

Isle of Wight Biodiversity Action Plan

Solent Coastal Habitat Action Plan

1 Introduction

This Habitat Action Plan has been prepared through consultation with a range of organisations and specialists within the Isle of Wight BAP partnership. It covers a ten-year period from 2004 – 2014, with a review in 2009.

This action plan embraces a number of estuarine and coastal habitats that are identified as individual habitats types within the UK BAP. The plan will assist in ensuring that national objectives for coastal and estuarine habitats identified under the UK Biodiversity Action Plan are translated into effective action on the Island, taking into account local issues. The habitats occur in the major estuaries and along the Solent coastline; they are summarised in Table 1.

Table 1: Relationship between Isle of Wight estuarine habitats and UK BAP habitats

Habitat type	UK BAP status	Distribution on IW
Saltmarsh	Priority habitat	In all estuaries; particularly extensive in Newtown and Yar estuaries,
Mudflats	Priority habitat	Extensive in all estuaries, and along Solent shore
Coastal Vegetated shingle	Priority habitat	At the mouth of the Eastern Yar and Newtown and along Solent shore. Small amount within Medina estuary
Coastal Sand dune	Priority habitat	Small areas at the mouth of both the Western and Eastern Yar estuaries; relict sand dune near Ryde Canoe Lake
Reedbed	Priority habitat	Present in all estuaries but Newtown
Club rush swamp	Broad habitat	Mostly in Medina estuary
Sheltered muddy gravels	Priority habitat	Small areas within estuaries and along Solent shore
Sand flats		At the mouths of estuaries and along the Solent shore
Seagrass Beds	Priority habitat	Not mapped but important areas found on the north shore and at Bembridge Ledges
Saline lagoons	Priority habitat	Eight sites on the Island with important examples found at Bembridge, Yarmouth and Newtown Quay.

The Solent coastline is notable for its unusual oceanographic, geological and biogeographic characteristics. The Island provides shelter and protection to the Hampshire coastline and the unusual double tides of the Solent area contribute to the special character of the intertidal. The Solent coastal habitats are ecologically rich and diverse, with a very large number and exceptionally wide range of regionally, nationally and internationally important habitats, communities and species populations.

This diversity of coastal habitats and species arises partly because the Solent lies on the transition between the warm 'Lusitanian' waters of the western Channel and the cold 'Boreal' waters of the Eastern Channel. This results in the presence of marine flora and fauna characteristic of both provinces, with several species at the edge of their British geographical distribution. The southern location in Britain also means that some maritime species characteristic of warmer regions of Europe can maintain a foothold in the coastal zone, alongside species more characteristic of northerly climes. Its position close to the centre of the European flyway for many waterbirds and wildfowl encourages up to 150,000 waterfowl to make use of its estuaries while on migration and

during the winter months. Additionally, the complex nature of the coastal zone is of particular importance to species that utilise a range of coastal habitats at different times of the tidal cycle, day and year, and for different parts of their life cycle.

The Isle of Wight Solent Coastal Habitat Action Plan encompasses not only the estuaries of the north coast of the Island, but also the coastal and intertidal habitats which between them are essential components of the same single, highly interdependent, ecological system. This coastal system, comprising a network of estuaries and the Solent itself, extends to the adjacent counties of Hampshire and West Sussex. When planning for biodiversity on the coast, it is essential to consider these adjacent counties. Most of the Island's estuaries are intertidal harbours that are partially closed by sand and shingle spits at their mouths. They are characterised by low freshwater inflow, and many have large areas of saltmarsh and extensive sand and mud tidal flats with eelgrass beds exposed in the intertidal zone at low tide. Extensive areas of coastal wet grassland, reclaimed from saltmarsh and intertidal hundreds of years ago, creating vast areas of coastal grazing marsh, still occur in some areas behind sea walls, principally in parts of the Western Yar and the entirety of the formerly tidal Eastern Yar. Several estuaries still support natural transitions to terrestrial habitats, now an unusual feature in southern Britain. In addition to contributing towards a single inter-dependent ecological unit, each estuary is individually of high biodiversity value and of great value as a functioning estuarine ecosystem.

The coastal habitats described in this plan are each part of a complex and dynamic natural coastal system. These habitats are individually important for biodiversity conservation but the intimate mixture and the transitions between them and adjacent terrestrial habitats are also of particular importance for many species. Maintaining these transitions between habitats and, where possible, reinstating them is a high priority. The conservation of estuarine habitats is further complicated by the consequences of natural processes and changes in our climate and sea levels. These processes mean that the future of estuarine habitats is to a certain extent uncertain. Maintaining the capability of the coastal system to respond to dynamic changes is an important objective. Changes may lead to an increase in the extent of one habitat and a resultant decrease in the extent of an adjacent habitat in the short term. Such changes should only be accepted where they are the result of natural processes and so long as site integrity and function are not adversely impacted.

Covey & Laffoley (2002) have identified a number of common threats to estuaries around the English coastline, many of which are likely to be relevant to the Solent estuarine ecosystem. These are as follows:

1. Coastal habitat is still being lost to development. Past development and hard coastal defences are fragmenting naturally mobile coastal habitats and their wildlife. Only a handful of dune systems are not impacted by development, leisure facilities or artificial sea defences.
2. Saltmarsh habitats, trapped between rising sea-levels and fixed seawalls, are being lost rapidly to 'coastal squeeze'. The loss of saltmarsh nationally is currently estimated at around 100ha each year.
3. Most of Europe's vegetated shingle occurs in England and today, nearly 50% of designated vegetated shingle habitat is in unfavourable condition as a result of poor coastal management and from activities that damage the fragile plant communities.
4. Managed realignment should be the main approach to accommodating saltmarshes and mudflats in the face of rising sea-levels. However, current flood management is failing to offset current losses and only 150ha of new coastal habitat has been created in the last 10 years, falling far short of the national BAP target of 140ha per year.
5. Present agricultural policy is having a double impact. It affects the ability to manage some coastal habitats such as saltmarsh and cliff-top grassland with appropriate grazing levels and it is also causing deterioration in marine water quality due to nutrient run off from

agricultural land. Since 1984, nitrogen inputs to the seas around the UK have increased by around 20%.

6. Fishing has taken so many fish out of the seas that the basic structure of marine food chains has altered and is degrading and the rate of deterioration has reportedly increased since the 1980s.
7. Heavy metals and other pollutants introduced into the marine environment are difficult to remove, especially when they become persistent in sediments or animal tissues (bioaccumulation). New, man-made chemicals, discharged into the marine environment over the last century, are now known to disrupt reproductive processes of fish, such as flounders in estuaries.
8. Eutrophication, the over-enrichment of the maritime environment leads to excessive growth of algae and often, reduced oxygen content of the water.
9. Dredging for aggregates as a source of raw materials for construction modifies sediment supply around the coast. Also dredging in harbours and ports to keep channels open, and to meet the demand for larger vessels alters the dynamics of estuaries.

The Solent Coastal Habitat Management Plan (CHaMPS) (Bray and Cottle, 2003) has identified a number of threats within the Solent. It concludes the following:

- 1) Continuing erosion of foreshores and die-back and erosion of cordgrass (*Spartina*) saltmarsh will leave upper foreshores, cliffs and coastal defences increasingly exposed. The coastal defences will contribute to widespread 'coastal squeeze' of foreshores and saltmarshes as sea-levels rise. This will be particularly pronounced along the Hampshire mainland coastline.
- 2) Between 58% and 75% of existing saltmarsh will be lost by 2100 due to coastal squeeze, with many existing areas becoming replaced by mudflats. Losses are predicted to be unevenly distributed and be most severe along the West Solent mainland coast and within the larger mainland harbours. Within the smaller estuaries, such as at Newtown, saltmarshes are anticipated to persist, and hence their relative importance is likely to increase over time.
- 3) Short-term increases in mudflats occurring at the expense of saltmarsh could be beneficial in terms of providing additional bird feeding areas. However, mudflats gained would be at a lower elevation than saltmarsh lost and therefore the effective intertidal area at half tide and above will be reduced.
- 4) The majority of vegetated shingle sites are likely to be maintained at approximately their present extent or increase slightly.
- 5) Few changes are predicted to areas of designated coastal grazing marsh provide that, under present strategic coastal defence policies, the majority would continue to be protected by defences. However, coastal grazing marsh is considered to be one of the most threatened habitats in the Solent. Realignment of coastal defences would result in loss of coastal grazing marsh habitat but could provide opportunities for creation of new estuarine habitats. The Eastern Yar valley provides the greatest opportunity (up to 600ha) within the Solent area but rapid coastal realignment would extinguish the nationally and internationally important freshwater and brackish habitats and species that have colonised the floodplain during the 130 years since reclamation. Therefore, it would be essential to secure significant belts of floodplain land upstream from the SSSI/SPA/Ramsar to facilitate the creation of new grazing marsh habitats, which would be a requirement for any unavoidable losses of land covered by these designations. Coastal realignment of such sites as the Eastern Yar, therefore, would require substantial resources and many decades (50-100 years) to enable these non-intertidal habitats and species to establish further up the flood plain. The effectiveness of creating new coastal grazing marsh habitat has yet to be tested.

Estuarine habitats often occur in association with other important habitats. In particular, there are often transitions from coastal saltmarsh to coastal and flood plain grazing marsh. The latter are considered in a Wetlands Habitat Action Plan.

2 Current Status

2.1 Description of the habitat

Estuaries and their associated habitats are a very important feature of the Isle of Wight's coastal biodiversity. They are varied in character, but all depend on a balance between sediment supply, the input of fresh and saline water and the tidal regime to maintain the specialist groups of plants and animals associated with them. For the purposes of the Solent Coastal HAP the habitats are described under the following headings: coastal saltmarsh, mudflats, coastal vegetated shingle, coastal sand dunes, seagrass beds and saline lagoons.

2.1.1 Coastal saltmarsh

These are intertidal or tidally-influenced vegetated habitats that develop along soft, sheltered coasts with shallow shores, generally within estuaries. They are a transition habitat between the intertidal mudflats and sand, and the coastal hinterland which may be grazing marshes, dunes or shingle or woodland. The habitat as described excludes sea couch dominated, species-poor high saltmarsh. Rather rarely on the Island's coastline, saltmarsh may be truncated by the presence of sea walls.

