



Report to the
Department of Trade and Industry

Conservation Sites in the SEA 5 Area

Final Report
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1 INTRODUCTION

An integral element of any environmental assessment for offshore oil and gas exploration, and for possible nearshore renewable energy proposals, involves a review of potential sites of conservational importance within the region of interest. For the purpose of SEA 5, this is especially important given the scale of the area in question and the fact that it includes the coastal zone which is known to support a large number of conservation sites.

The SEA 5 area displays a wide variety of habitat types such as coastal cliffs, rock platforms, beaches and dunes. The area also includes major estuaries such as the Tay and the Forth. Some of these habitats are rare in a national and/or international context, and many support important numbers of bird colonies, seals and, in the Moray Firth, dolphins.

This report identifies and locates coastal and nearshore sites within the SEA 5 area which are protected by international, national and local conservation designations as well as describing the sites and reasons for their protected status. The coastal conservation sites are listed according to whether they are of international, national or local importance. For internationally important sites, summary information describing the main features of the site is provided and there is also an assessment of the vulnerability of the site and any relevant management issues. The ordering of the national sites in this report does not imply any formal ranking, but is a relative judgement of their scientific importance. The conservation sites described in this section are listed in Table 1.1 and brief descriptions of the statutory and non-statutory mechanisms responsible for site protection are presented in Appendix 2. Statutory sites are legally protected whilst non-statutory sites rely on the planning process and other local agreements to confer protection.

Table 1.1 - Coastal and nearshore conservation sites

International importance	Designation
	Candidate Special Areas of Conservation (cSAC)
	Special Protection Area (SPA)
	Ramsar
	Important Bird Area (IBA)
	World Heritage site
National and local importance	
	National Nature Reserve (NNR)
	Site of Special Scientific Interest (SSSI)
	Local Nature Reserve (LNR)
	National Scenic Area (NSA)
	Area of Special Protection (AoSP)
	Country Park
	Nature Conservation Review (NCR) site
	Geological Conservation Review (GCR) site
	Marine Consultation Area (MCA)
	Voluntary Marine Reserve (VMR)
	Regional Landscape Designation (RLD)
	Environmentally Sensitive Area (ESA)
	Preferred Conservation Zone (PCZ)
	Biogenetic Reserve
	National Trust for Scotland site
	Royal Society for the Protection of Birds (RSPB) reserve
	Scottish Wildlife Trust (SWT) reserve

Much of the information utilised by this report including site descriptions, mapping information and species inventories, has come from the JNCC and Scottish Natural Heritage to whom we are grateful. Other sources of information include various non-governmental conservation organisations, such as the National Trust for Scotland, RSPB and the Scottish Wildlife Trust.

The report has been divided into five sections: 'The Northern Isles', 'Moray Firth', 'Northeast Scotland', 'Firth of Forth and Borders' and 'Contiguous Areas'.

Nearshore areas of the Orkney and Shetland Islands form part of the SEA 5 area. Conservation sites within the Northern Isles were described fully in the previous Conservation Report for SEA 4 (www.offshore-sea.org.uk/sea/dev/html_file/udsea4_document.php?documentID=30). For the purpose of the present report, a summary of the conservational importance of the area is provided as are details of the relevant conservation sites. The two contiguous parts i.e. the north Northumberland Coast (SEA 3) and the mainland coast of North Scotland in Caithness (SEA 4) are also described briefly to provide continuity of geographical context.

Some sites are designated primarily for the conservation of non coastal habitats and species but small areas of coastal habitats are included within the site boundaries. Although the percentage of the area which is coastal might be small, the site is normally included in the following inventory. The importance of the marine interface with the land designations is not always transparent in the formal site descriptions e.g. SSSI's, but the coastal location and therefore possible environmental interest for SEA 5 purposes implies the need for its inclusion, especially if the site is essentially an ecosystem. Nevertheless some of the purely terrestrial attributes of a site have been edited-out to emphasise the more relevant coastal aspect of the designation. It has been decided to omit the cSAC designations for both the River Dee and River Tweed since only 2% and 1% respectively are intertidal and consist of port and harbour facilities. Similarly, although it is recognised that migratory species, such as salmon or lamprey, may pass through the coastal zone on route to upriver cSACs (for example the River Tay and River Spey), details of these sites and species have been omitted as the total number of species is comparatively small. Further information on each SEA 5 site can be obtained from the original source where indicated. Extensive habitat descriptions have also been condensed.

Unlike previous SEA reports, the complete absence of a particular type of area is indicated by omission, rather than a null statement.

Sources of information

SEA 3 Conservation Report

www.offshore-sea.org.uk/sea/dev/html_file/udsea3_document.php?documentID=19

SEA 4 Conservation Report

www.offshore-sea.org.uk/sea/dev/html_file/udsea4_document.php?documentID=30

2 THE NORTHERN ISLES

The northwest boundary of SEA 5 transects the Orkney and Shetland islands and strictly includes only the eastern coastline of the islands. These islands were described fully in the previous Conservation Report for SEA 4, and while summary information of the conservation designations of the region is given below, the underpinning SEA 4 Conservation Report should be referred to for further detailed information (www.offshore-sea.org.uk/sea/dev/html_file/udsea4_document.php?documentID=30).

2.1 The Shetland Islands

The coastline of Shetland, is long, intricate and dominated by rocky formations. Soft shorelines are rare and, therefore, have added environmental and ecological interest. It is a coastline of submergence and, as such, is best understood by assuming that a series of mountains, hills, ridges and valleys, normally glaciated, have been drowned by a post-glacial rise in sea level.

The coast contains large, diverse and spectacular lengths of cliff and cliff-top habitat, of considerable landscape and nature conservation value. The highest vertical cliffs reach 370m at The Kame of Foula on the west coast of the island. The extensive cliff habitat provides important nesting sites for a large number of seabirds.

Overall, the coastline is among the most wave-exposed in Britain although in places the high west-facing vertical cliffs give way to sheltered inlets or voes. There are also numerous stacks and islets, some of them connected to the islands by thin stretches of sand or shingle, known as tombolos. Areas of sand dunes are small and few in number due not only to the steeply shelving offshore sea bed, which limits sand supply but also the frequent exposure to gales which prevents significant accumulation. The Shetland Islands also include Fair Isle which lies about 40km south of Sumburgh Head, mid-way between Shetland and Orkney. There are steep cliffs on the north and west coasts whilst the southeast is lower lying. Most of the island is extremely exposed to wave action although the east coast is less exposed than the Atlantic west coast.

The Shetland Islands play host to a variety of important coastal habitats and species as well as bird areas, which are protected under international, national and local designations. Detailed descriptions of these sites and species can be found in the SEA 4 Conservation Report (www.offshore-sea.org.uk/sea/dev/html_file/udsea4_document.php?documentID=30). The present report provides summary details of the relevant conservation sites.

Sites of international importance

The principal European designations are Special Protection Areas (SPA's) established under the 1979 EC Directive on the Conservation of Wild Birds and Special Areas of Conservation (SAC's) under the 1992 EC Habitats and Species Directive. Ramsar sites are designated mainly for their important waterfowl populations but also rare or endangered plant and animal species.

Shetland is internationally important for its cliff and island-nesting seabirds, particularly fulmar, gannet, arctic skua, kittiwake, puffin and guillemot. During the breeding season, the coastal waters near the breeding colonies support large concentrations of seabirds and sheltered areas of the islands are important for wintering birds, especially eiders and black guillemot. The area is also important for migrant waterfowl in spring and autumn as it lies on the migratory flyway for birds of the east Atlantic moving between southern wintering areas and northern breeding grounds. Fair Isle is of major importance as a breeding area for seabirds, including skuas, terns, gulls and auks. It is also notable for its endemic race of wren. There are a number of sites throughout the Shetland Isles designated for their internationally important bird assemblages (Table 2.1).

Figure 2.1 – Coastal sites of international importance in the Shetland region

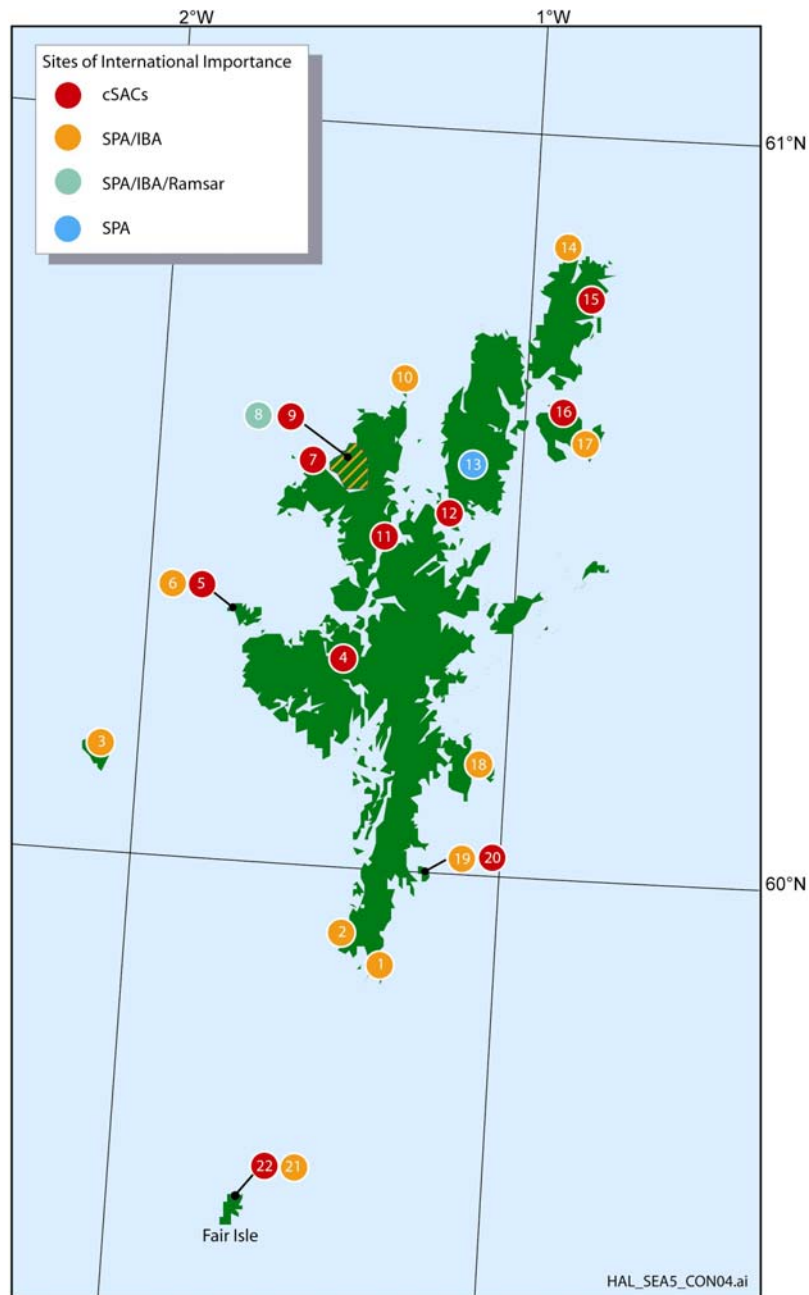


Table 2.1 - Sites of international importance for birds in the Shetland region

Map Ref	Site	Area (ha)	Status	Conservation interest
1	Sumburgh Head	39	SPA/IBA	Breeding seabirds
2	Lochs of Spiggie and Brow	141.5	SPA/IBA	Wintering wildfowl
3	Foula	1,323	SPA/IBA	Breeding seabirds and divers
6	Papa Stour	569	SPA/IBA	Breeding seabirds and waders
8	Ronas Hill-North Roe and Tingon	5470	SPA/IBA/Ramsar	Breeding moorland- and sea-birds
10	Ramna Stacks and Gruney	11.6	SPA/IBA	Breeding seabirds

Map Ref	Site	Area (ha)	Designation	Key Features
13	Otterswick and Graveland	To be confirmed	SPA	Breeding divers
14	Hermaness, Saxa Vord and Valla Field	1037.7	SPA/IBA	Breeding seabirds and divers
17	Fetlar	2594.9	SPA/IBA	Breeding seabirds
18	Noss	343.8	SPA/IBA	Breeding seabirds
19	Mousa	198	SPA/IBA	Breeding seabirds
21	Fair Isle	561	SPA/IBA	Breeding seabirds

The Shetland Isles also support a range of important coastal and marine habitats as well as important populations of common seal. The large rocky tidal pools of Mousa cSAC are of particular importance, as they are frequently used by seals for pupping, breeding and moulting, and provide shelter from the exposed conditions of the open coast. Habitats of international importance within the SEA 5 component of Shetland include the European dry heaths and alkaline fens found at North Fetlar cSAC and the vegetated sea cliffs of Fair Isle cSAC.

