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

Supporting documentation for the
conservation status assessment for the habitat:

H3260 - Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

SCOTLAND

IMPORTANT NOTE - PLEASE READ

- The information in this document is a country-level contribution to 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.
- The 2019 Article 17 UK Approach document provides details on how this supporting information was used to produce the UK Report.
- The UK Report on the conservation status of this habitat is provided in a separate document.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Explanatory notes (where provided) by the country are included at the end. These provide an audit trail of relevant supporting information.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; (ii) completion of the field was not obligatory; and/or (iii) the field was only relevant at UK-level (sections 10 Future prospects and 11 Conclusions).
- For technical reasons, the country-level future trends for Range, Area covered by habitat and Structure and functions are only available in a separate spreadsheet that contains all the country-level supporting information.
- The country-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 (Scotland information only)**
1.2 Habitat code	**3260 - Water courses of plain to montane levels with the Ranunculion fluitant**

2. Maps

2.1 Year or period	1994-2007
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	Scottish Natural Heritage Site Condition Monitoring (SCM) Database. (River habitat data collected in 2013 and 2017.) Scottish Environment Protection Agency (2015) The River Basin Management Plan for the Scotland River Basin District 2015-2027. See https://www.sepa.org.uk/environment/water/river-basin-management-planning/ Scottish Environment Protection Agency (2015) The River Basin Management Plan for the Solway Tweed River Basin District: 2015 Update. See https://www.sepa.org.uk/environment/water/river-basin-management-planning/ Scottish Environment Protection Agency (2016) Water Framework Directive Classification Data (2016). See https://www.sepa.org.uk/data-visualisation/water-classification-hub/ Jackson, DL & McLeod, CR (eds.) (2002) Handbook on the UK status of EC Habitats Directive interest features: provisional data on the UK distribution and extent of Annex I habitats and the UK distribution and population size of Annex II species. JNCC Report, No. 312. Version 2. www.jncc.gov.uk/page-2447 McLeod, CR, Yeo, M, Brown, AE, Burn, AJ, Hopkins, JJ, & Way, SF (eds.) (2005) The Habitats Directive: selection of Special Areas of Conservation in the UK. 2nd edn. Joint Nature Conservation Committee, Peterborough. http://jncc.defra.gov.uk/SACselection JNCC (2016) Common Standards Monitoring Guidance for Rivers, updated September 2016. http://jncc.defra.gov.uk/page-2232 Hatton-Ellis, T, Grieve, N and Newmand, J (2003) Ecology of watercourses characterised by Ranunculion fluitantis and Callitricho-Batrachion vegetation. Conserving Natura 2000 rivers, Ecology series No 11. English Nature, Peterborough. http://publications.naturalengland.org.uk/publication/81010 JNCC (2016) Natura 2000 - Standard Data Form - River Tweed SAC (UK0012691). http://jncc.defra.gov.uk/

4. Range

4.1 Surface area (in km²)	
4.2 Short-term trend Period	

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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			
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)		
	b) Operator		
	c) Unknown	No	
	d) Method		
4.11 Change and reason for change in surface area of range	No change		
	The change is mainly due to:		
4.12 Additional information	See comment on range assessment in 'habitat audit' tab.		

5. Area covered by habitat

5.1 Year or period			
5.2 Surface area (in km²)	a) Minimum	b) Maximum	c) Best single value
5.3 Type of estimate			
5.4 Surface area Method used	Insufficient or no data available		
5.5 Short-term trend Period	2007-2018		
5.6 Short-term trend Direction	Stable (0)		
5.7 Short-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.8 Short-term trend Method used	Based mainly on expert opinion with very limited data		
5.9 Long-term trend Period	1995-2018		
5.10 Long-term trend Direction	Stable (0)		
5.11 Long-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.12 Long-term trend Method used	Based mainly on expert opinion with very limited data		
5.13 Favourable reference area	a) Area (km²)		
	b) Operator		
	c) Unknown	No	
	d) Method		
5.14 Change and reason for change in surface area of range	No change		
	The change is mainly due to:		
5.15 Additional information			

6. Structure and functions

6.1 Condition of habitat	a) Area in good condition (km²)	Minimum	Maximum
	b) Area in not-good condition (km²)	Minimum	Maximum
	c) Area where condition is not known (km²)	Minimum	Maximum

