

HAYLE ESTUARY AND CARRACK GLADDEN SSSI

CONDITION ASSESSMENT, MARCH 2010. Assessment by Andrew McDouall

UNIT 1

Notified features:

- Estuary (including intertidal sand flats and mud flats)
- Saltmarsh (including transition to reedbed)
- Aggregations of non-breeding birds – Variety of wintering species (90)
- Vascular plant assemblage: *Adiantum capillus-veneris*, *Carex montana*, *Poa bulbosa*, *Fumaria occidentalis*, *Scrophularia scorodonia*

Feature assessments:

Estuary (including sand flats and mud flats)

Overall extent of estuary: Comparison of aerial photograph dated 1988 (Cornwall County Council) with aerial photographs used for this assessment (2001) shows the overall extent of the intertidal area of estuary increased since the restoration of tidal inundation at Ryan's Field by RSPB in 1995.

Extent of sand flats and mudflats: No baseline of relative extent of sand flats and mud flats is available at the present time. Aerial photographs could be used to indicate significant gross changes in extent. Comparison of aerial photograph dated 1988 (Cornwall County Council) with aerial photographs used for this assessment (2001) shows the overall extent of the area of sandflat and mudflat does not appear to have changed significantly since 1988. However, observations by RSPB suggest that sand ingress into Lelant Water is leading to an increase in the area of sand flat and a reduction in the area of open mud flat. Further assessment of actual conditions on the ground is required.

Biotope mapping carried out by Aquatronics Ltd for Hayle Harbour redevelopment outline planning application in September 2008 could, with permission, form a baseline for future assessments.

Spartina anglica at Copperhouse Pool has increased significantly in extent since mapping carried out in 1982 for Saltmarsh Survey of GB 1989. RSPB has estimated change in the area of *Spartina anglica* (on RSPB owned land at Copperhouse Pool):

11.05.1988	1,200 m ²
16.08.1991	9,500 m ² (692% increase)
14.10.1998	9,290 m ² (2% decrease)
02.09.2005	11,915 m ² (28% increase).

There appears to have been no significant increase in since 2005 with a possible loss of some clumps. *Spartina anglica* at Copperhouse Pool appears to have invaded mudflat rather than pioneer saltmarsh. Spread of this species may have implications for invertebrate populations and available feeding areas for wintering birds. However, observations from Dave Flumm, RSPB indicate that some wintering bird species use the *Spartina* area for roosting, particularly following disturbance (eg snipe flushed from reedbed by dogs) from Wilson's Pool adjacent. Requires further investigation and monitoring.

Survey of macroalgae by the Environment Agency in summer 2009 suggests that mudflats are affected by extensive algal mats due to nutrient enrichment. These algal mats may adversely affect invertebrate biomass – see advice from Allan Drewitt and Richard Caldow. The implications of nutrient enrichment and development of algal mats for invertebrate populations and biomass in relation to food availability for wintering birds requires further investigation and assessment.

Sand flats and, in particular, mudflats are habitat supporting the non-breeding bird assemblage (wintering birds) by providing feeding, roosting and resting areas. Therefore factors such as the quality of the habitat as demonstrated by invertebrate populations and biomass require assessment in addition to overall extent of habitat. The conservation objective attributes and targets require review to include the specific aspects of this feature that are critical to supporting the non-breeding bird assemblage.

Assessment based on current information: *FAVOURABLE MAINTAINED (AT RISK)*.

Saltmarsh (including transition to reedbed)

Baseline: Saltmarsh Survey of GB (Burd, F. 1989). Note saltmarsh at Hayle estuary mapped in 1982. No complete NVC surveys. Some NVC survey of Copperhouse and Wilson's Pools for Hayle Harbour redevelopment outline planning application (2008).

The most significant areas of saltmarsh occur at the following locations:

Grigg's Quay, Lelant: pioneer, low-mid saltmarsh, mid-upper saltmarsh, transitions to grassland. This area of saltmarsh is the most important high tide roost for wintering birds within the SSSI due to the lack of disturbance.

Copperhouse Pool: pioneer, low-mid saltmarsh, narrow zone mid-upper saltmarsh, transitions to grassland.

Wilson's Pool: small area low-mid saltmarsh, mid upper saltmarsh, transitions to *Phragmites* swamp and grassland.

Ryan's Field: area with saltmarsh communities developing since 1995 following re-introduction of tidal inundation by RSPB in May 1995.

Grigg's Quay: Field visit 26th August 2009. Zonation maintained but relative proportion of area of zones appears to have changed since 1982 mapping. Mid-upper zone appears approximately similar in extent while the extent of the low-mid zone appears to have decreased (narrowed) with an increase in the extent of pioneer saltmarsh. Assessment: favourable maintained but requires monitoring for future change.

Copperhouse Pool: Field visit 27th August 2009. Zonation maintained with a possible increase in extent of low-mid saltmarsh. *Spartina anglica* at Copperhouse Pool has increased in extent since mapping carried out in 1982 for Saltmarsh Survey of GB 1989. However, mapping by RSPB (2005) indicates no significant increase in recent years with a possible loss of some clumps. *Spartina anglica* at Copperhouse Pool appears to have invaded mudflat rather than pioneer saltmarsh. Assessment: favourable maintained, at risk due to potential *Spartina anglica* encroachment.