Saltmarshes are confined along the Island's Solent coastline to comparatively small estuaries. They form a key component of the Solent and Southampton Waters SPA and candidate Maritime SAC. There are calculated to be 159.3 hectares of vegetated saltmarsh habitat on the Island (Table 2). This represents around 3.6 % of the Southeast regional resource. 80% of the Island resource is concentrated in two sites, the Western Yar Estuary and Newtown Harbour. The Medina Estuary and Bembridge Harbour in contrast have lost much of their semi-natural saltmarshes to a combination of factors including reclamation, increasing demand for recreational boating facilities, development of water-side industries and homes, and the natural processes of erosion leading to coastal squeeze.

Mixed saltmarsh is a particularly valuable resource and those in the Solent are notable for their concentration of nationally scarce flowering plant species. Although many saltmarshes in the Solent are considered to be of recent origin (generally less than 120 years old), some on the Island, principally in parts of the Newtown estuary, are believed to be much older, and they are not dominated by common cord-grass (*Spartina anglica*). The native, small cord-grass (*S. maritima*) is a component of mixed salt marshes in the Newtown estuary, its only remaining location on the south coast of England. However, the 17 hectares which have developed at Newtown since the breach of the sea wall in 1954 are more typical of the cord grass swards of the Solent coast. The Island's saltmarshes contribute to the international importance of the Solent as an important resource for wading birds and wildfowl. They act as high tide refuges for birds feeding on adjacent mudflats, as breeding sites for waders and gulls and as a source of food for passerine birds particularly in autumn and winter. In winter they may also be used as feeding grounds for Brent geese, teal and wigeon. Areas with high structural and plant diversity, particularly where freshwater seepages provide a transition from fresh to brackish conditions, can be important for invertebrates.

Saltmarshes play an important role in binding-up sediments, including contaminants. They also help to attenuate the action of waves within the estuary. The intimate relationship between saltmarsh vegetation and other coastal habitats such as shingle structures, sand dunes and intertidal flats means that they need to be considered as a functional unit.

2.1.2 Mudflats

Intertidal mudflats are sedimentary habitats created by deposition in low energy coastal environments, particularly estuaries and sheltered bays. They are not vegetated by flowering plants, apart from the eelgrass beds occurring along very sheltered stretches of coast. There are

some 275 hectares of mudflats within Island estuaries, representing just 0.14% of the national resource (Table 2). Additionally, 103 hectares of intertidal mudflats and 450 hectares of intertidal sandflats have been identified along the north coast of the Island, outside of the estuaries.

The largest extent of intertidal sediments in the Solent is found along the sheltered north-eastern shore of the Island, between Fishbourne and Horestone Point. This is the only major zone of sediment accumulation within the coastal cell stretching from Selsey Bill to Portland. Sediment accretion is believed to be derived from erosional processes on the south coast of the Island, although Ryde Sands may also be supplied from the Solent. At low tide, a particularly wide range of sediments are exposed over this stretch of coastline, grading from the fine estuary muds of Wootton Creek, through cobbles and boulders at Pelhamfield to the extensive sandflats at Ryde, which reach a maximum width of almost 2 km.

Intertidal flats are extremely productive biologically and they can be characterised in terms of their benthic fauna and their ability to support internationally important populations of wildfowl and waders as winter feeding grounds. Typically, twelve species of wildfowl and twenty species of wader regularly use the Island's estuaries. Holme & Bishop (1980) split the sedimentary shore communities of the Solent and Southampton Water into five main types: crustacean-polychaete, sandmason worm, lugworm, carpet shell and furrow shell. The modern biotope classifications now used subdivide these communities further, and their use needs to be extended throughout the Solent. Mudflats are characterised by high biological productivity and abundance of organisms, but low diversity with few rare species. They are also important nursery areas for flatfish. Sheltered muddy gravel habitats can be extremely species rich, especially in fully marine conditions, because the complex nature of the substratum supports a high diversity of both infauna and epifauna.

2.1.3 Coastal vegetated shingle

Approximately 1/3 of the coastline of the UK is fringed by a shingle or sand/shingle beach but much of this is devoid of vegetation. Sites where drift line vegetation does occur may have vegetative cover one year but not another. Therefore, although widespread in terms of total area, sites where this habitat is persistent are rare. Vegetation will establish on shingle beaches when the structure is stable and there is a matrix of finer material such as sand or silt. The extent and location of the vegetation depends upon the naturally occurring processes of erosion and accretion of the substrate. Mobility is an over-riding consideration and colonising species are able to withstand periodic disturbance, which may involve the total removal of the surface by storms.

The seaward edge of coastal vegetated shingle supports a particularly distinctive if sparse flora including sea kale, sea knotweed and yellow horned poppy. Certain invertebrate species are dependent upon shingle vegetation. There is a small but important group of Red Data Book beetles dependent upon undisturbed shingle beaches with seaweed; they probably also require adjoining low clay cliffs into which they can escape. Birds, including ringed plover and oystercatcher, use shingle as breeding and roosting sites. Common terns currently breeding on artificial rafts in the Newtown estuary have the potential to use nearby shingle beaches for breeding.

Coastal vegetated shingle is a nationally rare habitat. Although there are a few shingle areas on the Island's coast and they are of limited extent, several sites are considered to be of regional importance for their representation of southern vegetation communities. There is an estimated 33ha of vegetated shingle on the Island's coast.

Sites are restricted to the north coast and are contained within SSSIs and within the Solent and Southampton Waters cSAC. The best examples are the spits at the entrance of Newtown Harbour. Other sites occur at Wootton Creek and King's Quay and the foreshores at Thorness Bay and Quarr are examples of shingle barriers.

2.1.4 Coastal sand dunes

These are windblown sand formations that may be stable or shifting, together with their associated slacks, grassland and scrub. Sand dunes are a scarce resource on the Island's coast and indeed along much of the English Channel coast. There is an estimated 15.4 hectares, representing around 2% of the south-east resource (Table 2). The majority of the South-east resource is

accounted for by the major dune system of Sandwich Bay. However, St Helen's Duver is considered to be of regional importance, because of the scarcity of this habitat on the South Coast. There are examples of spit dunes on the sandy promontories at the entrance to Bembridge Harbour and the Western Yar together with a sand dune community on the banks of Ryde Canoe Lake. The seaward edges of these dunes are artificially constrained and as a result, much of the habitat is stabilised. However, there is a small but important example of a dynamic dune system in its early, mobile phase at the mouth of Bembridge Harbour. A small, but remarkable perched sand dune occurs on a cliff top at Ladder Chine on the south-west coast and this is addressed in the Maritime Cliffs HAP.

Sand dunes provide a unique habitat for a rich community of highly specialised plant and animal species. St Helen's Duver is the best local example; it supports the richest concentration of flowering plants per area of anywhere on the Island. With the increase in mild winters and warm, dry summers many plant and animal species characteristic of sandy soils are showing increases in populations and ranges. Sea buckthorn dune scrub is present on the spit dunes at the entrance to Bembridge Harbour.

The Island's scarce sand dune resource is currently under considerable pressure from recreational activities. At Bembridge Point, Bembridge Harbour Improvements Company carry out mineral extraction on the sandflats, dunes and subtidal area. This may be having an impact on the dune forming processes at the mouth of Bembridge Harbour.

2.1.5 Reed bed

Extensive reed beds are present in all estuaries on the Isle of Wight except Newtown. They are described more fully in the Wetlands Habitat Action Plan and in the case of the cliff face reed beds, by the Maritime Cliffs and Slopes Habitat Action Plan.

Substantial reed bed does, however, occur as part of a natural transition from saltmarsh habitat and in the upper reaches of estuaries as tidal influence is gradually reduced.

2.1.6 Club rush swamp

In brackish situations sea club-rush *Bolboschoenus maritimus* forms swamp vegetation. This is present on the Medina estuary, at Thorness Bay and from Brading Marshes to St Helens ledges. It is very fragmented on the Island and under threat from pollution and sedimentation as a result of intensive agricultural activity on the river edge.

Wetland habitats that fall within this category include areas of tall fen and marsh that occur on permanently wet ground, mostly within river valleys. These are covered in the Wetlands Habitat Action Plan.

2.1.7 Seagrass Beds

Intertidal sediments along the north coast of the Island can also support beds of three species of seagrass and these extend into the subtidal. All three species are nationally scarce and, additionally, extensive seagrass beds are highly productive because organic material released from decaying grass provides an important nutrient source for marine ecosystems.

Seagrass beds develop in intertidal and shallow subtidal areas on sands and muds. They may be found in marine inlets and bays but also in other areas such as lagoons and channels. The root systems of seagrass species stabilise and encourage accretion of the sediment on which they grow. These plants are an important source of organic matter, and provide shelter and attachment sites for other plants and animals, allowing interesting marine communities to develop. Infaunal communities within seagrass beds include some species not found in adjacent areas, with a number of sedentary species of plant and animal typically found attached to the leaves and free-living species occurring within the beds. Seagrass beds also support a large number of burrowing invertebrates, provide an important nursery and feeding ground for many fish species and a valuable food source for internationally important populations of waterfowl, particularly Brent Geese and Wigeon.

The Isle of Wight's seagrass resource has not yet been mapped but seagrass beds are largely on the north coast, including some at Bembridge Ledges. These extend into the sublittoral and are included within the Solent Maritime candidate SAC.

2.1.8 Saline Lagoons

Saline lagoons are pond- or lake-like, virtually tideless, shallow brackish or saline bodies of water separated or partly separated from the sea by a beach, spit or seawall, which allows only limited influx of seawater. They can retain various levels of salt producing brackish, saline or hyper saline water. Saline lagoons are a nationally rare habitat and a 'priority habitat type' under the Habitats Directive. They are one of the rarest habitats in the UK, where there are only about 360, occupying an area of no more than 5,200 hectares. In England, they are largely confined to the south and east coasts, where they are relatively transient features. The Solent and Poole Harbour area supports one of the highest densities of coastal saline lagoons in England. Between 1750 and 1900 (and probably earlier than this) many lagoons in the Solent area were used as salt pans for the commercial production of salt. Along the Isle of Wight's northern coastline, 8.5 hectares of saline lagoons have been identified. Although this is a small extent and a tiny proportion of the south-east resource, it includes some nationally important examples. The total figure does not include the 15 hectares of Wootton Millpond; this may be considered as a saline lagoon, or a partially tidal estuarine inlet.