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6.2 Condition of habitat Method used	Insufficient or no data available
6.3 Short-term trend of habitat area in good condition Period	2007-2018
6.4 Short-term trend of habitat area in good condition Direction	Stable (0)
6.5 Short-term trend of habitat area in good condition Method used	Based mainly on extrapolation from a limited amount of data
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	No precise figures can be provided for the percentage of habitat that is in 'good/not good' condition. However, some estimates can be made based on condition assessments for designated sites and Water Framework Directive (WFD) ecological status results for Scotland's river water bodies. Condition monitoring of the River Tweed SAC in 2013 and an additional 50 km of 'river habitat' SSSIs in 2017 found that the SAC (which accounts for 96% of designated river length) was in unfavourable condition, while the majority of the 'river habitat' SSSI river sections (4% of designated river length) were in favourable condition. This is generally supported by WFD assessments in Scotland which record that, of a total of 24,925 km of river water bodies, only 1,332 km (5%) are in 'good' condition; 12,373 (50%) are in 'not good' condition, and 11,220 (45%) are in 'unknown' condition. Based on these figures it can be estimated that less than 10% of the H3260 habitat is in 'good' condition in Scotland. See the 'habitat audit' notes for 6.1 for further details on these analyses.

7. Main pressures and threats

7.1 Characterisation of pressures/threats

Pressure	Ranking
Hydropower (dams, weirs, run-off-the-river), including infrastructure (D02)	M
Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (F12)	H
Modification of flooding regimes, flood protection for residential or recreational development (F28)	H
Invasive alien species of Union concern (I01)	H
Other invasive alien species (other then species of Union concern) (I02)	M
Mixed source pollution to surface and ground waters (limnic and terrestrial) (J01)	H
Abstraction from groundwater, surface water or mixed water (K01)	M
Physical alteration of water bodies (K05)	H
Droughts and decreases in precipitation due to climate change (N02)	M
Increases or changes in precipitation due to climate change (N03)	M

Threat	Ranking
Hydropower (dams, weirs, run-off-the-river), including infrastructure (D02)	M
Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (F12)	M
Modification of flooding regimes, flood protection for residential or recreational development (F28)	H
Invasive alien species of Union concern (I01)	H
Other invasive alien species (other then species of Union concern) (I02)	M
Mixed source pollution to surface and ground waters (limnic and terrestrial) (J01)	H
Abstraction from groundwater, surface water or mixed water (K01)	M
Physical alteration of water bodies (K05)	H
Droughts and decreases in precipitation due to climate change (N02)	H
Increases or changes in precipitation due to climate change (N03)	M

7.2 Sources of information

7.3 Additional information

Some larger-scale dams and (increasingly) run-of river schemes with associated infrastructure development. Habitat loss often small scale but unquantified.
Threat likely to decrease with advances in technology and improvement in the level of treatment before discharge to receiving waters.
Embankments and other hard engineering, river impoundments, canalisation, water deviation, removal of natural bank vegetation.
Giant hogweed, Himalayan balsam and North-American signal crayfish.
Japanese knotweed, rhododendron species.
Mixture of point source and diffuse source pollution causing eutrophication, organic pollution, enhanced sediment loads, toxic pollution and acidification.
Abstractions for various purposes, from small scale to larger scale.
Channel modifications (loss of river length, reduced habitat complexity, stabilised water levels and siltation) and in-stream modifications or impoundments (restricting movement of water and some biota).
Threat likely to increase with climate warming and prolonged dry spells leading to temporary lower flows, reductions in wetted area, loss of niche habitats and disconnection with floodplain features.
Increased periods of heavy rainfall leading to more frequent flooding, increased scouring of river beds, bank erosion, and 'wash-out' of resident plants and invertebrates.

