

Matrix of management options for the Charlie-Gibbs MPA

Note: within the hierarchy below, specific management options only make sense vs. specific conservation objectives. Vision and general objectives provide guidance on general principles of a future management plan, including research and monitoring needs.

| Conservation Vision for the Charlie-Gibbs MPA | Remarks | Existing and/or potential management response | Competent authorities / pertinent law and organisations concerned |
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| <p>Maintenance and, where appropriate, restoration of the integrity and natural quality of the functions and biodiversity of the various ecosystems of the Charlie-Gibbs Fracture Zone so they are the result of natural environmental quality and ecological processes.¹</p> <p>Cooperation between competent authorities, stakeholder participation, scientific progress and public learning are essential prerequisites to realize the vision and to establish a Marine Protected Area subject to good governance, sustainable utilization, and adequate regulations, in conformity with UNCLOS.</p> <p>Best available scientific knowledge and the precautionary principle form the basis for conservation.</p> | <p>At this holistic level, the overarching threat (likely to jeopardise success of other protective measures) may be climate change causing global warming and changes in oceanic current patterns, as well as ocean acidification (OA).</p> <p>The envisaged cooperation and governance is an important global precedent and showcase for governance in Areas Beyond National Jurisdiction and/or the High Seas.</p> | <p>Mitigation measures, cut in greenhouse gas emissions</p> <p>Investigate long-term ecosystem changes due to climate change impacts and OA.</p> <p>Exclude geo-engineering projects (e.g. ocean fertilisation) from site.</p> <p>Correspondence and dialogue between OSPAR and stakeholders, IGOs concerned</p> <p>Informal stakeholder meeting in prep.</p> <p>MoUs concerning further cooperation and information exchange with a view to meeting the conservation objectives.</p> <p>OSPAR-NEAFC-MoU</p> <p>MPA proposal to be based on sound science and thorough peer review.</p> <p>MPA proposal consistent with globally adopted selection criteria.</p> | <p>IPPC, Kyoto Protocol and follow-up instruments</p> <p>Scientific institutions and frameworks, ICES, EU FP; OSPAR support <i>vis-a-vis</i> funding agencies</p> <p>London Convention / Protocol (LC/LP), OSPAR, CBD-COP9 Moratorium</p> <p>OSPAR, NEAFC, IMO, IWC, ISA, NAMMCO, UNEP, CBD, EC ...</p> <p>id.</p> <p>id.</p> <p>OSPAR, NEAFC</p> <p>OSPAR, ICES, MarEco, EcoMar et. al.</p> <p>OSPAR, CBD-EBSA</p> |
| General Conservation Objectives ^{2 3} for the Charlie-Gibbs MPA | Remarks | Existing and/or potential management response | Competent authorities / pertinent law and organisations concerned |
| <p>(1) To protect and conserve the range of habitats and ecosystems including the water column of the Charlie-Gibbs MPA for resident, visiting and</p> | <p>At this level, particular attention should be paid to connectivity. According to the nomination proforma, the site and its ecosystems are not pristine any more. However, there is a</p> | <p>Prevent further anthropogenic fragmentation of populations, habitats and ecosystems. Avoid interference with natural gradients and patterns (e.g. sub-polar front).</p> | <p><i>See details further below.</i></p> |

¹ Recognizing that species abundances and community composition will change over time due to natural processes.

² Conservation objectives are meant to realize the vision. Conservation objectives are related to the entire Charlie-Gibbs MPA or, if it is decided to subdivide, for a zone or subdivision of the area, respectively.

³ It is recognized that climate change may have effects in the area, and that the MPA may serve as a reference site to study these effects.

