

## Estuarine and Intertidal Habitats

### LOCAL HABITAT ACTION PLAN

#### SUMMARY

The 250 km coastline of North East Scotland contains a mosaic of important habitats, and those located in estuaries and the intertidal zone are the subject of this action plan. These are **Estuaries, Coastal Saltmarsh, Seagrass Beds, Mudflats, Sheltered Muddy Gravel** and **Littoral Rock**. The Moray coastline is sheltered and low lying with important sedimentary habitats at Culbin Sands, Findhorn Bay and Spey Bay including saltmarsh and eel grass communities, which are unique and subject to damage. In contrast, the Aberdeenshire coastline varies from the rocky and exposed wave-eroded areas, which are less sensitive to environmental pressure, to the sedimentary habitats within estuarine systems and bays containing saltmarsh and mudflat.

Some of these habitats contain species of national or international importance or are locally significant. For example, the eider ducks on the Ythan Estuary, the rare furoid alga *Fucus distichus* in Macduff Harbour, and the red algae community at Pennan. Cold temperate and arctic waters meet in the North East area, benefiting a variety of species, some of which may be at the limits of their geographical range.

The coastal habitats, including the intertidal zone, are of significant importance to the area for activities such as tourism, port operations, the oil industry and fishing. These activities all rely on the coastal region for resources, which can put estuarine and intertidal habitats under varying degrees of pressure.

This action Plan will be implemented in close association with the North East action plans for **Coastal Sand Dunes and Shingles, Coastal Cliff and Heath** and **Marine Open Water Habitats**.



## 1.0 CURRENT STATUS

This Action Plan concerns those habitats located between the Extreme High Water Spring (EHWS) level (upper boundary of the lichen zone on rocky shores and the strand line on sedimentary coasts), and the Extreme Low Water Springs (ELWS) (or to the edge of the kelp park on rocky shores and the lower reaches of sea grass beds if present on sedimentary shores). In addition, the boundaries of estuaries and harbours will be taken as a line drawn across the mouth between well defined landmasses e.g. harbour walls or bars and headlands exposed at ELWS.

The main sedimentary intertidal habitats of the region are primarily contained within estuaries and sheltered areas behind spits and bars such as Culbin Sands. There are also stretches of sandy beach north of Aberdeen to Balmedie, Newburgh and Forvie and to the south at St Cyrus. The significant shingle structures, such as the shingle bar at Culbin and beach at Kingston, are covered separately in the **Coastal Sand Dunes and Shingle** Habitat Action Plan. The rest of the coastline (e.g. Fraserburgh to Portgordon and Stonehaven to St Cyrus) is primarily rocky. Littoral Rock is covered in this Plan, and rock above the high tide mark and will be covered in the **Coastal Cliffs and Heath** Action Plan.

### 1.1 Estuaries

There are eight estuaries in the North East, all small and mostly of the bar-built type, and collectively representing less than 0.3% of the total UK estuarine area of 581,300ha. The Ythan is the largest estuary in this area, and the Moray coastline west of Findhorn can also be regarded as part of a much larger estuary of the Inner Moray Firth (Alexander *et al.*, 1998; Davidson *et al.*, 1991). Estuaries have permanent channels and intertidal areas and may include other key habitats such as saltmarsh and reedbeds. The water quality in North East Scotland's estuaries is generally excellent or good except for parts of the Ythan and the Dee (SEPA, 2003).

**Table 1: Distribution of North-East Estuaries (area data from Alexander *et al.*, 1998)**

Council Area	Estuary	Grid Ref.	Area (ha)	Shoreline Length (km)
Moray	Lossie Estuary	NJ2470	56	13.3
	Spey bay	NJ3465	49	4.9
	Findhorn Bay	NJ0462	1200	13.8
Aberdeenshire	Banff Bay	NJ6964	102	8.6
	Ugie Estuary	NK1247	c.12	c.3
	Ythan Estuary	NK0026	282	28.2
	River North Esk	NO7362	156	12.8
Aberdeen City	Don Estuary	NJ9509	23	5.5
	Dee Estuary	NJ9405	97	18.7
<b>TOTAL</b>			<b>c.1,427</b>	<b>c.115</b>

### 1.2 Coastal Saltmarsh

Saltmarsh vegetation develops between Mean High Water Spring Tides (MHWS) and Mean High Water Neap Tides (MHWN), in sheltered waters where there is a net accumulation of sediments. Saltmarsh is an uncommon feature of the North East, with the largest saltmarsh areas at Findhorn and Culbin Sands comprising about 70% of the region's saltmarsh. The Ythan Estuary also has a significant area where it forms an important part of the estuary ecosystem and part of Forvie National Nature Reserve (NNR). The beachhead at Stake Ness contains an important non-estuarine saltmarsh.

**Table 2: Extent of Coastal Saltmarsh Occurring in NE Scotland (source: Burd, 1989, taken from Alexander *et al*, 1998)**

Council Area	Saltmarsh Site	Grid Ref.	Area (ha)
Moray	Culbin	NH950612	60.28*
	Findhorn Bay	NJ035618	118.05
	Lossiemouth	NJ245695	2.02
	Spey Bay	NJ344653	22.2
	Logie Head	NJ531677	0.8
Aberdeenshire	East Head, Portsoy	NJ596664	0.31
	Stakeness	NJ645658	6.51
	Deveron Mouth	NJ695637	0.7
	Pitullie	NJ953678	0.21
	Fraserburgh Bay	NK022648	2.0
	Loch of Strathbeg	NK070602	15.91
	Ratray Bay	NK106533	0.3
	Lunderton	NK116497	0.24
	River Ugie	NK116475	0.08
	Ythan Estuary	NK007284	25.19
	Balmedie	NJ982192	0.2
	St. Cyrus	NO744635	4.0
	Aberdeen City	Don Mouth	NJ948094
<b>TOTAL</b>			<b>259.51</b>

\* Part of a saltmarsh extending into Highland, outside North East Scotland area (total area 203 ha).