All the Island's lagoons are included within Sites of Special Scientific Interest and due to their 'priority' status, 12 of the lagoons in the Solent region have been included within the Solent and Isle of Wight Lagoon Special Area of Conservation. The Yar Bridge Lagoon is not included in the Solent and Isle of Wight Lagoons SAC but lies within the Solent Maritime candidate SAC, for which saline lagoons are also a feature, and in the Solent and Southampton Water SPA and Ramsar site.

There are only a limited number of plants and animals able to tolerate the extreme conditions found within saline lagoons; but they include a significant number of specialists, which are not, or rarely, found elsewhere. Lagoons possess a characteristic invertebrate fauna that shows little regional variation, even within Europe. In Britain, several of these species are very rare and are protected under the Wildlife & Countryside Act 1981. These include the starlet sea anemone *Nematostella vectensis*, recorded, at high densities in the Yar Bridge Lagoon and Bembridge lagoon, and the lagoon sand shrimp *Gammarus insensibilis* found at Newtown and Bembridge.

True lagoons support only three types of aquatic vegetation – stands of green algae, sea-grasses and similar plants, and occasionally stoneworts. The foxtail stonewort *Lamprothamnium papulosum*, which occurs in the Bembridge Harbour lagoon, is protected under the Wildlife & Countryside Act 1981. However, much of the area of lagoon beds is bare sediment, devoid of vegetation. Natural lagoons are very rare; most of those in the Solent are formed from sluiced ponds or inlets. Despite their highly modified nature or artificial origins, these saline lagoons still provide a similar habitat to that of natural lagoons, with a comparable range of specialised species.

2.1.9 High Tide Roosts

High tide roosts are not so much a habitat type as an area used by waterbirds as a safe refuge at high tide. Undisturbed upper saltmarsh and coastal shingle are important high tide roosts but, in addition, some fields adjoining the Solent coast and offering uninterrupted sight-lines serve as high tide roosts for waders and waterfowl. They are an essential component of the land required by these species to maintain the Solent SPA in favourable condition.

2.2 Estuarine Species

The Island's estuaries and associated habitats are home to a rich diversity of plant and animal species of national or local importance. Ten species are listed within the UK BAP as being of national priority, 40 of national conservation concern and 81 of local conservation concern (see Table 2).

One priority mollusc species associated with the Island's estuaries is the native oyster *Ostrea edulis* found on sheltered muddy gravels. The Solent is one of the few places in the United Kingdom where natural beds of native oysters occur.

The nationally rare (Red Data Book) looping snail *Truncatella subcylindrica* is recorded on the eastern side of the northern face of the Freshwater causeway bridge at the levels of high water springs and above, and also at Kings Quay (Light and Killeen 2000)

Mediterranean Gull and Common Tern, SPA qualifying species, breed in Newtown estuary. The only national priority breeding bird species to occur on the Island's estuaries and associated habitats is the reed bunting.

Table 2: Status of estuarine species

Group\Priority	1 National priority	2 National Conservation Concern	3 Local Conservation Concern
Mammals	1*		
Birds	1	30	1
Fish		1	
Ants Bees and Wasps			1
Beetles	3		8
Crickets			1
Crustaceans	1		
Flies			3
Moths		1	11
Mollusc	2	3	3
Millipedes		1	
Sea anemone	1		1
Sea mat			1
Sponge			1
True bugs			6
Worms		1	1
Flowering plants		3	43
Stonewort	1		
TOTAL	10	40	81

* Otter is a vagrant species at Newtown

2.3 Distribution and Extent

The total extent of most of the Island's estuarine and associated habitats has been mapped as part of the Isle of Wight Biodiversity Audit and Assessment (IWC, 2000). The results of this are summarised in Table 3

Table 3: Extent of estuarine habitats on the Isle of Wight

BAP habitat type	Area (ha)	Within estuaries	Along Solent shore
Salt marsh	159	157.8	1.2
Mudflats	379	270.19	99.46
Sand flats	459.9	0	459.9
Coastal Vegetated shingle	4.06	2.63	1.43
Coastal Sand Dune	15.36	15.36	0
Reedbed (in estuaries)	32.03	32.03	-
Club rush swamp	5.46	5.46	0
Sheltered muddy gravels	not mapped	present	present
Seagrass Beds	not mapped	?	present
Saline Lagoons	8.47	present	-

2.4 Legislation and Site Designation

The Island's estuaries are all contained within the Solent European Marine Site that incorporates important species and habitats throughout the Solent. The site incorporates the Solent Maritime candidate Special Area of Conservation, Solent and Southampton Water Special Protection Area and Ramsar Site, Chichester and Langstone Harbours Special Protection Area and Ramsar Site and Portsmouth Harbour Special Protection Area and Ramsar Site.

A large proportion of estuarine habitat on the Island has been notified as Sites of Special Scientific Interest (SSSI) or designated through the Unitary Development Plan as Sites of Importance for Nature Conservation (SINC).

A summary of estuarine and associated habitats present within the main SSSI and SINC on the Island is summarised in tables 4 and 5.

Table 4: Distribution of estuarine habitat within SSSIs

Site name	Saltmarsh	Mudflats	Sand flats	Coastal vegetated shingle	Coastal sand dune	Reedbed	Club rush swamp	Sheltered muddy gravels	Saline lagoons	Seagrass beds
Yar estuary	43.82	28.87	0	0	0.6	6.63		0	0.43	
Newtown Harbour	81.98	159.35	50.48	2.15	0				0.65	
Medina estuary	4.33	61.37	0	0.01	0	0.69	2.79	present	0	
Kings Quay shore	4.73	18.72	29.37	0.28	0	2.39			0	present
Ryde Sands and Wootton Creek	0.23	79.66	303.26	0.69	0	1.97	0		1.71 (Seaview Duver)	present
Bridlesford Copse	5.71	0	0	0	0			0		
Brading Marshes to St Helens Ledges	12.29	18.59	49.77	0.10	14.67	10.54	0.26		5.68	
Thorness Bay	1.18		0	0.47	0	2.92	1.71	present	0	
Bouldnor and Hamstead Cliffs	0	0	11.70	0	0				0	present

Table 5: Distribution of estuarine habitats in SINCs

SINC number	SINC name	Area ha	Principal habitat	Subsidiary habitat
199	Little Werrar Wood	5.33	Woodland	saltmarsh 0.50
242	Waterclose Copse	9.97	Woodland	saltmarsh 0.64
221	The Old Mill Pond Wootton	14.30	Open water	mud 10.48 saltmarsh 0.16
200	Heathfield Meadows	31.61	Semi-improved grassland	saltmarsh 1.94
214	Ryde Canoe Lake	1.83	Open water	sand dune 0.09
132	Osborne Estate	199.89	Semi- improved grassland and woodland	vegetated shingle 0.36 Sand flats 4.32; Seagrass beds
233	Shrape Muds	7	Sandflats	Seagrass beds

Additionally there are small fragments of saltmarsh habitat in the Medina Estuary that lie outside any designated site.

2.5 Summary of Important Sites

Most coastal and estuarine habitats of biodiversity importance are covered by Site of Special Scientific Interest designation down to the mean low water mark. One exception to this is the

subtidal species of *Zostera* that generally lies outside the SSSI designation, although some populations fall within the boundary of the candidate Solent European Marine Site, which incorporates 'mud and sand banks not covered by seawater at low tide' as one of its features of interest.

The Solent and Southampton SPA (which includes a complex of sites in Hampshire and the Isle of Wight) is of European and national importance for breeding gulls and terns and wintering waterfowl (supporting a mean of over 20,000 wildfowl and nearly 30,000 waders). All of these areas are also Ramsar sites designated as 'Wetlands of International Importance especially as Wildfowl Habitat'.

A large proportion of the Island's northern coast falls within the Solent Maritime candidate Special Area of Conservation designated under the EC Habitats and Species Directive. This is designated for the following habitats of European importance: Atlantic salt meadows (perennial saltmarsh vegetation, for which this is one of the best areas in the United Kingdom); Cord Grass (*Spartina*) swards; mudflats and sandflats not covered by seawater at low tide; *Salicornia* and other annuals colonising mud and sand; Sandbanks which are slightly covered by seawater all the time; and Annual vegetation of drift lines. There is also a Solent and Isle of Wight Lagoons SAC which contains some of the Island's Saline Lagoons and areas of brackish ditches with lagoonal communities inside coastal wet grassland.

The network of European designations within the Solent region are collectively known as the Solent European Marine Sites and a management plan is currently being drawn up to ensure the activities that take place within them are managed appropriately.

3 Current Factors affecting the habitat

The estuarine system is subject to a high degree of natural change but is particularly interdependent. In assessing the importance of issues relating to estuaries, the combined impact of activities also needs to be considered.

Many estuarine and coastal habitats face similar threats. Below are a number of generic factors with specific details of those habitats particularly at risk.

3.1 Rising Sea Level and Coastal Squeeze

Rising sea level poses a significant threat to the Island's coastal and estuarine habitats. Studies suggest that the effect on the Isle of Wight will be particularly pronounced due to the combination of climate change and gradual sinking of land in the region caused by isostatic movements since the last ice age.

The CHaMPs study suggested a rise of 2mm per year rising to 6.5mm / year over the next 50 years (Bray and Cottle, 2003) The SCOPAC study suggests a rise of mean sea level of 54cm and a rise of extreme sea level (incorporating a 1:50 year surge of 84cm by 2080s (Hosking and Moore, 2001). A trend towards increased storm frequency is also anticipated.

Although the scale of these trends is still uncertain, the overall result of this relative sea level rise is the landward movement of both low water and high water marks. 'Coastal squeeze' is a process by which the intertidal habitats are forced landward by higher tides but are unable to move inland to compensate and are 'squeezed out' of existence. This may occur where hard structures such as coastal defence, urban developments, cultivated land or other maritime land use limit the inland development of coastal habitats above the high water mark. On a natural coastline, in the absence of such barriers, it would be possible for the whole of the intertidal area to move inland providing opportunities for the growth of saltmarshes higher on the coast and development of a broader and more stable intertidal area. It is likely that if a programme of managed retreat or coastal realignment is not implemented, much of the Solent's saltmarsh resource will be lost over the next few decades.

Sea level rise and coastal squeeze will cause further pressures on existing and potential saline lagoons through flooding, percolation and infiltration and by reducing the area of the low-lying coastal fringe habitats that are suitable for their establishment. There may also be increasing pressures for reinforcement of seawalls or managed retreat at the expense of existing lagoons.