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| migratory species as well as the marine communities associated with key habitats. | higher potential to safeguard natural dynamics compared to elsewhere in the North-East Atlantic. | Investigate population sizes, genetic relations and reproduction / migratory patterns. Ensure ongoing research and data collection to contribute to knowledge base. | Scientific institutions and frameworks, ICES, EU FP OSPAR support <i>vis-a-vis</i> funding agencies |
| (2) To prevent loss of biodiversity, and promote its recovery where practicable, so as to maintain the natural richness and resilience of the ecosystems and habitats. | Specific focus to be made on inventories, evaluation and monitoring of existing damage by historic and ongoing fishing activities to the features concerned. Particular attention must be paid to the protection of Vulnerable Marine Ecosystems (VMEs). | Identify areas and stocks in particular need of recovery. Safeguard these VMEs against all detrimental/harmful anthropogenic impacts including fishing, mining. Fisheries measure adopted in April 2009. | OSPAR, NEAFC, ICES and related research institutions. NEAFC: Implementation of UNGA Resolution 61/105 ISA with regard to mining NEAFC <i>Also see details further below.</i> |
| (3) To prevent degradation of, and damage to, species, habitats and ecological processes, in order to maintain the structure and functions - including the productivity - of the ecosystems. | The pre-requisites to prevent current or predict further impacts in a proactive way are not fully in place yet. | Initiate and run monitoring and surveillance programme with a focus on human activities, e.g. VMS database, remote sensing of plankton production, hydrographic properties, vessel traffic, mineral resources and related claims etc. | Requires close collaboration of OSPAR, NEAFC, ICES, IMO, ISA and other bodies. The question arises as to which body could host such programme covering data from all sectors. <i>Also see details further below.</i> |
| (4) To restore the naturalness and richness of key ecosystems and habitats, in particular those hosting high natural biodiversity. | Except the sub-polar front, hotspots of natural biodiversity are not fully mapped within the site yet – while the distribution of key features e.g. seamount is known. | Identify and map areas and assemblages hosting high natural biodiversity. | Scientific institutions and frameworks, ICES, EU 7 th FP; OSPAR support <i>vis-a-vis</i> funding agencies <i>With regard to key ecosystems and habitats, see details below.</i> |
| (5) To provide a refuge for wildlife within which there is minimal human influences and impact. | The importance of key habitats and ecosystems for particular species and communities within the CG-MPA deserves further attention. | Further mapping of level of pristineness vs. human impacts within the CG-MPA. Setting precautionary and best practice standards for each human activity concerned. Evaluation of overseas expertise. | Scientific institutions and frameworks, ICES, EU 7 th FP; OSPAR support <i>vis-a-vis</i> funding agencies NEAFC and RFMOs OSPAR and RSCs, UNEP |
| Specific Conservation Objectives ⁴ for the Charlie-Gibbs MPA | Potential impact / threat | Existing and/or potential management response | Competent authorities / pertinent law and organisations concerned |
| 2.3.1 Water column – to prevent ... (a) ... deterioration of the environmental quality of the bathypelagic and epipelagic water column (e.g. toxic and non-toxic contamination) from levels characteristic of the ambient ecosystems. | Dumping and incineration of radioactive / chemical waste Dumping of disused offshore installations | Prohibition in force Prohibition in force | OSPAR Convention Annex II London Convention / Protocol (LC/LP) having external effect on non-OSPAR Parties OSPAR Decision 98/2 IMO: MARPOL Annex VI prohibiting incineration of plastic and PCB compounds aboard vessels OSPAR Decision 98/3 |

⁴ Specific Conservation Objectives shall relate to a particular feature and define the conditions required to satisfy the general conservation objectives. Each of these specific conservation objectives will have to be supported by more management oriented, achievable, measurable and time bound targets.