Table 2.2 provides details of the coastal and marine cSACs in the Shetland Isles region. cSACs are a more recent initiative, hence their status as candidate sites at the present time. Nevertheless, UK Government policy is that they should be treated as designated sites once the details are registered with the European Commission.

Map Ref	Site	Area (ha)	Qualifying features
4	The Vadills	62.4	Coastal lagoons
5	Papa Stour	2076.7	Reefs and submerged or partially submerged sea caves
7	Tingon	569.3	Blanket bogs
9	Ronas Hill-North Roe	4900.9	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the Isoëto-Nanaojuncea Natural dystrophic lakes and ponds Alpine and boreal heaths Blanket bogs
11	Sullom Voe	2698.5	Large shallow inlets and bays
12	Yell Sound Coast	1540.5	Otter <i>Lutra lutra</i> and common seal <i>Phoca vitulina</i>
15	Keen of Hamar	38.5	Calamarian grasslands of the <i>Violetalia calaminariae</i> Calcareous and calcshist screes of the montane to alpine levels (<i>Thlaspietea rotundifolii</i>)
16	North Fetlar	1584.4	European dry heaths Alkaline fens
20	Mousa	530.6	Common seal <i>Phoca vitulina</i>
22	Fair Isle	561	Vegetated sea cliffs of the Atlantic and Baltic coasts

Landscape conservation is recognised at a European level by the identification of Environmentally Sensitive Areas (ESA's), which have the restoration of traditional landscapes as one of their objectives. The Shetland Islands (as a whole and including Fair Isle) were designated as an ESA in 1987. Fair Isle has also been awarded the Council of Europe Diploma, an accolade to acknowledge the European interest of the site and the quality of protection and management.

Sites of national and local importance

National conservation designations provide underpinning protection for most of the European sites, as well as safeguarding sites of national importance. These sites are National Nature Reserves (NNR's) or Sites of Special Scientific Interest (SSSI's) that have been designated for predominantly geological and ornithological interest in the region. A large number of Geological Conservation Review sites (GCR's) can also be found in the region. In addition to managing some of these nationally important sites, non-government organisations (NGO's), including the Scottish Wildlife Trust and the RSPB, also protect a range of coastal sites. Summary details of coastal SSSI's in the Shetland Islands are described in Figure 2.2 and Table 2.3. Further sites of national and local importance are described in Figure 2.3 and Table 2.4. More detailed descriptions of these sites can be found in the SEA 4 Conservation Report.

Figure 2.2 – SSSI's in the Shetland Isles

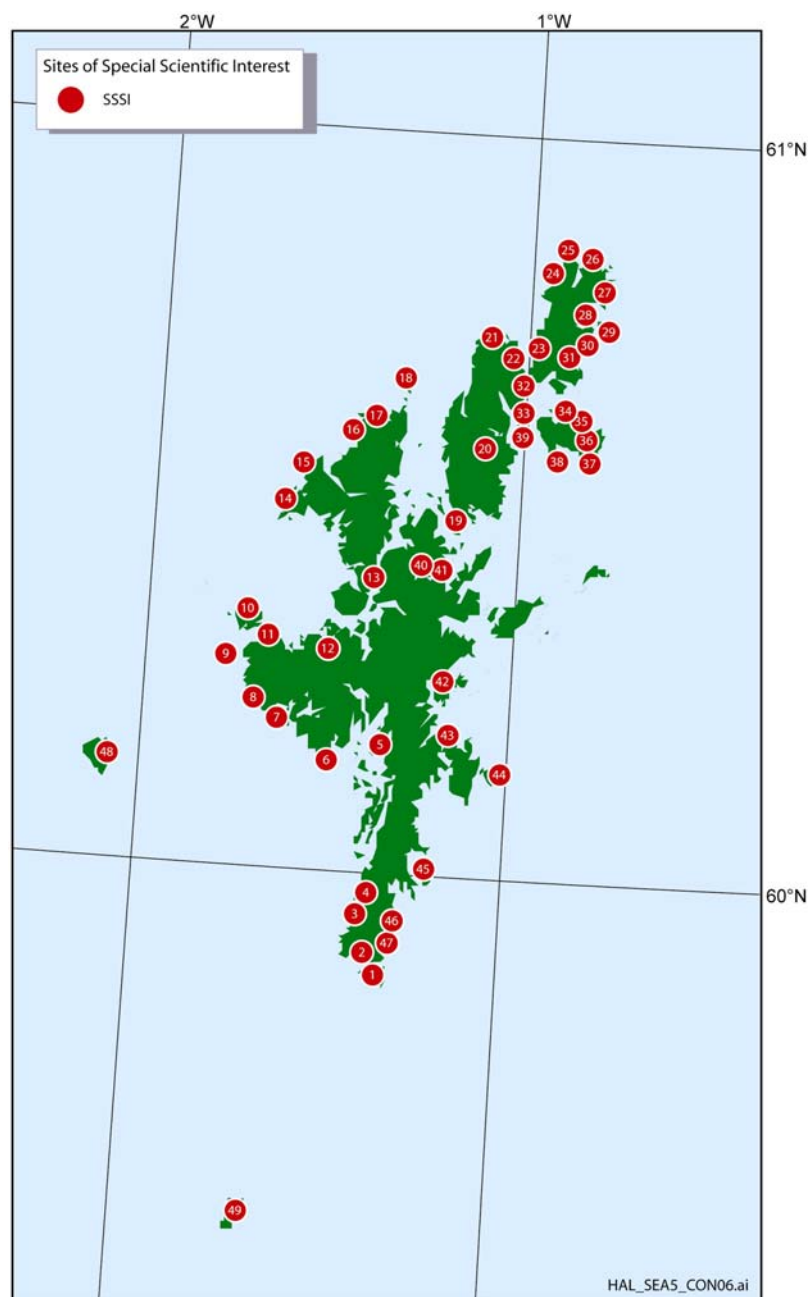


Table 2.3 - SSSI's in the Shetland Isles

Map Ref.	Site	Map Ref.	Site
1	Sumburgh Head	26	Saxa Vord
2	Quendale	27	Norwick
3	Lochs of Spiggie and Brow	28	Keen of Hamar
4	St. Ninians Tombola	29	Balta
5	South Whiteness	30	Skeo Tang to Clugan
6	Skelda Ness	31	Qui Ness to Pund Stacks
7	Fidlar Geo to Watsness	32	Gutcher
8	Sel Ayre	33	North Sandwick
9	Melby	34	Tressa Ness to Colbinstoff
10	Papa Stour	35	North Fetlar
11	Sandness Coast	36	Virva
12	The Vadills	37	Funzie
13	Voxter Voe and Valayre Quarry	38	Lamb Hoga
14	Eshanness Coast	39	Hascosay
15	Villains of Hamnavoe	40	Dales Voe
16	Fugla Ness – North Roe	41	The Ayres of Swinister
17	Uyea, North Roe Coast	42	Cat Firth
18	Ramna Stacks and Gruney	43	Easter Rova Head
19	Yell Sound Coast	44	Noss
20	Otterswick	45	Mousa
21	Breckon	46	The Cletts, Exnaboe
22	Ness of Cullivoe	47	Pool of Virkie
23	Lunda Wick	48	Foula
24	Tonga Greff	49	Fair Isle
25	Hermaness		

Figure 2.3 - National and local designations in the Shetland Isles

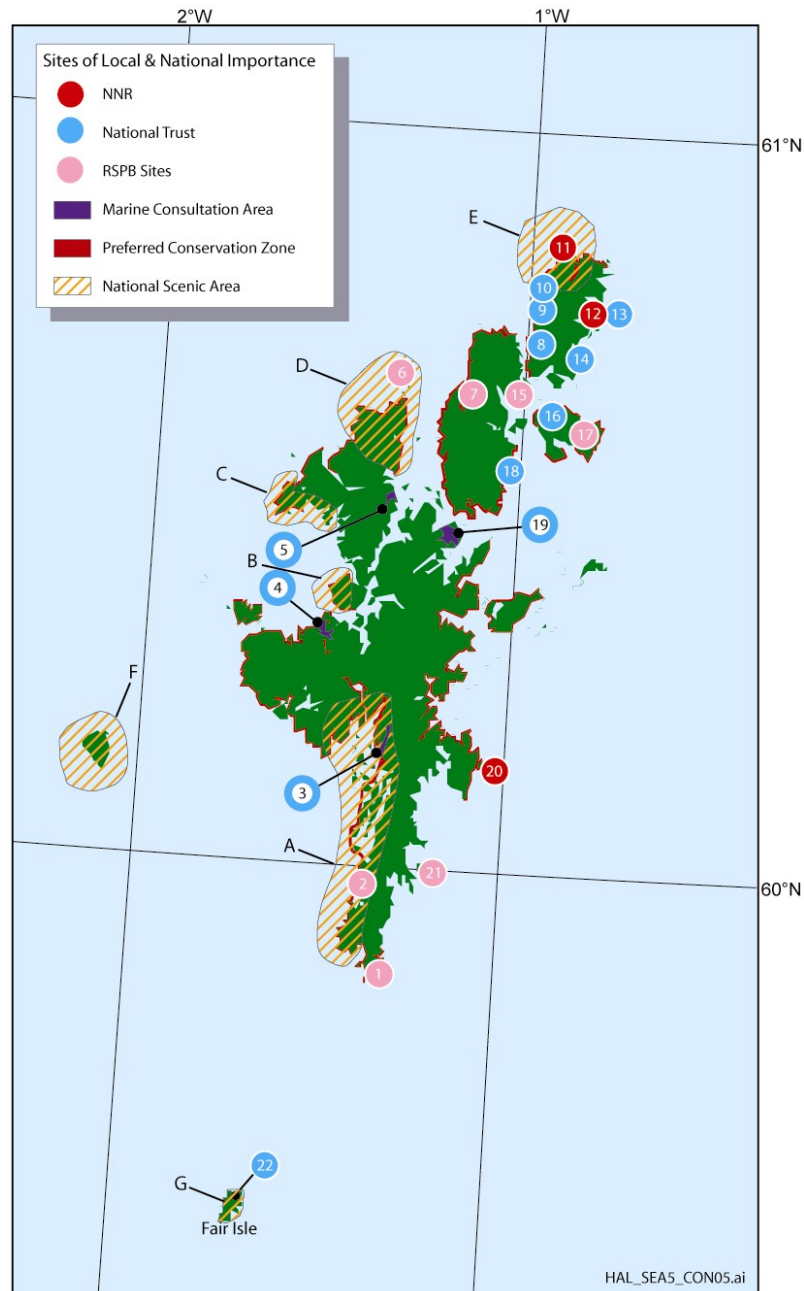


Table 2.4 - Sites of national and local importance in the Shetland Isles

Map Ref.	Site	Map Ref.	Site
A	Shetland NSA (southwest coast west of Quendale Bay)	9	Unst N of Collaster National Trust
B	Shetland NSA (west coast of Muckle Roe)	10	Unst Sneuga National Trust
C	Shetland NSA (dominated by Eshaness cliffs)	11	Hermaness NNR
D	Shetland NSA (north coast of mainland)	12	Keen of Hamar NNR

