

Scottish MPA Project Data Confidence Assessments

EAST OF GANNET & MONTROSE FIELDS NATURE CONSERVATION MPA

JULY 2014

The following documents provide further information about the East of Gannet and Montrose Fields Marine Protected Area (MPA):

- Site Summary Document
- Detailed assessment against the MPA Selection Guidelines
- Management Options Paper

The documents are all available at www.jncc.defra.gov.uk/page-6478

Document D	Document Distribution List and Version Control					
Format	Version	Issue date	Version development and review	Issued to		
Electronic	2.0	11/04/2013	Internal drafting and review of pre-version 2.0 drafts by JNCC SMPA team and Grade 7 staff and editorial review prior to release to MPA Sub Group	MPA Sub Group		
Electronic	3.0	10/06/2013	Review of document to take into account MPA Sub-Group comments by JNCC SMPA team prior to release to MPA Sub Group for sign-off	MPA Sub Group		
Electronic	4.0	12/07/2013	Review of document to take into account MPA Sub-Group comments by JNCC SMPA team and editorial review before release of document for public consultation.	Uploaded to JNCC website		
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Figure 1 Map of the East of Gannet and Montrose Fields MPA

Map projected in Mercator (World) projection, geographic coordinate system WGS1984. The exact limits of the UK Continental Shelf are set out in the Continental Shelf (Designation of Areas) Order 2013, Statutory Instrument 2013/3162 (© Crown Copyright). Landmass, Ordnance Survey © Crown Copyright and database right 2011. All rights reserved. Scotland (Adjacent waters) Updated by the Law of the Sea Division, United Kingdom Hydrographic Office October 2005. MPA © JNCC and SNH, 2014. All rights reserved. Admiralty Chart © Crown Copyright, 2013. All rights reserved. License No. EK001-2013/0405. NOT TO BE USED FOR NAVIGATION

MPA name	East of Gannet and Montrose Fields	Date of initial assessment	14 th Aug 2012	Assessors	ALR, NC, PC, ML, OCA
The area was selected following (2011); it has been derived from concluded that the search locat deep-sea muds. However, offsh- included as a proxy for the pote deep-sea muds, the distribution quahog colonisation.	a consideration of locations consider two LD/MN locations - East of Gannet ion should be proposed as an MPA for ore subtidal sand and gravel habitat wi ntial distribution of the species within of ocean quahog records, and an area	ed to be Least Damage Field and Montrose Fie the protection of ocea ithin the area considered the area. The boundary of offshore subtidal se	d/More Natural (LD/M eld. Following applica n quahog (<i>Arctica isl</i> ed suitable for colonis / has been defined by ands and gravel habit	IN) as describ ation of the se <i>andica</i>) aggre sation of ocea the predicted tat considered	ed in Chaniotis <i>et al.</i> lection guidelines, it was gations and offshore in quahog is also d extent of offshore d suitable for ocean

Protected feature	es				
Biodiversity	Ocean quahog (OQ) (<i>Arctica islandica</i>) aggregations (including offshore subtidal sands and gravels suitable for ocean quahog colonisation) Offshore deep-sea muds (ODSM) on the continental shelf	Geodiversity	None		
Feature exclusions (MPA search features recorded within the MPA but excluded from the assessment with reasons)					
None					

Data used in assessment			
Version of GeMS holding feature data used to support site selection	Ver.4	Other datasets used (not in GeMS) [superscripts are used to reference these datasets in the following discussion]	 ¹British Geological Survey (BGS) Marine particle size analysis (PSA) dataset (February 2012)) - data collected between 1967 and 1987 categorised according to the Folk classification and subsequently to the EUNIS habitat classification by JNCC based on the BGS modified Folk scheme ²Marine Scotland Science <i>Nephrops</i> UWTV survey 2001 – 2011 Particle Size Analysis (PSA) data ³EuSeaMap habitat map derived from habitat models (Cameron and Askew, 2011). Note that the product used in the maps is the 2012_08 version, which is an improvement on that published in the 2011 report

