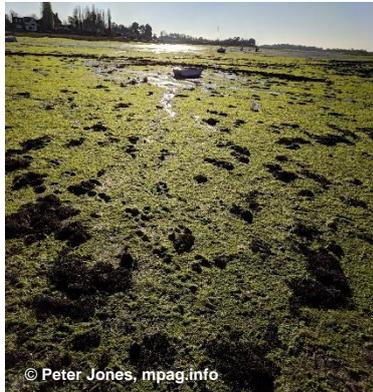


Condition review of Chichester Harbour Sites - intertidal, subtidal and bird features – Executive Summary



February 2021



Chichester Harbour is one of the most important sites for wildlife in the United Kingdom and is globally important for migratory birds. The harbour is designated as a Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) and Special Protection Area (SPA) for birds. A combination of a desk-based evidence reviews and field survey for saltmarsh in 2019 were undertaken by Natural England to assess whether the harbour's special habitats and species (known as notified features) were flourishing – or as we

describe features of designated sites: in favourable condition. The report reviews the historic trends in populations and condition of notified features, discusses whether the existing conservation actions are appropriate, and identifies what changes are required to improve the site and its features back to favourable condition.

A summary of the key findings and recommendations from the review (for further study, survey and conservation action) are provided below.

Saltmarsh

Aerial photographs from the two 2008 and 2016 were reviewed for extent of saltmarsh and compared to previous assessments to provide the trend in area of saltmarsh from 1946 to 2016. During this period, 58% of saltmarsh habitat area was lost overall, with loss of almost half (46%) of that present when the site first became legally protected (1970). The saltmarsh was in unfavourable condition at the time of first designation as the saltmarsh losses in the 1960's were approximately 18 hectares a year. The rate of loss has slowed, however, on average 2.54 hectares (the equivalent of more than 3 football pitches in area) of saltmarsh is still being lost every year across Chichester Harbour. At the current rate of decline the site could lose all its remaining saltmarsh habitat by the middle of the next century.

In 2019, field surveys of six transects were undertaken across the largest areas of remaining saltmarsh. Several rare species were still present and even locally abundant showing the continued ecological value of the remaining saltmarsh. However, all six sites that were surveyed on foot were experiencing impacts from inappropriate coastal management, including coastal squeeze, to some extent on their landward edge. Opportunistic macroalgae (a sign of nutrient enrichment) was observed at all the land-based survey locations. No transects met the requirement for favourable condition for flourishing saltmarsh habitat. As a result, all SSSI units with saltmarsh at designation were assigned to unfavourable declining condition, totalling 3,003 hectares.

Birds

The wintering populations of birds in Chichester Harbour vary in their trends over time but on average the assemblage is in unfavourable condition as numbers of many species have declined, some species dramatically so (>70% long term). Nevertheless, the site remains nationally important for nine wintering species and internationally important for dark-bellied brent geese and black-tailed godwit. The national populations of four of the notified wader species have shifted range in response to climatic factors, which explains part of the declines seen. However, there are additional site-specific factors affecting these and the other bird species, including disturbance, pressures on high tide roosts and poor quality of habitat (opportunistic macroalgae). Consequently, some of the birds whose populations are doing well are species which can switch their foraging habitats away from the main intertidal area such as brent geese.

Nesting terns are in unfavourable declining condition because nesting Sandwich tern numbers have declined to zero, little tern numbers have declined dramatically and the number of their chicks per nest successfully fledging is at or close to zero. A range of complex factors including predation (both mammalian and avian), habitat changes and climate change (sea level rise and increased storminess) are the causes, despite concerted conservation action taken by the Chichester Harbour Conservancy (CHC) as site managers. However, there have been recent successes for common terns using artificial rafts deployed by CHC at Thorney Deeps, which if this continues will enable the population to recover.

Other intertidal habitats

Intertidal habitats – general and opportunistic macroalgae

The data on intertidal habitats' sediment type and the invertebrates that use it (biotopes) was reviewed based mainly on an analysis undertaken under contract in 2016. The data is of variable quality. For this reason, the current assessment should not replace the SAC wide assessment for overlapping features. Opportunistic macroalgae is an indicator of nutrient enrichment and high percentage coverage impacts bird prey and the habitat. Percentage coverage of opportunistic macroalgae was reviewed in 2011, 2014 and 2018, and assessed in each harbour arms and in the middle and outer harbour edges. Coverage varied from year to year and spatially but most of the harbour had too much opportunistic macroalgae in both 2011 and 2018. Only the outer harbour was not impacted by opportunistic macroalgae in all three years.

