European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC)

Fourth Report by the United Kingdom under Article 17

on the implementation of the Directive
from January 2013 to December 2018

Conservation status assessment for the habitat:

H1310 - *Salicornia* and other annuals colonising mud and sand

UNITED KINGDOM

IMPORTANT NOTE - PLEASE READ

- The information in this document represents the UK Report on the conservation status of this habitat, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- It is based on supporting information provided by the geographically-relevant Statutory Nature Conservation Bodies, which is documented separately.
- The 2019 Article 17 UK Approach document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Maps showing the distribution and range of the habitat are included (where available).
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the UK assessments. Further underpinning explanatory notes are available in the related country-level and/or UK offshore-level reports.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; and/or (ii) completion of the field was not obligatory.
- The UK-level reporting information for all habitats and species is also available in spreadsheet format.

Visit the JNCC website, https://jncc.gov.uk/article17, for further information on UK Article 17 reporting.

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

NATIONAL LEVEL

1. General information

1.1 Member State	**UK**
1.2 Habitat code	**1310 - Salicornia and other annuals colonizing mud and sand**

2. Maps

2.1 Year or period	1996-2018
2.3 Distribution map	Yes
2.3 Distribution map Method used	Based mainly on extrapolation from a limited amount of data
2.4 Additional maps	No

BIOGEOGRAPHICAL LEVEL

3. Biogeographical and marine regions

3.1 Biogeographical or marine region where the habitat occurs	**Atlantic (ATL)**
3.2 Sources of information	England Natural England. 2015. Coastal management theme plan (IPENSTP019) http://publications.naturalengland.org.uk/publication/6371629661683712?category=5605910663659520 Janssen, J.A.M.. Rodwell, J.S Garcia M Criado, S. Gubbay, S. Haynes, T, A. Nieto, A., Sanders, N Landucci,F . Loidi,J Ssymank,A. Tahvanainen, T. Valderrabano,M Acosta, A Aronsson, M. Arts,G Attorre, F. Bergmeier, E Bijlsma, R-J. Bioret,F. Bita-Nicolae, C. Biurrun, I. Calix, M. Capelo, J. Carni,A Chytry, M. Dengler, J. Dimopoulos, P. Essl, F. Gardfjell, H. Gigante,D Giusso del Galdo, G. Hajek, M. Jansen, F. Jansen, J. Kapfer, J. Mickolajczak, A Molina, J A. Molnar,Z. Paternoster, D. Piernik, A. Poulin, B. Renaux, B Schaminee,JHJ. Sumberova, K Toivonen, H. Tonteri, T. Tsiripidis, I. Tzonev R and Valachovic, M. 2016 European Red List of Habitats: Part 2 Terrestrial & Freshwater Habitats. European Commission, DG Environment http://ec.europa.eu/environment/nature/knowledge/pdf/terrestrial_EU_red_list_report.pdf Natural England. 2015.Climate change theme plan: Developing a strategic approach to climate change adaptation (IPENSTP014) http://publications.naturalengland.org.uk/publication/4954594591375360?category=5605910663659520 Natural England. 2015. Invasive species theme plan: Strategic principles for the management of invasive species on Natura 2000 sites (IPENSTP020) http://publications.naturalengland.org.uk/publication/6130001713823744?category=5605910663659520 Natural England. 2015. Improvement Programme for England's Natura 2000 sites (IPENS): Planning for the future Programme Report - a summary of the programme findings. (NE601). Natural England. http://publications.naturalengland.org.uk/publication/5757712073752576?category=4878851540779008 Jones L, Garbutt A and Angus S. 2013. Impacts of climate change on coastal habitats, MCCIP Science Review, 4 http://www.mccip.org.uk/media/13315/2013arc_backingpapers_18_chab.pdf JNCC. 2013. Third report by the United Kingdom under article 17 on the

