figure i: Percentage of total habitat area within OSPAR Regions II, and III under low disturbance (categories 0-4) for the assessment period 2009 to 2020. Habitat types shown are A5.1 (Sublittoral coarse sediment), A5.2 (Sublittoral sand), A5.3 (Sublittoral mud), and A5.4 (Sublittoral mixed sediment). The black horizontal lines across bars represent the 10% threshold.

Threshold of 10 % based on the extent of disturbance categories 0 per broad habitat type area: 2009 to 2020

The second disturbance threshold analysed was 10% of habitat area under 0 disturbance. In contrast to the low disturbance threshold, during the 2009 to 2020 assessment period, none of the four focal habitats met this 10% threshold in any OSPAR Region analysed (Table i). Notably, 0% of the area of Sublittoral mud was under 0 disturbance in all analysed Regions. The highest percentage of habitat area under 0 disturbance was just 0.04% of sublittoral sand in Region III.

Table i: Area and percentage of the total habitat area within OSPAR Regions II and III under a disturbance category of 0 for the assessment period 2009 to 2020. Habitats types shown are A5.1 (Sublittoral coarse sediment), A5.2 (Sublittoral sand), A5.3 (Sublittoral mud), and A5.4 (Sublittoral mixed sediment).

EUNIS Code	OSPAR Region	Area (km^2)	Percentage (%)
A5.1	II	10.97	0.0095
	III	1.70	0.0015
A5.2	II	27.43	0.0093
	III	50.17	0.0436
A5.3	II	0	0
	III	0	0
A5.4	II	12.90	0.0219
	III	0	0

Threshold of 25 % based on the extent of disturbance categories 5 to 9 per broad habitat type area: 2009 to 2020

The third disturbance threshold analysed was defined as no more than 25% of the total area of habitat recorded in a given Region being under high disturbance (categories 5-9) (Figure ii). Out of the focal habitat types (Sublittoral coarse sediment (A5.1), Sublittoral sand (A5.2), Sublittoral mud (A5.3), and Sublittoral mixed sediment (A5.4)), Sublittoral coarse sediment was the only habitat to meet this threshold in both Regions II and III. Sublittoral mixed sediments did meet the 25% threshold in Region III but not in Region II. In contrast, Sublittoral sand and Sublittoral mud did not meet the 25% threshold in either Regions II or III.