Intertidal and sub-tidal habitats – eelgrass

The historic data from a number of sources, including scientific literature on water quality impacts, was reviewed. There is no field survey of all the harbour's eelgrass in any one year. The review raised considerable doubt about the validity of previously used baseline data for the harbour. The SSSI baseline extent should be changed to at least between 130 and 220 hectares as a minimum for favourable

condition for this sub-feature. This feature was assigned unfavourable as a provisional assessment, with a very low confidence due to the absence of reliable baseline data and was not used to change mapped condition of the SSSI. The current assessment should not replace but only supplement the SAC wide assessment for the overlapping features.

Water quality

Only the inorganic components of nitrogen; dissolved inorganic nitrogen (DIN) and orthophosphate were assessed. DIN and orthophosphate vary seasonally, yearly and spatially within the harbour. Most of the nutrients are taken-up in the harbour by the opportunistic macroalgae growth and by the wider catchment (in summer months) where both DIN and orthophosphate values drop, the former to below detectable limits in summers back to 1995. Winter peaks of DIN show no apparent overall trends across the harbour as a whole, but increase during wet winters and springs. There are some localised declines, in particular at Langstone Bridge where declines occur shortly after the removal of the Budds Farm wastewater treatment works (WwTW) discharge from the adjacent Langstone Harbour.

The winter DIN values do vary between areas of the harbour with a trend of increasing values from west to east and from the outer harbour towards the upper harbour arms. The highest mean winter value is from Fishbourne Channel, which has nearly six times higher (598%) values of nitrogen than the lowest value of 0.25mg l^{-1} at Fisheries Buoy in the west of the main harbour. The conservation measures (such as Catchment Sensitive Farming and WwTWs improvements) that have occurred in the catchment may be reducing DIN values in parts of the harbour, but the picture is complex, and the localised reductions are not sufficient for the wildlife to recover. The best remaining saltmarsh habitat and the largest eelgrass beds are in areas with lower nitrogen.

Condition summary

Overall, the main intertidal habitats and bird features are assessed as unfavourable declining condition largely due to the continued loss of saltmarsh, the poor quality of saltmarsh and mudflat habitat, and the continued decline of several bird species (wintering and nesting). The summary condition following this review is:

Summary of the condition of Chichester Harbour SSSI (of all the saltmarsh and bird designated features within the SSSI)

Designated sites condition following 2019/20 review	Area in hectares (%)
Favourable	252.91 (6.77)
Unfavourable Recovering	115.83 (3.10)
Unfavourable No change	361.62 (9.69)
Unfavourable Declining	3003.17 (80.44)

Summarised recommendations for conservation action

- Restore saltmarsh habitat within Chichester Harbour to achieve at least the 552 hectares area at SSSI designation. This could begin with climate change safeguarding policies to help protect low lying land around the harbour for future saltmarsh restoration. Opportunities to recreate saltmarsh habitat should then be identified e.g. realigning sea defences. An additional 257 hectares of saltmarsh from the current level is initially needed to restore it back to recovering, and as the habitat structure evolves then to favourable condition.
- Remove barriers to coastal change caused from inappropriate coastal management including coastal squeeze, which are resulting in saltmarsh erosion and interrupting sediment supply.
- Identify low nutrient sources of sediment into the harbour, particularly mud sediment, if removing the structures does not restore the sediment supply.
- Maintain current actions and identify additional measures to reduce nitrogen into the harbour and the wider Solent including, depending on source apportionment, reducing nitrogen inputs from urban and rural diffuse (planning and farming), from atmospheric deposition and from point sources (mainly wastewater treatment works).
- Work with partners to understand the baseline condition of small fish (prey) populations in the harbour and whether this is influencing tern productivity.
- Significantly increase efforts to improve tern populations, e.g. creating more tern rafts (to improve nesting success rates) and predator management where necessary.
- In partnership investigate the feasibility of creating a network of sites that are less susceptible to tidal flooding by creating suitable raised shingle beaches at Stakes Island.
- Where feasible, include creation of islands for breeding terns and high tide roosts when designing coastal habitat creation schemes.
- Work with partners to continue to identify and manage sources of disturbance to birds.
- Improve monitoring and data collection, to include (if possible) assessing source apportionment at a smaller spatial scale related to the harbour's interest features and increase the frequency of saltmarsh assessment.

In partnership, implement a second phase of the project, subject to resources, to address identified evidence gaps and provide simple clear messages for stakeholders and the general public on how to help restore the harbour's wildlife.

Where can I find more information?

A copy of the full report can be found [here](#).