implementation of the directive from January 2007 to December 2012
H1310 Salicornia and other annuals
Scotland
Haynes, T.A. 2016. Scottish saltmarsh survey national report. Scottish Natural Heritage. Commissioned Report No. 786.
https://www.environment.gov.scot/our-environment/habitats-and-species/habitat-map-of-scotland/
Janine M Morris, Site Condition Monitoring of Coastal Habitats. (National Contract, Year 2009-2010) and Site Condition Monitoring of Coastal Habitats (National Contract, Year 2010-2011). Contract No: 25639
http://jncc.defra.gov.uk/pdf/Article17Consult_20131010/H1310_SCOTLAND.pdf
Wales
APIS Air Pollution Information System Website:
http://www.apis.ac.uk/overview/pollutants/overview_N_deposition.htm
Atkins. 2010. SMP 19 Anchor Head to Lavernock Point (Severn Estuary) Shoreline Management Plan (SMP) Review.
Blackstock T. H., Howe E. A., Stevens J. P., Burrows C. R. & Jones P. S. 2010. Habitats of Wales. A comprehensive field survey 1979-1997. University of Wales Press, Cardiff.
Boorman, L. 2003. Saltmarsh Review. An overview of coastal saltmarsh, their dynamic and sensitivity characteristics for conservation and management. Report No. 334. Joint Nature Conservation Committee, Peterborough.
Boorman, L.A. and Hazelden, J. 2012. Impacts of additional aerial inputs of nitrogen to saltmarsh and transitional habitats. CCW Science Report No: 995, pp44, Countryside Council for Wales, Bangor, Wales.
Brazier, P., Birch, K., Brunstrom, A., Bunker, A., Jones, M., Lough, N., Salmon, L., & Wyn, G. 2007. When the tide goes out,
the biodiversity and conservation of the shores of Wales - results
from a 10 year intertidal survey of Wales. The Countryside Council for Wales, Bangor
BRIG. 2007. A preliminary assessment of the implications of climate change for the implementation of the UK BAP targets.
Bunker, A. Habitat Feature condition assessment - attributes and assessment of current condition, Carmarthen Bay and Estuaries Atlantic Salt Meadow.
Burd, F. 1989. The saltmarsh survey of Great Britain. Research and survey in nature conservation. Nature Conservancy Council, Peterborough.
Dargie, T. 1998. NVC survey of saltmarsh habitat in the Severn Estuary. CCW Contract Science Report no. 341.
Evans, F., Clarke, J. 2000. Ty Gwyn Marsh - National Vegetation Classification (NVC) Survey Saltmarsh Survey. NRW Dataset.
Dargie, T. 2000a. Description of the Severn Estuary survey sectors identified in the 1998 NVC survey. CCW Contract Science Report no. 399.
Dargie, T. 2001. NVC survey of the saltmarsh and other habitats in the Dee and Clwyd estuaries 2000. CCW Contract Science Report no. 450.
Environment Agency 2007. Saltmarsh management manual. R&D Technical Report SC030220.
Halcrow Group. 2012. SMP 22 Great Ormes Head to Scotland (North West England and North Wales) Shoreline Management Plan SMP2. Available from:
http://www.allerdale.gov.uk/downloads/nw_shoreline_management_plan_2.pdf
Halcrow. Group. 2012. SMP 20 Lavernock Point to St Ann's Head (South Wales) Shoreline Management Plan SMP2. Available from:
http://www.npt.gov.uk/ldpexamination/SWW03 Shoreline Management Plan 2 Main Document (2012).pdf.