### 1.3 Seagrass Beds

Sea-grass beds develop on sandy or muddy substrates in intertidal and subtidal areas to depths of about 4m. They are confined to sheltered areas, such as behind the Culbin Bar and Findhorn Bay, where 2 of the 3 species of eelgrass, *Zostera noltii* (dwarf eelgrass) and *Zostera marina* (eelgrass) can be found. Most of the rest of the North East coastline is not suitable for the formation of seagrass beds. Seagrass beds were once more widespread along the Moray coast for example around Burghead, but *Z. marina* had disappeared from some areas by the 1940's. In the 1930's the wasting disease (caused by the slime mould *Labyrinthula macrocystis*) led to the widespread and rapid decline of *Z. marina*. There are also other possible causes of disappearance

### 1.4 Mudflats

Fully marine mudflats are rare in the North East. However, Findhorn Bay does have intertidal flats that are predominantly muddy, and there are good examples of variable salinity mudflat in the Ythan and St Cyrus estuaries.

### 1.5 Sheltered Muddy Gravel

Sheltered muddy gravel habitats occur principally in estuaries and sea lochs, in areas protected from wave action and strong tidal streams. In the North East, this habitat is only present in the seaward reaches of the Ythan Estuary and is therefore also subject to the same conditions as the mudflats in this part of the estuary.

### 1.6 Littoral Rock

The majority of the rocky coastline of the North East is either very exposed or moderately exposed and varies from vertical cliffs to shore platforms, boulder shores and rocky reefs. The main rock type between Kincardine and Stonehaven is Old Red Sandstone or volcanic rock and other igneous rocks interbedded with, or intruded into, sediments. There are also some areas of conglomerate

rock here and in the Moray Firth. The Old Red Sandstone produces cliffs with caves and stacks. The igneous and volcanic rock is harder than the red sandstone and produces headlands with geos (e.g. Redhead and Stonehaven). An area around Longhaven has a granite foreshore and between Fraserburgh and Portgordon it is Dalradian rock. This variety produces many unique habitats in caves, under boulders, in rock pools and gullies, and glacial overburden. The majority of the rocky intertidal area is fully marine, however there is a variable salinity rock shore community just inside the Dee estuary mouth on the south shore.

### 1.7 Saline Lagoons

Annochie lagoon near St. Fergus (NK107533) is the only natural coastal lagoon in North East Scotland, covering an area of 3 ha, and representing on 0.4% of Britain's total natural lagoonal resource. Findhorn Bay, a coastal embayment with a restricted mouth, approaches lagoon-like status, but is not considered an important lagoonal habitat (Alexander *et al*, 1998).

## 2.0 ECOLOGICAL DATA

### 2.1 Estuaries

Estuaries, or transitional waters, are bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters, but which are substantially influenced by freshwater inflows. They are very important for many species of wildfowl and waders. The Ythan has the largest number of breeding eider in Britain and shelduck also breed. There are tern colonies at the Ythan, Loch of Strathbeg and Spey bay. The sandwich tern colony on the Ythan has held more than half the Scottish breeding population and there are smaller colonies of common, arctic and little terns, and a black-headed gull colony. The Ythan also holds large numbers of wintering pinkfooted geese, and the Lossie Estuary is internationally important for wintering greylag geese. North East estuaries also support wigeon, teal, goldeneye and mallard, and ringed plovers breed in small numbers at Lossie, Spey bay, Ythan and St. Cyrus. In winter many waders are present, including turnstone, purple sandpiper, knot, redshank, lapwing and golden plover. Findhorn Bay is an important area for breeding ospreys.

Otters breed in the Findhorn River and Bay, close to the mouth of the Spey and the other estuaries in North East Scotland. Otters are a named species for the Dee cSAC. Both common and Atlantic grey seals are commonly seen in many areas around the coast, feeding in estuarine waters. Common seals feed along the Moray coast as far as Buckie, and there are haul-out sites at Findhorn Bay and Spey Bay. Grey seals have important haul-out sites at Pennan Head, Rattray Head, Boddam, Catterline and Donmouth. Bottlenose dolphins and harbour porpoises are an important feature of the Moray and Aberdeenshire coast, but issues concerning the conservation of these animals are covered in the Moray Firth cSAC Management Plan and Marine Open Water Habitats Action Plan.

The coastal waters are well populated by a wide variety of fish including migratory salmonids, eels, flounders, saithe, sand eels, dogfish and spurdogs. In summer and autumn, there is a large population of the sand goby *Pomatoschistus minutus* in the Ythan Estuary (Alexander *et al*, 1998), and river and sea lampreys are important residents of North East estuaries. The Sea Lamprey is also a rare anadromous species present in the Spey river and Bay.

The invertebrate fauna in these sediments is dominated by oligochaetes, such as blood worms, and polychaetes, such as ragworms and lugworms, burrowing amphipods and bivalves such as Baltic tellins, peppery furrow shells, razor shells. Notable plant species are the rare estuarine sedge *Carex recta* (Buck 1993), and the seagrasses *Zostera marina* and *Z. noltii*. The mussel scaup in Findhorn Bay, (the rights for which are owned by RSPB), is developing into a major reef offshore leading to increased sedimentation in the bay and filling the navigation channel offshore.