E	Shetland NSA (Herma Ness and Unst)	13	Unst Swinness National Trust
F	Shetland NSA (Foula)	14	Unst Burga Wick National Trust
G	Shetland NSA (Fair Isle)	15	Black Park, Yell RSPB
1	Sumburgh Head RSPB	16	Fetlar Daaey National Trust
2	Loch of Spiggie	17	Fetlar RSPB
3	Whiteness Voe MCA	18	Yell, N of Queyon National Trust
4	Brindister Voe and the Vadills MCA	19	Swinster Voe and the Houb of Fora Ness MCA
5	The Houb, Fugla Ness MCA	20	Noss NNR
6	Ramna Stacks and Gruney RSPB	21	Mousa RSPB
7	Lumbister, Yell RSPB	22	Fair Isle National Trust
8	Unst Wick National Trust		

2.2 The Orkney Islands

2.2.1 Overview

The group of islands forming the Orkney archipelago is generally low with gentle slopes and rounded topography. The most southerly island lies less than 10km from the Scottish mainland. The exception is the west Atlantic coastline of the main island (Mainland) and Hoy, which is characterised by some of the most spectacular cliff and rock formations in Britain, including the much-photographed stack, the Old Man of Hoy.

There are almost ninety islands and numerous rocks and skerries, all of which are separated by shallow and often narrow strands and inlets. Some of these, in response to their position between different tidal regimes in the Atlantic, North Sea and Pentland Firth, have strong tidal currents.

The eastern coasts of many of the islands are predominantly rocky shorelines interspersed with sandy and shingle beaches and sand dunes. Many of the shingle beaches are important for migrant and wintering waders. Along the west coast of Mainland there are numerous geos and caves, features also found on other islands within the archipelago. Many of the islands support internationally important numbers of both common and grey seals, and the otter is also common in coastal and inland waters.

Estuarine habitat is limited in Orkney but remains undisturbed and supports breeding waders and wildfowl populations, as well as tern breeding colonies. There are also a number of coastal lagoons although the only one of any significant size is the Loch of Stenness, the largest brackish lagoon in the UK. The nature conservation importance of the Orkney coast is acknowledged through the designation of international, European and nationally recognised conservation areas.

Sites of international importance

The Orkney Islands are internationally important for breeding seabirds and wintering waterfowl. Seabirds colonise much of the coastline with some sections housing contiguous colonies, while the nearshore waters of the region hold vulnerable concentrations of seabirds and seaduck species such as eiders and long-tailed duck throughout the year. Several sites are designated as Special Protection Areas (SPA's) for their internationally important bird assemblages. Current coastal SPAs, IBAs and Ramsar sites in the Orkney region are highlighted in Figure 2.4 and Table 2.5.

Figure 2.4 – Sites of international importance in Orkney

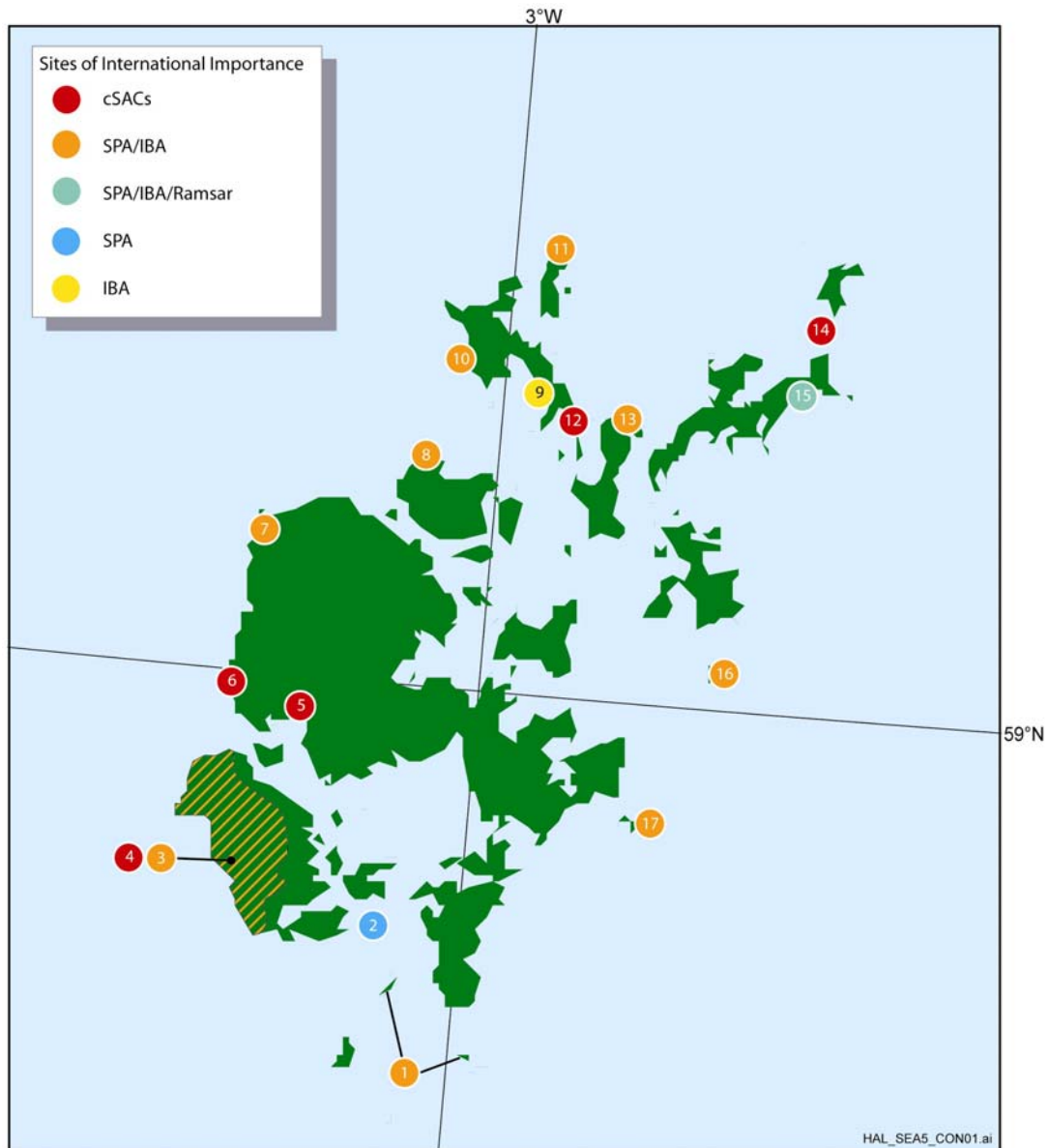


Table 2.5 - Sites of international importance for birds in the Orkney region

Map Ref	Site	Area (ha)	Status	Conservation Interest
1	Pentland Firth Islands	170.5	SPA/IBA	Breeding seabirds
2	Switha	57.4	SPA/IBA	Wintering wildfowl
3	Hoy	9499.7	SPA/IBA	Breeding falcons and seabirds
7	Marwick Head	8.7	SPA/IBA	Breeding seabirds
8	Rousay	633.4	SPA/IBA	Breeding sea and moorland birds
9	South Westray Coast	530	IBA	Wintering waders
10	West Westray	350.6	SPA/IBA	Breeding seabirds and breeding waterbirds

Map Ref	Site	Area (ha)	Designation	Importance
11	Papa Westray (North Hill and Holm)	245.7	SPA/IBA	Breeding seabirds
13	Calf of Eday	238	SPA/IBA	Breeding seabirds
15	East Sanday Coast	1515	SPA/IBA/Ramsar	Wintering seabirds and waders
16	Auskerry	102	SPA/IBA	Breeding seabirds
17	Copinsay	125.4	SPA/IBA	Breeding seabirds

Orkney supports a large and diverse spectrum of marine and coastal habitats in addition to nationally scarce species, with many reaching the most northern limits of their distribution. Marine habitats between the islands include areas of bedrock, boulders, gravel and sand with occasional deposits of mud. Biogeographically, Orkney lies in the boundary between the rich marine life of the western British Isles and the less diverse area of the North Sea. Those areas of international importance for habitats and/or non-avian species are described in Table 2.6 and Figure 2.4.

Map Ref	Site	Area (ha)	Qualifying features
4	Hoy	9499.7	Vegetated sea cliffs of the Atlantic and Baltic Coasts Natural dystrophic lakes and ponds Northern Atlantic wet heaths with <i>Erica tetralix</i> , alpine and boreal heaths Blanket bogs
5	Loch of Stenness	791.9	Coastal lagoons
6	Stromness Heaths and Coasts	635.8	Vegetated sea cliffs of the Atlantic and Baltic coasts European dry heaths
12	Faray and Holm of Faray	785.7	Grey seal <i>Halichoerus grypus</i>
14	Sanday	10971.6	Reefs Common seal <i>Phoca vitulina</i>

World Heritage Sites are listed by the World Heritage Committee of UNESCO to provide recognition that a site is of "outstanding universal value" and also that the national Government has provided it with an especially high level of assured protection. There are both natural and cultural categories of site. The Heart of Neolithic Orkney is included as a World Heritage Site and the citation includes archaeological sites, which are located at the coastline, such as '*Skara Brae*'.

Sites of national and local importance

National conservation designations provide underpinning protection for most of the European sites, as well as safeguarding sites of national importance. These sites are National Nature Reserves (NNR's) or Sites of Special Scientific Interest (SSSI's) that have been designated for predominantly geological and ornithological interest in the region. A large number of Geological Conservation Review sites (GCR's) can also be found in the region. In addition to managing some of these nationally important sites, non-government organisations (NGO's), including the Scottish Wildlife Trust and the RSPB, also protect a range of coastal sites. Summary details of coastal SSSI's in the Orkney Islands are described in Figure 2.5 and 2.7. Further sites of national and local importance are described in Figure 2.6 and Table 2.8. More detailed descriptions of these sites can be found in the SEA 4 Conservation Report (www.offshore-sea.org.uk/sea/dev/html_file/udsea4_document.php?documentID=30).