The habitats covered in this HAP are amongst those most badly affected by coastal squeeze, although the issue is also covered by the Habitat Action Plans for Maritime Cliffs and Wetlands. The Island is predicted to see a loss of intertidal habitats in the future and this is likely to be preceded by an increase in the area of intertidal mudflats.

Managed retreat or managed realignment is seen as the only sustainable solution to sea level rise but this may result in the loss of brackish or freshwater habitats if they are not also able or allowed to migrate inland. Options for managed retreat are restricted by the large amount of coastal land that has been developed for industry or housing and is of too high an economic value to be abandoned. Decision-makers and landowners must decide, within provisions of the Habitats Regulations, whether valuable semi-natural habitats (particularly coastal wet grassland and saline lagoon) should be sacrificed for the re-establishment of saltmarsh, when it proves impossible to move all coastal and transitional habitats inland. Implementation of such a project would be subject to the satisfactory outcome of a feasibility study, the ability to gain control of necessary land and adequate finance being available.

3.2 Sediment Supply

The balance between erosion and accretion of coastal habitats is determined primarily by the local sediment budget. This may be affected by coast protection works, or by changes in estuary morphology caused by land claim, dredging of shipping channels and flood defence works. Such changes may occur over tens or hundreds of years following the activities that originally caused them.

The health and ongoing development of coastal sediment features depend on a continuing supply of new sediment, usually from eroding coastlines and river sources further up the coast.

Very few sand dune systems are in overall equilibrium, the majority in the UK are eroding as a result of insufficient sand supply. Such changes may be cyclical, not only seasonally but also annually and over longer periods of time. Replenishment of shingle may occur sporadically as a response to storm events rather than continuously.

Human activities can lead to materials being released for 'natural' replenishment. Management techniques such as beach recharge may be successful, and may even be used to re-circulate material sustainably within a dynamic coastal cell. Mechanical re-profiling is unlikely to be successful in the long term, as it does not address the need to supply new material.

The size of the Island's sand dune resource means that large-scale restoration techniques are often inappropriate. Smaller scale management techniques such as replanting of stabilising grasses are likely to be more effective.

Ways of using dredged material beneficially for habitat recreation are being explored, and such requirement is now often included under the terms of dredging licences, although it is yet to be proved effective in the Solent.

3.3 Water quality

Water quality can have a significant impact on coastal and estuarine habitats, particularly those in enclosed areas. The Island's tidal and estuarine waters are generally of good quality but there are a number of factors that affect it.

Pollution from agricultural and urban run-off, anti-fouling chemicals and sewage and industrial discharges (historic and present) has affected water and habitat quality.

The Medina is the only one of the Island's estuaries that supports major industrial use and the only one with a significant treated sewage input, from the Fairlee treatment works.

Water quality is monitored by the Environment Agency to look at trends in chemical and biological quality. The past decade has seen a general improvement in water quality on the Island. Of the 88 km total length of monitored rivers, 27 km has shown a significant improvement over the period whilst only 2 km has decreased in quality. Stretches of water courses with decreased water quality are likely to be investigated by the Environment Agency from 2003/2004 onwards.

Other forms of pollution are associated with agriculture, and include diffuse sources of phosphate, nitrate and pesticides, as well as silt and sediment eroded from fields and leakage of silage effluent. These diffuse sources of pollution can be difficult to control, and require catchment-based land management strategies and advice to farmers if they are to be resolved.

The 'SeaClean Wight' project undertaken by Southern Water, which includes secondary treatment, has resulted in a significant improvement in the quality of discharge into coastal waters. The input of a large number of unconsented septic tank discharges and storm overflow systems has yet to be comprehensively addressed although the Environment Agency is tackling this on an environmental risk basis as resources become available.

In the past much of the pollution was from point sources and there has been significant improvement in the identification and improvement of the quality of the discharge. Non-point sources such as from atmospheric pollution, and agricultural run-off and industrial leachate are now considered to be a more significant source of pollution and a more difficult to reduce.

There have been high nutrient levels indicated by monitoring in the Solent Area. Excessive plant growth (anoxic events and blooms of nuisance algae) can be a consequence of nutrient enrichment. Green algae are important primary producers in estuaries but in conditions of high nutrient levels they can form dense, smothering mats on mudflats, which can lead to highly anaerobic conditions in the underlying mud and to changes in the biomass and composition of benthic fauna. This increase has implications for the fish and birds that feed on the benthic fauna but too few nutrients will affect some bird populations that thrive on the artificially high biomass.

There is increasing concern that algal mats of *Enteromorpha* spp, are remaining on the mudflats for a longer time and are becoming more expansive. Although subject to seasonal variations, a gradual increase over a number of years may be due to increased nutrients in the water and the extent of change should be monitored.

The Solent is an important waterway for oil tankers and other shipping and tankers from the major ports of Southampton, Portsmouth and the oil refinery in Southampton Water. Spills could occur from all shipping, including the ferry traffic to and from the Island. Each Harbour Authority has a contingency plan in place to deal with such an event and there is an agreement between authorities to assist each other.

Hormone-disrupting chemicals can be a chronic problem for estuary life, the impact of which is not fully quantified. One useful indicator species of such contamination is the dog-whelk *Nucella lapillus*. A report in 1994 found good evidence to suggest that tributyl tin from the recreational craft in the Solent area is responsible for the elimination of dog-whelks from around the Isle of Wight which had been observed by Herbert, (1988). The results of surveys from around the Island's coast in May 1992 showed that the Medina estuary had the highest concentrations of TBT (10.5 ng Sn l⁻¹). Significant contamination was also detected along the north-east coast between Bembridge Harbour and Cowes, and in the Western Solent near Yarmouth (Langston *et al* 1994.). Some degree of recovery has been documented by further survey work (Bray and Herbert 1998).

Mudflats, seagrass and their associated species are particularly vulnerable to pollution incidents such as oil spills, to sewage and industrial discharges and to the input of tributyltin and other antifoulants. The long history of such activities has left a legacy of heavily polluted sediments.

Seagrasses are known to accumulate tributyl tin and possibly other metals and organic pollutants and may pass these on to grazers such as brent geese. These and other substances may reduce nitrogen fixation and affect the viability of these plants (Hampshire County Council, 2001). Water quality is also affected by the factors outlined in the following five sections.

3.4 Recreational Pressure

Increasing recreational pressure on the coast has probably the greatest impact on biodiversity.

The Solent coast is a major centre for recreational yachting and the coastline and harbours of the Isle of Wight are extremely popular, particularly in the main season from April to September and during Cowes week in August. This intensity of use may increase pollution as discharge from boats includes sewage and 'grey' water possibly containing detergents and engine emissions. It may also increase the incidence of marine litter.

As well as monitoring, one of the steps necessary to improve water quality is to tackle it at the source and through a combination of education and provision of facilities. In doing so the potential increase in damage from these sources could be reduced. Marinas and harbours are being encouraged to provide appropriate facilities as part of the 'Greener marinas' project. Environmental codes of practice are being developed by organisations such as the RYA.

Other recreational activities such as walking, kayaking and angling can cause damage to habitats such as saltmarsh, mudflats and vegetated shingle due to trampling and the introduction of synthetic materials and results in disturbance to nesting, feeding and roosting birds. The litter left behind after angling competitions has been identified as an issue on the Medina Estuary.

The increasing recreational pressure at Norton Spit is thought to have a major impact on the SSSI. English Nature and Yarmouth Harbour Commissioners are working together to develop a Site Management Statement that will allow recreational use but minimise the impact it has on the site.

3.5 Changing land use and management

Changes in land use, land claim and coastal defence works have all had a major impact on coastal biodiversity over hundreds of years. Some of these activities have resulted in the development or extension of habitats such as the expansion of saltmarshes after the creation of the breakwater at Yarmouth Harbour. Many habitats that have increased in area in this way are now considered to be of considerable importance for the species they support.

The construction of artificial coastal works along many sections of coast has stabilised cliffs and prevented flooding and erosion of low-lying land above the high water mark. Some of these activities have reduced the supply of sediments from the land that would feed other parts of the coastal system, particularly saltmarshes and intertidal mudflats.

The processes which lead to the natural development of some types of lagoons tend to be inhibited by human activities. The formation of new lagoons will not keep pace with the process of lagoon loss. The main factors affecting the habitat are natural succession, infilling, sea level rise, pollution and the repair of flap-valves.

In the past, land claim was primarily for agricultural purposes and salt production. In the Solent it is estimated that 3,655 ha of saltmarshes and mudflats have been embanked, 90% of this between 1600 and 1900 (Hampshire County Council, 2001). More recently arable intensification, land claim, recreational, urban, port and industrial developments have resulted in habitat loss.

Losses of intertidal and coastal habitats on the Island are directly as a result of development or land claim or the consequence of a change in the flow of water or supply of sediment. In a study carried out on the Western Yar in 1999 (Pethick, 1999) it is suggested that current changes in estuarine habitats are a consequence of changes to the shape of the harbour as the estuary tries

to regain its equilibrium. A report by ABPMer (February 2003) concluded that the saltmarshes have undergone relatively little change.

On the Island, land reclamation has taken place over a number of previous tip sites. This has led to uncertainty about the contents of the old tips and their suitability for development. There is also concern about pollutants leaching out of the site into the watercourse. The Western Yar has seen significant land claim on two former tip sites, one on each bank. The Medina has seen more development related to maritime industries and is under considerable pressure to cope with the increasing demand for recreational use alongside a need for regeneration of industrial sites.

The Medina Valley is the focus of a development strategy ('Cowes Waterfront') to encourage investment and appropriate use of the allocated sites that are available for redevelopment.

3.6 Dredging and dumping

Capital and maintenance dredging of shipping channels, berthing areas such as marinas and marine aggregate dredging can disrupt natural coastal sediment processes, including the movement of sediment between intertidal and subtidal areas. This disruption of natural processes is exacerbated when capital and maintenance dredgings are dumped outside the Solent and unable to return to feed coastal processes there.

Sediment supply to estuaries is important in maintaining the balance of habitats they support. It is likely to be an increasingly important issue as an increased supply of sediment may help to partially counter-act the effects of sea level rise on estuarine and coastal habitats.

One way that dredging might be used to achieve this aim is to keep the dredged material within the estuarine system through some kind of alternative or beneficial use. This may take the form of bed levelling, intertidal recharge or recreation of habitats for example but there are a number of issues that arise from this approach. A number of studies are underway on the Island to look into the possibility of using dredged material in an alternative manner.