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 diffuse pollution to surface or ground waters from agricultural activities (CA11)
- Reduce impact of hydropower operation and infrastructure (CC04)
- Reduce/eliminate point source pollution to surface or ground waters from industrial, commercial, residential and recreational areas and activities (CF04)
- Manage changes in hydrological and coastal systems and regimes for construction and development (CF10)
- Management, control or eradication of established invasive alien species of Union concern (CI02)
- Management, control or eradication of other invasive alien species (CI03)
- Reduce impact of mixed source pollution (CJ01)
- Reduce impact of multi-purpose hydrological changes (CJ02)
- Restore habitats impacted by multi-purpose hydrological changes (CJ03)
- Adopt climate change mitigation measures (CN01)

8.6 Additional information

9. Future prospects

9.1 Future prospects of parameters

a) Range
b) Area
c) Structure and functions

9.2 Additional information

10. Conclusions

10.1. Range

10.2. Area

10.3. Specific structure and functions (incl. typical species)

10.4. Future prospects

10.5 Overall assessment of Conservation Status

10.6 Overall trend in Conservation Status

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 change

The change is mainly due to:

10.8 Additional information

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

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 2.5
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
11.4 Short-term trend of habitat area in good condition within the network Direction	Stable (0)
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	Site Condition Monitoring for the River Tweed SAC (2013) concluded that the site is in unfavourable condition. Targets were not met for a number of attributes including: flow, organic pollution, reactive phosphorus, habitat structure, fine sediment, alien species, macrophytes and macroinvertebrates. Habitat modification was the greatest pressure with only one 'river section' (out of a total of 18 assessed) meeting the 'habitat structure' target.

12. Complementary information

12.1 Justification of % thresholds for trends	
12.2 Other relevant information	

Distribution Map

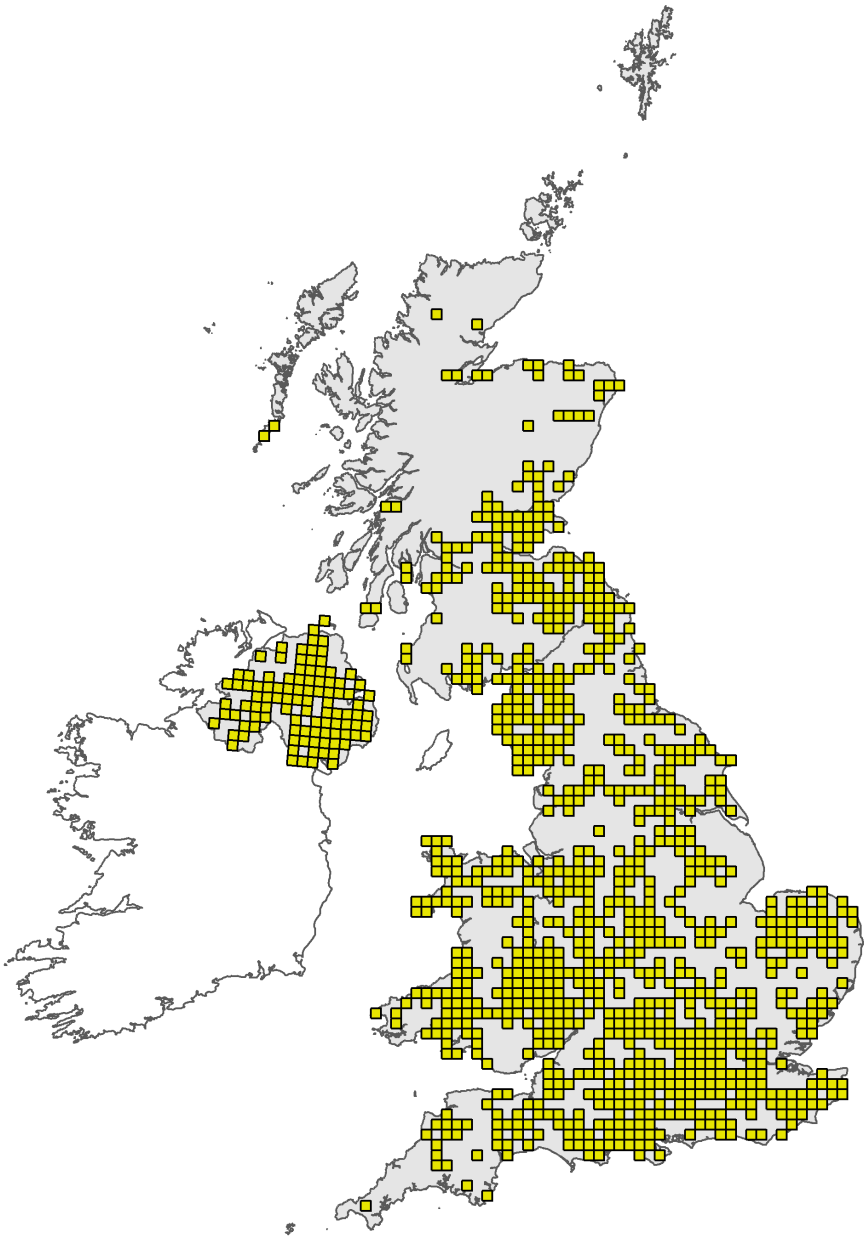

Figure 1: UK distribution map for H3260 - Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government 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 H3260 - Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. 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.