### 2.2 Coastal Saltmarsh

Culbin sands and Findhorn saltmarshes are important both in extent and diversity of saltmarsh habitats and are unique in that they are not grazed and display a high proportion (58%) of mid to



upper-marsh communities compared to saltmarshes elsewhere in Britain. There are 25 rare and scarce plant species recorded in the North East area. Especially of note is the Scottish scurvy grass *Cochlearia scotica*, which occurs at the upper edge of the saltmarsh. Saltmarshes are home to many invertebrates, such as burrowing amphipods, ragworms and the mud snail *Hydrobia ulvae*. Ungrazed saltmarshes also support other rare invertebrates, such as the ground beetle *Aepus marinus*, unique to the harsh conditions encountered there. The main plant species, present in various different combinations, include the common saltmarsh grass, *Puccinellia maritima*, Samphire *Salicornia* spp with channeled wrack *Pevetia canaliculata* and cordgrass *Spartina* spp. The birds, Twite and Linnets eat *Salicornia* seeds and other UK Priority species such as Wigeon graze on the *Puccinellia*, and Redshank breed in the upper saltmarsh. The upper saltmarsh and strandline are also important areas for the adults and larvae of moths, beetles and flies.

### 2.3 Seagrass beds

Two of the three species of seagrass are found in the North East, *Zostera marina* and *Zostera noltii*, which are both UK Priority species. Five different community types have been identified for seagrass beds and 16 microhabitats, including the seagrass itself, sessile epifauna, infauna and free swimming animals, such as bristle worms, lugworms, and sandmason worms, various bivalves, mudsnails and periwinkles, burrowing heart urchins anemones, thong weed and channeled wrack. Seagrass beds are an important food source for wildfowl, particularly Brent goose and Widgeon. They provide many different communities and microhabitats and are also important nursery areas for flat fish. Seagrass beds and saltmarshes are important nursery areas for flat fish and the common and sand goby. Seagrasses require good water quality for growth, as well as the right habitat conditions.

### 2.4 Mudflats

Fully saline areas of mudflat are the richest, with a high biomass of invertebrate infauna. However there are few rare species and diversity decreases within the harsh, variable salinity environment of the estuaries. Mudflats have high primary productivity in terms of benthic microalgae, resulting in high numbers of invertebrates, and so providing the basis of the biodiversity in the estuary. This high productivity can support large numbers of predatory birds and fish, and can be important nursery areas for flatfish. The large extent of mudflat in the Ythan and in Findhorn Bay reduces the impact of waves on the shore, helping to prevent erosion of saltmarshes. Under nutrient rich conditions fast-growing opportunistic algae such as *Enteromorpha* spp and *Ulva* spp can form dense, extensive mats, which could have detrimental effects on underlying invertebrate populations. Sea Lamprey and the River Lamprey can be found in Spey Bay, and the Don and Dee estuaries and up into the rivers.

### 2.5 Sheltered muddy gravel

In fully marine conditions this habitat can be extremely diverse due to the variation in grain sizes and the presence of larger pieces of shell and gravel for the attachment of epiflora and fauna including mussels, littorinids, ephemeral green algae and filamentous red algae. Although good quality examples of this habitat are very scarce a good example can be found in the lower reaches of the Ythan estuary. The dominant fauna are polychaetes such as the bristle worm *Notomastus latericeus* and bivalve molluscs. This diverse habitat provides food for estuarine wildfowl and nursery areas for fish. The extensive mussel beds found in the Ythan Estuary bind the mud and gravels and support species more commonly found on rocky shores, such as *Fucus vesiculosus*, *Littorina littorea* and barnacles, *Semibalanus balanoides*. These mussel beds and their invertebrate fauna are the dominant food source for the UK's largest breeding population of eider duck and the Ythan's other wading bird species.

### 2.6 Littoral rock

The rocky intertidal, rock pools especially, can be extremely rich in invertebrate life including hydroids and anemones, encrusting sponges and ascidians. Molluscs such as dog whelks, winkles and limpets, crustaceans including barnacles, amphipods and shore crabs and calcareous-tube forming worms are also present. In the wave exposed coasts of the North East the intertidal shore communities are dominated by barnacles, limpets, mussels and encrusting flora and fauna, often with a fringe of brown and red algae at the low water line and below. The barnacle *Chthamalus*

*montagui*, found at Fraserburgh and Stonehaven, is rare in the area and is at its northern extent in the North East. In less exposed areas algae can better establish themselves and may dominate the intertidal rocks. The biodiversity of invertebrate fauna also increases.

There is a distinct zonation of species from the lichen *Verrucaria maura* in the littoral fringe to kelp (*Laminaria spp*, *Alaria esculenta*) in the sublittoral fringe. Between these two extremes there is a mosaic of species with the community structure dependent mainly on the degree of exposure, these could include encrusting red algae, anemones, littorinids, limpets, mussels and calcareous tube building worms. Algae on hard sub-strata provide shelter and micro-habitats for other species and therefore increase the productivity and biodiversity of the shore. Some notable areas are the *Fucus distichus* community in MacDuff Harbour (the only site on the mainland known for this northern furoid), and the red algae community in Pennan Bay. Species diversity is highest on shores with a wide variety of sub-habitats (pools, overhangs, couloirs, etc), and between 80 and 100 species of macroalgae have been recorded at various sites in the northeast, with 106 at Buchan Ness (Wilkinson, 1979). The total macroalgal species list for the U.K. is approx. 630.

The very rare Dickies Bladder Fern is only found in a few caves on the Aberdeenshire coast.

### 2.7 Saline Lagoons

There are no significant lagoonal vegetation types or invertebrate species found at Annochie lagoon, therefore this is not considered an important site (Alexander *et al*, 1998).