3.7 Fisheries and Bait collection

A number of recreational and commercial fisheries activities may cause physical disturbance on coastal habitats and have a direct impact on the species they support. Trampling, bait collection, bivalve dredging, the use of mobile fishing gear, shoreline species collection and anchoring have all been reported to cause habitat damage.

There is relatively little data on fish populations in the Island's estuaries and what information there is has not been collated despite the importance of estuaries as nurseries for commercially important fish species. The Environment Agency recently carried out a study into fish populations in the Medina Estuary and the Medina Valley Centre keep records of species found there. The Medina estuary is believed to have a rich diversity of fish species and is particularly important as a nursery area for juvenile bass.

Some of the Island's estuaries support the passage of migratory fish. Sea trout are known to frequent the Medina during their migration to and from fresh water. Little or no information is available concerning the distribution and health of migratory fish populations.

There are no major commercial fisheries operating in the estuaries themselves at present but a thriving Oyster fishery is present in the Solent and oyster fishing may return to the Medina when the condition of the oysters is fit for consumption.

3.8 Non-native and Introduced Species

The large volume of shipping in the Solent means it is susceptible to the introduction of non-native species from ballast water or anchor lines. Wireweed (*Sargassum muticum*) is an invasive species from the Pacific that appeared on the Isle of Wight in 1973, having spread to Britain from France. Wireweed is thought to have been transported to the Solent entangled on anchors or anchor lines. It competes with native species such as seagrass and is considered a nuisance in harbours, beaches and shallow waters.

The other major source of introductions is through the deliberate translocation of species for mariculture. The only instance of this on the Island is the use of Newtown estuary for cleansing clams reared in Southampton Waters. This is a relatively low-intensity operation. In Hampshire notable examples of mariculture include commercially harvested species such as the American clam *Mercenaria mercenaria* and Pacific oyster *Crassostrea gigas*. Some species may have been unintentionally introduced with these such as the soft clam *Mya arenaria*, slipper limpet *Crepidula fornicata*, and Japanese or Korean seasquirt *Styela clava*, all of which now dominate some native benthic communities on the Hampshire coast.

Deliberate introductions of non-native species are in violation of the Wildlife and Countryside Act, if undertaken without a licence, because of the damage that introductions may cause to native flora, fauna and habitats. Non-native species may have such fast growth rates, resilience to disease and to local predators that they have the potential to out-compete local species (fast-growing Wireweed, for example, could potentially shade out *Zostera* beds and displace native algae). If hybridisation occurs between introduced and native species, this may also lead to the loss of the latter if the hybrid is invasive.

4 Current Action

4.1 Site and Species Protection

Most of the important habitats on the Isle of Wight's Solent coastline are covered by Site of Special Scientific Interest (SSSI) designation. Much of it, particularly the estuaries, saltmarsh, lagoonal habitats and those areas of importance for bird populations, receives additional protection under existing or proposed international designations as Special Protection Area, Ramsar Site or Special Area of Conservation. Much of the Newtown estuary has also been designated as a National Nature Reserve

4.1.1 Site designation

There are currently no plans to notify new estuarine sites as SSSI or SINCA on the Isle of Wight.

4.1.2 Habitat management

There are limited opportunities to recreate coastal and estuarine habitats throughout the Solent and suitable areas are likely to come under increasing pressure as mitigation / compensation is sought for habitats lost to development. These areas are also under pressure from natural change such as sea level rise. It is likely that coastal and estuarine habitats will be lost due to coastal squeeze but in the short term those remaining can be managed and possibly enhanced to delay the loss. There will need to be some debate over the creation of new coastal and estuarine habitats if their creation would be detrimental to other existing habitats.

At Newtown an area of shingle bank has been fenced off to allow the vegetation to regenerate.

Some coastal habitats are a target habitat for the Environmental Stewardship Scheme, administered by Defra through the Rural Development Service (RDS). This scheme provides payments for maintaining and enhancing wetland habitats, although it is a competitive scheme and funding has to be prioritised. At Thorness Bay, a scheme for recreation of intertidal habitat through

managed retreat has been agreed with Defra, and a Stewardship agreement has been signed. Work is scheduled to start in the spring of 2004.

The forthcoming Eastern Yar Fluvial and Coastal Strategy will consider the implications of sea level rise and the future management of Brading Marshes and Bembridge Harbour.

More details of relevant habitat management can be found in the Wetlands Habitat Action Plan.

4.2 Survey, research and monitoring

Regular monthly counts of wildfowl, waders, gulls and certain other wetland birds have taken place as part of the British Trust for Ornithology's Wetland Bird Survey (WeBS) since 1969. The sites watched within the area covered by this Habitat Action Plan are:

Western Yar, Newtown, Medina, and Brading Harbour (including Brading/Bembridge Marsh), Ryde East Sands and Wootton Creek.

Despite the large number of regional coastal management initiatives in and around the Solent there is still a need for detailed local surveys, research and monitoring. There has been an increase in recent years in the number of studies undertaken on estuaries, particularly on the Medina. This has largely been through requirements for development proposals so that the statutory authorities can assess the possible impact when carrying out appropriate assessments and granting consents. Consequently the studies tend to focus on specific areas rather than on the estuary as a whole.

The Isle of Wight Estuaries Project also aims to encourage or facilitate the gathering of more information regarding the Island's estuaries. A number of studies are currently (2003) underway on the Medina Estuary relating to sustainable use, bird use and the impact of swinging moorings. Monitoring of the saltmarsh in the Western Yar is also proposed as part of Yarmouth Harbour Commissioners' sustainable dredging plan.

In 2002 the Environment Agency commissioned the consultancy Atkins to investigate the Isle of Wight's SAC saline lagoons in order to establish the potential impacts of the Environment Agency's consented discharges on the lagoons. In 2003, the Environment Agency commissioned a Solent-wide study of the current biological character of saline lagoons.

English Nature have undertaken site quality monitoring of all coastal SSSI on the Island in recent years and aim to ensure that 95% of all sites are in favourable or recovering condition by 2010. A CASI survey is also underway to provide baseline data on the extent of coastal habitats.

The Isle of Wight Centre for the Coastal Environment is involved in a strategic monitoring programme that is being funded by Defra along the whole of south-east England, covering all aspects of the coast.

Most of the actions contained within this plan should include an element of surveying, research or monitoring to ensure that the action is required, appropriate and successful.

4.3 Action for species

Appendix 1 gives details of species on the Isle of Wight found primarily in coastal and estuarine habitats. Action proposed in this Plan will be the principal means of conserving most of these species. In some cases, additional action plans and programmes will also contribute to conserving priority species.

4.4 Action through policy and legislation

There are a large number of national and regional initiatives and programmes that have an influence on the management of the Isle of Wight's coast. Many of these look at issues and actions throughout the Solent and the coasts of Hampshire, West Sussex and Dorset. They range from local planning policy to the management of the Solent European Marine Sites.

The Standing Committee on Problems Associated with the Coastline (SCOPAC), comprising the coastal local authorities of West Sussex, Hampshire, the Isle of Wight and Dorset aims to integrate initiatives at county planning level. The Solent Forum has brought together all national and local statutory bodies, user groups, academia, industry and the main voluntary organisations (over 60 organisations) in order to develop a common strategy (through consensus) for the management and conservation of the Solent. The Solent Forum is setting up a Solent Nature Conservation Group to co-ordinate action for biodiversity in the Solent. Co-ordination and integration of coastal management issues across the region is an essential element of the future of the Isle of Wight's coastal habitats.

Solent European Marine Sites (SEMS) Management Scheme

The European Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (generally known as the Habitats Directive) requires the maintenance or restoration of natural habitats and species of European interest at favourable conservation status. The identification and management of a network of sites of European importance (SACs and SPAs), known as Natura 2000 sites, is one of the main vehicles for achieving this. The Directive includes special provisions for European Marine Sites (SACs and SPAs which include areas of sea), particularly the production of a management scheme.

The Solent European Marine Site (SEMS) includes the Solent Maritime candidate SAC, the Solent and Southampton Water SPA, Portsmouth Harbour SPA, and Chichester and Langstone Harbours SPA. A Management Group of Relevant Authorities is currently preparing a management scheme for the Site. This will outline measures required to achieve the favourable conservation status of the Site by considering the impacts of current activities and their management. Plans and projects that require a license or permission from a competent authority will be assessed on a case-by-case basis through Habitats Regulations 48-50 and the requirement for appropriate assessments.

The management scheme will build on English Nature's Regulation 33 Advice on conservation objectives and operations that may cause deterioration and disturbance to habitats and species (English Nature, 2001) and will identify issues that need to be addressed by the Relevant Authorities to ensure the conservation status of the SEMS is maintained.

The Statutory SEMS Management Scheme will link into other current initiatives in the area including the Coastal Habitat Action Plans of the counties concerned.

Coastal Habitat Management Plans (CHaMPs)

CHaMPs, launched in April 2000, are intended to *"resolve situations where predictable changes to the coastline make it impractical or unsuitable to maintain all the components of a European or other international site in situ, and to meet their conservation objective, such as dynamic coasts where habitats are no longer able to respond to sea level rise"*.

The CHaMPS guidelines aim to develop a strategic approach to the holistic management of flood risk and internationally important wildlife sites. They may be applied to coastal sites of international nature conservation importance (SPAs and SACs) threatened by rising sea levels and coastal squeeze or to areas immediately adjacent to European or international sites.

The Project will seek opportunities for mitigation of net losses that are likely due to coastal defence actions. The aim is to maintain or protect *in situ* in the first instance and only to mitigate elsewhere where losses still persist or are otherwise likely. Habitats included are vegetated shingle, sand dune, saltmarsh, coastal grazing marsh, mudflat and saline lagoons.

The Isle of Wight Centre for the Coastal Environment has commissioned an Environmental Mitigation Strategy. This will identify potential sites for realignment around the coast and estuaries of the Island. The key aims and purpose of this study are to identify appropriate and realistic sites that will allow the Isle of Wight Centre for the Coastal Environment to put forward technical and environmentally sustainable solutions to shoreline management and coastal development.

The Environment Agency, English Nature and Hampshire County Council are developing a similar project on the Hampshire mainland, looking at habitat creation sites, and developing the CHaMP further.