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| | Carbon dioxide disposal in water column | Prohibition in force | OSPAR Convention Annex II London Convention / Protocol (LC/LP) having external effect on non-OSPAR Parties |
| | Long-range transboundary air pollution | Further research and evaluation | UN/ECE-LRTAP |
| | Nutrient inputs and eutrophication | Exclude ocean fertilisation projects from site. | CBD-COP9 Moratorium LC/LP Resolution OSPAR-Decision? |
| | | Reduction of NOx air pollution from ships | IMO: MARPOL Annex VI and mandatory guidelines |
| | Oil and chemicals from shipping: operational discharges and incidental releases | Tracking and prosecution of MARPOL offenders | OSPAR Parties' / EU Member States' port state control mechanisms |
| | | Special Area and/or Particularly Sensitive Sea Area (PSSA) status for the southern section of the MPA | IMO: MARPOL Annexes I, II, III + PSSA Guidelines |
| | Release of tributyltin and other toxic antifouling compounds | Ban on TBT use on ships hulls in force | IMO AFS Convention -in force since 2008 |
| | Litter: entanglement and ingestion (seabirds, turtles, cetaceans, sharks and rays) | Further research and evaluation. Special Area for the southern section of the MPA Tracking and prosecution of MARPOL offenders | IMO: MARPOL Annex V including a ban on plastic garbage disposal OSPAR Parties' / EU Member States' port state control mechanisms |
| | Ghost nets (id.) | Further research and evaluation Ban on using gillnets in waters greater than 200 metres depth in conjunction with measures to remove and dispose of unmarked or illegal fixed gear and retrieve lost gear to minimise ghost fishing. | OSPAR-NEAFC MoU NEAFC |
| | Fish waste, discard and offal – interference with oceanic seabird populations | Further research and evaluation | Exempted by OSPAR Annex II, NEAFC assessing problem and studying solutions |
| | Invasive species introduced via ballast water (BW) exchange | Restriction of BW exchange on the High Seas via exemptions from IMO/OSPAR guidelines and rules. Option A: area of subpolar front (most sensitive to invasive species) – Option B – southern section of MPA (highest vessel frequency) | IMO Guidelines; OSPAR/HELCOM Guidelines; Annex (Section C Additional Measures) to the 2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments) – entry into force pending |
| (b) ... other physical disturbance (e.g. acoustic). | Noise pollution by Low Frequency Sonar (LFS) in military exercises + seismic exploration for seabed mining purposes + shipping – interference with migrating cetaceans | Further research and evaluation. Mitigation through Best Available Technologies Avoid military exercises with LFS Consideration of shipping routes Establish area as a reference site: no mining allowed | IMO IWC International Seabed Authority (ISA) |
| (c) To protect, maintain and, where in the past impacts have occurred, restore where appropriate the epipelagic and bathypelagic | Fishing effort and pressure still high in certain parts of the area, likely to increase in a way less regulated and sustainable than in waters within national / EU jurisdiction. | Establish no-take zone for pelagic fisheries of sufficient size to provide a meaningful reference. Protect epipelagic vulnerable elasmobranchs. Prohibition of | NEAFC; OSPAR-NEAFC MoU NEAFC, EC |