Summary of data of	Summary of data confidence assessment (see detailed assessment on following pages)							
Confident in under	pinning data		Yes	~	Partial	-	No	-
'Confident in presence of identified features?OQ ODSMDat pro		Data suitable to de	efine extent of i	ndividual	Yes	Partial	No	
		ODSM	protected features	;			OQ ODSM	-
Summary	We have high confid 2000 that record the damaged/more natu- viability of the popul in the area is influer provided did not inc feature presence ar Ocean quahog is re northern North Sea MPA, further data w habitat, they are kno offshore and bathyb Bergman, 2003; Sal of potentially suitabl particularly the east existing ocean quah We have high confid deep-sea muds feat (UKSeaMap2010 (M BGS ¹ and Marine S also mud and sandy present leads JNCC sands and gravel ha and BGS PSA data delineate the offsho	dence in the e presence of ural (LD/MN lation(s) has need by the lude record nd distribution corded at s (OSPAR, 2 yould be record own to occur benthic offsh batini & Pizz le habitat for ern extent of nog aggrega dence in the ture extends / CBreen <i>et</i> a cotland Scie y mud data C to have or abitats that because su	e data recording the pr of ocean quahog. Give l) locations, it is reason s not been compromis offshore industry surv ls of where ocean qua on, rather than provide significantly different de 2009). There is insuffic quired to verify the feat ur in a range of sedime hore environment. The zolla, 2008). We have or colonisation of ocean of the MPA boundary. ations. e presence of offshore s from the south-east <i>al.</i> , 2011), EU SeaMaj ence ² fall within the pr points extending across nly partial confidence i are suitable for colonis uitable habitat is report a mud habitat and veri	resence of ocean of en that ocean qua nable to assume the ed by adverse pre- rey design that gen hog were not foun e additional conclu- ensities across its ient evidence avai- ture density. Altho- ents from coarse, of ey can inhabit sedi used BGS PSA do n quahog aggrega Further survey thr e deep-sea muds v to the north-west a p (Cameron & Ask redicted area of the sation of ocean qua- ted to extend beyon ify the extent of se	quahog within the hog is a long-live he species will st essures in the inte- nerated the data id. This means th sive evidence of range, with dens ilable to quantify ugh ocean quaho clean, sand to mu- ments at a range lata ¹ , UKSeaMap tions as a proxy roughout the MPA within the MPA bounce area of the bounce (area of the MPA. Se (a feature. We hav (a hog within the bound (a the MPA bou (a the MPA bou (a the MPA bou)	e MPA boundary. Id species, and the ill be present with ervening years. O showing ocean qu e sample data can feature absence. ities between 16 a the density of the og is not known to uddy sand in the ir of water depths f 2010 and EU Se to define the poss A area would conf bundary. The prece dary in a continuou iple sediment sam sea muds feature Such contradictory e partial confidence boundary. Future san for the colonisatio	There are data from at the MPA was der in the boundary, pro- ur knowledge of fea- uahog occurrence. In only be used as a and 100 per m ² reco ocean quahog reco be characteristic on fralittoral, circalitto rom 4 to-400m (Wit aMap data to verify sible extent of the fea- irm the distribution of us band between ~2 pple data points coll within the MPA. Ho y evidence on the e ce in the extent of on n UKSeaMap2010, npling in the MPA wo on of ocean quahog	h as recent as ived from least oviding that the ture distribution The dataset n indicator of orded in the rds within the f any particular ral, circalittoral baard & the presence ature, and size of the the offshore 2-7km ² wide ected by the wever there are xact habitat ffshore subtidal EU SeaMap yould better



Figure 2 The known distribution of protected features within the East of Gannet and Montrose Fields MPA

Map displayed in geographic coordinates WGS84. The exact limits of the UK Continental Shelf are set out in the Continental Shelf (Designation of Areas) Order 2013, Statutory Instrument 2013/3162 (© Crown Copyright). Landmass Ordnance Survey © Crown Copyright and database right 2011. All rights reserved. Scotland (Adjacent waters) Updated by the Law of the Sea Division, United Kingdom Hydrographic Office October 2005. Bathymetry © GEBCO, 2011. Biological data from Geodatabase of Marine features in Scotland (GeMS v4) © Crown Copyright; MPA © JNCC and SNH 2014. All rights reserved; PSA data © BGS and MSS.