**Table 3: Species Primarily Dependent on Estuarine and Intertidal Habitats**

Species	Distribution/Status	Habitats	Threats
Horse Mussel beds <i>Modiolus modiolus</i> (P)	Lower shore to 150m. Widespread in NES, with important occurrence at UK level.	Mudflats and Sublittoral. Lower shore to 150m.	Fishing, physical impacts, such as aggregate extraction, trenching, pipe-laying, dumping of spoil.
Sand Goby <i>Pomatoschistus minutus</i> (P)	Ythan	Estuaries, seagrass beds.	
Seagrass <i>Zostera marina</i> (C)	Shallows to 4m Culbin bar and Findhorn Bay and St Cyrus.	Mudflats	Declining due to slime mould, and trawling, Sedimentation and Eutrophication.
Seagrass <i>Zostera noltii</i> (C)	Scarce. Intertidal mid to upper shore at Culbin sands, Findhorn Bay and St Cyrus.	Mudflats	Sedimentation and Eutrophication
Scottish Scurvy Grass <i>Cochlearia scotica</i> (P)		Rocky and sandy coasts, upper edge of saltmarsh.	Declining due to uncertain causes. Grazing?
Algae <i>Fucus distichus subsp</i> <i>edentatus</i> (L)	MacDuff Harbour only. The southern limit for this sub-arctic furoid.	Hard surfaces	Climate change, diffuse pollution.

**Table 4: Species Partially Dependent on Estuarine and Intertidal Habitats**

Species	Distribution/Status	Habitats	Threats
Otter <i>Lutra lutra</i> (P)	Widespread	Undisturbed water with plenty of cover, mostly freshwater lakes, rivers or small streams.	Environmental pollutants and habitat degradation (e.g. loss of natural bankside vegetation).
Eider <i>Somateria mollissima</i> (C)	Key species in NES. NES 5% wintering pop; stable nationally decline in NES.	Offshore Water, inshore waters while moulting. Blackdog, Ythan Estuary, coastal sand dunes. Feeds on mussel beds.	Predation by foxes, crows and mink.
Little Tern <i>Sterna albifrons</i> (C)	Rarest tern breeding in NES (2 sites); significant in UK context.	Shallow seawater.	Predation by foxes, crows and mink; disturbance by dogs; high tides, bad weather, habitat loss.
Sandwich Tern <i>Sterna sandvicensis</i> (C)	Sands of Forvie now only colony – largest in Scotland, holds 8% of GB population.	Inshore waters.	Predation by foxes, crows and mink; disturbance by dogs, habitat loss.
Common Tern <i>Sterna hirundo</i> (C)	Coastal and inland, NES holds a small proportion of GB population.	Inshore waters. Sand Dunes and raised beach pebbles.	Habitat loss, predation.
Arctic Tern <i>Sterna paradisaea</i> (C)	Forvie, St Fergus and Morayshire coast.	Inshore waters. Sand Dunes and raised beach pebbles.	Predation by foxes and crows; disturbance by dogs, habitat loss.
Curlew <i>Numenius arquata</i> (C)	Characteristically an upland bird in Britain, breeding up to 550 m, but recently increasing in lowlands. Key species in NES. GB >20% breeding and non-breeding pops. Stable.	Flocks at coast in passage and in winter; feeds on mudflats and intertidal areas.	Habitat loss, predation.
Redshank <i>Tringa totanus</i> (C)	Widespread. Key species in NES. NES breeding pop 150 pairs.	Lowland wet grassland, feeds on estuarine mudflats.	Declining due to drainage of wet grassland.
Atlantic Salmon <i>Salmo salar</i> (C)	NE rivers and tributaries, coastal waters and open sea. Important occurrence in NES at UK level.	Sea and main rivers and burns in NES.	Declining due to pollution and physical barriers
River Lamprey <i>Lampetra fluviatilis</i> (C)	Spey Bay, Don And Dee Estuaries	Rivers and burns, coastal waters and estuaries;	Declining in UK due to pollution, engineering and barriers
Sea Lamprey	Spey Bay, Don And Dee	Rivers, estuaries and	Declining in UK due to

<i>Petromyzon marinus</i> (C)	Estuaries	coastal waters	pollution, engineering and barriers (more susceptible than river lampreys to this)
Dickie's Bladder Fern <i>Cystopteris dickieana</i> (C)	Only a few caves south of Aberdeen	Lowland basic rocks in sea caves and stream gorges	Climate change, pollution, Collectors
Oyster Plant <i>Mertensia maritima</i> (C)	Local in Moray.	Strand line of shingle beaches.	Habitat Loss

### 3.0 CURRENT FACTORS AFFECTING THE HABITAT

#### 3.1 Habitat Loss

Coastal defence works, land claim and harbour developments could lead to coastal squeeze as sea levels rise and there is less room for habitats such as saltmarsh and mudflat to develop. Actions such as turf cutting actually remove salt marsh that could take years to re-establish.

#### 3.2 Erosion and sedimentation

Beachhead saltmarshes, such as the one at Stake Ness, are particularly sensitive to erosion. At St Cyrus, the encroachment of sand is reducing the extent of the saltmarsh area. Sand can also smother seagrass beds, and increased sedimentation through erosion upstream could also be problematic for seagrasses.

#### 3.2 Pollution

Various forms of pollution can affect these habitats, from eutrophication in the Ythan estuary to point source pollution, including landfill seepage in other areas. Nutrient enrichment can encourage the growth of macroalgal mats, such as occur in the Ythan estuary. Dense mats can produce abiotic areas beneath them on mudflats, therefore reducing the diversity and productivity of the habitat. Low levels of nutrient enrichment can increase production in *Zostera* but sewage effluents and agricultural discharge are thought to be implicated in the decline of *Z.marina*. *Zostera* is also known to accumulate Tributyl tin and possibly other heavy metals and organic pollutants, and chemical pollution from land runoff may be the main threat to saltmarsh. Tributyl tin can adversely affect marine snails causing imposex in dog whelks (*Nucella lapillus*) and intersex in winkles (*Littorina littorea*). Monitoring has shown some degree of imposex along much of the north-east coast, particularly around major ports, but not currently sufficient to eliminate populations, although the absence of dog whelks in the outer Dee Estuary and Peterhead Bay of Refuge is questionable. Heavy metal and tributyl tin pollution bio-accumulation within mussel beds could cause problems for species higher up the food chain, e.g. eider ducks and seals, though this is not thought to be a significant issue in the North East.