JNCC 2000. Common Standards Monitoring Guidance
For Saltmarsh Habitats. Version August 2000. JNCC, Peterborough.
http://jncc.defra.gov.uk/pdf/CSM_coastal_saltmarsh.pdf
Jones, M.L.M., Angus S., Cooper A., Doody P., Everard M., Garbutt A., Gilchrist P., Hansom G., Nicholls R., Pye K., Ravenscroft N., Rees S., Rhind P. & Whitehouse A. 2011. Coastal margins [chapter 11]. In: UK National Ecosystem Assessment. Understanding nature's value to society. Technical Report. Cambridge, UNEP-WCMC, 411-457.
Lewis H., Kay, L. 2018. Atlantic salt meadow GIS Mapping Workflow Article 17. Internal NRW Document
Lewis, H. 2011. Pen Llyn a'r Sarnau SAC Monitoring Report, Atlantic Salt Meadows and Salicornia and other annuals colonising mud and sand. CCW Internal Report.
Lough, N., Lloyd, D., Booth, A., Gray, D. Saltmarsh monitoring in Carmarthen Bay and Estuaries, Glannau Mon, Pembrokeshire Marine and Pen Llyn a'r Sarnau SACs 2006: Atlantic Salt meadow and Salicornia and other annuals colonising mud features. CCW Environmental Monitoring Report No: 37.
National Trust 2015. Shifting Shores Report, National Trust.
https://www.nationaltrust.org.uk/documents/shifting-shores-report-2015.pdf
Mike J. Lush, Thomas A. Haynes and Claire E. Lush Natural England 2016. Spartina anglica and its management in estuarine Natura 2000 sites: an update of its status and monitoring future change in England. Natural England, Peterborough
Natural Resources Wales. 2015. Water Watch Wales maps gallery. Cycle 2 waterbodies and rivers. Available:
https://nrw.maps.arcgis.com/apps/webappviewer/index.html?id=2176397a06d64731af8b21fd69a143f6
NRW. 2017. Actions Database. Internal NRW Database.
NRW.2018a. Indicative feature condition assessments for European marine sites (EMS). [Online]. Available from:
https://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/find-protected-areas-of-land-and-seas/indicative-feature-condition-assessments-for-european-marine-sites-ems/?lang=en
NRW, 2018. Dee Estuary / Aber Dyfrdwy Special Area of Conservation: Indicative site level feature condition assessments 2018. NRW Evidence Report Series, Report No: 229, 35pp, NRW, Bangor
NRW, 2018. Glannau Mon: Cors heli / Anglesey Coast: Saltmarsh Special Area of Conservation: Indicative site level feature condition assessments 2018. NRW Evidence Report Series, Report No: 225, 29pp, NRW, Bangor.
NRW, 2018. Kenfig / Cynffig Special Area of Conservation: Indicative site level feature condition assessments 2018. NRW Evidence Report Series, Report No: 230, 21pp, NRW, Bangor.
NRW, 2018. Pen Llyn a`r Sarnau / Lleyn Peninsula and the Sarnau Special Area of Conservation: Indicative site level feature condition assessments 2018. NRW Evidence Report Series, Report No: 234, 58pp, NRW, Bangor.
MarLIN: The Marine Life Information Website: Networkhttps://www.marlin.ac.uk/habitats/detail/25
Pauls, L. 2017. Carmarthen Bay and Estuaries SAC Atlantic Salt Meadows SAC Monitoring Report. NRW Evidence Report 222.
Prosser, M.V. and Wallace, H.L. 1997. Braint Estuary pSAC, NVC survey 1996. CCW NW Area Report 3.
Prosser, M.V. and Wallace, H.L. (1998). Taf, Tywi and Gwendraeth saltmarsh survey (Burry Inlet cSAC), 1997. CCW Contract Science Report No 293.