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| <p>ecosystems, including their functions for resident, visiting and migratory species, such as: cetaceans, and mesopelagic and bathypelagic fish populations.</p> | <p>Bycatch of marine mammals, seabirds, turtles sharks and rays</p> <p>Taking of cetaceans</p> | <p>directed fisheries and maximum landing length for spurdog. Shark finning ban.</p> <p>Establish standards for pelagic mid-water fishing including the promotion of innovative ("smart") gear. Introduce mandatory Environmental Impact Assessment (EIA) for new fisheries.</p> <p>Combat illegal, unregulated and unreported (IUU) fishing by stringent port state control and naming and shaming.</p> <p>id. - Pelagic long-lining only to be permitted if method providing close-to-zero bycatch</p> <p>Further assessment and evaluation</p> <p>Establish a cetacean sanctuary.</p> | <p>NEAFC; FAO-COFI</p> <p>NEAFC scheme in place, A and B lists of vessels</p> <p>NEAFC; OSPAR-NEAFC MoU</p> <p>OSPAR, NEAFC, IWC, ICES</p> <p>IWC, NAMMCO</p> |
| <p>Special attention should be given to the area of the meandering sub-polar frontal ecosystem</p> | <p>Fishing and taking likely to weaken the natural productivity and biodiversity of this important feeding ground and aggregation sit for all pelagic food web components.</p> <p>Particularly prone to the introduction of invasive species</p> | <p>Establish the importance of the sub-polar front as a feeding area for marine mammals and turtles and selected shark species.</p> <p>Restore the elevated meso- and bathypelagic fish stocks in its vicinity as a reserve pool. No fishing or taking in its vicinity.</p> <p>Control ballast water exchange in its vicinity.</p> | <p>NEAFC; OSPAR-NEAFC MoU</p> <p>IWC; NAMMCO</p> <p>IMO Guidelines; OSPAR/HELCOM Guidelines; Annex (Section C Additional Measures) to the 2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments) – entry into force pending</p> |
| <p>2.3.2 Benthopelagic layer – to protect, maintain and, where in the past impacts have occurred, restore where appropriate:</p> <p>(a) Historically harvested fish populations (target and bycatch species) at/to levels corresponding to population sizes above safe biological limits⁵ with special attention also given to deep water elasmobranch species, including threatened and/or declining species, such as Portuguese dogfish, leafscale gulper shark and gulper shark.</p> | <p>Historical depletion of key stocks, often in aggregation with seamounts – hence in need of recovery</p> | <p>Cessation of fishing below 1000 m to protect the bathyal ecosystem</p> <p>Cessation of fishing on historically fished species such as redfish, roundnose grenadier, alfonsino and orange roughy until sustainable catch can be generated from population data</p> <p>Combat illegal, unregulated and unreported (IUU) fishing by stringent port state control and naming and shaming.</p> <p>Investigate population sizes, genetic relations and reproduction patterns to inform on stock health and / or safe biological limits (if any).</p> <p>Reduction / prohibition of targeted fisheries on these deep</p> | <p>NEAFC, OSPAR-NEAFC MoU;</p> <p>id.</p> <p>NEAFC scheme in place, A and B lists of vessels</p> <p>ICES WG DEEP and WG DEC</p> <p>Council Regulation (EC) No 1359/2008 of 28 November</p> |

⁵ "Safe biological limits" used in the following context: "Populations are maintained above safe biological limits by ensuring the long-term conservation and sustainable use of marine living resources in the deep-seas and preventing significant adverse impacts on Vulnerable Marine Ecosystems (FAO International Guidelines for the Management of Deep-Sea Fisheries in the High Seas, 2008).

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| | | water elasmobranchs (including bycatch margins) | 2008 fixing for 2009 and 2010 the fishing opportunities for Community fishing vessels for certain deep-sea fish stocks – applying to vessels flying EU MS' flags |
| (b) Benthopelagic habitats and associated communities. | Potential fishing impact (including bycatch) on shrimp, prawn and squid stocks Harvest of organisms for bioprospection purposes | Further assessment and evaluation Further assessment and evaluation. Implement OSPAR Code of Conduct for responsible research in the high / deep seas. | NEAFC, ICES OSPAR, ICES, ISA? |
| 2.3.3 Benthos – to protect, maintain and, where in the past impacts have occurred, restore where appropriate: (a) The epibenthos and its hard and soft sediment habitats, including threatened and/or declining species and habitats such as seamounts, deep-sea sponge aggregations, <i>Lophelia pertusa</i> reefs and coral gardens. | Destruction of vulnerable marine ecosystems (VMEs) by fishing gear in touch with the seafloor: cold-water coral reefs, coral gardens, seamount communities, sponge aggregations, hydrothermal vent fields. Harvest of organisms for bioprospection purposes, particularly relevant to the highly diverse sponge fauna of the area Extraction / destruction by scientific sampling Extraction of mineral resources e.g. gypsum, anhydrite, cobalt crusts likely do disturb and destroy benthic communities. While their occurrence in the area is largely unknown, claims for extraction licences are imminent. Placement of cables | Close all areas to harmful bottom gear - where VMEs (are likely to) occur. Measure adopted in April 2009. Closure applies to most of the Charlie-Gibbs MPA including a section of the Reykjanes Ridge to the north as well as the Hecate and Faraday seamounts previously closed on a temporary basis. Further assessment and evaluation Establish no-take zone(s) at least with regard to sponges. Implement OSPAR Code of Conduct for responsible research in the high / deep seas. Blueprint for zonation exists: management plan for Lucky Strike and Menez Quen hydrothermal vent fields (Azores) Further assessment and evaluation Establishment of a reference area / no-mining-zone EIA, Best Available Technologies, Restricted Areas; | NEAFC: Implementation of UNGA Resolution 61/105 and follow-up to Annual Meeting 2008; OSPAR-NEAFC MoU NEAFC OSPAR, NEAFC OSPAR? ISA? CBD? OSPAR and scientific community or organisations, e.g. InterRidge WWF, UiAc-DOP, InterRidge, IFREMER ISA ISA OSPAR? |
| (b) The infauna of the soft sediment benthos, including threatened and/or declining species and habitats. | Bottom gear likely to disturb community Extraction of mineral resources e.g. ferromanganese nodules likely do disturb and destroy communities. While their occurrence in the area is largely unknown, claims for extraction licences are imminent. Cable laying for transatlantic telecommunication and/or electric energy transfer. | Further assessment and evaluation Further assessment and evaluation Establishment of a reference area / no-mining-zone Further assessment and evaluation Establish no-go areas. Alternatively: EIA, Best Available Technologies. | OSPAR, NEAFC, ICES ISA ISA OSPAR OSPAR |