The Centre for the Coastal Environment has commissioned a Coastal Evolution Study using overlays of current and historic aerial photographs. This will enable very precise measurements of coastal change to be measured using GIS.

Shoreline Management Plans (SMP)

Shoreline Management Plans cover a stretch of coastline and take account of the natural coastal sediment circulation cells. They address factors such as the geological structure of the coast, the natural processes which influence it, the land use in the area, development plans and the flood and erosion risks along the coast. The SMP proposes a strategy for the future approach to managing the coast in terms of holding the line, managed realignment or doing nothing. It looks ahead for up to fifty years but is subject to a five yearly review. The Isle of Wight SMP was completed in 1997, but its review has been delayed while guidance from Defra is awaited. It is hoped that Round two will commence in autumn 2004 and it is anticipated that the new SMP will have an increased regard for CHaMPS and Coastal Mitigation Studies and will consider a longer (100 year) timescale.

Coastal Defence Strategy Studies

The coastal defence strategies stem from the SMP and look in more detail at the coastline of the Isle of Wight, its current sea defences and the best approach for each section of coastline in the future. Such studies are now in progress for the whole of the Isle of Wight coast and also the Eastern Yar valley where a combined coastal and fluvial strategy is being developed between the Environment Agency and the Coastal Defence authority.

Estuary Management Plans

Estuary Management Plans were prepared for the Medina Estuary and the Western Yar Estuary in 1997 and 1998 respectively. Although originally part of a national initiative, these plans were developed through extensive consultation with local stakeholders. Many of the actions and objectives contained in the plans are administered and implemented by the Isle of Wight Estuaries Project. This is a partnership project between statutory authorities and the Harbour Commissions. The north-east coast study proposes an allocation of funding for an estuary management plan for Wootton Creek. Bembridge Harbour would also benefit from a Management Plan.

AONB Management Plan

Large sections of the Island's northern coastline and estuaries lie within the AONB. The management and protection of AONBs has been strengthened by the Countryside and Rights of Way Act 2000. The Act confers a duty on all Local Authorities with AONB within their area to formulate, adopt and publish an AONB Management Plan setting out their policies for the area and for carrying out their functions in relation to it. The Act has also placed a duty on all public bodies and statutory undertakers to 'have regard' to the purpose of conserving and enhancing the AONB, when exercising or performing their functions in relation to, or so as to affect an AONB. Areas of key coastal and estuarine habitat on the Island are contained within AONB designation. The AONB Unit seek to encourage a partnership approach to the conservation and enhancement of the AONB.

5 Objectives and Targets

These objectives are in line with national, regional and Solent-wide objectives and targets for coastal habitats. In order to ensure that actions are in line with and monitored across the Solent, progress on the actions will be fed into the Solent Nature Conservation Group, organised by the Solent Forum.

	Objectives	Proposed Actions
A	Maintain and enhance the present extent of estuarine and associated habitats.	1 – 12, 16 - 18
B	Encourage relevant authorities to seek opportunities for further estuarine habitat creation, in line with national targets and other Habitat Action Plans in the Solent area. Work with other authorities in the Solent area to identify possible areas of mitigation for sea level rise and help to maintain the integrity of the coastal system.	4, 6 –9, 18
C	Ensure the requirements of Isle of Wight estuarine BAP species are met and their populations maintained and where possible augmented through appropriate management.	13 – 15, 17 - 20
D	Improve knowledge of estuarine and associated habitats on the Island through survey research and monitoring and encourage the integration of this research and monitoring with similar work for relevant coastal management plans.	21 - 28
E	Communication, awareness and promotion: Promote the importance of estuaries and their habitats, the associated species and the threats to them to key sectors including statutory and voluntary organisations, coastal industries and user groups, landowners, community groups and the public to promote awareness of coastal habitats.	28 - 32

6 Proposed Action

The following table lists the actions required to achieve the objectives set out in this plan. Each action has been assigned to one or more Key Partners. Key Partners are those organisations that are expected to take responsibility for the delivery of the actions assigned to them, according to the targets set in this Plan. Other organisations may also be involved in the delivery of action and they have been indicated in the 'Others' column.

Key to symbols in Action Table:

- ◆ To be completed by the indicated year. Work can commence at any time before the due date, at the discretion of the key partner.
- ◆⇒ Design or production of a plan/strategy to be completed by this year and then followed by its implementation.
- ➡ To start by the indicated year and usually followed by ongoing work. A start arrow in year 2004 can indicate a new action or a new impetus to existing work.
- ⇒ Work that has already begun and is ongoing.

Key to Organisations in Action Table

IWC = Isle of Wight Council, EA = Environment Agency, EN = English Nature, Defra = Department for Environment, Food and Rural Affairs, WW = Wight Wildlife, HIWWT = Hampshire and Isle of Wight Wildlife Trust, WNF = Wight Nature Fund, NT = National Trust, CLA = Country Land and Business Association, NFU = National Farmers Union, RSPB, I2KT = Island 2000 Trust, AONB = IW AONB Project, SW = Southern Water, FWAG Farming and Wildlife Advisory Group IWC CCE = Isle of Wight Council Centre for the Coastal Environment

	ACTION	DELIVERY BY		YEAR						MEETS OBJ.	
		Key Partner	Others	2004	2005	2006	2007	2008	2014		
Habitat Protection											
1	Review the selection of SSSI to ensure all relevant sites are designated.	EN	ALL							➡	A
2	Ensure that all suitable habitats that meet SINC criteria are identified.	IWC	WW	⇒							A

	ACTION	DELIVERY BY		YEAR						MEETS OBJ.
		Key Partner	Others	2004	2005	2006	2007	2008	2014	
3	Support the review of the shoreline management plan to ensure that the habitats are afforded adequate consideration and protection.	IWC CCE	Steering Group members		◆					A
4	Seek to acquire existing and potential sites adjacent to estuaries for nature conservation management, particularly those that will facilitate habitat change to accommodate sea level rise	HIWWT/ RSPB/ NT	WNF	⇨						A, B
5	Seek to safeguard all estuarine habitats from development through forward planning and development control.	IWC/ Harbour Authorities/ Marine Consents Unit	EN, WW	⇨						A
6	Take opportunities to work with developers to promote habitat restoration and creation	IWC/EA/ EN	I2KT, WW	⇨						A, B
Habitat Management, Incentive Schemes and Other Resources										
7	Review all SSSI supporting estuarine habitats and ensure 95% by area are under favourable and appropriate management by 2010	EN	All public service bodies	⇨						A, B
8	Seek favourable and appropriate management of 75% of SINCs that support estuarine habitats.	WW, Defra, I2KT	ALL	⇨						A, B
9	Review extent and condition of SINCs bordering estuaries to assess progress towards objectives	IWC	WW				◆			A, B
10	Produce estuary management plans for Wootton Creek and Bembridge Harbour	Estuaries Partnership	Others				➔			A
11	Review Medina estuary management plans every five years	Estuaries Partnership						◆		A
12	Review Western Yar estuary management plan every five years	Estuaries Partnership		◆						A

	ACTION	DELIVERY BY		YEAR						MEETS OBJ.	
		Key Partner	Others	2003	2004	2005	2006	2007	2013		
13	Develop and incorporate management requirements for priority estuarine habitats and/or species and incorporate them when developing, revising and/or updating incentive schemes.	EN/ Defra	ALL	⇒							C
14	Review the potential for modifying agri-environment objectives to include control of soil erosion and diffuse pollution in estuaries	Defra	EA/EN/ WW/ RSPB		◆ ⇒						C
15	Encourage further uptake of agri-environment schemes in support of above actions and objectives.	Defra	WW/ I2KT	⇒							C
16	Develop sustainable dredging strategies for the estuaries including approaches to beneficial use.	Harbour Authorities, EN	Estuaries partnership	◆⇒							A
17	Work with Southern Water plc and others to reduce the impact of waste water discharges to estuaries in particular the impact of nutrients	EA	SW	⇒							A, C
18	Promote the appropriate and beneficial management of land adjacent to estuaries, particularly where this creates mosaics of bio-diverse habitats	DEFRA, Land-owners	WW/ I2KT/IWC/EN/ FWAG	⇒							A, B, C
Species Action											
19	Review status and distribution of fish populations in IW estuaries and develop strategy to conserve, restore and enhance native fish populations	EA		◆⇒							C
20	Seek to reduce or remove obstructions to fish migration where migratory fish populations are known to survive	EA		◆⇒							C
Survey, Research and Monitoring											
21	Produce a survey strategy for estuarine habitats to complement actions within this HAP.	EN	WW IWC	◆⇒							D
22	Implement a rolling re survey programme for estuarine SINC's	IWC	NT WW EN							➔	D

	ACTION	DELIVERY BY		YEAR						MEETS OBJ.
		Key Partner	Others	2003	2004	2005	2006	2007	2013	
23	Continue current monitoring programmes, to determine the condition of SAC lagoons and to monitor the impacts	EN, EA		⇨						D
24	Collate information on uptake of wetland and waterside land options in the vicinity of estuaries (water level, fen, reed bed, ditch management) of agri-environment schemes	Defra	WW/ EN	⇨						D
25	Monitor level of nutrient inputs of estuaries and assess relative contribution of point and diffuse discharges as part of Review of Consents under the Habitats Directive	EA	SW/EN Defra Land-owners			◆				D
26	Produce reports on results of fish population monitoring in IW estuaries with special reference to BAP and migratory species	EA		➔						D
27	Set up a working group to assess impact of recreational activities on estuarine habitats and species	WW	ALL	➔						D
Communication and Publicity										
28	Support and work with the Solent Forum Nature Conservation Group to ensure a Solent-wide approach is taken in the HAP	IWC	ALL	⇨						D, E
29	Compile an index of information sources and guidance on good management practices for estuarine habitats and associated priority species	HIWWT/ Estuaries Project		⇨						E
30	Promote the ecology and conservation requirements of estuarine habitats and associated priority species, particularly amongst farmers, landowners and their advisors.	WW Defra	IWC/ NFU/ CLA/ RSPB		➔					E
31	Raise awareness of incentive schemes and projects relevant to the management of land adjacent to estuaries	WW Defra	ALL	⇨						E
32	Increase public awareness of the Island's estuaries, by production of promotional material and encouragement of public access to appropriate sites. Include community involvement and flagship species	Estuaries Project/ I2KT/ AONB/RSPB	ALL	⇨						E

7 Sources of Information

ABP Marine Environmental Research Ltd. (2003) *Assessment of Estuary Processes and maintenance Dredging in Yarmouth Harbour*. Report for Yarmouth Harbour Commissioners.