Explanatory Notes

Habitat code: 3260

Field label	Note
2.2 Distribution map	No evidence has been collected which suggests that the distribution of the habitat has changed within Scotland since the last reporting round. The same distribution map (as for 2013) has been submitted.

Habitat code: 3260 Region code: ATL

Field label	Note
4.12 Additional information	Note that the range (and distribution) of this habitat does not tend to change substantially as river habitat is generally not 'lost' or 'gained' - instead, anthropogenic impacts tend to result in deterioration of the habitat (structure and functions) rather than actual loss. Channel straightening results in a reduction in river length but this loss is likely to be very small when considering the habitat resource overall.
5.4 Surface area; Method used	River length (km) would be a more appropriate basis for assessing H3260 habitat (rather than surface area) and should be considered for future reporting once a reasonably reliable estimate has been generated from predictive modelling. In Scotland, the River Tweed (which covers approximately 1,300km of river length) is the only SAC for this Annex I feature. However, it is understood that H3260 does occur elsewhere in Scotland but the habitat type is more often dominated by lower plants (aquatic mosses) than Ranunculus species in other parts of the country.
5.4 Surface area; Method used	Comprehensive data on area of habitat (in square kilometres) cannot be supplied due to lack of availability. H3260 is a widespread habitat within an extensive river network. Macrophyte surveys provide point data on the river network, but are difficult to extrapolate to the wider river network due to the current lack of a predictive model. The habitat may occur across much of Scotland, in suitable catchments wherever drainage pathways converge to create river channels, from incised upland valleys to lowland floodplains across the full trophic range of rivers and streams. Work is needed to define the habitat more specifically on the basis of geology, altitude, gradient and plant communities. This will enable a detailed quantification of the habitat resource and its distribution, both within Scotland and for the UK as a whole.
5.6 Short term trend; Direction	Although quantitative data for surface area are not available, expert judgement has been applied to report a 'stable' trend. The area of this habitat does not tend to change substantially as river habitat is generally not 'lost' or 'gained' - instead, anthropogenic impacts tend to result in deterioration of the habitat (structure and functions) rather than actual loss.
6.1 Condition of habitat	Ecological status of WFD water bodies in Scotland. Classification data from 2,379 water bodies in Scotland were assessed to give an indication of the status of rivers outwith the SAC/SSSI network of protected sites. Of these, 348 have been classified as 'heavily modified water bodies', i.e. those where significant anthropogenic modifications are present which cannot be removed to restore good ecological status for reasons of overriding public interest. An objective of good ecological potential is applied in this case. Artificial water bodies were excluded from the analysis. WFD ecological status classes were correlated to good / not good condition for Article 17 reporting as follows: i) Good condition = WFD high status; ii) Not good condition = WFD moderate / poor / bad status, and iii) Unknown condition = WFD good status (as this final category could not be separated into 'good' or 'not good' with sufficient confidence). Scotland has a total of 24,925 km of river water bodies and application of these correlations to 2016 classification data produced the following results: 1,332 km (5%) in 'good' condition; 12,373 (50%) in 'not good' condition; and 11,220 (45%) in 'unknown' condition.