Rocky intertidal communities may be susceptible to pollution from harbour and land run-off. Oil pollution incidents, and diffuse pollution such as agricultural and land run-off, sewage discharges or seepage from tips can impact on littoral rock communities. Other pollution problems include, litter from both sea and land-based sources.

#### 3.3 Disturbance

Physical disturbance from vehicles and trail/quad biking, can affect the sand and mud flats on the Ythan Estuary, and horse riding and vehicles have affected the saltmarsh at Culbin.

#### 3.4 Dredging

Many of the harbours in the North East are dredged either regularly as with Aberdeen, Perterhead and Lossiemouth or intermittently such as at Stonehaven, Fraserburgh, Buckie and MacDuff. A

licence is required to dump the dredged material under the Food and Environment Protection Act, however only the dump sites are monitored at present for habitat degradation. Aggregate dredging is very rare in the North East and has not occurred in this area for at least 5 years.

### **3.5 Climate change and sea level rise**

Increased wave action and reduced sediment availability due to sea level rise will lead to erosion of saltmarsh. Severe storms can also reduce the extent of seagrass beds. Species and habitats that are susceptible to climate change and sea level rise with regard to temperature increases have been outlined in a Scottish Natural Heritage (The Impact of Climate Change on subtidal and intertidal benthic species in Scotland, SNH, Survey and Monitoring Series). One species identified that may either decrease in abundance or extent is *Fucus distichus disticus*.

### **3.6 Bait digging/collection and winkle picking**

North East mudflats, including mussels and cockles, are affected by bait digging, construction works and dredging. Although the rocky coasts are generally free from these pressures, localised bait collection and winkle picking could disturb under boulder communities.

### **3.7 Grazing**

Over grazing by wildfowl and livestock can impact adversely on saltmarsh and can reduce the extent of seagrass beds.

### **3.9 Disease**

Environmental factors can weaken seagrass plants increasing their susceptibility to disease such as the wasting disease caused by *Labyrinthula macrocystis*. There is a possibility of another widespread epidemic of this disease in Britain. This has resulted in *Zostera noltii* becoming more dominant in seagrass beds previously dominated by *Zostera marina*.

## **4.0 CURRENT ACTION**

### **4.1 Designations**

Many sites within the area are protected under national schemes such as SSSI, Ramsar NNRs, and Habitats Directive SAC/SPA.

Culbin Sands, Findhorn Bay, Spey Bay and the Ythan are recognised under the EU Birds Directive as Special Protection Areas, and by the Ramsar Convention as wetlands of international importance for the wildfowl, waders and other bird life that they support. Some habitats are designated as candidate SACs under the Habitats Directive, for example the Moray Firth for bottlenose dolphins and sandbanks.

**Table 5: Designated Sites**

Name of Site	Designation/s
Moray Firth	cSAC
Culbin	SPA, cSAC, Ramsar, SSSI, RSPB Reserve
Moray and Nairn Coast	(part) SPA
Findhorn Bay	SPA, Ramsar, SSSI
Spey Bay	SPA, cSAC, Ramsar, SSSI
Troup, Pennan and Lions Heads	SPA
Loch of Strathbeg	Ramsar, RSPB, SSSI, SINS
Buchan Ness to Collieston	CSAC
Forvie	cSAC, NNR, SSSI, SINS
Ythan Estuary	SSSI, SPA, Ramsar
Dee Estuary	cSAC
St.Cyrus	NNR, SSSI
Kingston Shingles (The Lein)	SPA, SSSI
Burghead back shore to Cummingston	SSSI
Ratray - Kirkton Head	SINS
Cruden Bay	SINS
Donmouth to Blackdog	DWS
Spey Bay and the Lein	SWT Reserve
Donmouth	LNR
Waters of Philorth	LNR
Findhorn Bay & neighbouring back shore	LNR
Balmedie	Country Park

The Ythan catchment was designated as a Nitrate Vulnerable Zone (NVZ) in 2000 under the EC Nitrates Directive, and the estuary is also a sensitive area under the Urban Waste Water Treatment Directive due to cross-compliance of directives.

#### **4.2 Water Framework Directive**

The Water Framework Directive (Directive 2000/60/EC) establishes a new, integrated approach to the protection, improvement and sustainable use of Europe's rivers, lochs, estuaries, coastal waters and ground water. This has been transposed into Scottish legislation through the Water Environment and Water Services (Scotland) Act 2003.

As in previous legislation, the Directive sets objectives to protect particular uses of the water environment from the effects of pollution and to protect the water environment itself from especially dangerous chemical pollutants. The novel aspect of the Directive is that it introduces new, broader ecological objectives, designed to protect and, where necessary, restore the structure and function of aquatic ecosystems and thereby safeguard the sustainable use of water resources. In future, the management of our waters will be judged principally by their ecological status.

#### **4.3 Integrated Coastal Zone Management (ICZM)**

A stocktake of the current framework for the management of the coastal zone in the UK (i.e. the different legislation, institutions and stakeholders involved and how they interact) and identification of the issues of common concern was started in March 2003 with a final report in April 2004. This will set the path for strategies for ICZM for each of the devolved administrations, but not to develop the actual strategies and Action Plans.