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| (c) The habitats associated with ridge structures. | Bottom gear: id. Extraction of mineral resources e.g. polymetallic sulphides likely do disturb and destroy communities. While their occurrence in the area is largely unknown, claims for extraction licences are imminent. | Provide for undisturbed spawning habitat associated with ridge structures. Further assessment and evaluation Establishment of a reference area / no-mining-zone | NEAFC; OSPAR-NEAFC MoU ISA ISA |
| 2.3.4 Habitats and species of specific concern – Those species and habitats of special interest for the CGFZ-MPA, which could also give an indication of specific management approaches, are listed at Annex 1. | | | |
| Annex 1 - Habitats and species of special interest in the Charlie-Gibbs MPA | Potential impact / threat | Existing and/or potential management response | Competent authorities / pertinent law and organisations concerned |
| Threatened and/or declining habitats | <i>Issues not addressed above</i> | <i>Issues not addressed above</i> | <i>Issues not addressed above</i> |
| Seamounts | Potential anthropogenic interference, on top of fishing impacts (<i>see above</i>): bioprospective and mineral extraction | Further assessment and evaluation Blueprints for management of human activities around seamounts: proposed management plan for Sedlo Seamount (Azores) and overseas (AUS, CDN) examples | OSPAR, ISA WWF, UiAc-DOP |
| Deep sea sponge aggregations | Potential anthropogenic interference, on top of fishing impacts (<i>see above</i>): bioprospective extraction | Further assessment and evaluation | OSPAR, ISA? |
| <i>Lophelia pertusa</i> reefs | Further to the fishing impact <i>addressed above</i> , ocean acidification and sedimentation / silting (due to extractive activities and / or cable laying in the vicinity). Ghost nets and loss of gear following entanglement might pose a particular threat. | Further assessment and evaluation of deep water pH trends in the area No-go areas and buffer zones Review existing measures to remove and dispose of unmarked or illegal fixed gear and retrieve lost gear to minimise ghost fishing. | OSPAR, ICES OSPAR, ISA NEAFC; OSPAR-NEAFC MoU |
| Coral gardens | Potential and as yet neglected fishing impact on these communities often colonising the non-hydrothermal hard bottom areas of oceanic ridges (like sponges). | Ban on using gillnets in waters greater than 200 metres depth Further assessment of long-lining impact in the area | NEAFC OSPAR-NEAFC MoU |