Bray, M. and Cottle, R., (2003). *The Solent Coastal Habitat Management Plan, Volume 1*. Peterborough, Royal Haskoning.

Bray, S. and Herbert, R.J.H. (1998). *A Reassessment of Populations of the Dog-Whelk (Nucella lapillus) on the Isle of Wight following legislation restricting the use of TBT Antifouling paints*. Proceedings of the Isle of Wight Natural History and Archaeological Society. Vol.14. (23 – 40).

Covey, R. & Laffoley, D.d'A. (2002). *Maritime State of Nature Report for England: getting onto an even keel*. Peterborough, English Nature.

Department of the Environment, (1999). *UK Biodiversity Group Tranche 2 Action Plans. Volume V – maritime species and habitats*. Peterborough, English Nature on behalf of the UK Biodiversity Group.

English Nature, (1998). *Isle of Wight Natural Area Profile*. Peterborough, English Nature.

English Nature, (2001). *Solent European Marine Site: English Nature's advice given under Regulation 33 (2) of the Conservation (Natural Habitats &c.) Regulations 1994*. Peterborough, English Nature.

Hampshire County Council, (2001). *Biodiversity Action Plan for Hampshire: Volume Two. (September 2001)*. Winchester, Hampshire County Council.

Herbert, R. J. H. (1989) A survey of the dog-whelk *Nucella lapillus* (L.) around the coast of the Isle of Wight. *Proc. Isle Wight nat Hist. Soc.* 8(3): 15-21

Holme, N.A.and Bishop G.M.(1980) Survey of the littoral zone of the coast of Great Britain no. 5. Report on the sediment shores of Dorset, Hampshire and the Isle of Wight.

Hosking, A and Moore, R. (2001). *Futurecoast. Preparing for the Impacts of Climate Change; report for SCOPAC by Halcrow Ltd*. Swindon, SCOPAC.

Isle of Wight Biodiversity Action Plan Steering Committee. (2000). *Wildlife of the Isle of Wight: an Audit and Assessment of its Biodiversity*. Newport, Isle of Wight Council.

Isle of Wight Biodiversity Partnership. (2003). *Wetlands Habitat Action Plan*. Newport, Isle of Wight Council.

Isle of Wight Council, (2001). *Isle of Wight Unitary Development Plan 1996 – 2011* (adopted May 2001). Newport, Isle of Wight Council.

Joint Nature Conservation Committee, (1999). *The Implementation of Common Standards for Monitoring and Conservation Objectives*. Peterborough, JNCC.

Langston W. J., Bryan, G.W., Burt, E. R., and Gibbs, P.E. (1994) Assessing the impact of tin and TBT in estuaries and coastal regions. *Functional Ecology*, **4**: 433-443

Light, J.M. & Killeen, I.J. 2000. *Truncatella subcylindrica* (Mollusca: Prosobranchia) in the Solent Area: its distribution, status, and conservation. In Collins, M. & Ansell, K. (eds.) *Solent Science - A Review*. Elsevier Science BV, Amsterdam. 295-298.

Pethick, J.P., (1999). *The Western Yar: a preliminary sediment budget*. Report to Yarmouth Harbour Commissioners. Coastal Geomorphology Partnership, Department of Marine Science and Coastal Management, University of Newcastle Upon Tyne.

MUDFLATS

LATIN_NAME	ENGLISH_NAME	Group	BAP_STATUS	Rarity	Other habitats
<i>Anas crecca</i>	Teal (wintering)	Bird	2		Grazing marsh
<i>Anas penelope</i>	Wigeon (wintering)	Bird	2		Improved grassland
<i>Anas strepera</i>	Gadwall (wintering)	Bird	2		EUTROPHIC STANDING WATERS ♦
<i>Calidris alpina</i>	Dunlin (wintering)	Bird	2		SALTMARSH
<i>Calidris canutus</i>	Knot (wintering)	Bird	2		SALTMARSH
<i>Charadrius hiaticula</i>	Ringed plover (wintering)	Bird	2		COASTAL VEGETATED SHINGLE ♦
<i>Egretta garzetta</i>	Little egret	Bird	2		Broad-leaved mixed woodland
<i>Haematopus ostralegus</i>	Oystercatcher	Bird	3		COASTAL VEGETATED SHINGLE
<i>Limosa limosa</i>	Black-tailed godwit (wintering)	Bird	2		LOWLAND MEADOWS
<i>Numenius arquata</i>	Curlew (wintering)	Bird	2		Improved grassland
<i>Pluvialis apricaria</i>	Golden plover (wintering)	Bird	2		Improved grassland
<i>Pluvialis squatarola</i>	Grey plover (wintering)	Bird	2		SALTMARSH
<i>Tadorna tadorna</i>	Shelduck	Bird	2		MARITIME CLIFFS & SLOPES
<i>Tringa totanus</i>	Redshank	Bird	2		LOWLAND MEADOWS
<i>Vanellus vanellus</i>	Lapwing	Bird	2		Improved grassland

SALTMARSHES

LATIN_NAME	ENGLISH_NAME	CLASS	BAP_Status	Rarity	Other habitat
<i>Anas acuta</i>	Pintail (wintering)	Bird	2		Coastal waters ♦
<i>Anas penelope</i>	Wigeon (wintering)	Bird	2		MUDFLATS
<i>Branta bernicla</i>	Brent goose (wintering)	Bird	2		Grazing marsh
<i>Calidris alpina</i>	Dunlin (wintering)	Bird	2		MUDFLATS ♦
<i>Calidris canutus</i>	Knot (wintering)	Bird	2		MUDFLATS ♦
<i>Cygnus olor</i>	Mute swan	Bird	2		Fen marsh and swamp ♦
<i>Larus melanocephalus</i>	Mediterranean gull	Bird	2		Littoral sediment ♦

1= National BAP Priority species 2= Species of National Conservation Concern 3= Species of Local Conservation Concern Habitats in CAPITALS are Priority Habitats in the UK biodiversity Action Plan ♦ indicates the primary habitat of a species

LATIN_NAME	ENGLISH_NAME	CLASS	BAP_Status	Rarity	Other habitat
<i>Limosa lapponica</i>	Bar-tailed godwit (wintering)	Bird	2		Littoral sediment ♦
<i>Numenius arquata</i>	Curlew (wintering)	Bird	2		MUDFLATS ♦
<i>Pluvialis apricaria</i>	Golden plover (wintering)	Bird	2		MUDFLATS
<i>Pluvialis squatarola</i>	Grey plover (wintering)	Bird	2		MUDFLATS ♦
<i>Anisodactylus poeciloides</i>	A ground beetle	Beetle	1	pRDB	
<i>Metrioptera roeselii</i>	Roesel's Bush-cricket	Crickets and Grasshoppers	3		
<i>Atylotus latistriatus</i>	A horsefly	Flies	p 3		
<i>Haematopa grandis</i>	A fly	Flies	p 3		
<i>Myopites eximia</i>	A gall-fly	Flies	3		COASTAL VEGETATED SHINGLE
<i>Trachysphaera lobata</i>	A millipede	Millipedes	2		COASTAL SAND DUNES ♦
<i>Apamea oblonga</i>	Crescent Striped	Moth	3		FENS
<i>Mythimna favicolor</i>	Mathew's Wainscot	Moth	2		
<i>Scopula emutaria</i>	Rosy Wave	Moth	3		
<i>Aphrodes aestuarinus</i>	A leafhopper	True bug	3		
<i>Macrosteles fieberi</i>	A leafhopper	True bug	3		Fen marsh and swamp
<i>Oliarus leporinus</i>	A froghopper	True bug	3		
<i>Paralimnus phragmitis</i>	A leafhopper	True bug	3		Fen marsh and swamp
<i>Alopecurus bulbosus</i>	Bulbous Foxtail	Flowering plant	3		Grazing marsh ♦
<i>Althaea officinalis</i>	Marsh Mallow	Flowering plant	3		
<i>Bupleurum tenuissimum</i>	Slender Hare's-ear	Flowering plant	3		
<i>Carex divisa</i>	Divided Sedge	Flowering plant	3		Grazing marsh
<i>Carex extensa</i>	Long-bracted Sedge	Flowering plant	3		
<i>Frankenia laevis</i>	Sea-heath	Flowering plant	3		COASTAL VEGETATED SHINGLE
<i>Inula crithmoides</i>	Golden Samphire	Flowering plant	3		COASTAL VEGETATED SHINGLE
<i>Limonium humile</i>	Lax-flowered Sea Lavender	Flowering plant	3		
<i>Parapholis incurva</i>	Curved Hard-grass	Flowering plant	3		MARITIME CLIFFS & SLOPES
<i>Puccinellia distans</i>	Reflexed Saltmarsh-grass	Flowering plant	3		
<i>Puccinellia rupestris</i>	Stiff Saltmarsh-grass	Flowering plant	3		
<i>Salicornia pusilla</i>	One-flowered Glasswort	Flowering plant	3		

1= National BAP Priority species 2= Species of National Conservation Concern 3= Species of Local Conservation Concern Habitats in CAPITALS are Priority Habitats in the UK biodiversity Action Plan ♦ indicates the primary habitat of a species

LATIN_NAME	ENGLISH_NAME	CLASS	BAP_Status	Rarity	Other habitat
<i>Sarcocornia perennis</i>	Perennial Glasswort	Flowering plant	3		
<i>Seriphidium maritimum</i>	Sea Wormwood	Flowering plant	3		
<i>Spartina maritima</i>	Small Cord-grass	Flowering plant	3		
<i>Spartina x townsendii</i>	Townsend's Cord-grass	Flowering plant	3		