Prosser, M.V. and Wallace, H.L. 1999a. Burry Inlet and Loughor Estuary SSSI, NVC Survey 1998. CCW Contract Science Report No 376.
Prosser, M.V. and Wallace, H.L. 1999b. Cefni and Aberffraw estuary pSAC: NVC survey 1998. Countryside Council for Wales, Bangor.
Prosser, M.V. and Wallace, H.L. 2002. National Vegetation Classification Survey: Saltmarshes of the Conwy Estuary. Countryside Council for Wales, Bangor.
Prosser, M.V. and Wallace, H.L. 2003. Milford Haven saltmarsh survey. Report to the Milford Haven Waterway Environmental Surveillance Group.
Prosser, M.V. and Wallace, H.L. 2004. Pen Llyn a'r Sarnau cSAC and adjacent areas saltmarsh review and National Classification survey 2003. CCW Contract Science Report No. 642.
Rhind, P. M. 1995. A review of saltmarsh vegetation surveys in Wales. Countryside Council for Wales, Biological Science Report. Bangor.
Rhind, P. M. & Jones, A. 1994. Brackish saltmarsh communities in the Glaslyn Marsh Trust Reserve. Field Studies, 8: 373-384.
Royal Haskoning. 2012. SMP 21 St Ann's Head to Great Ormes Head (West of Wales) Shoreline Management Plan 2. Available from: http://www.westofwalessmp.org/.
Surry, K. 2012. Dee Estuary / Aber Dyfrdwy: Saltmarsh: 1310 Salicornia and other annuals colonising mud and sand, 1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae) Draft SAC monitoring report 2012. Internal CCW document.
Surry, K., Creer J. 2011. Glannau Mon: Cors heli / Anglesey Coast: Saltmarsh: 1310 Salicornia and other annuals colonising mud and sand, 1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae) Draft SAC monitoring report 2011. Internal CCW Report.
West, R. 2013. Loughor Salicornia report, NRW Internal Report.
N.Ireland
Cooper, E.A., Crawford, I., Malloch, A.J.C. & Rodwell, J.S. (1992). Coastal vegetation survey of Northern Ireland. Lancaster, Lancaster University Environment and Heritage Service, Belfast. Northern Ireland Habitat Action Plan - Coastal Saltmarsh - March 2005
JNCC (1997). Coasts and seas of the United Kingdom, Region 17 Northern Ireland. Coastal Directories Series
NIEA. Internal Condition Assessment Reports (various sites and years).
Rodwell, J.S. (2000). British Plant Communities. Volume 5, Maritime Communities and Vegetation of Open habitats. Cambridge: Cambridge University Press
Rodwell, J.S., Dring, J.C., Averis, A.B.V., Proctor, M.C.F., Malloch, A.J.C., Schaminee, J.H.J & Dargie, T.C.D. 1998. Review of Coverage of the National Vegetation Classification. Lancaster: Unit of Vegetation Science report to the Joint Nature Conservation Committee.
Boorman, L. 2003. Saltmarsh Review. An overview of coastal saltmarsh, their dynamic and sensitivity characteristics for conservation and management. Report No. 334. Joint Nature Conservation Committee, Peterborough.
Baxter, J. & Boaden, P. 1990 Coastal resources of the Irish Sea - Northern Ireland. In Irish Sea Study Group, The Irish Sea - an environmental review. Part 1: nature conservation, pp. 83-102. Liverpool University Press, Liverpool
Davy, A. J., Bishop, G. F. and Costa, C. S. B. (2001), Salicornia L. (Salicornia pusilla J. Woods, S. ramosissima J. Woods, S. europaea L., S. obscura P.W. Ball & Tutin, S. nitens P.W. Ball & Tutin, S. fragilis P.W. Ball & Tutin and S. dolichostachya Moss). Journal of Ecology, 89: 681-707.