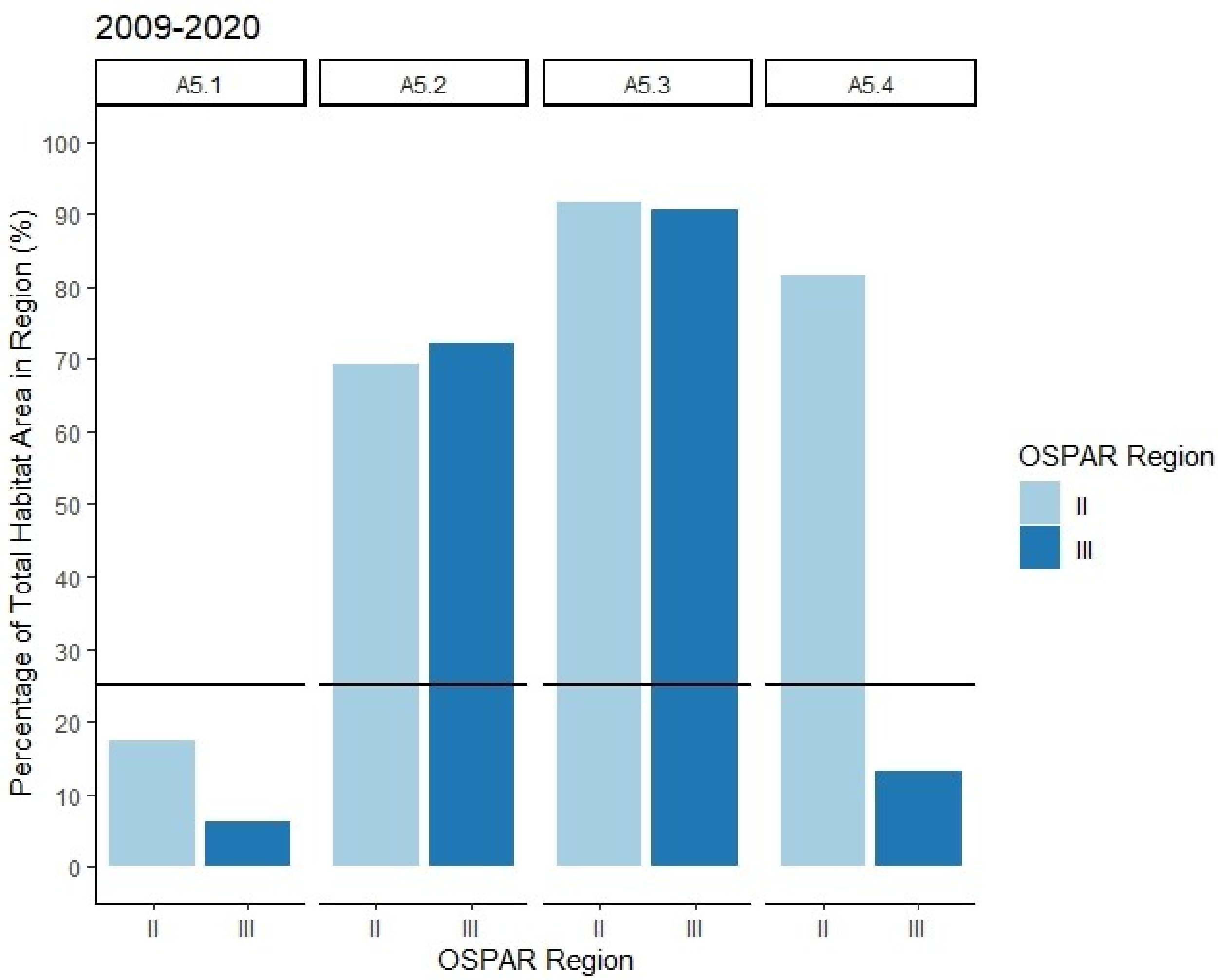

Figure ii: Percentage of total habitat area within OSPAR Regions II and III under high disturbance (categories 5-9) for the assessment period 2009 to 2020. Habitat types shown are A5.1 (Sublittoral coarse sediment), A5.2 (Sublittoral sand), A5.3 (Sublittoral mud), and A5.4 (Sublittoral mixed sediment). The black horizontal lines across bars represent the 25% threshold.

Proposed Disturbance Thresholds: 2016 to 2020 Assessments

Threshold of 10 % based on the extent of disturbance categories 0 to 4 per broad habitat type area: 2016 to 2020

Throughout the 2016 to 2020 assessment period, all four focal habitats (Sublittoral coarse sediment (A5.1), Sublittoral sand (A5.2), Sublittoral mud (A5.3), and Sublittoral mixed sediment (A5.4)) met the threshold of 10% of total habitat area under low disturbance within Region III (Figure iii). However, in Region II all focal habitats, with the exception of Sublittoral mud, met the 10% threshold; as observed with the 2009 to 2020 assessment period, the threshold was missed by less than 2%. Furthermore, as observed, in the 2009 to 2020 assessment period, the highest percent of habitat area under low disturbance was recorded in Region III for Sublittoral coarse sediment (95.39%). Additionally, the greatest variation in percentage of area under low disturbance for a single habitat type was observed in Sublittoral mixed sediment, with a maximum of 88.02% in Region III and a minimum of 20.41% in Region II.