Figure 2.5 - SSSI's in Orkney

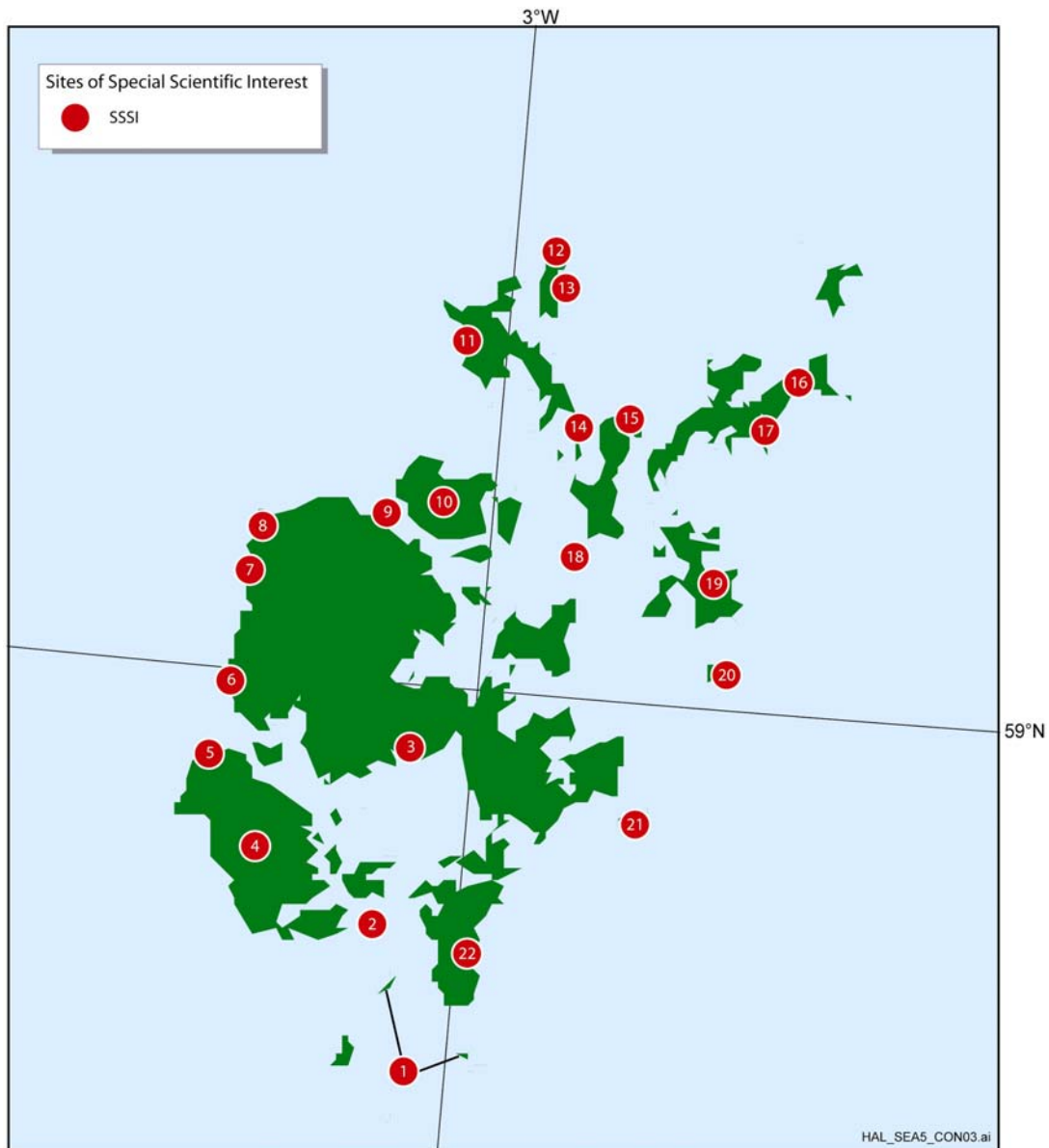


Table 2.7 - SSSI's in the Orkney Isles

Map Ref.	Site	Map Ref.	Site
1	Pentland Firth Islands	12	North Hill
2	Switha	13	Holm of Papa Westray
3	Waulkimill	14	Faray and Holm of Faray
4	Hoy	15	Calf of Eday
5	Muckle Head and Selwick	16	East Sanday Coast
6	Stromness Heaths and Coast	17	Central Sanday
7	Bay of Skail	18	Muckle and Little Green Holm
8	Marwick Head	19	Mill Bay
9	Eynhallow	20	Auskerry
10	Rousay	21	Copinsay
11	West Westray	22	Ward Hill Cliffs

Figure 2.6 - National and local designations in the Orkney Isles

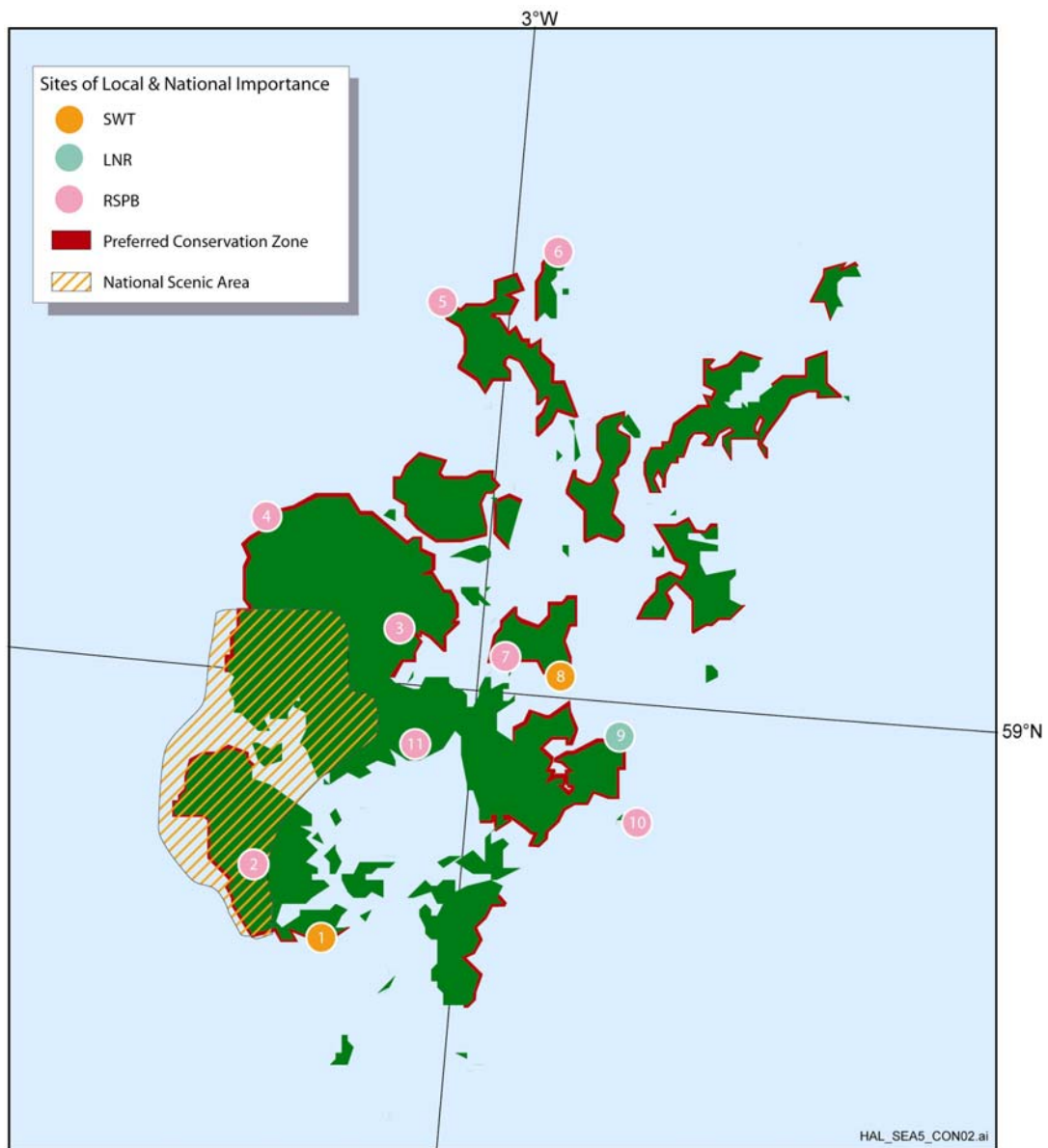


Table 2.8 - Sites of national and local importance in the Orkney Isles

Map Ref.	Site	Map Ref.	Site
1	Hill of White Hamars SWT	7	Mill Dam RSPB
2	Hoy RSPB	8	Holm of Burghlee SWT
3	Birsay Moors & Cottascarth, Mainland RSPB	9	Mull Head LNR
4	Marwick Head RSPB	10	Copinsay RSPB
5	Noup Cliffs, Westray RSPB	11	Hobbister RSPB
6	North Hill, Papa Westray RSPB		

3 MORAY FIRTH

The Moray Firth is one of the largest and most conspicuous features of the British coastline. It is remarkably symmetrical in outline, being approximately 180km from Inverness to Duncansby Head in the northeast and roughly 160km from Inverness to Kinnairds Head, at Fraserburgh, due east. The angle between the two coastlines is approximately 45°. In other respects, however, there are stark contrasts between the southeast and north facing coastlines. The southeast facing coastline reflects the Caledonian trend of regional geological structures; an alignment which is particularly notable between Inverness and Tarbert Ness – an alignment which is an extension of the Great Glen Fault. With the exception of a small, but significant outcrop of Upper Jurassic soft rocks between Brora and Helmsdale, almost the entire area is Upper or Middle Old Red Sandstone. These sedimentary series extend eastwards from Inverness to Spey Bay (except for New Red Sandstone west of Lossiemouth). East of Spey Bay, however, there is a sequence where more than a dozen different older geological series reach the coastline almost at 90°. This gives rise to considerable local variation in coastal types. Accordingly this coastline is almost a continuous succession of Sites of Special Scientific Interest for geological reasons.

Photo 3.1 - Lybster, a small port on the east coast of Caithness



The glacial features of the east coasts of Scotland are characterised by deposition of glacial and fluvio-glacial deposits which dominate the lowland topography. Great masses of sands and gravels lie both offshore and onshore. At Morrich More near Tain and Cuthill Links south of Dornoch there is an exceptionally large dune and sand ridge system at the entrance to a minor but deep-set inlet, Dornoch Firth. From the bisected glacial ridge at Fort George eastwards to Burghead there are massive sand dune and beach systems including Culbin with its pioneering extensive afforestation which was completed early in the 20th Century to stabilise sand drifting. Further east, the powerful River Spey and its fluvio-glacial antecedents have provided shingle for a series of fossil and active shingle ridges which have no equivalent anywhere in Europe.

Within Scotland, no coastal description can omit the obvious evidence of Late and Post-Glacial raised shorelines, many of which now lie far inland from the present day coastline. Except where there are rock cliffs, these features (usually coastal plains, raised beaches or degraded old cliff lines cut in

glacial deposits) can be traced almost continuously along the entire coastline of the Moray Firth. ‘Text-book’ examples, such as these, occur around the Dornoch Firth, Spey Bay and eastwards, at Portsoy and near Fraserburgh.

The Moray Firth itself is shallow with many sand and gravel banks. In places it is relatively sheltered. Given its shape there is a funnelling effect when wind-driven waves approach from the northeast. This open fetch tends to drive sediment westwards along the south coast and southwestward along the northeast coast. The sea area of the Moray Firth has emerged as one of the most important areas for cetaceans (particularly dolphins) in Scotland. Most of this research emanates from the University of Aberdeen which has an important Field Station in the Old Lighthouse complex in Cromarty (further information can be found at <http://www.abdn.ac.uk/zoology/lighthouse/index.shtml>).

Photo 32 - Inverness Firth



The geological structure of the Firth has provided one significant area for offshore oil production with the Beatrice Platform being the closest field to the Scottish Mainland. A pipeline leads south-westwards to a terminal at Nigg Bay in the sheltered deepwater inlet of the Cromarty Firth. This exceptionally sheltered deepwater haven is presently used for the mooring and maintenance of large numbers of oil exploration platforms and rigs. There is a platform fabrication yard at Nigg in the shelter of the dramatic opposing cliff headlands of the Sutors which continue to guard the entrance to what was the base of the Home Fleet of the Royal Navy at Invergordon for most of the earlier part of the 20th Century. The oil fabrication industry is also represented, albeit with little current activity, at Sinclair’s Bay and Morrich More and Evanton (pipeline assembly) and Arderseir (Platform Fabrication).