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

4. Range

4.1 Surface area (in km²)	28085.03	
4.2 Short-term trend Period	2007-2018	
4.3 Short-term trend Direction	Stable (0)	
4.4 Short-term trend Magnitude	a) Minimum	b) Maximum
4.5 Short-term trend Method used	Based mainly on extrapolation from a limited amount of data	
4.6 Long-term trend Period		
4.7 Long-term trend Direction		
4.8 Long-term trend Magnitude	a) Minimum	b) Maximum
4.9 Long-term trend Method used		
4.10 Favourable reference range	a) Area (km²)	28085.03
	b) Operator	
	c) Unknown	No
	d) Method	The FRR is approximately equal to the current range area. The FRR value has been updated to take account of improved information on the habitat range. The approach taken to set the FRR is explained in the 2007 and 2013 UK Article 17 habitat reports (see http://jncc.defra.gov.uk/page-4064 and http://jncc.defra.gov.uk/page-6563).
4.11 Change and reason for change in surface area of range	Improved knowledge/more accurate data	
	The change is mainly due to:	Improved knowledge/more accurate data
4.12 Additional information		

5. Area covered by habitat

5.1 Year or period	1996-2018		
5.2 Surface area (in km²)	a) Minimum	b) Maximum	c) Best single value 20.54
5.3 Type of estimate	Best estimate		
5.4 Surface area Method used	Based mainly on extrapolation from a limited amount of data		
5.5 Short-term trend Period	2007-2018		
5.6 Short-term trend Direction	Uncertain (u)		
5.7 Short-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.8 Short-term trend Method used	Insufficient or no data available		
5.9 Long-term trend Period			
5.10 Long-term trend Direction			
5.11 Long-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.12 Long-term trend Method used			
5.13 Favourable reference area	a) Area (km²)		
	b) Operator	More than (>)	
	c) Unknown	No	
	d) Method	The FRA is not more than 10% above the current area. An FRA operator has been used as it is not clear what the exact area of the FRA is. The approach taken to set the FRA is explained in the 2007 and 2013 UK Article 17 habitat reports (see	

http://jncc.defra.gov.uk/page-4064 and http://jncc.defra.gov.uk/page-6563).

5.14 Change and reason for change in surface area of range	Improved knowledge/more accurate data
	The change is mainly due to: Improved knowledge/more accurate data
5.15 Additional information	

6. Structure and functions

6.1 Condition of habitat	a) Area in good condition (km²)	Minimum 10.27	Maximum 13.66
	b) Area in not-good condition (km²)	Minimum 4.71	Maximum 8.11
	c) Area where condition is not known (km²)	Minimum 2.1	Maximum 2.22
6.2 Condition of habitat Method used	Based mainly on extrapolation from a limited amount of data		
6.3 Short-term trend of habitat area in good condition Period	2005-2018		
6.4 Short-term trend of habitat area in good condition Direction	Uncertain (u)		
6.5 Short-term trend of habitat area in good condition Method used	Insufficient or no data available		
6.6 Typical species	Has the list of typical species changed in comparison to the previous reporting period?	No	
6.7 Typical species Method used			
6.8 Additional information			

7. Main pressures and threats

7.1 Characterisation of pressures/threats

Pressure	Ranking
Wind, wave and tidal power, including infrastructure (D01)	M
Shipping lanes, ferry lanes and anchorage infrastructure (e.g. canalisation, dredging) (E03)	M
Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defences or coastal protection works and infrastructures) (F08)	H
Harvesting or collecting of other wild plants and animals (excluding hunting and leisure fishing) (G09)	M
Other invasive alien species (other then species of Union concern) (I02)	M
Mixed source air pollution, air-borne pollutants (J03)	M
Sea-level and wave exposure changes due to climate change (N04)	M

Threat	Ranking
Wind, wave and tidal power, including infrastructure (D01)	H

Shipping lanes, ferry lanes and anchorage infrastructure (e.g. canalisation, dredging) (E03)	M
Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defences or coastal protection works and infrastructures) (F08)	H
Harvesting or collecting of other wild plants and animals (excluding hunting and leisure fishing) (G09)	M
Other invasive alien species (other then species of Union concern) (I02)	M
Mixed source air pollution, air-borne pollutants (J03)	M
Sea-level and wave exposure changes due to climate change (N04)	H