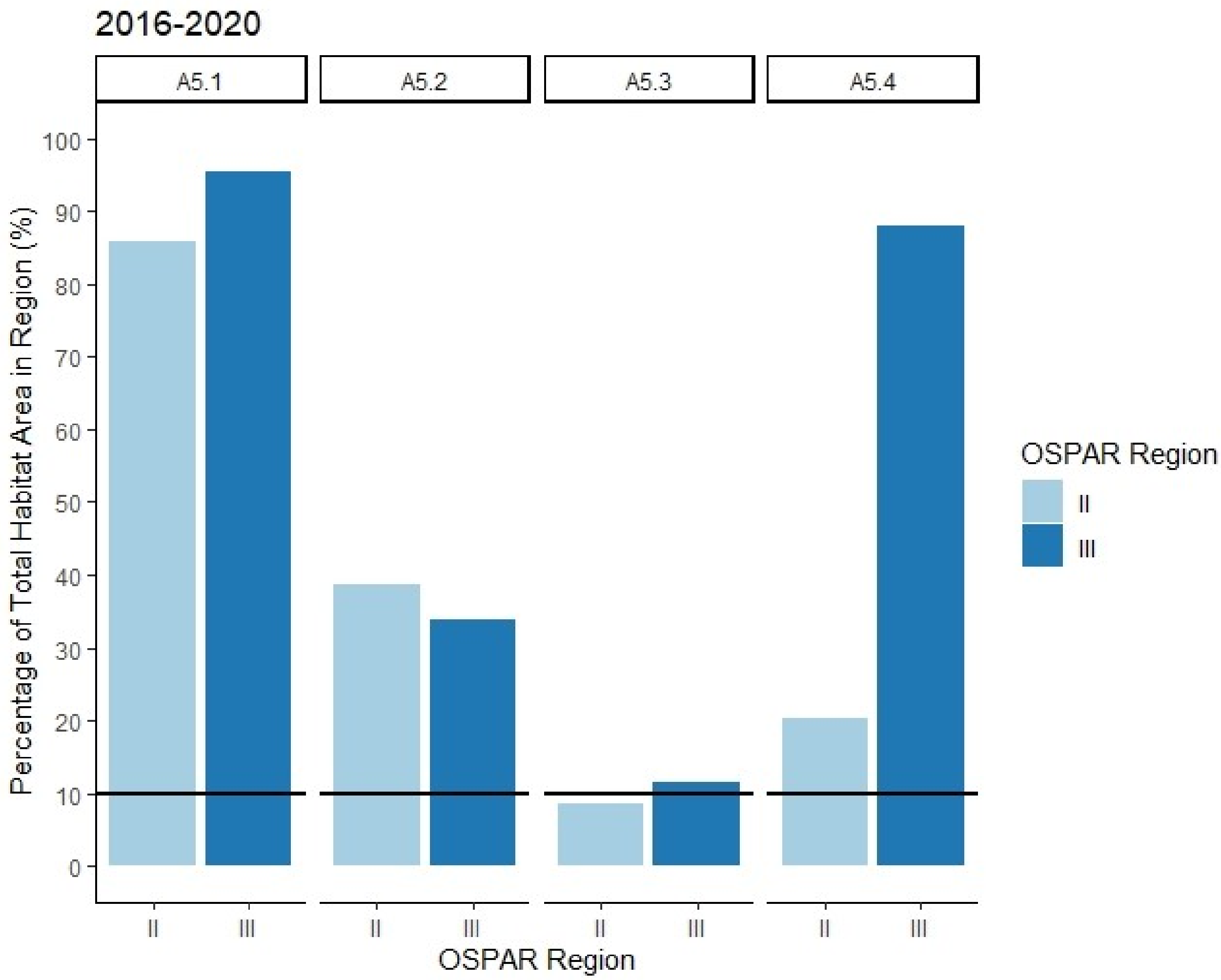

Figure iii: Percentage of total habitat area within OSPAR Regions II and III under low disturbance (categories 0-4) for the assessment period 2016 to 2020. Habitat types shown are A5.1 (Sublittoral coarse sediment), A5.2 (Sublittoral sand), A5.3 (Sublittoral mud), and A5.4 (Sublittoral mixed sediment). The black horizontal lines across bars represent the 10% threshold.

Threshold of 10 % based on the extent of disturbance categories 0 per broad habitat type area: 2016 to 2020

As with the 2009 to 2020 assessment period, no habitat type met the 10% of habitat area under 0 disturbance threshold in any Region during the 2016 to 2020 assessment period (Table ii). In this assessment period, habitat types were only recorded to be under 0 disturbance in Region II, with Sublittoral mud being the exception, showing 0% of area under 0 disturbance in both Regions.

Table ii: Area and percentage of the total habitat area within OSPAR Regions II and III under a disturbance category of 0 for the assessment period 2016 to 2020. Habitats types shown are A5.1 (Sublittoral coarse sediment), A5.2 (Sublittoral sand), A5.3 (Sublittoral mud), and A5.4 (Sublittoral mixed sediment).

EUNIS Code	OSPAR Region	Area (km^2)	Percentage (%)
A5.1	II	2.76	0.0025
	III	0	0
A5.2	II	0.13	$0.0048x10^{-2}$
	III	0	0
A5.3	II	0	0
	III	0	0
A5.4	II	12.90	0.0225
	III	0	0

Threshold of 25 % based on the extent of disturbance categories 5 to 9 per broad habitat type area: 2016 to 2020.

For the 2016 to 2020 assessment period, the third disturbance threshold analysed was defined as no more than 25% of the total area of habitat recorded in a given Region being under high disturbance (categories 5-9) (Figure iv). Out of the focal habitat types (Sublittoral coarse sediment (A5.1), Sublittoral sand (A5.2), Sublittoral mud (A5.3), and Sublittoral mixed sediment (A5.4)), Sublittoral coarse sediment was the only habitat to meet this threshold in both Regions II (14.19%) and III (4.60%). Sublittoral mixed sediments did meet the 25% threshold in Region III (11.98%) but not in Region II (79.59%). In contrast, Sublittoral sand and Sublittoral mud did not meet the 25% threshold in either Regions II or III.