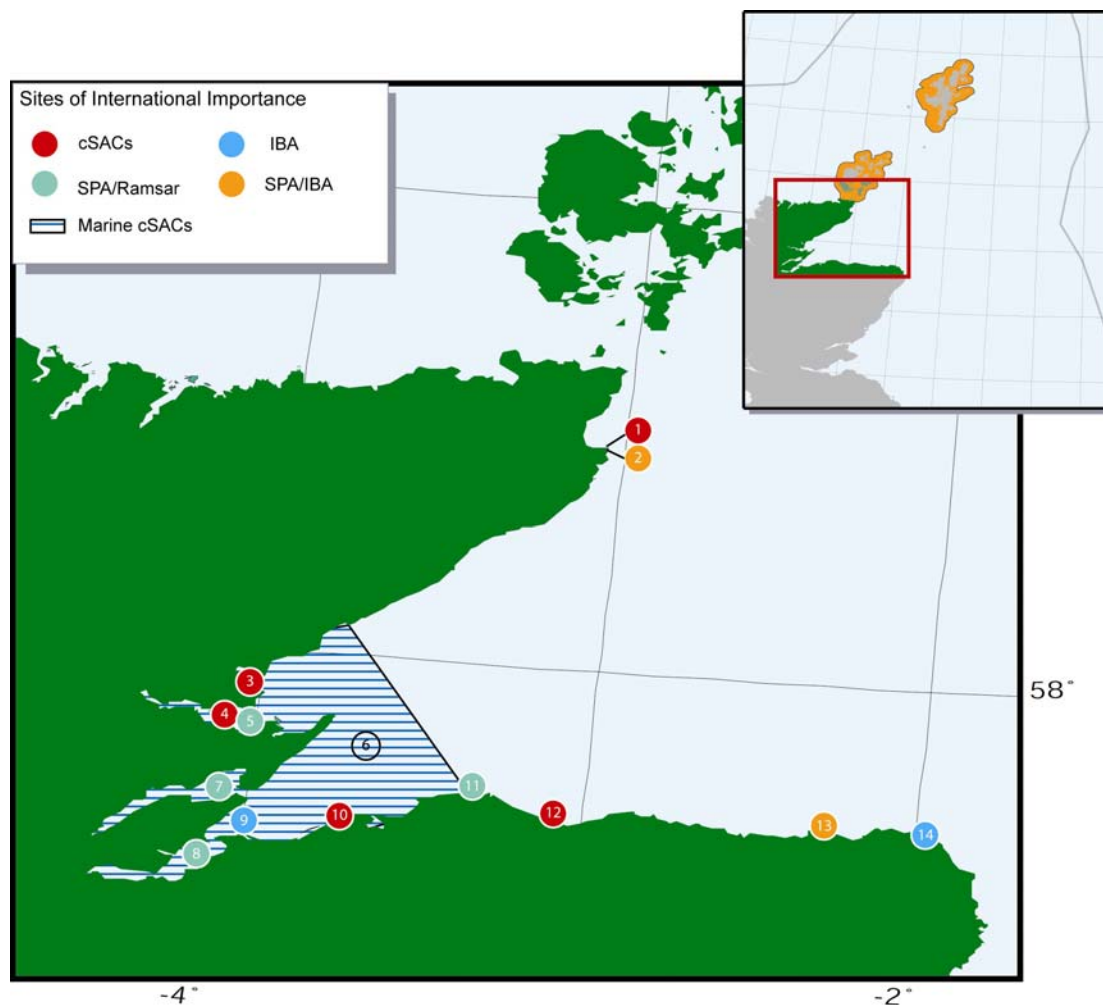
In addition to a flourishing tourist industry, including numerous golf courses, the coastal plains are dominated by forestry and rich agriculture (especially on the south coastline). The largest settlement, now with city status is Inverness, usually described as the fast-growing service centre and capital of the Highlands. All other towns of moderate size have their origin as fishing ports – Wick, Brora, Golspie, Nairn, Lossiemouth, Buckie, Macduff and Fraserburgh – and almost all fishing interests are now in decline, but retain evidence in the port infrastructure of former importance not only in the herring fisheries but in the post-war white fishing period. As a reflection of the dry climate and flat coastal plain topography there are major airfields along the Moray Firth coastline e.g. Dalcross (civil) and Kinloss (RAF).

Although new bridges at Inverness, west of Evanton and Littleferry have greatly reduced travel distances around the Inverness, Cromarty and Dornoch Firths respectively, the north area is perceived as remote, lightly settled and in need of commercial and industrial regeneration. The south coast, especially near Inverness is an area of economic and population growth. Further east however the continuing decline of the Scottish fishing industry is having a widespread negative effect on all coastal communities east of Spey Bay and there is little sign at present of any general replacement of economic activity. Unlike Aberdeen and Peterhead to the southeast and, with the exception of the Cromarty Firth, the Moray Firth coastline has not been a major beneficiary of North Sea oil and gas service and transport industries.

3.1 Sites of international importance

This area of SEA 5 is defined as stretching between Duncansby Head (Caithness) to Fraserburgh (Aberdeenshire). There are a number of sites of international importance along the east highland coast of Scotland. These sites are described below and are located on the following map (Figure 3.1). The number given in the right-hand corner of the summary information box identifies that site on Figure 3.1. In places the habitat qualification section has been condensed from the original JNCC text.

Figure 3.1 - Coastal sites of international importance in the Moray Firth region



3.1.1 East Caithness Cliffs cSAC

Summary information	Figure 3.1 1
Location: 58°16'4"N, 03°20'2"W Area: 442.64ha Date submitted: 20/12/2000 Relevant qualifying habitats: Vegetated sea cliffs of the Atlantic and Baltic coasts Relevant qualifying species: N/A	

General site characteristics

Shingle. Sea cliffs. Islets (70%)
 Heath. Scrub. Maquis and garrigue. Phygrana (15%)
 Humid grassland. Mesophile grassland (15%)

Habitat qualification

The Annex I habitat which is a primary reason for selection of this site is as follows:

Vegetated sea cliffs of the Atlantic and Baltic coasts

This stretch of northern Scottish coast provides a range of habitats, though lacking the extreme exposure of some of the island sites and Cape Wrath. There are two very small patches of perched saltmarsh with saltmarsh rush *Juncus gerardii*, and locally there is also bird-influenced vegetation. Short herb-rich grasslands and heath occur on the cliff tops. Around Berriedale, the vegetation lacks some of the more maritime components such as thrift *Armeria maritima* and sea plantain *Plantago maritima*, and becomes progressively less maritime southwards, with no maritime heath on the cliff top.

Vulnerability and management issues

Changes to the maritime cliff plant communities are not expected as a result of current activity. The majority of the site is ungrazed and most of the cliff-tops are fenced off as the steep slopes present a danger to livestock. Sheep grazing, where present, is usually light.

Component designations at national and local level

Berriedale Cliffs SSSI	Castle of Old Wick to Craig Hammel SSSI
Craig Hammel to Sgaps Geo SSSI	Dunbeath to Sgaps Geo SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0030143>

3.1.2 East Caithness Cliffs SPA (Caithness Cliffs IBA)

Summary information	Figure 3.1 2
Location: 58°16'49"N, 03°20'21"W Area: 442.62ha Date submitted: 27/03/1996 Birds of conservation concern: <i>Amber list:</i> peregrine, guillemot, herring gull, kittiwake, razorbill, shag, black guillemot, puffin, cormorant, fulmar	

The East Caithness Cliffs SPA is located on the east coast of Caithness. The site comprises most of the sea-cliff areas between Wick and Helmsdale. The cliffs are formed from Old Red Sandstone and are generally between 30-60m high, rising to 150m at Berriedale. Cliff ledges, stacks and geos provide ideal nesting sites for internationally important populations of seabirds, especially gulls and auks. The seabirds nesting on the East Caithness Cliffs feed outside the SPA in inshore waters as well as further away. The cliffs also provide important nesting habitat for peregrine *Falco peregrinus*. The cliffs overlook the Moray Firth, an area that provides rich feeding areas for fish-eating seabirds.

Caithness Cliffs IBA (1,053ha, 58°37'N 03°03'W) comprises sections of cliff-lined coast at Dunnet Head, Duncansby Head to Skirza Head, and Wick to Helmsdale.

General site characteristics

Habitats (no areal percentages provided)

Scrub (heathland)

Grassland

Rocky areas (sea cliff/rocky shore)

SPA species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of birds
<i>During the breeding season</i>	
Peregrine <i>Falco peregrinus</i>	6 pairs representing at least 0.5% of the breeding population in Great Britain (Mid-1990s)
Guillemot <i>Uria aalge</i>	71,509 pairs representing at least 3.2% of the breeding East Atlantic population (Count as at 1986)
Herring gull <i>Larus argentatus</i>	9,370 pairs representing at least 1.0% of the breeding Northwestern Europe (breeding) and Iceland/Western Europe - breeding population (Count, as at 1986)
Kittiwake <i>Rissa tridactyla</i>	31,930 pairs representing at least 1.0% of the breeding Eastern Atlantic - Breeding population (Count, as at 1986)
Razorbill <i>Alca torda</i>	9,259 pairs representing at least 1.6% of the breeding population (1986)
Shag <i>Phalacrocorax aristotelis</i>	2,345 pairs representing at least 1.9% of the breeding Northern Europe population (Count as at 1986)

SPA assemblage qualifications

During the breeding season, the area regularly supports 300,000 individual seabirds including puffin *Fratercula arctica*, great black-backed gull *Larus marinus*, cormorant *Phalacrocorax carbo*, fulmar *Fulmarus glacialis*, razorbill *Alca torda*, guillemot *Uria aalge*, kittiwake *Rissa tridactyla*, herring gull *Larus argentatus* and shag *Phalacrocorax aristotelis*.

IBA qualification

The bird populations responsible for qualification of this site as an IBA are similar to those of the SPA, but also include the species listed below:

IBA qualifying bird species	Number of individual birds
During the breeding season	
Great black-backed gull <i>Larus marinus</i>	875 (1987)
Black guillemot <i>Cephus grylle</i>	725 (1987)

These cliffs support 127,000 pairs of breeding seabirds, and 54,000 pairs of breeding waterbirds on a regular basis. The site is also nationally important for breeding *Fulmarus glacialis* (27,100 pairs, 1986-1987, 5% and *Phalacrocorax carbo* (250 pairs, 1985-1986, 3%).

Vulnerability and management issues

Threats to the coastline include oil pollution from passing tankers, development of oil-extraction facilities and inshore oil fields, and disturbance from recreational activities.