#### 4.4 Organisations Operating in Intertidal areas

**Marine Conservation Society (MCS):** Aberdeenshire Rangers and local people take part in MCS' Beachwatch along the Aberdeenshire coast each year. There is also a Beachwatch group operating for Nigg Bay in Torry. Local divers have also carried out underwater clean ups in some years. Many local divers have expressed an interest in Seasearch, and there have been local training days by the Marine Conservation Society on Seasearch and underwater identification skills.

The **Maritime and Coastguard Agency (MCA)** is the competent UK authority responsible for responding to pollution from shipping and offshore installations. The MCA is regularly called upon to respond to a wide range of maritime incidents and has developed a comprehensive response procedure to deal with any emergency at sea that causes pollution, or threatens to cause pollution. The "National Contingency Plan for Marine Pollution from Shipping and Offshore Installations" (NCP) was published in January 2000 and sets out revised command and control procedures for incident response following Lord Donaldson's Review of Salvage and Intervention and their Command and Control.

The Coastguard Agency's Marine Pollution Control Unit (MPCU) provides a command and control structure for decision making and response following a shipping incident that causes, or threatens to cause, pollution in UK waters. The MPCU was restructured in 1998 to become the Counter Pollution and Response (CPR) Branch of the MCA.

**The Crown Estate** grants leases or licences for the foreshore to local authorities, ports and harbours, and conservation bodies such as Scottish Natural Heritage, the National Trust for Scotland and the RSPB. Some 570 kilometres (21%) of foreshore is leased specifically for conservation purposes, where no development is permitted, and it is intended to extend this in consultation with SNH. A great deal more of the coastline is under protective ownership by way of leases to local authorities.

To optimise the responsible use of marine resources, the Crown Estate participates in relevant research projects such as a joint study with DEFRA to look into the cumulative impact of dredging on the seabed, and research through the Marine Life Information Network (MarLIN) and the Marine Climate Change programme.

As a landowner, the Crown Estate seeks to maintain the highest standards by ensuring that management of these important areas is in the appropriate hands and that, where development is proposed, this is carried out in the most responsible manner with the necessary consents.

**The Moray Firth Partnership** was launched in August 1996. It is a voluntary organisation made up of partners from industry, local authorities, conservation bodies, recreational users, and local residents, all with an interest in the future well-being of the Moray Firth. The Partnership focuses on the coast and sea from Duncansby Head in Caithness to Fraserburgh in Aberdeenshire. Its aim is to help people find ways of working together to safeguard the Moray Firth's natural, economic and social resources, now and for future generations.

**Fisheries Research Services (FRS)** performs regulatory and statutory functions as required by SEERAD and other government customers as well as advising on the sustainable use of living aquatic resources and protection of the aquatic environment. FRS runs a continuous monitoring program on the state of living aquatic resources and the aquatic environment.

The **Local Authorities** are responsible for carrying out coast protection works. Aberdeenshire Council has been trying to move away from hard engineering solutions, i.e. coastal protection at Inverbervie and Stonehaven now involves moving gravel from one end of the beach to the other on a cyclical basis and letting the sea move it back again. This is in place of hard defence at the end of the beach, which is eroding.

The **Local Authority Ranger Services** are taking the lead in terms of raising awareness about the coast through various events and activities, and they actively promote Beachwatch and other similar national campaigns.

The **Scottish Environment Protection Agency (SEPA)** is the public body charged with protecting Scotland's environment by regulating discharges to air, land and controlled waters (lochs, rivers, groundwater, estuaries and coastal waters to three miles out to sea). SEPA aims to provide an efficient and integrated environment protection system for Scotland that will improve the environment and contribute to the Scottish Executive's goal of sustainable development. SEPA performs regulatory, statutory and advisory functions. It monitors coastal waters in relation to statutory requirements, impact assessment and general water quality. Data are used to provide annual classifications of controlled waters.

**Scottish Natural Heritage**, the statutory body for SSSIs and European designations, manages the reserves at Forvie and St. Cyrus, and leases part of the foreshore from the Crown Estate at Ythan Estuary.

The re-establishment of a **North East Coastal Forum** is currently under discussion, and its establishment would fill a gap along the east coast.

## 5.0 BENEFITS

Estuarine and intertidal habitats in North East Scotland contain a range of species of national or international interest or importance, for example, the eider ducks on the Ythan Estuary, the fucoid alga *Fucus distichus* in Macduff Harbour, and the red algae community at Pennan. The estuaries are very important for many species of wildfowl and waders, many of which feed on the diverse invertebrate fauna of the mudflats. These birds and other wildlife make the coast an important area for recreational pursuits such as bird watching, and the coastal habitats are of significant importance to the area for activities such as tourism, as well as being a key resource for port operations, the oil industry and fishing.

Estuarine and intertidal habitats are also a source of indirect benefits for society. Intertidal habitats may for example act as sediment, nutrient and contaminant sinks, thereby improving coastal water quality. Some habitats such as salt marsh also play a coastal defence role by absorbing wave energy. A good example of this is the Coastal Realignment Project at Nigg Bay in the Cromarty Firth. Finally, intertidal habitats often also provide nursery grounds for recreational and commercial fisheries.

## 6.0 UK BIODIVERSITY OBJECTIVES AND PROPOSED TARGETS

The UK costed Action Plans for intertidal habitats include the targets outlined below for each of the intertidal habitats.

### 6.1 Coastal Saltmarsh

Target 1: There should be no further net loss (currently estimated at 100ha/yr of coastal saltmarsh. This will involve some creation of saltmarsh.

Target 2: To create a further 40ha of saltmarsh in each year of the plan to replace that lost between 1992 and 1998.

Target 3: Maintain the quality of the existing resource in terms of community and species diversity.