Data confidence assessment	JNCC's assessment of data confidence considered the age and source of the data, the type of sampling methodologies used
	and the overall coverage of data across the MPA

Age of data (Map A)						
Multiple or majority of records collected post 2000		-	Multiple records collected pre 2000	OQ ODSM		
Comments	Approximately half of the ocean quahog records within the MPA were collected in 2000; the remainder have been collected since 1990. The Particle Size Analysis (PSA) records from samples collected in the area ^{1,2} date from 1973-2005; there is no contextual evidence to suggest a major change in sediment type over the intervening period.					
	Project in 2011 (Cameron & Askew, 2011).					

Source of data (Map B)						
Targeted data collection for nature conservation purposes		-	Statutory monitoring (marine licensing etc.)	-	Fisheries survey work	-
Data collection associated with development proposals (EIA etc.)		OQ	Recreational / volunteer data collection	-	Other (specify) – EUSeaMap, British Geological Survey (BGS) survey data and Marine Scotland Science (MSS) survey data	ODSM
Comments	The underlying habitat maps are the result of work undertaken by JNCC to combine physical data describing the marine environment with information from biological sampling, generating habitat models that produce a broad-scale predictive map of seabed habitats (UKSeaMap 2010, McBreen <i>et al.</i> , 2011). These models were updated by the EUSeaMap project in 2011 (Cameron & Askew, 2011). The sample records of mud habitats originate from surveys conducted by MSS and BGS (the latter underpins the substrate map that fed into the habitat models). The majority of sample records for offshore subtidal sand and gravel habitats originate from BGS survey data that suggest the sediments are suitable for colonisation by ocean quahog and so provide a proxy for the presence of the feature. The ocean quahog records originate from samples collected from oil and gas Environmental Impact Assessment surveys, accessed from the UKOOA (UK Offshore Operators Association, now Oil & Gas UK) database. Multiple records from BP and Shell verify the presence and provide information on the distribution of ocean quahog.				nt with SeaMap le ∋ habitat t the d from ence and	

Sampling r	nethods / re	esolution					
Feature	Modelled	Acoustic / remote sensing	Remote video / camera	Infaunal - grab / core	Fisheries trawl	Diving	Sediment sampling
OQ	✓			1			✓
ODSM	✓						√
Comments	Its The ground-truthing data for offshore deep-sea mud habitats, and offshore subtidal sands and gravel habitats considered suitable for colonisation of ocean quahog originate from Particle Size Analysis (PSA) of grab and core samples taken during surveys conducted by the British Geological Survey ¹ and Marine Scotland Science ² (for offshore deep-sea muds). They underpin the habitat maps from the UK SeaMap2010 and EU SeaMap habitat models. It is acknowledged that the spatial accuracy of older PSA records may be limited in places where the Decca Main Chain or similar types of positioning systems will have been used that could produce poorer spatial accuracy by modern standards. Sub-surface PSA results from cores have not been reported here. Infaunal benthic grab sampling methods were used during oil and gas Environmental Impact Assessment surveys conducted by BP and Shell providing the evidence on the distribution of ocean quahog. The seabed habitat modelling projects UKSeaMap2010 and EUSeaMap 2011 habitat maps used in this assessment were developed by JNCC (McBreen <i>et al,</i> 2011; Cameron & Askew, 2011).						

Data covera	Data coverage (Maps A to C)					
Across MPA						
Numerous pr records ever across MPA	Numerous protected feature-records evenly distributed-across MPA?-		Numerous protected feature records scattered across the MPA with some clumping?✓		Few or isolated protected feature records - possibly clumped?	-
Individual fe	Individual features					
Multiple records of individual protected features providing indication of extent and distribution throughout MPA?		OSDM	Few or scattered records of specific protected features making extent and broad distribution assessment difficult?	OQ	Few or isolated records of specific protected feature records	-
Are acoustic remote sensing data available to facilitate the development of a full coverage predictive seabed habitat map?			No			
Comments	Comments Offshore deep-sea muds (ODSM) on the continental shelf					
	 UKSeaMap 2010 (in GeMS v4) - The original habitat map predicts that offshore deep-sea muds, specifically EUNIS level 4 A5.37 Deep circalittoral mud, extends from the south-east to the north-west of the MPA in a continuous band approximately 2-7km² wide. The EU SeaMap project updated the UK SeaMap 2010 product in 2011. Cross-checking of the outputs from both products suggests no differences 					

in the EUNIS habitat type predicted to occur across the MPA in the more recent product.