7.2 Sources of information

7.3 Additional information

8. Conservation measures

8.1 Status of measures	a) Are measures needed?	Yes
	b) Indicate the status of measures	Measures identified and taken
8.2 Main purpose of the measures taken		Restore the habitat of the species (related to 'Habitat for the species')
8.3 Location of the measures taken		Both inside and outside Natura 2000
8.4 Response to the measures		Medium-term results (within the next two reporting periods, 2019-2030)
8.5 List of main conservation measures		

Reduce/eliminate point pollution to surface or ground waters from agricultural activities (CA10)
Other measures related to extraction and energy exploitation activities (CC14)
Reduce impact of outdoor sports, leisure and recreational activities (CF03)
Manage changes in hydrological and coastal systems and regimes for construction and development (CF10)
Management, control or eradication of other invasive alien species (CI03)
Implement climate change adaptation measures (CN02)

8.6 Additional information

9. Future prospects

9.1 Future prospects of parameters	a) Range	Good
	b) Area	Poor
	c) Structure and functions	Bad
9.2 Additional information		Future trend of Range is Overall stable; Future trend of Area is Negative - decreasing <=1% (one percent or less) per year on average; and Future trend of Structure and functions is Negative - slight/moderate deterioration

10. Conclusions

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

10.1. Range	Favourable (FV)
10.2. Area	Unfavourable - Inadequate (U1)
10.3. Specific structure and functions (incl. typical species)	Unfavourable - Bad (U2)
10.4. Future prospects	Unfavourable - Bad (U2)
10.5 Overall assessment of Conservation Status	Unfavourable - Bad (U2)
10.6 Overall trend in Conservation Status	Unknown (x)
10.7 Change and reasons for change in conservation status and conservation status trend	a) Overall assessment of conservation status No change The change is mainly due to: b) Overall trend in conservation status No information on nature of change The change is mainly due to:
10.8 Additional information	Conclusion on Range reached because: (i) the short-term trend direction in Range surface area is stable; and (ii) the current Range surface area is approximately equal to the Favourable Reference Range. Conclusion on Area covered by habitat reached because: (i) the short-term trend direction in Area is uncertain; and (ii) the current Area is not more than 10% below the Favourable Reference Area. Conclusion on Structure and functions reached because habitat condition data indicates that more than 25% of the habitat is in unfavourable (not good) condition. Conclusion on Future prospects reached because: (i) the Future prospects for Range are good; (ii) the Future prospects for Area covered by habitat are poor; and (iii) the Future prospects for Structure and functions are bad. Overall assessment of Conservation Status is Unfavourable-bad because one or more of the conclusions is Unfavourable-bad. Overall trend in Conservation Status is based on the combination of the short-term trends for Range - stable, Area covered by habitat - uncertain, and Structure and functions - uncertain. The Overall trend in Conservation Status has changed between 2013 and 2019 because the Area trend has changed from decreasing to uncertain, and the Structure and functions trend has changed from increasing to uncertain [note that the reason for change is due to less information/accuracy or certainty in the information available].

11. Natura 2000 (pSCIs, SCIs, SACs) coverage for Annex I habitat types

11.1 Surface area of the habitat type inside the pSCIs, SCIs and SACs network (in km² in biogeographical/ marine region)	a) Minimum b) Maximum c) Best single value 14.49
11.2 Type of estimate	Best estimate
11.3 Surface area of the habitat type inside the network Method used	Based mainly on extrapolation from a limited amount of data

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11.4 Short-term trend of habitat area in good condition within the network Direction	Decreasing (-)
11.5 Short-term trend of habitat area in good condition within network Method used	Based mainly on extrapolation from a limited amount of data
11.6 Additional information	