COASTAL VEGETATED SHINGLE

LATIN_NAME	ENGLISH_NAME	CLASS	BAP_Status	Rarity	Other habitat
<i>Charadrius hiaticula</i>	Ringed plover (wintering)	Bird	2		MUDFLATS
<i>Haematopus ostralegus</i>	Oystercatcher	Bird	3		MUDFLATS ♦
<i>Sterna albifrons</i>	Little tern	Bird	2		Coastal waters
<i>Sterna hirundo</i>	Common tern	Bird	2		Coastal waters
<i>Agriotes sordidus</i>	A click beetle	Beetle	3	pRDB	
<i>Apion matricela</i>	A weevil	Beetle	3	EN	
<i>Dromius vectensis</i>	A ground beetle	Beetle	3	pRDB	MARITIME CLIFFS & SLOPES
<i>Halobrecta princeps</i>	A rove beetle	Beetle	3	RDB 1	MARITIME CLIFFS & SLOPES
<i>Medon pocoferus</i>	A rove beetle	Beetle	3	RDB 1	MARITIME CLIFFS & SLOPES ♦
<i>Medon ripicola</i>	A rove beetle	Beetle	3		COASTAL SAND DUNES ♦
<i>Myopites eximia</i>	A gall-fly	Flies	3		SALTMARSH ♦
<i>Dolicharthria punctalis</i>	Long-legged China-mark	Moth	3		LOWLAND CALCAREOUS GRASSLANDS ♦
<i>Synaphe punctalis</i>	Long-legged Tabby	Moth	3		COASTAL SAND DUNES
<i>Crambe maritima</i>	Sea Kale	Flowering plant	3		
<i>Frankenia laevis</i>	Sea-heath	Flowering plant	3		SALTMARSH ♦
<i>Hyoscyamus niger</i>	Henbane	Flowering plant	3		COASTAL SAND DUNES ♦
<i>Inula crithmoides</i>	Golden Samphire	Flowering plant	3		SALTMARSH ♦
<i>Lactuca virosa</i>	Great Lettuce	Flowering plant	3		Built-up areas and gardens
<i>Polygonum maritimum</i>	Sea Knotgrass	Flowering plant	2	EN	
<i>Polygonum oxyspermum</i>	Ray's Knotgrass	Flowering plant	3		
<i>Salsola kali</i>	Prickly Saltwort	Flowering plant	3		

1= National BAP Priority species 2= Species of National Conservation Concern 3= Species of Local Conservation Concern Habitats in CAPITALS are Priority Habitats in the UK biodiversity Action Plan indicates the primary habitat of a species

SAND DUNES

LATIN_NAME	ENGLISH_NAME	CLASS	BAP_STATUS	RARITY	Other habitat
<i>Drypta dentata</i>	A ground beetle	Beetle	3	RDB1	
<i>Harpalus cordatus</i>	A ground beetle	Beetle	1	pRDB	
<i>Medon ripicola</i>	A rove beetle	Beetle	3		COASTAL VEGETATED SHINGLE
<i>Trachysphaera lobata</i>	A Millipede	Millipedes	2		MARITIME CLIFFS & SLOPES ♦
<i>Agrotis ripae</i>	Sand Dart	Moth	3		
<i>Eupithecia millefoliata</i>	Yarrow Pug	Moth	3		
<i>Mythimna litoralis</i>	Shore Wainscot	Moth	3		
<i>Phibalapteryx virgata</i>	Oblique Striped	Moth	3		
<i>Synaphe punctalis</i>	Long-legged Tabby	Moth	3		COASTAL VEGETATED SHINGLE ♦
<i>Trigonotylus psammaecolor</i>	A mirid bug	True bug	3		
<i>Tuponia carayoni</i>	A capsid bug	True bug	3	VU	
<i>Anisantha diandra</i> *	Great Brome	Flowering plant	3		
<i>Anthriscus caucalis</i>	Bur Chervil	Flowering plant	3		
<i>Calystegia soldanella</i>	Sea Bindweed	Flowering plant	3		
<i>Dianthus deltoides</i>	Maiden Pink	Flowering plant	3		
<i>Elytrigia juncea</i>	Sand Couch	Flowering plant	3		
<i>Eryngium maritimum</i>	Sea Holly	Flowering plant	3		
<i>Euphorbia paralias</i>	Sea Spurge	Flowering plant	3		
<i>Hyoscyamus niger</i>	Henbane	Flowering plant	3		COASTAL VEGETATED SHINGLE
<i>Hypochaeris glabra</i>	Smooth Catsear	Flowering plant	2		
<i>Moenchia erecta</i>	Upright Chickweed	Flowering plant	3		LOWLAND DRY ACID GRASSLAND
<i>Phleum arenarium</i>	Sand Cat's-tail	Flowering plant	3		

1= National BAP Priority species 2= Species of National Conservation Concern 3= Species of Local Conservation Concern Habitats in CAPITALS are Priority Habitats in the UK biodiversity Action Plan ♦ indicates the primary habitat of a species

LATIN_NAME	ENGLISH_NAME	CLASS	BAP_STATUS	RARITY	Other habitat
<i>Poa bulbosa</i>	Bulbous meadow grass	Flowering plant	3		MARITIME CLIFFS & SLOPES
<i>Scilla autumnalis</i>	Autumn Squill	Flowering plant	3		
<i>Silene uniflora</i>	Sea Campion	Flowering plant	3		MARITIME CLIFFS & SLOPES ♦
<i>Trifolium arvense</i>	Haresfoot Clover	Flowering plant	3		Arable & horticultural
<i>Trifolium glomeratum</i>	Clustered Clover	Flowering plant	3		MARITIME CLIFFS & SLOPES
<i>Trifolium suffocatum</i>	Suffocated Clover	Flowering plant	3		LOWLAND DRY ACID GRASSLAND
<i>Vulpia ciliata ssp. ambigua</i>	Bearded Fescue	Flowering plant	3		
<i>Vulpia fasciculata</i>	Dune Fescue	Flowering plant	3		

REEDBEDS

Latin Name	English Name	Group	BAP Status	Rarity	Other habitat
<i>Acrocephalus schoenobaenus</i>	Sedge warbler	Bird	2		ANCIENT AND/OR SPP RICH HEDGEROWS
<i>Acrocephalus scirpaceus</i>	Reed warbler	Bird	2		Fen marsh and swamp
<i>Cettia cetti</i>	Cetti's warbler	Bird	2		Fen marsh and swamp
<i>Emberiza schoeniclus</i>	Reed bunting	Bird	1		Fen marsh and swamp
<i>Rallus aquaticus</i>	Water rail	Bird	2		Fen marsh and swamp
<i>Psen atratinus</i>	A solitary wasp	Ants, Bees and Wasps	P3	RDB 2	MARITIME CLIFFS & SLOPES ♦
<i>Vertigo moulinsiana</i>	A snail	Mollusc	1	RDB 3	FENS ♦
<i>Chilodes maritimus</i>	Silky Wainscot	Moth	3		
<i>Simyra albovenosa</i>	Reed Dagger	Moth	3		
<i>Carex pseudocyperus</i>	Cyperus sedge	Flowering plant	3		FENS ♦
<i>Ranunculus lingua</i>	Greater Spearwort	Flowering plant	3		FENS ♦

SHELTERED MUDDY GRAVELS

Latin Name	English Name	Group	BAP Status	Rarity	Other habitat
<i>Arenaria interpres</i>	Turnstone	Bird	2		Littoral rock

1= National BAP Priority species 2= Species of National Conservation Concern 3= Species of Local Conservation Concern Habitats in CAPITALS are Priority Habitats in the UK biodiversity Action Plan ♦ indicates the primary habitat of a species

Latin Name	English Name	Group	BAP Status	Rarity	Other habitat
<i>Ostrea edulis</i>	Native oyster	Mollusc	1		

SEAGRASS BEDS

Latin Name	English Name	Group	BAP Status	Rarity	Other habitat
<i>Zostera marina</i>	Eel grass	Flowering Plant	2		
<i>Z. angustifolia</i>	Narrow-leaved eel grass	Flowering Plant	3		
<i>Z. noltii</i>	Dwarf eel-grass	Flowering Plant	3		

SALINE LAGOONS

Latin Name	English Name	Group	BAP Status	Rarity	Other habitat
<i>Paracymus aeneus</i>	A water beetle	Beetle	1		
<i>Gammarus insensibilis</i>	Lagoon sand shrimp	Crustacean	1		
<i>Cerastoderma glaucum</i>	Lagoon cockle	Mollusca	3		
<i>Hydrobia ventrosa</i>	Lagoon snail	Mollusc	2		
<i>Nematostella vectensis</i>	Starlet sea anemone	Sea anemone group	1		
<i>Alkmaria romijni</i>	Tentacled worm	Worm	2		
<i>Ruppia cirrhosa</i>	Spiral tasselweed	Flowering Plant	3		
<i>Lamprothamnion papulosum</i>	Foxtail stonewort	Stonewort	1		

LITTORAL AND INSHORE SEDIMENTS

Latin Name	English Name	Group	BAP Status	Rarity	Habitat
<i>Calidris maritima</i>	Sanderling (Wintering)	Bird	2		Littoral sediment
<i>Chlamys varia</i>	Variable scallop	Mollusc	3		Inshore sediment
<i>Suberites massa</i>	A sponge	Sponge	3		Inshore sediment
<i>Maxmulleria lankesteri</i>	A spoon worm	Worm	3		Inshore sediment

SUPRALITTORAL, LITTORAL AND INSHORE ROCK

Latin Name	English Name	Group	BAP Status	Rarity	Habitat
<i>Truncatella subcylindrica</i>	Looping snail	Mollusc	2		
<i>Nucella lapillus</i>	Dog whelk	Mollusc	2		Littoral rock
<i>Aeolidiella alderi</i>	Sea slug	Mollusc	3		Littoral rock
<i>Amathia provoti</i>	Sea mat	Sea mat	3		Littoral rock

1= National BAP Priority species 2= Species of National Conservation Concern 3= Species of Local Conservation Concern Habitats in CAPITALS are Priority Habitats in the UK biodiversity Action Plan indicates the primary habitat of a species

<i>Isozanthus sulcatus</i>	An anemone	Sea anemone group	3		Inshore sediment
----------------------------	------------	-------------------	---	--	------------------

COASTAL WATERS

Latin Name	English Name	Group	BAP Status	Rarity	Other habitat
<i>Bucephala clangula</i>	Goldeneye (Wintering)	Bird	2		
<i>Podiceps auritus</i>	Slavonian grebe (Wintering)	Bird	2		
<i>Phalacrocorax carbo</i>	Cormorant	Bird	2		MARITIME CLIFFS AND SLOPES ♦
<i>Pomatoschistus minutus</i>	Sand goby	Fish	2		Inshore sediment

1= National BAP Priority species 2= Species of National Conservation Concern 3= Species of Local Conservation Concern Habitats in CAPITALS are Priority Habitats in the UK biodiversity Action Plan indicates the primary habitat of a species