Data coveraç	ge (Maps A to C)					
	 British Geological Survey (BGS) Marine particle size analysis (PSA) dataset (February 2012) - These data comprise sediment samples collected between 1967 and 1987 across the UK waters in which the PSA results were categorised according to Folk and subsequently to EUNIS categories/BGS modified Folk classification. Note these data underpin the BGS substrate map used in the seabed habitat modelling project UKSeaMap2010 habitat map)¹. Of the 15 surface samples collected by the BGS (collection dates range between 1973 and 1981) within the predicted area of offshore deep-sea muds (A5.37 Deep circalittoral mud), 9 record the presence of the modified Folk/EUNIS class 'mud and sandy mud' and are distributed relatively evenly within the predicted mud habitat, within the MPA boundary. The remaining six points record the presence of the modified Folk/EUNIS class 'sand and muddy sand' which is not typically a class associated with this mud feature. The discrepancy may be explained by the fact the data points are distributed principally along the fringes of the predicted extent of mud habitat and there is a likelihood the points set the limits for the extent of the mud. 					
	 There are five further BGS data points that record the presence of the modified Folk/EUNIS class 'mud and sandy mud' within the area predicted by UKSeaMap 2010 to be offshore subtidal sands and gravels (Map C). The exact extent of the offshore deep-sea mud feature is therefore uncertain, given the occurrence of mud and sandy mud outside the predicted boundary for the offshore deep-sea mud feature. 					
	 Marine Scotland Science (MSS) 2001 – 2011 particle size analysis (PSA) data² – There is one sediment sample collected by MSS in 2005 which records the Folk class 'muddy sand' in the south-eastern area of the predicted distribution of offshore deep-sea mud habitat within the MPA boundary. The 'muddy sand' record is not directly transferable to the modified Folk/EUNIS class 'sand and muddy sand' without information on percentage mud content as the threshold between this category and the 'mud and sandy mud' category is part way through the muddy sand Folk class. In the context of the BGS PSA data in the immediate vicinity of the MSS data point (the majority of which are 'mud and sandy mud') a likely scenario is that the MSS sample is closest to the Folk class 'mud and sandy mud'. 					
	• There are no biotope records available to confirm the biological diversity of offshore deep-sea muds in the MPA.					
	Ocean quahog aggregations (Arctica islandica) (OQ) (species records)					
	• Clusters of ocean quahog records were found during benthic grab surveys conducted in the following surveys in the north-western area of the MPA. The status of the specimens (i.e. alive or dead at the point of sample collection, juvenile or adult) is not described. The determination of all the records is listed as certain.					
	 1990 - IOE - Gannet Gannet C Shell (in GeMS v4) – There are four clusters of data entries recording the presence of ocean quahog in the western part of the MPA on predicted offshore subtidal sands and gravels. 					
	 1990 - IOE - Gannet Gannet D Shell (in GeMS v4) – There are four clusters of data entries recording the presence of ocean quahog in the northern part of the MPA on predicted offshore subtidal sands and gravels. 					
	 1994 - ERT - Gannet Gannet A Shell (in GeMS v4) – There are three clusters of data entries recording presence of ocean quahog in the western part of the MPA on predicted offshore subtidal sands and gravels. 					
	 2000 - ERT - Cayley Cayley BP (in GeMS v4) – There are multiple clusters of data entries recording the presence of ocean quahog in the northern part of the MPA on predicted offshore subtidal sands and gravels. 					
	 2000 - ERT - Montrose Montrose BP (in GeMS v4) – There are multiple clusters of data entries recording the presence of ocean quahog in the northern part of the MPA on predicted offshore subtidal sands and gravels. 					