6.1 Condition of habitat	Condition of river habitat in SACs and SSSIs in Scotland. Habitat H3260 is a notified feature in just one SAC in Scotland (River Tweed: 1,300km long) and 'river habitat' is a notified feature for six short-river (or river sectional) SSSIs: Dee, Findhorn, Laxford, Lunan Burn, Spey and Traligill (covering a total river length of 50 km). The JNCC Common Standards Monitoring Guidance for Rivers addresses the four main aspects of river habitat integrity: hydrological, chemical, physical and biological. All attributes and targets were monitored and assessed at each of these sites during the reporting cycle, as follows: flow, water quality, habitat structure, fine sediment, biological assemblages and alien species. Condition monitoring of the River Tweed SAC in 2013 concluded that the H3260 feature is in unfavourable condition. Targets were not met for a number of attributes including: flow, organic pollution, reactive phosphorus, habitat structure, fine sediment, alien species, macrophytes and macroinvertebrates. Habitat modification was the greatest pressure with only one 'river section' (out of a total of 18 assessed) meeting the 'habitat structure' target. There was no significant deterioration in condition from the previous monitoring visit (2005), so a trend of 'no change' was recorded. SNH carried out condition monitoring for the additional 50 km of 'river habitat' SSSIs in 2017. The majority of sites were found to in favourable condition, but pressures on the habitat feature included the presence of alien species and a slight increase in habitat modifications (either in-channel, bankside or changes in the structure of the riparian zone).
6.1 Condition of habitat	Structure & Functions: method of assessment. A collation of data from Scotland's Site Condition Monitoring (SCM) and Water Framework Directive (WFD) monitoring programmes has been used to assess the condition of H3260 habitat. A clearer picture of condition within protected areas was possible given that SCM monitoring focuses specifically on structure and functions of the designated habitat and provides a direct conclusion of whether or not the feature is in favourable or unfavourable condition. Beyond SACs and nationally designated sites (SSSIs), WFD monitoring data was used to assess the ecological status of rivers that form part of defined 'water bodies'. Ecological status classes (high, good, moderate, poor and bad) have been correlated to good / not good condition to give a general indication of habitat condition across the rivers of Scotland. Unfortunately WFD data cannot be used to discriminate between H3260 river habitat and 'other river habitat', nor does it include data for headwater streams (many of which do include H3260 habitat). Consequently WFD data provides a useful indication of the condition of river habitat across the wider resource in Scotland but these limitations need to be considered.
6.1 Condition of habitat	No figures provided for 6.1 as data for H3260 are not available in the form of squared kilometres. The following text describes the analysis undertaken for this parameter and results are provided (below) in the form of river length (km).
7.1 Characterisation of pressures/ threats	The H3260 river habitat feature includes in-channel, marginal and riparian habitats, and the condition of each depends upon four main aspects of habitat integrity: hydrological, chemical, physical and biological. Pressures that act upon any aspect of the river habitat or its wider catchment may adversely affect the integrity of the feature. It is for this reason that river habitats are often affected by a wide range (and combination) of pressures.

8.4 Response to the measures	It is difficult to estimate the speed of recovery for the feature across Scotland given the varied types and combinations of pressures affecting the habitat, which aspect(s) of habitat integrity are affected and on what scale, e.g. localised habit, river reach, small tributary, larger river or whole catchment. For the River Tweed SAC, it is reasonable to suggest that recovery times for most conservation measures will be medium-term (2019-2030), given the complexity and size of the site, the fact that most pressures act over a reasonably large scale and the number and range of individuals (owner/occupiers) and delivery bodies that work together to manage the site, e.g. SNH, SEPA, Natural England, Environment Agency, Forestry Commission, Tweed Forum, water companies, etc. Furthermore, some of the pressures (especially physical modifications) will require significant funding in order to address them adequately and rivers often require a certain amount of 'recovery time' following positive interventions before all four aspects of habitat integrity can be fully restored to favourable condition.
9.1 Future prospects of parameters	Future prospects for Range are stable overall with the expectation that the Range will remain equal to the Favourable Reference Range. Future prospects for Area are stable overall with no substantial losses or gains in the foreseeable future. Future prospects for Structure and Functions are stable overall (or possibly improving slightly) as a consequence of the balance between pressures and improvements gained from conservation measures. Pressures on the River Tweed SAC are being tackled by specific, targeted measures including SNH grants, agri-environment scheme funding and the Scottish Government Water Environment Fund (for river restoration). It is more difficult to assess the future prospects of river habitat outwith protected areas.
11.1 Surface area of the habitat type inside the pSCIs, SCIs and SACs network	The 'Best Single Value' of 2.5 km2 is the figure for the cover of H3260 habitat within the River Tweed SAC as published in the 'Natura 2000 Standard Data Form - River Tweed SAC' (2016). This is the only SAC for H3260 in Scotland.