Target 4: Where necessary, restore the nature conservation interest through appropriate management. It will be desirable for some managed realignment sites to develop the full range of saltmarsh zonation.

### 6.2 Seagrass beds

Target 1: Maintain extent and distribution of seagrass beds in UK waters.

Target 2: Assess feasibility of restoration of damaged or degraded seagrass beds. Until surveys assess the extent of the seagrass resource, it will not be possible to assess whether restoration is necessary, or to specify a final target. An interim target of 1000ha has been costed.

### 6.3 Mudflats

Target 1: Maintain at least the present extent and regional distribution of the UK's mudflats. This target will require compensating for predicted losses to development by the restoration of mudflats. Whilst this may not be possible in the same location, it should be within the same littoral sediment cell.

Target 2: Create and restore enough intertidal area over the next 50yrs to offset predicted losses to rising sea levels in the same period. Predicted losses in the next 15 yrs should be offset in the next 10yrs.

Target 3: Restore estuarine water quality to ensure that existing mudflats fulfill their important ecological and conservation role.

### 6.4 Sheltered muddy gravels

Target 1: Maintain the extent and distribution of sheltered muddy gravel bed habitats.

Target 2: Maintain the quality of sheltered muddy gravel bed habitats.

### 6.5 Littoral rock

Target 1: Maintain the extent and quality of littoral rocky habitats in the UK, including the full diversity of communities.

## 7.0 OBJECTIVES AND PROPOSED TARGETS

### PRINCIPAL OBJECTIVE

To maintain, enhance and rejuvenate the quality, extent and status of the estuarine and intertidal habitats in the North East through appropriate habitat management, data collection, promotion, education, liaison and legislation.

#### Principal Target

No loss, or reduction in quality, of existing estuarine and intertidal habitat.

### 7.1 Data Collection

**Objective 1:** Establish the current status of the estuarine and intertidal habitats (extent and rate of decline) in the North East area.

#### Target 1.1:

All information currently held on protected and other significant sites (e.g. held by SNH, SEPA, FRS, UKOOA, British Phycological Society, Macduff Marine Aquarium (Sea Surface Temperature data), Culterty Field Station and Cromarty Lighthouse), collated and held at NESBReC, and any gaps in this information identified.

#### Time:

By end of  
2005

#### Target 1.2:

Any gaps in existing knowledge filled by conducting new surveys through existing mechanisms (e.g. Seasearch, Aberdeen Harbour, Culterty Field Station and the Marine Conservation Society), and by introducing survey projects to schools, higher education establishments and businesses.

By 2013

## 7.2 Habitat Management

**Objective 2:** Assess and record possible threats and potential problems affecting estuarine and intertidal habitats, and use the information to guide management.

**Target 2.1:**

Information from *SEPA's Pressures and Impacts report for WFD*, and information from industry, on point source and diffuse pollution, and habitat disruption, collated and documented.

**Time:**  
By 2005

**Target 2.2:**

Management plans developed for sites as recommended by appropriate action plan partners, together with neighbouring community involvement projects, to secure the conservation of these important habitats and associated species.

By 2008

## 7.3 Habitat Enhancement and Creation

**Objective 3:** Create new habitat/rejuvenate low quality areas and wasteland.

**Target 3:**

Opportunities for habitat enhancement investigated, e.g. by managed realignment or removal of excessive pressures on degraded areas.

**Time:**  
By 2006

## 7.4 Awareness and Training

**Objective 4:** Raise the public's awareness of coastal issues and the importance of estuarine and intertidal environments.

**Target 4:**

Coastal and marine campaigns (e.g. Seasearch) promoted and interpretation activities facilitated by the Countryside Rangers, to increase the level of awareness in the general public and industry.

**Time:**  
Ongoing,  
and by  
2008

## 7.5 Liaison

**Objective 5:** Improve links between the community and industry and the Local Authority, the Scottish Executive, SEPA and SNH.

**Target 5:**

Communications between all stakeholders improved via community meetings and joint projects or other appropriate means.

**Time:**  
Ongoing

## 7.6 Research and Monitoring

**Objective 6:** Investigate the habitat/species relationships, and the effects of pollution on habitats and species in the North East.



**Target 6:**

At least two appropriate research projects initiated (e.g. postgraduate theses, PhDs), through discussions with research institutions and universities.

**Time:**

By 2006

**This Action Plan was prepared by Clare Greathead, Maria Hardy and the *Estuarine and Intertidal Working Group* on behalf of the North East LBAP Steering Group.**

**Glossary:**

**Littoral** = the ocean shore, including the rocky intertidal, sandy beaches, and salt marshes.

**Sub-littoral** = Lying between the low tide line and the edge of the continental shelf or ranging in depth to about 100 fathoms or 200 meters (660 feet).