12. Complementary information

12.1 Justification of % thresholds for trends	
12.2 Other relevant information	

Distribution Map

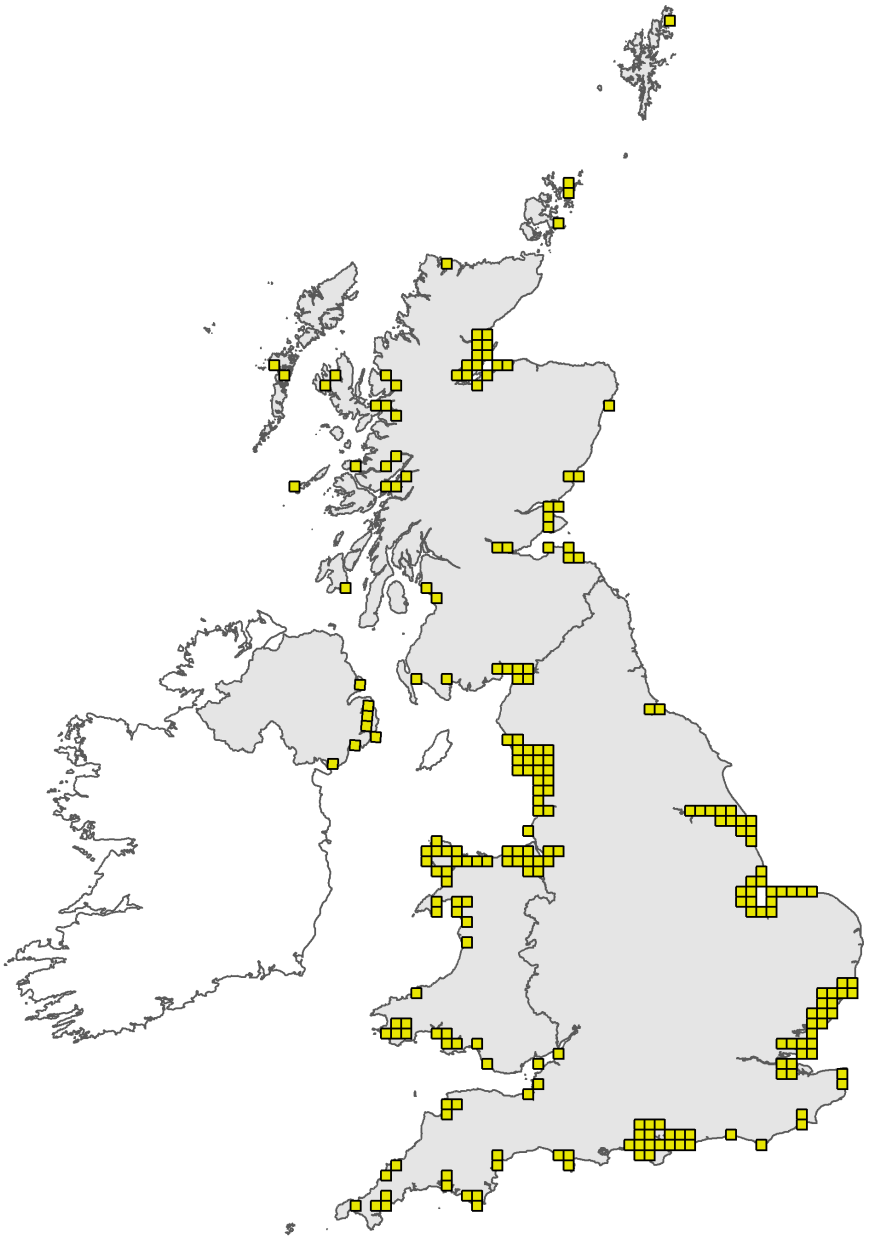

Figure 1: UK distribution map for H1310 - *Salicornia* and other annuals colonising mud and sand. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The 10km grid square distribution map is based on available habitat records which are considered to be representative of the distribution within the current reporting period. For further details see the 2019 Article17 UK Approach document.