Component designations at national and local level

Berriedale Cliffs SSSI

Castle of Old Wick to Craig Hammel SSSI

Craig Hammel to Sgaps Geo SSSI

Dunbeath to Sgaps Geo SSSI

Sources of information

JNCC birds of conservation concern: reference card

http://www.jncc.gov.uk/species/Birds/PosB/Pop_status_of_birds_card.pdf


JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9001182.htm>

Birdlife International website

http://www.birdlife.net/datazone/search/sites_search.html?action=SitHTMDetails.asp&sid=2437&m=0

3.1.3 Mound Alderwoods cSAC

Summary information	Figure 3.1 
<p>Location: 57°57'50"N, 04°05'30"W</p> <p>Area: 297.33ha</p> <p>Date submitted: 15/06/1995</p> <p>Relevant qualifying habitats: Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>)</p> <p>Relevant qualifying species: N/A</p>	

General site characteristics

Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins) (6%)

Salt marshes. Salt pastures. Salt steppes (2%)

Coastal sand dunes. Sand beaches. Machair (1%)

Inland water bodies (standing water, running water) (4%)

Bogs. Marshes. Water fringed vegetation. Fens (4%)

Heath. Scrub. Maquis and garrigue. Phygrana (5%)

Alpine and sub-alpine grassland (3%)

Broad-leaved deciduous woodland (65%)

Coniferous woodland (9%)

Inland rocks. Screens. Sands. Permanent snow and ice (1%)

Habitat qualification

Annex I habitats that are a primary reason for selection of this site:

Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)

Mound Alderwoods is the most northerly site selected and is the largest estuarine alder *Alnus glutinosa* wood in Britain. It provides examples of successional stages from estuarine mud to dense woodland and is representative of the more stable form of the habitat.

Vulnerability and management issues

This site is a National Nature Reserve and is managed primarily for conservation.

Component designations at national and local level

Loch Fleet NNR

Mound Alderwoods NNR

Loch Fleet SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0013574>

3.1.4 Dornoch Firth and Morrich More cSAC

Summary information	Figure 3.1 4
<p>Location: 57°51'00"N, 04°02'30"W</p> <p>Area: 8700.53ha</p> <p>Date submitted: 20/07/2001</p> <p>Relevant qualifying habitats: Estuaries. Mudflats and sandflats not covered by seawater at low tide. <i>Salicornia</i> and other annuals colonising mud and sand. Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>). Embryonic shifting dunes. Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes'). Fixed dunes with herbaceous vegetation ('grey dunes'). Decalcified fixed dunes with <i>Empetrum nigrum</i>. Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>). Humid dune slacks. Coastal dunes with <i>Juniperus</i> spp, (sandbanks which are slightly covered by sea water all the time and reefs – present).</p> <p>Relevant qualifying species: Otter <i>Lutra lutra</i>. Common seal <i>Phoca vitulina</i>.</p>	

General site characteristics

Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins) (78.3%)
 Salt marshes. Salt pastures. Salt steppes (6.1%)
 Coastal sand dunes. Sand beaches. Machair (6.4%)
 Inland water bodies (standing water, running water) (0.2%)
 Heath. Scrub. Maquis and garrigue. Phygrana (6.2%)
 Humid grassland. Mesophile grassland (0.4%)
 Improved grassland (0.6%)
 Coniferous woodland (1.6%)
 Other land (including towns, villages, roads, waste places, mines, industrial sites) (0.2%)

Habitat qualification

Annex I habitats that are a primary reason for selection of this site:

Estuaries

Dornoch Firth is the most northerly large and complex estuary in the UK. The estuary is fed by the Kyle of Sutherland and is virtually unaffected by industrial development. There is a complete transition from riverine to fully marine conditions and associated communities. Inland, and in sheltered bays, sediments are generally muddy. Gravelly patches occur in the central section of the Firth. Wide sandy beaches dominate the large bays at the mouth of the Firth, and areas of saltmarsh occur around the shores. Sublittoral sediments are predominantly medium sands with a low organic content. Several of the associated coastal habitats have been proposed as Annex I interests in their own right.

Mudflats and sandflats not covered by seawater at low tide

The estuary contains extensive areas of mudflats and sandflats. The flats extend in a wide belt along the northern and southern shores and are characteristic of a range of environmental conditions. There is a continuous gradient in the physical structure of the flats, from medium-sand beaches on the open coast to stable, fine-sediment mudflats and muddy sands further inland. This results in a high diversity of animal and plant communities supporting polychaetes, oligochaetes, amphipods, gastropods and bivalves. The sheltered bays provide a habitat for communities of algae, eelgrass *Zostera* spp. and the pioneer saltmarsh plant glasswort *Salicornia* spp.

Salicornia and other annuals colonising mud and sand

Dornoch Firth and Morrich More has the most extensive area of pioneer glasswort *Salicornia* spp. saltmarsh in Scotland. It is the most northerly site selected for this Annex I type, and represents the habitat type in the northern part of its range in the UK. It forms part of a complete transition from pioneer to upper saltmeadow and important sand dune habitats.

Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

Dornoch Firth and Morrich More is the most northerly site selected for Atlantic salt meadows and represents this habitat type in the northern part of its UK range. The site supports a wide variety of community types, with the characteristic zonation from pioneer to upper marsh vegetation. At Morrich More the saltmarshes lie adjacent to sand dunes and there are important transitions between these habitats.

Morrich More dune systems

The massive area of sand dunes at Morrich More contains the full sequence of dune types - from embryonic backshore dunes which are colonised by lyme-grass *Leymus arenarius* and, unusually for Scotland, often prograde seawards to decalcified fixed dunes with *Elymus maritimus* vegetation. Other older dune ridges, also decalcified, have *Caluna-Ulicetea* associations. Landwards from the active shoreline there are complex series of other habitats, often shore-parallel, including successively older fixed dunes with intervening wet meadow, pasture, marsh and saltmarsh areas. Large parabolic dunes also occur in the west of the area. Heather and juniper scrub occur on low ridges further inland and gradually replace the more common long dune grasses. In spite of its use as a NATO bombing range most of the site is remarkably undisturbed. From a geomorphological perspective the essentially shore-parallel dune system typifies the importance of a falling sealevel for at least the last 7,000 years. This is the most important acidic dune site in north Scotland. Its importance is based on size, age, diversity and complexity.

Species qualification

Otter *Lutra lutra*

Dornoch Firth and Morrich More consists of an estuarine system with extensive areas of bordering natural habitat including sand dune, woodland and small lochans. The River Evelix and the River Oykel, which both feed into the site, provide further otter *Lutra lutra* habitat. The area supports a good population of otters in what is the only east coast estuarine site selected for the species in Scotland.

Common seal *Phoca vitulina*

The Dornoch Firth is the most northerly large estuary in Britain and supports a significant proportion of the inner Moray Firth population of the common seal *Phoca vitulina*. The seals, which utilise sand-bars and shores at the mouth of the estuary as haul-out and breeding sites, are the most northerly population to utilise sandbanks. Their numbers represent almost 2% of the UK population.

Vulnerability and management issues

The majority of the site is owned by the Ministry of Defence and management is discussed regularly at a Ministry of Defence Conservation group. A pipeline construction corridor runs through the middle of Morrich More; use of the dunes by vehicles and grazing levels are being monitored and reviewed. The collection of shellfish, other than mussels, by mechanical means is controlled by a Nature Conservation Order made under the Wildlife and Countryside Act 1981. The site contains a long established wild mussel fishery, which is managed sustainably. All of these activities will be included within an integrated site management scheme.

Component designations at national and local level

Dornoch Firth SSSI
Morrich More SSSI

Edderton Sands RSPB
Dornoch-Tarbet Ness PCZ

Dornoch Firth NSA

Sources of information

JNCC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0019806>

3.1.5 Dornoch Firth and Loch Fleet SPA/Ramsar

Summary information	Figure 3.1	5
<p>Location: 57°51'00"N, 04°02'30"W</p> <p>Area: 7836.33ha</p> <p>Date submitted: 24/03/1997</p> <p>Birds of conservation concern: <i>Amber list:</i> osprey, bar-tailed godwit, greylag goose, wigeon, curlew, dunlin, oystercatcher, teal</p>		

The Dornoch Firth is one of the two northernmost estuaries in the Moray Basin ecosystem. The Dornoch Firth and Loch Fleet SPA is one of the best examples in northwest Europe of a large complex estuary which has been relatively unaffected by industrial development, whilst Loch Fleet itself is an example of a shallow, bar-built estuary. Extensive sand-flats and mud-flats are backed by saltmarsh and sand dunes with transitions to dune heath and alder *Alnus glutinosa* woodland. The tidal flats support internationally important numbers of waterbirds on migration and in winter, and are the most northerly and substantial extent of intertidal habitat for wintering waterbirds in the UK, as well as Europe. The Firth is also of importance as a feeding area for locally breeding osprey *Pandion haliaetus*.

Dornoch Firth and Loch Fleet SPA forms an integral ecological component of Moray Basin Firths and Bays of which it forms the most northerly component area.

General site characteristics

Land-use

Human activities include tourism, forestry, fishing, grazing, and hunting.

SPA species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of birds
During the breeding season	
Osprey <i>Pandion haliaetus</i>	10 pairs representing at least 10.0% of the breeding population in Great Britain (Count as at early 1990's)
Over winter	
Bar-tailed godwit <i>Limosa lapponica</i>	1,300 individuals representing at least 2.5% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)
Greylag goose <i>Anser anser</i>	2,079 individuals representing at least 2.1% of the wintering Iceland/UK/Ireland population (5 year peak mean 1991/2 - 1995/6)
Wigeon <i>Anas penelope</i>	15,304 individuals representing at least 1.2% of the wintering Western Siberia/Northwestern/Northeastern Europe population (5 year peak mean 1989/90-1993/4)

SPA assemblage qualifications

Over winter, the area regularly supports 34,837 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including curlew *Numenius arquata*, dunlin *Calidris alpina alpina*, oystercatcher *Haematopus ostralegus*, teal *Anas crecca*, wigeon *Anas penelope*, greylag goose *Anser anser* and bar-tailed godwit *Limosa lapponica*.

Ramsar features

Site information
Location: 57°51'N 004°02'W
Area: 7,836ha
Date submitted: 24/03/1997
Importance: Over the winter the area provides habitat for <i>Anser anser</i> (1.1% of the population), <i>Anas penelope</i> (1.2% of the population), and <i>Limosa lapponica</i> (1.1% of the population).

Component designations at national and local level

Dornoch Firth SSSI
Morrich More SSSI

Edderton Sands RSPB
Dornoch-Tarbet Ness PCZ

Dornoch Firth NSA

Sources of information

JNCC birds of conservation concern: reference card

http://www.jncc.gov.uk/species/Birds/PosB/Pop_status_of_birds_card.pdf

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9001622.htm>

The Annotated Ramsar list

http://www.ramsar.org/profiles_uk.htm

3.1.6 Moray Firth (marine) cSAC

Summary information	Figure 3.1 6
<p>Location: 57°49'00"N, 03°43'36"W</p> <p>Area: 151341.67ha</p> <p>Date submitted: 16/03/2001</p> <p>Relevant qualifying habitats: (Sandbanks which are slightly covered by sea water all the time – present)</p> <p>Relevant qualifying species: Bottlenose dolphin <i>Tursiops truncatus</i></p>	

General site characteristics

Marine areas. Sea inlets (100%)

Species qualification

Annex II species that are a primary reason for the selection of this site:

Bottlenose dolphins *Tursiops truncatus*

The Moray Firth in northeast Scotland supports the only known resident population of bottlenose dolphin *Tursiops truncatus* in the North Sea. Dolphins are present all year round, and, while they range widely in the Moray Firth, they appear to favour particular areas.

Vulnerability and management issues

Under the auspices of the Moray Firth Partnership, a SAC management group was set up in October 1999 with EC LIFE Project funding. The group aims to develop management measures to restore and maintain the bottlenose dolphin population at a viable level. The dolphin population is monitored by Aberdeen University. A number of initiatives are already underway including an accreditation scheme for dolphin-watching cruise boats and codes of conduct for recreational pleasure craft. A strategy for dumping and dredging activities is also being developed to address these very localised activities adjacent to the coastline.