Operational Objective	Outline Prescription	Obj	Lead Partner	Partners	Cost	Fund Source	By Year	Priority
1. Establish current status of estuarine and intertidal habitats and associated species in the North East.	1.1 Collate all species and habitat data, or at least metadata, currently held on protected and other significant sites by all relevant organisations, (e.g. UKOOA, British Phycological Society, MarLIN, Macduff Marine Aquarium, Culterty Field Station and Cromarty Lighthouse), and hold at NESBReC in an accessible format e.g. GIS.	1	NESBReC	NESBReC, MFP, FRS, MMA, UA, SEPA	In kind	NESBReC	2005	H
	1.2 Identify any gaps in the above information and compile a list of areas of research focus.	1, 6	NESBReC	NESBReC, MFP, FRS, MMA, UA	In kind	NESBReC	2005	H
	1.3 Conduct new surveys through existing mechanisms (e.g. Culterty Field Station, Marine Conservation Society), to fill information gaps, and in order to start to assess any changes in habitat extent/species distribution.	1	NESBReC	NESBReC, LBAP WG, AHB, UA	Depend s on survey	NESBReC, AHB, UA	2013	H
	1.4 Encourage interested businesses/companies to fund surveys on sections of coast.	1	LBAP WG	LBAP WG, Businesses	Depend s on survey	Business	2009	H
2. Assess and record possible threats and potential problems affecting estuarine and intertidal habitats.	2.1 Collate information from SEPA's <i>Pressures and Impacts</i> report for the WFD on specific point source and diffuse pollution or habitat disruption and other relevant sources if necessary.	2,3	SEPA	SEPA, FRS, LBAP WG, SNH		SEPA	2005	H
	2.2 Collate current information on climate change and coastal erosion impacts to intertidal habitats and species, and future projections.	2	SNH	SNH, FRS, MI	In kind	SNH	2005	M
3. Protect and enhance existing high quality sites and associated species.	3.1 Integrate existing management of Culbin Sands into action for this HAP, and use as a pilot for other areas where appropriate.	3,4	RSPB	LBAP WG, RSPB	*	RSPB	2006	M
Operational Objective	Outline Prescription	Obj	Lead Partner	Partners	Cost	Fund Source	By Year	Priority

	3.2 Encourage management pilot projects for important sites of representative habitat types, as directed by action plan partners.	3	LBAP WG	LBAP WG, FRS, SEPA, RSPB,	?	LIFE	2008	H
	3.3 Establish community involvement in the pilot projects to engender local support for estuarine and intertidal habitats.	3, 4	LBAP WG	LBAP WG, FRS, SEPA	In kind	LBAP WG	2008	H
	3.4 Promote the protection of estuarine and intertidal habitats as valued habitats under policy Env 4 of the Finalised Aberdeenshire Local Plan.	3	A/shire Council	LAs	In kind		Ongoing	H
	3.5 Promote the protection of estuarine and intertidal habitats in the planning and implementation of coastal protection works and bridge works.	3	LAs	CE, SEPA	In Kind	LA, CE, FRS	Ongoing	H
4. Identify sites/areas where habitat enhancement or creation may be possible.	4.1 Use data collected by NESBReC and information from LBAP WG partners to identify suitable sites for habitat improvement as appropriate, in line with national plans.	3	LBAP WG	LBAP WG, NESBReC, RSPB	In kind	LBAP WG, NESBReC	2009	M
	4.2 Where opportunities are identified, initiate habitat creation/improvement, involving the local community and industry where possible.	3, 5	LBAP WG	LBAP WG, SNH, SEPA, LAs	In kind	LBAP WG	2009	M
5. Raise the public's awareness of coastal issues and the importance of estuarine and intertidal environments.	5.1 Hold at least one coastal seminar/event for the general public, per year across the North East, linking with the other coastal action plans, to promote the value of coastal habitats, and to encourage public support for the LBAP.	4, 5	LBAP WG, R/SNH, R/LA	LBAP WG, R/SNH, R/LA	£500 per year	LBAP, SNH, Business	Annually	H
	5.2 Set up a web page on NE Coastal Habitats on the NELBAP website, including links to useful information, campaigns (e.g. Seasearch, Beachwatch, Torry Community Waterline Project),	4, 5	LBAP	LBAP WG, UA	In kind	UA	2005 ongoing	M
<b>Operational Objective</b>	<b>Outline Prescription</b>	<b>Obj</b>	<b>Lead Partner</b>	<b>Partners</b>	<b>Cost</b>	<b>Fund Source</b>	<b>By Year</b>	<b>Priority</b>
	and to other LBAP partners involved in coastal biodiversity action.							

	5.3 Encourage habitat/ and species surveys and projects through schools and higher education establishments.	1, 4, 5, 6	R/SNH, R/LA	R/SNH, R/LA, LBAP, AHB, FRS, SEPA, UA.	In Kind	R/SNH, R/LA, LBAP, AHB, FRS, SEPA, UA.	Annually in autumn term	M
	5.4 Provide targeted awareness raising opportunities such as guided walks and MMA events.	4	R/SNH, R/LA	R/SNH, R/LA, SNH, MMA	In Kind	R/SNH, R/LA, SNH, MMA	Annually	M
6. Improve liaison between stakeholders involved in estuarine and intertidal habitats.	6.1 Ensure representation from LBAP on the proposed NE Coastal Forum, or similar group, which may evolve from the current discussions.	5	LBAP WG	LBAP WG	In kind	LBAP WG	ongoing	M
7. Research	7.1 Using list compiled through gap analysis in action 1.2, highlight and drive areas for future research - at least two projects.	6	LBAP WG	LBAP WG	In kind	LBAP WG	By 2006	
8. Monitoring	8.1 Update on actions progress for this HAP annually.	6	LBAP WG	LBAP WG	In kind	LBAP WG	Annually	H
	8.2 Carry out a full review of the action plan every 5 years.	6	LBAP WG	LBAP WG	In kind	LBAP WG	2009	M

**Key to Action Partners:**

AHB – Aberdeen Harbour Board; FRS – Fisheries Research Services; LAs – Local Authorities (Aberdeen City, Aberdeenshire, Moray); LBAP WG – North East Local Biodiversity Action Plan Estuarine and Intertidal Working Group; MCA – Maritime and Coastguard Agency; MFP – Moray Firth Partnership; NESBReC – North East Scotland Biological Records Centre; RSPB – Royal Society for the Protection of Birds; SEPA – Scottish Environment Protection Agency; SNH – Scottish Natural Heritage; UA – University of Aberdeen; MMA – Macduff Marine Aquarium; R/SNH – SNH Rangers; R/LA – Local Authority Rangers; CE – Crown Estate.