Wilson's Pool: Field visit 27th August 2009. Zonation maintained. However, since 1982 mapping there has been a significant increase in the area dominated by *Phragmites australis* and significant spread of *P. australis* across saltmarsh. This change is likely to be related to a change in the tidal regime since the inception of the Angarrack flood alleviation scheme in the early 1990s by the Environment Agency. The current operation of the flood gate at Copperhouse Pool maintains a tidal cycle in Copperhouse Pool but maintains water levels for flood risk management purposes below that required to inundate Wilson's Pool. A trial carried out by the Environment Agency in May 2008 confirmed that tidal inundation of Wilson's Pool would occur on spring tides if water levels were not controlled by operation of the flood gate. Tidal inundation is a key functional process to maintain saltmarsh communities. Without any tidal inundation the saltmarsh communities are likely to become relict with an increase in the dominance of communities characteristic of brackish conditions. Investigation of the potential for the restoration of tidal inundation at Wilson's Pool is required in collaboration with the Environment Agency. Wilson's Pool is also used extensively by dog walkers. Dog fouling is likely to result in nutrient enrichment of the substrate and affect plant communities. Assessment: favourable maintained, at risk due to lack of tidal inundation and nutrient enrichment.

Ryan's Field: Field visit 27th August 2009. The development of saltmarsh communities at Ryan's Field since the restoration of tidal inundation by RSPB in 1995 has resulted in an increase in the overall area of saltmarsh in the SSSI since the 1982 mapping. The vegetation appears generally to be transitional between pioneer and low-mid saltmarsh. However, some species characteristic of mid-upper saltmarsh were noted. Assessment: favourable maintained.

Overall assessment for saltmarsh feature: *FAVOURABLE MAINTAINED (AT RISK)* due to potential for spread of *Spartina anglica* at Copperhouse Pool and the lack of tidal inundation at Wilson's Pool.

Aggregations of non-breeding birds – Variety of wintering species (90)

Data from RSPB Annual Reports. Note that the number of wintering species recorded is likely to be under-recorded.

Jan, Feb, Nov, Dec	2008	81 species	(AR 2008/09)
	2007	85 species	(AR 2007/08)
	2006	63 species	(AR 2006/07)
	2005	68 species	(AR 2005/07)
	2004	78 species	(AR 2004/05)

Five year mean for 2004 – 2008: 75 wintering species (16.7% decline).

Many factors influence the number of wintering birds, both within and outwith the SSSI. Key site requirements include suitable habitat extent and quality for feeding and roosting/resting birds and lack of disturbance. Loss of habitat extent and quality and disturbance (eg. by people and dogs) could adversely affect this feature. Effort to manage, control and reduce disturbance is ongoing. Less than 25% decline – **FAVOURABLE MAINTAINED (AT RISK)**.

Vascular plant assemblage: *Adiantum capillus-veneris*, *Fumaria occidentalis*, *Scrophularia scorodonia*

FAVOURABLE MAINTAINED - see Hayle Estuary and Carrack Gladden VPA assessment for details.

Unit assessment:

Currently, the overall extent of unit 1 not directly adversely affected by anthropogenic factors. However, unit 1 is surrounded and constrained by build development including roads, railways, quays, residential and commercial property and flood defence structures. As a result key features (sand flats, mud flats and saltmarsh) are likely to be adversely affected by sea level rise and coastal squeeze. In addition sand encroachment, particularly into Lelant Water, may result in a reduction the area of mud flat, a key habitat supporting wintering birds. Other factors likely to affect wintering birds include poor water quality leading to spread of algal mats and disturbance by people and dogs.

Overall assessment for unit 1: **FAVOURABLE MAINTAINED (AT RISK)**.

UNIT 2

Notified features:

Sand dunes (including dune grassland)

Maritime cliff and slope (maritime heathland, lowland heathland)

Vascular plant assemblage: *Adiantum capillus-veneris*, *Carex montana*, *Poa bulbosa*,

Feature assessments:

Sand dunes TO BE ASSESSED (May 2010)

Maritime cliff and slope (maritime heath)

No baseline data, maps or NVC surveys have been carried out on this unit.

Field visit 1st September 2009. Relatively small areas of maritime heathland (H7?) and lowland heathland (H4/H8?) appear to remain – see aerial photograph. These communities were probably previously more extensive (at notification). The steep coastal slope between the railway line and the cliff top is affected by bracken and scrub encroachment (natural succession), including blackthorn, willow, gorse and sycamore. Invasive shrub species recorded include buddleia, rhododendron, escallonia, privet and Rosa. Non-native invasive species such as montbretia also present. The scrub is clearly adversely affecting heathland communities. Clearance and management of invasive shrub species carried out in March 2010. **UNFAVOURABLE RECOVERING**

Vascular plant assemblage: *Adiantum capillus-veneris*, *Carex montana*, *Poa bulbosa*,

FAVOURABLE MAINTAINED (AT RISK) - see Hayle Estuary and Carrack Gladden VP assessment for details. Note comments about scrub encroachment affecting habitat for *Carex montana* at Carrack Gladden. Note comments on scrub encroachment affecting western part of sand dunes at Porth Kidney Sands. Scrub encroachment over sand dunes puts habitat of *Poa bulbosa* at risk.

Unit assessment:

Overall extent of unit 2 not adversely affected by anthropogenic factors.

Notified features currently unfavourable declining and favourable maintained (at risk).

Overall assessment for unit 2: **UNFAVOURABLE RECOVERING**.