Range Map

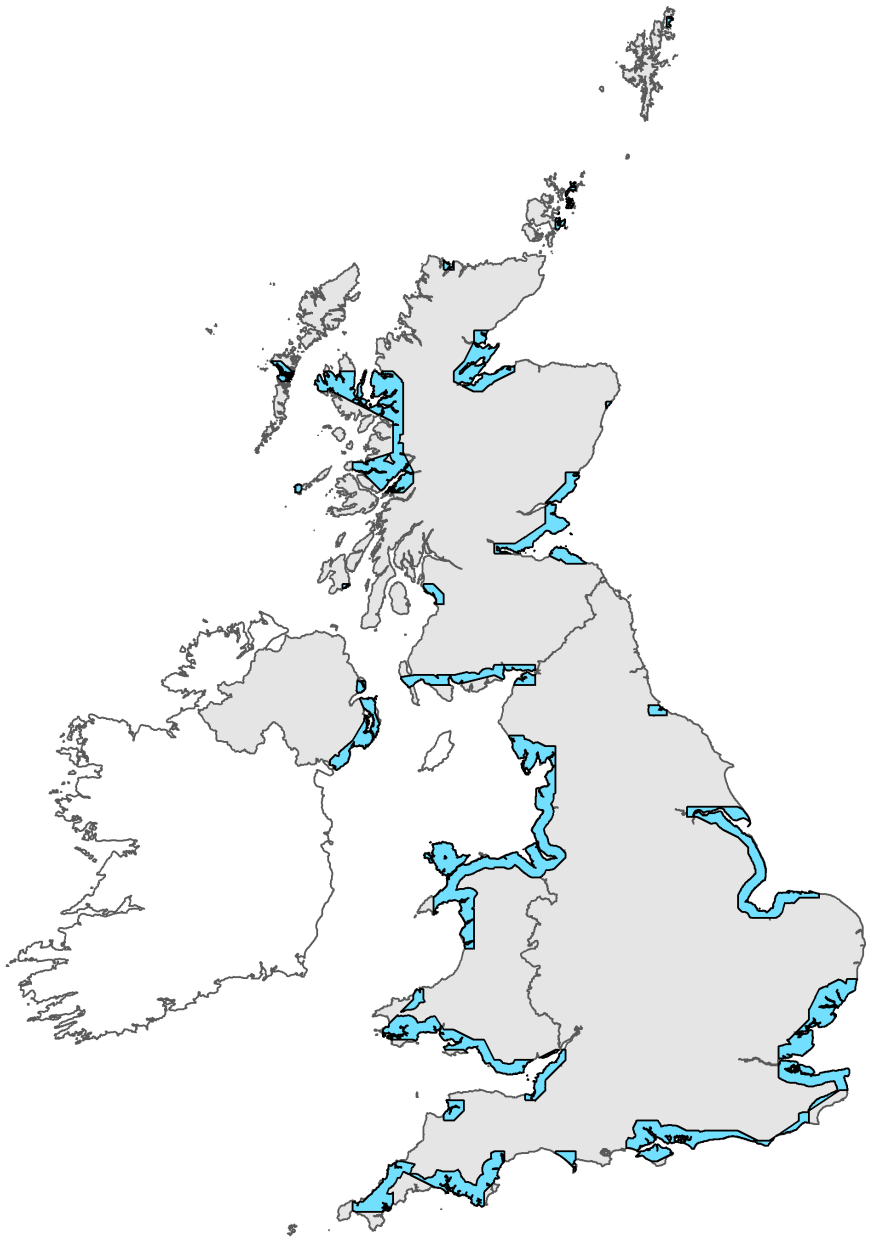

Figure 2: UK range map for H1310 - *Salicornia* and other annuals colonising mud and sand. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The range map has been produced by applying a bespoke range mapping tool for Article 17 reporting (produced by JNCC) to the 10km grid square distribution map presented in Figure 1. The alpha value for this habitat was 25km. For further details see the 2019 Article 17 UK Approach document.