Data coverag	e (Maps A to C)
	 UKSeaMap 2010 (in GeMS v4) - The habitat map based on the EUNIS classification scheme predicts that A5.27 Deep circalittoral sand extends across the MPA and beyond. This habitat type is considered suitable for supporting ocean quahog populations (Witbaard & Bergman, 2003; Sabatini & Pizzolla, 2008). There is also an area of A5.15 Deep circalittoral coarse sediment in the south-west of the MPA but this is very small in size (<0.5 sq km) and so is not considered viable.
	 British Geological Survey (BGS) Marine Particle Size Analysis (PSA) dataset (February 2012) - These data represent sediment sampling between 1967 and 1987 across the UK waters in which the PSA results were categorised according to the Folk classification and subsequently to the EUNIS habitat classification by JNCC based on the BGS modified Folk scheme. Note these data underpin the BGS substrate map used in the seabed habitat modelling project UKSeaMap2010 habitat map¹ – Of the 58 surface samples present throughout the area predicted to be offshore subtidal sands and gravels, 52 record the presence of 'sand and muddy sand' and one records the presence of 'coarse sediment'. Both types are considered suitable habitat type for ocean quahog colonisation (Witbaard & Bergman, 2003; Sabatini & Pizzolla, 2008). The remaining five data points recorded as 'mud and sandy mud'(mentioned above) indicate that there is likely to be a degree of transition from one feature to another, demonstrating that the area predicted to be deep circalittoral sand may be heterogeneic. Marine Scotland Science (MSS) 2001 – 2011 particle size analysis (PSA) data² – There are two sediment samples collected by MSS in 2009 and 2010 which record the Folk class 'muddy sand' in the predicted distribution of offshore subtidal sands and gravel habitats within the boundary of the MPA.

THE EVIDENCE BASE



THE EVIDENCE BASE



THE EVIDENCE BASE



Data sources and bibliography		
Year	Title	Features covered
2014	Geodatabase of Marine features in Scotland (GeMS) Version 4	ODSM OQ
2011	Cameron, A. and Askew, N. (eds.). (2011). EUSeaMap - Preparatory Action for development and assessment of a European broad-scale seabed habitat map final report. Available at http://jncc.gov.uk/euseamap	ODSM OQ
2011	McBreen, F., Askew, N., Cameron, A., Connor, D., Ellwood, H. and Carter, A., (2011). UK SeaMap 2010 Predictive mapping of seabed habitats in UK waters, JNCC Report 446, ISBN 0963 8091	ODSM OQ
2011	Chaniotis, P.D., Crawford-Avis, O.T., Cunningham, S., Gillham, K., Tobin, D. and Linwood, M., (2011). Profiles of locations considered to be least damaged/more natural in Scotland's seas. Supplementary report produced by the Joint Nature Conservation Committee, Scottish Natural Heritage and Marine Scotland for the Scottish Marine Protected Areas Project. Available from < <u>http://www.scotland.gov.uk/Resource/Doc/295194/0121829.pdf</u> >	-
2001- 2011	Marine Scotland Science Nephrops UWTV survey 2001 – 2011 particle size analysis (PSA) data (dates refer to data collection period for the entire dataset)	ODSM
2009	OSPAR Commission (2009) OSPAR Background for Ocean quahog Arctica islandica. OSPAR Commission. Biodiversity Series http://qsr2010.ospar.org/media/assessments/Species/P00407_Ocean_quahog.pdf	OQ
2008	Sabatini, M. and Pizzolla, P., (2008). <i>Arctica islandica</i> . Icelandic cyprine. Marine Life Information Network: Biology and Sensitivity Key Information Sub-programme [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 07/06/2010]. Available from: <u>http://www.marlin.ac.uk/speciesinformation.php?speciesID=2588</u>	OQ
2003	Witbaard, R. and Bergman, M.J.N., (2003). The distribution and population structure of the bivalve Arctica islandica L. In the North Sea: what possible factors are involved? <i>Journal of Sea Research</i> , 50 (1), 11-25.	OQ
1967- 1988	British Geological Survey particle size analysis (PSA) data (dates refer to data collection period for the entire dataset)	ODSM OQ