Sources of information

JNCC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0019808>

3.1.7 Cromarty Firth SPA/Ramsar

Summary information	Figure 3.1	7
Location: 57°41'00"N, 04°12'00"W Area: 3,666.24ha Date submitted: 22/03/1999 Birds of conservation concern: <i>Amber list:</i> osprey, bar-tailed godwit, whooper swan, greylag goose, redshank, curlew, dunlin, knot, oystercatcher, scaup, pintail, wigeon		

Cromarty Firth is one of the major firths on the east shore of the Moray Firth. It contains a range of high-quality coastal habitats including extensive intertidal mud-flats and shingle bordered locally by areas of saltmarsh, as well as reedbeds around Dingwall. The rich invertebrate fauna of the intertidal flats, with beds of eelgrass *Zostera spp.*, glasswort *Salicornia spp.*, and *Enteromorpha* algae, all provide important food sources for large numbers of wintering and migrating waterbirds (swans, geese, ducks and waders). With adjacent estuarine areas elsewhere in the Moray Firth, it is the most northerly major wintering area for wildfowl and waders in Europe. The Firth is also of importance as a feeding area for locally breeding osprey *Pandion haliaetus* as well as for breeding terns.

Cromarty Firth SPA forms an integral ecological component of Moray Basin Firths and Bays.

SPA species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of birds
<i>During the breeding season</i>	
Common tern <i>Sterna hirundo</i>	294 pairs representing at least 2.4% of the breeding population in Great Britain (5 year mean, 1989-1993)
Osprey <i>Pandion haliaetus</i>	1 pair representing at least 1.0% of the breeding population in Great Britain (Early 1990s)
<i>Over winter</i>	
Bar-tailed godwit <i>Limosa lapponica</i>	1,420 individuals representing at least 2.7% of the wintering population in Great Britain (winter peak mean)
Whooper swan <i>Cygnus cygnus</i>	55 individuals representing at least 1.0% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)
Greylag goose <i>Anser anser</i>	1,777 individuals representing at least 1.8% of the wintering Iceland/UK/Ireland population (winter peak mean)

SPA assemblage qualifications

Over winter, the area regularly supports 34,847 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including redshank *Tringa totanus*, curlew *Numenius arquata*, dunlin *Calidris alpina alpina*, knot *Calidris canutus*, oystercatcher *Haematopus ostralegus*, red-breasted merganser *Mergus serrator*, scaup *Aythya marila*, pintail *Anas acuta*, wigeon *Anas penelope*, greylag goose *Anser anser*, bar-tailed godwit *Limosa lapponica* and whooper swan *Cygnus cygnus*.

Ramsar features

Site information
<p>Location: 54°41'N 04°12'W Area: 4,197ha Date submitted: 22/07/99 Importance: The site supports the full range of estuarine habitats. Of particular importance are the extensive intertidal mudflats, which support sizeable beds of <i>Zostera spp.</i> The tidal flats are bordered locally by saltmarsh which grades into alluvial woodland at the mouth of the river Conon. It provides habitat for internationally important populations of <i>Limosa lapponica</i> and <i>Anser anser</i>. The site is used for nature conservation, tourism, and grazing.</p>

Component designations at national and local level

Cromarty Firth SSSI

Sources of information

JNCC birds of conservation concern: reference card

http://www.jncc.gov.uk/species/Birds/PosB/Pop_status_of_birds_card.pdf

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9001623.htm>

3.1.8 Inner Moray Firth SPA/Ramsar

Summary information	Figure 3.1	8
<p>Location: 56°50'25"N, 04°21'15"W Area: 2339.23ha Date submitted: 22/03/1999 Birds of conservation concern: <i>Amber list:</i> osprey, bar-tailed godwit, greylag goose, redshank, scaup, curlew, oystercatcher, goldeneye, teal, wigeon, cormorant</p>		

The Inner Moray Firth is located to the north of Inverness and is one of the major arms of the Moray Firth. It comprises the Beaully Firth and Inverness Firth (including Munloch Bay), which together form the easternmost estuarine component of the Moray Basin ecosystem. The site contains extensive intertidal flats and smaller areas of saltmarsh. The rich invertebrate fauna of the intertidal flats, with beds of eelgrass *Zostera spp.*, glasswort *Salicornia spp.*, and *Enteromorpha* algae, all provide important food sources for large numbers of wintering and migrating waterbirds (geese, ducks and waders). With adjacent estuarine areas elsewhere in the Moray Firth, this site is the most northerly major wintering area for wildfowl and waders in Europe. The Firth is also of importance as a feeding area for locally breeding osprey *Pandion haliaetus* as well as for breeding terns. The Inner Moray Firth SPA forms an integral ecological component of Moray Basin Firths and Bays.

SPA species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of birds
During the breeding season	
Common tern <i>Sterna hirundo</i>	310 pairs representing at least 2.5% of the breeding population in Great Britain (Seabird Census Register)
Osprey <i>Pandion haliaetus</i>	4 pairs representing at least 4.0% of the breeding population in Great Britain (Early 1990s)

SPA qualifying bird species	Number of birds
Over winter	
Bar-tailed godwit <i>Limosa lapponica</i>	1,155 individuals representing at least 2.2% of the wintering population in Great Britain (winter peak mean)
Greylag goose <i>Anser anser</i>	1,731 individuals representing at least 1.7% of the wintering Iceland/UK/Ireland population (winter peak mean)
Red-breasted merganser <i>Mergus serrator</i>	1,731 individuals representing at least 1.4% of the wintering Northwestern/Central Europe population (winter peak mean)
Redshank <i>Tringa tetanus</i>	1,811 individuals representing at least 1.2% of the wintering Eastern Atlantic - wintering population (winter peak mean)
Scaup <i>Aythya marila</i>	97 individuals representing <0.1% of the wintering Northern/Western Europe population (Counts 1991-96)

SPA assemblage qualifications

Over winter, the area regularly supports 33,148 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including scaup *Aythya marila*, curlew *Numenius arquata*, oystercatcher *Haematopus ostralegus*, goosander *Mergus merganser*, goldeneye *Bucephala clangula*, teal *Anas crecca*, wigeon *Anas penelope*, cormorant *Phalacrocorax carbo*, redshank *Tringa totanus*, red-breasted merganser *Mergus serrator*, greylag goose *Anser anser* and bar-tailed godwit *Limosa lapponica*.

Ramsar features

Site information
<p>Location: 56°50'N 04°21'W</p> <p>Area: 2,339ha</p> <p>Date submitted: 22/07/1999</p> <p>Importance: The site supports important wetland habitats including intertidal flats, saltmarsh, and a sand and shingle spit. The intertidal areas are especially important for the population of wintering waterfowl, including <i>Limosa lapponica</i> (1% of the population) and <i>Anser anser</i> (3% of the population). Human activities include nature conservation, tourism, fishing, hunting, and grazing.</p>

Component designations at national and local level

Beaully Firth SSSI
Munlochy Bay SSSI

Longman & Castle Stuart Bays SSSI
Whiteness Head SSSI

Sources of information

JNCC birds of conservation concern: reference card

http://www.jncc.gov.uk/species/Birds/PosB/Pop_status_of_birds_card.pdf

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9001624.htm>

The Annotated Ramsar list

http://www.ramsar.org/profiles_uk.htm

3.1.9 Moray Basin, Firths and Bays IBA

Summary information

Figure 3.1

9

Location: 57°36'N 04°00'W

Area: 134,660ha

Birds of conservation concern: *Amber list:* Slavonian grebe, whooper swan, greylag goose, wigeon, teal, scaup, velvet scoter, oystercatcher, ringed plover, knot, dunlin, bar-tailed godwit, curlew, redshank

A complex area of coastline and estuary, including Loch Fleet, Dornoch Firth, Loch Eye, Cromarty Firth, Beaully Firth, and Moray Firth (south shore including Burghead and Spey Bay), stretching from Helmsdale south to Spey Bay. This area includes six sites that were treated as separate IBAs in the previous international IBA inventory: 'Lower Dornoch Firth (including Morrich More)', 'Loch Eye', 'Cromarty Firth', 'Beaully Firth', 'Moray Firth: Munloch Bay to Findhorn Bay' and 'Moray Firth: Burghead and Spey Bays'.

General site characteristics

Habitats (no areal percentages available)

Scrub (scrub, heathland)

Grassland

Wetland (tidal river/enclosed tidal water, mudflat/sandflat, saltmarsh, sand dunes/sand beach, shingle/stony beach, standing freshwater)

Marine areas (open sea)

Rocky areas (sea cliff/rocky shore)

Land-use

Fisheries/aquaculture

Tourism/recreation

Species qualification

Those bird populations responsible for IBA qualification of the site are shown below:

IBA qualifying bird species	Number of birds
Over winter	
Slavonian grebe <i>Podiceps auritus</i>	66 (1995)
Whooper swan <i>Cygnus cygnus</i>	295 (1995)
Greylag goose <i>Anser anser</i>	23,200 (1994)
Wigeon <i>Anas Penelope</i>	31,400 (1995)
Teal <i>Anas crecca</i>	4,760 (1995)
Scaup <i>Aythya marila</i>	455 (1995)
Velvet scoter <i>Melanitta fusca</i>	540 (1995)
Red-breasted merganser <i>Mergus serrator</i>	1,790 (1995)
Oystercatcher <i>Haematopus ostralegus</i>	11,100 (1995)
Ringed plover <i>Charadrius hiaticula</i>	500 (1995)
Knot <i>Calidris canutus</i>	5,400 (1995)
Dunlin <i>Calidris alpine</i>	13,500 (1995)
Bar-tailed godwit <i>Limosa lapponica</i>	3,970 (1995)
Curlew <i>Numenius arquata</i>	5,300 (1995)
Redshank <i>Tringa tetanus</i>	5,150 (1995)

IBA qualifying bird species	Number of birds
On passage	
Oystercatcher <i>Haematopus ostralegus</i>	10,600 (1995)
Ringed plover <i>Charadrius hiaticula</i>	670 (1995)
Bar-tailed godwit <i>Limosa lapponica</i>	2,020 (1995)
Curlew <i>Numenius arquata</i>	3,720 (1995)
Redshank <i>Tringa tetanus</i>	5,600 (1995)
During the breeding season	
Common tern <i>Sterna hirundo</i>	310 (1995)

These coastal areas form an integral unit that is internationally important for populations of wintering and passage wildfowl. The IBA holds 130,000 wintering and 31,000 passage waterbirds on a regular basis, and is also nationally important for breeding *Phalacrocorax carbo* (280 pairs, 1990, 4%), and for wintering *Phalacrocorax carbo* (775 birds, 5%), *Cygnus olor* (380 birds, 1%), *Anser brachyrhynchus* (2,140 birds, 1989-1994, 1%), *Tadorna tadorna* (1,060 birds, 1%), *Somateria mollissima* (1,710 birds, 1994-1995, 2%), *Clangula hyemalis* (3,740 birds, 1994-1995, 16%), *Melanitta nigra* (2,760 birds, 1994-1995, 7%), *Bucephala clangula* (975 birds, 1994-1995, 3%), *Mergus merganser* (605 birds, 1994-1995, 7%), *Calidris maritima* (260 birds, 1%) and *Tringa nebularia* (8 birds, 1%). *Anser anser* are from the Icelandic breeding population.