| Other features of special interest | <i>Issues not addressed above</i> | <i>Issues not addressed above</i> | <i>Issues not addressed above</i> |
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| Deep water and epipelagic ecosystems, including their function for migratory species | <i>See above</i> | | |
| Habitats associated with ridge structures, including their function as recruitment and spawning areas | <i>See above</i> | Identify one or two representative sections of the Charlie-Gibbs MPA seascape combining all these features. | OSPAR, NEAFC, MarEco/EcoMar ICES NGOs Google Ocean? |
| Benthopelagic habitats and associated communities, including commercially fish species | <i>See above</i> | Establish a “scientific observatory” for the Charlie-Gibbs MPA and secure funds to operate it. Inform and promote the management process via public outreach and awareness raising, | |
| Hard substrate habitats and associated epibenthos, including cold water corals and sponges | <i>See above</i> | Create an information portal on the Charlie-Gibbs MPA (and subsequently other OSPAR MPAs in ABNJ) giving access to research initiatives, real time information on human activities and impacts, documentation material, footage etc. | |
| Soft sediment habitats and associated benthos, including “coral gardens” of non-scleractinian corals | <i>See above</i> | | |
| The meandering sub-polar frontal ecosystem | <i>See above</i> | | |
| Threatened and/or declining species | <i>Issues not addressed above</i> | <i>Issues not addressed above</i> | <i>Issues not addressed above</i> |
| Orange roughy (<i>Hoplostethus atlanticus</i>) | Most stocks are in critical shape due to historic and recent high fishing mortality. | Moratorium on target fisheries. NEAFC ban of target fisheries | Council Regulation (EC) No 1359/2008 of 28 November 2008 fixing for 2009 and 2010 the fishing opportunities for Community fishing vessels for certain deep-sea fish stocks – applying to vessels flying EU MS’ flags NEAFC (complete ban pending) |
| Blue whale (<i>Balaenoptera musculus</i>) | Particularly sensitive to LFS and noise from seismic exploration <i>see above</i> (cetaceans) | <i>See above</i> Given the low population size, reporting of injuries due to collisions should be made mandatory. | IWC, NAMMCO, ISA, Bonn Convention IMO |
| Leatherback turtle (<i>Dermochelys coriacea</i>) | Specific attention should be paid to bycatch in long-lines and possible ingestion of litter e.g. plastic bags mistaken as jellyfish, the main food source – <i>see above</i> | Make use of information from transatlantic turtle tracking system Further assessment and research concerning distribution and migratory pattern | OSPAR, WWF, Bern and Bonn Conventions |
| Portuguese dogfish (<i>Centroscyrmus coelolepis</i>) | Stocks are in critical shape due to historic and recent high fishing mortality – species particularly sensitive to bycatch and discarding. | Ban on using gillnets in waters greater than 200 metres depth Ban on target fisheries in conjunction with maximum bycatch levels | NEAFC Council Regulation (EC) No 1359/2008 of 28 November 2008 fixing for 2009 and 2010 the fishing opportunities for Community fishing vessels for certain deep-sea fish stocks – applying to vessels flying EU |

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| Gulper shark (<i>Centrophorus granulosus</i>) | Stocks are in critical shape due to historic and recent high fishing mortality – species particularly sensitive to bycatch and discarding. | <p>Ban on using gillnets in waters greater than 200 metres depth</p> <p>Ban on target fisheries in conjunction with maximum bycatch levels</p> | Council Regulation (EC) No 1359/2008 of 28 November 2008 fixing for 2009 and 2010 the fishing opportunities for Community fishing vessels for certain deep-sea fish stocks – applying to vessels flying EU MS' flags |
| Leafscale gulper shark (<i>Centrophorus squamosus</i>) | Stocks are in critical shape due to historic and recent high fishing mortality – species particularly sensitive to bycatch and discarding. | <p>Ban on using gillnets in waters greater than 200 metres depth</p> <p>Ban on target fisheries in conjunction with maximum bycatch levels</p> | <p>NEAFC</p> <p>Council Regulation (EC) No 1359/2008 of 28 November 2008 fixing for 2009 and 2010 the fishing opportunities for Community fishing vessels for certain deep-sea fish stocks – applying to vessels flying EU MS' flags</p> |