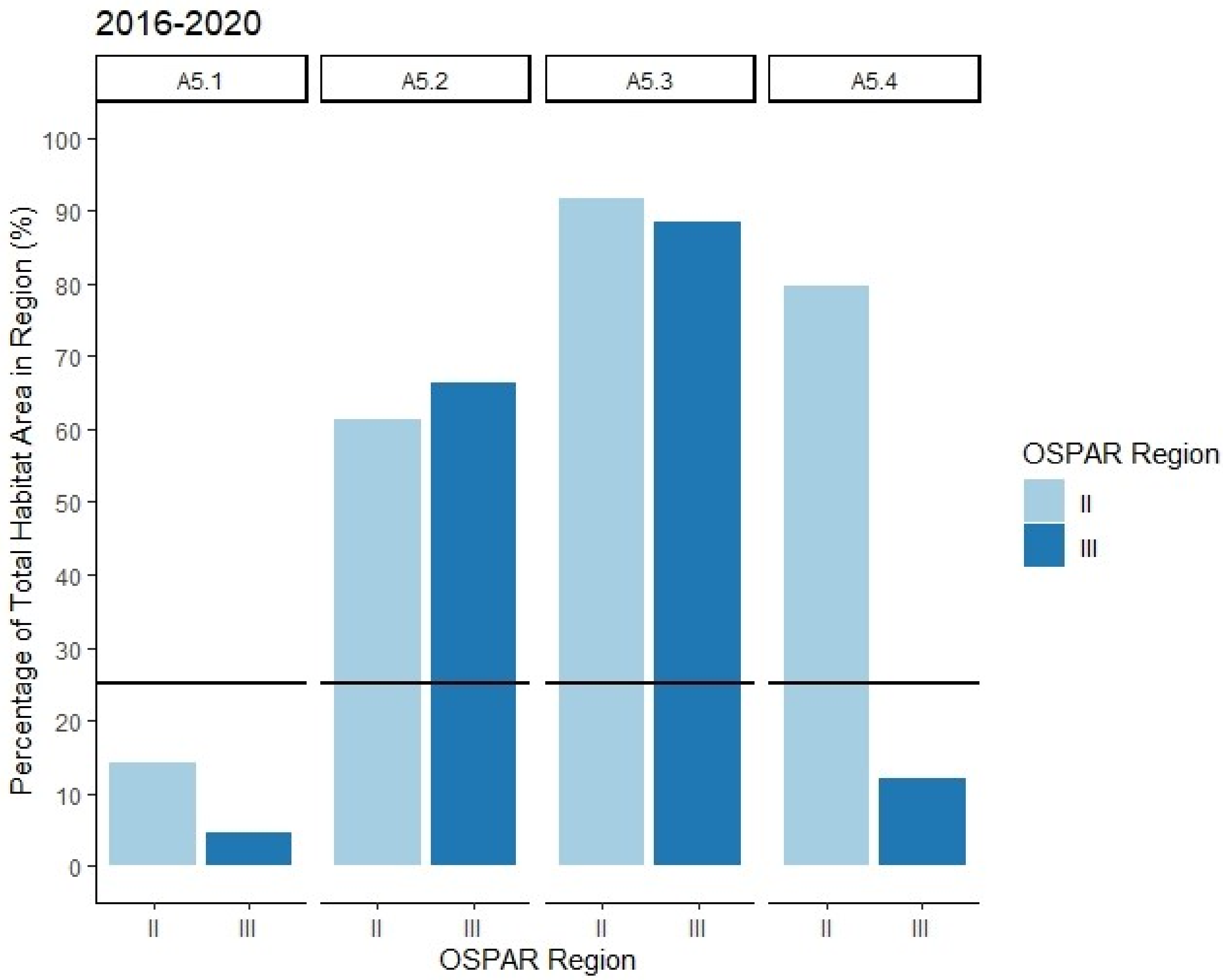

Figure iv: Percentage of total habitat area within OSPAR Regions II and III under high disturbance (categories 5-9) for the assessment period 2016 to 2020. Habitat types shown are A5.1 (Sublittoral coarse sediment), A5.2 (Sublittoral sand), A5.3 (Sublittoral mud), and A5.4 (Sublittoral mixed sediment). The black horizontal lines across bars represent the 25% threshold.