Component designations at national and local level

Inverbrora SSSI	Ballinreach Coastal Gorges SSSI	Spey Bay SSSI
Cashach-Cove sea SSSI	Longman and Castle Stuart Bays SSSI	Whiteness Head SSSI
Culbin Sands SSSI	Lossiemouth Shore SSSI	Cromarty Firth SSSI
Dunrobin Coast SSSI	Rosemarkie to Shandwick Coast SSSI	Dornoch Firth SSSI
Morrich More SSSI	Nigg Bay SSSI	Loch Fleet SSSI
Munlochy Bay SSSI	Tarbat Ness SSSI	Masonshaugh SSSI
Mound Alderwoods NNR	Loch Fleet NNR	Nigg and Udale Bay NNR
Culbin Sands RSPB Reserve	Nigg and Udale Bay RSPB Reserve	Edderton Sands RSPB Reserve
Helmsdale Coast Inverbrora SSSI		

Sources of information

JNCC birds of conservation concern: reference card

http://www.jncc.gov.uk/species/Birds/PosB/Pop_status_of_birds_card.pdf

Birdlife International website

http://www.birdlife.net/datazone/search/sites_search.html?action=SitHTMDetails.asp&sid=2546&m=0

3.1.10 Culbin Bar cSAC

Summary information	Figure 3.1
Location: 57°37'45"N, 03°46'30"W Area: 612.88ha	10

Summary information

Figure 3.1

10

Date submitted: 20/12/2000**Relevant qualifying habitats:** Perennial vegetation of stony banks (Atlantic salt meadows *Glauco-Puccinellietalia maritima* and embryonic shifting dunes – present)**Relevant qualifying species:** N/A

General site characteristics

Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins) (40%)
 Salt marshes. Salt pastures. Salt steppes (25%)
 Coastal sand dunes. Sand beaches. Machair (10%)
 Shingle. Sea cliffs. Islets (20%)
 Heath. Scrub. Maquis and garrigue. Phygrana (5%)

Habitat qualification

Annex I habitats that are a primary reason for selection of this site:

Perennial vegetation of stony banks

Historically, Culbin Bar in northeast Scotland formed part of the same shingle aggregation as Lower River Spey – Spey Bay to the east. Although sea-level rise has separated the sites, they are still linked, being maintained by the same coastal processes. Culbin Bar and the Lower River Spey – Spey Bay are, individually, the two largest shingle sites in Scotland and together form a shingle complex unique in Scotland. They represent perennial vegetation of stony banks in the northern part of its range in UK. Culbin Bar is 7km long. It has a series of shingle ridges running parallel to the coast that support the best and richest examples of northern heath on shingle. Dominant species are heather *Calluna vulgaris*, crowberry *Empetrum nigrum* and juniper *Juniperus communis*. The natural westward movement of the bar deposits new ridges for colonisation. Being virtually unaffected by damaging human activities, Culbin Bar is an example of a system with natural structure and function.

Vulnerability and management issues

This site is part of a dynamic system with both accreting and eroding areas. Culbin Sands is a Royal Society for the Protection of Birds nature reserve, and the adjacent forest is a Forest Nature Reserve. RSPB intend to remove conifers that have become established on sand dune communities on parts of the Bar. Recreational activity (mainly walking, birdwatching and horse-riding) is generally light and compatible with the site's interests. RSPB carries out limited wardening. Unauthorised use of motorbikes and other vehicles regularly causes localised damage to coastal plant communities. Management strategies to address this problem are under consideration.

Component designations at national and local level

Culbin Sands, Forest & Findhorn Bay SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0019807>

3.1.11 Moray and Nairn Coast SPA/Ramsar

Summary information	Figure 3.1	11
Location: 57°38'54"N, 03°43'48"W Area: 2410.25ha Date submitted: 02/02/1997 Birds of conservation concern: <i>Red list:</i> common scoter <i>Amber list:</i> osprey, bar-tailed godwit, greylag goose, pink-footed goose, redshank, dunlin, oystercatcher, velvet scoter, long-tailed duck, wigeon		

The Moray and Nairn Coast SPA is located on the south coast of the Moray Firth. The site comprises the intertidal flats, saltmarsh and sand dunes of Findhorn Bay and Culbin Bar, and the alluvial deposits and associated woodland of the Lower River Spey and Spey Bay. It is of outstanding nature conservation and scientific importance for coastal and riverine habitats and supports a range of wetland birds throughout the year. In summer it supports nesting osprey *Pandion haliaetus*, whilst in winter it supports large numbers of Iceland/Greenland pink-footed goose *Anser brachyrhynchus*, Icelandic greylag goose *Anser anser* and other waterbirds, especially ducks, sea-ducks and waders. The geese feed away from the SPA on surrounding agricultural land during the day. The sea-ducks feed, loaf and roost over inundated intertidal areas within the site, but also away from the SPA in the open waters of the Moray Firth.

Moray and Nairn Coast SPA forms an integral ecological component of the Moray Basin Firths and Bays, of which it is the easternmost unit.

General site characteristics

Land-use

Human activities include recreation, timber harvesting, shellfish collecting, and hunting.

SPA species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of birds
<i>During the breeding season</i>	
Osprey <i>Pandion haliaetus</i>	7 pairs representing at least 7.0% of the breeding population in Great Britain (Count, as at early 1990s)
<i>Over winter</i>	
Bar-tailed godwit <i>Limosa lapponica</i>	1,156 individuals representing at least 2.2% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)
Greylag goose <i>Anser anser</i>	2,679 individuals representing at least 2.7% of the wintering Iceland/UK/Ireland population (5 year peak mean 1991/2 - 1995/6)
Pink-footed goose <i>Anser brachyrhynchus</i>	139 individuals representing <0.1% of the wintering Eastern Greenland/Iceland/UK population (5 year peak mean 1991/2 - 1995/6)
Redshank <i>Tringa tetanus</i>	1,690 individuals representing at least 1.1% of the wintering Eastern Atlantic - wintering population (WeBS 1989-1993 and additional surveys)

Assemblage qualifications

Over winter, the area regularly supports 20,250 individual waterfowl including pink-footed goose *Anser brachyrhynchus*, dunlin *Calidris alpina alpina*, oystercatcher *Haematopus ostralegus*, red-breasted merganser *Mergus serrator*, velvet scoter *Melanitta fusca*, common scoter *Melanitta nigra*, long-tailed duck *Clangula hyemalis*, wigeon *Anas penelope*, redshank *Tringa totanus*, greylag goose *Anser anser* and bar-tailed godwit *Limosa lapponica*.

Ramsar features

Site information
<p>Location: 57°39'N 003°44'W Area: 2,410ha Date submitted: 02/02/1997 Importance: The site, of outstanding conservation and scientific importance for coastal and riverine habitats, includes intertidal flats, saltmarsh, dunes, and associated floodplain alder <i>Alnus glutinosa</i> woodland. Several nationally scarce aquatic plants, invertebrates, and mammals are present. The site regularly supports migrating waterbirds and various species of wintering waders, as well as internationally important numbers of wintering geese.</p>

Component designations at national and local level

Culbin Sands, Culbin Forest & Findhorn Bay SSSI Spey Bay SSSI Findhorn Bay LNR

Sources of information

JNCC birds of conservation concern: reference card

http://www.jncc.gov.uk/species/Birds/PosB/Pop_status_of_birds_card.pdf

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9001625.htm>

The Annotated Ramsar list

http://www.ramsar.org/profiles_uk.htm

3.1.12 Lower River Spey/Spey Bay cSAC

Summary information	Figure 3.1	12
<p>Location: 57°40'12"N, 03°07'00"W Area: 652.6ha Date submitted: 29/01/01 Relevant qualifying habitats: Perennial vegetation of stony banks. Residual alluvial forests. Relevant qualifying species: N/A</p>		

General site characteristics

Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins) (8%)

Salt marshes. Salt pastures. Salt steppes (5%)

Coastal sand dunes. Sand beaches. Machair (1%)

Shingle. Sea cliffs. Islets (16%)

Inland water bodies (standing water, running water) (7%)

Bogs. Marshes. Water fringed vegetation. Fens (2%)

Heath. Scrub. Maquis and garrigue. Phygrana (26%)

Humid grassland. Mesophile grassland (7%)

Broad-leaved deciduous woodland (14%)

Coniferous woodland (8%)

Inland rocks. Screens. Sands. Permanent snow and ice (4%)

Other land (including towns, villages, roads, waste places, mines, industrial sites) (2%)

Habitat qualification

Annex I habitats that are a primary reason for selection of this site:

Perennial vegetation of stony banks

Historically, Lower River Spey – Spey Bay in north-east Scotland formed part of the same shingle aggregation as Culbin Bar to the west. Although sea-level rise has separated the sites, they are still linked, being maintained by the same coastal processes. Lower River Spey – Spey Bay and Culbin Bar are, individually, the two largest shingle sites in Scotland and together form a shingle complex unique in Scotland. They represent this habitat type in the northern part of its range in the UK. Lower River Spey – Spey Bay contains significant areas of both bare and naturally vegetated parallel shingle ridges, although some of these have been planted with trees. The most significant feature of the site is the complex of wet and dry vegetation types, depending on the physical relief of the shingle ridges and hollows. Species-rich dry heath and grassland occurs on the ridges, while in the wetter hollows there is species-rich wet heath and transitions to a vegetation type comparable to that of dune slacks. Large areas of scrub, mainly of gorse *Ulex europaeus*, also occur.

Vulnerability and management issues

Extensive areas of shingle have been deposited adjacent to the lower reaches of the River Spey and along the coast where it flows into the sea at Spey Bay. The river is very active and has developed a heavily braided channel because it frequently changes its course. As well as the main channel there are smaller channels. Some of these are flooded only at times of high flow, and others are isolated. The channels are separated by gravel banks which are vegetated to varying degrees. Parts of this large coastal shingle system have been modified by afforestation and shingle extraction and part of it is used as a military firing range. The rest is unmodified shingle ridges and slacks, and part of this area is managed as a nature reserve by the Scottish Wildlife Trust. The site will be monitored for damaging activities.

Component designations at national and local level

Spey Bay SSSI

Spey Bay SWT

Sources of information

JNCC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0019978>

3.1.13 Troup, Pennan and Lion Heads SPA/IBA

Summary information	Figure 3.1	13
Location: 57°41'00"N, 02°15'05"W		
Area: 174.22ha		
Date submitted: 14/03/1997		
Birds of conservation concern: <i>Amber list:</i> guillemot, razorbill, kittiwake, herring gull, fulmar		

The Troup, Pennan and Lion's head SPA is a 9km stretch of sea-cliffs along the Banff and Buchan coast of Aberdeenshire in north-east Scotland. As well as cliffs, the site also includes adjacent areas of grassland and heath, and several small sand or shingle beaches punctuate the otherwise rocky shore. The cliffs rise to 150m and provide ideal nesting sites for seabirds, which feed in the rich waters offshore and outside the SPA. Different parts of the cliffs are used by different species of seabirds according to varying ecological requirements. The site is particularly important for its numbers of gulls and auks. The IBA is located at 57°41'N 2°17'W and covers 320ha.

General site characteristics

Habitats

Scrub (2%; scrub, heathland)

Grassland (6%)

Wetland (2%; shingle/stony beach)

Rocky areas (90%; sea cliff/rocky shore)

Land-use

Not utilised (100%)

SPA species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

During the breeding season;

Guillemot *Uria aalge*, 29,902 pairs representing at least 1.3% of the breeding East Atlantic population (Count as at 1995).

SPA assemblage qualifications

During the breeding season the area regularly supports 150,000 individual seabirds (count, as at 1995) including razorbill *Alca torda*, kittiwake *Rissa tridactyla*, herring gull *Larus argentatus*, fulmar *Fulmarus glacialis* and guillemot *Uria aalge*.

IBA qualification

The bird populations responsible for qualifying this site as an IBA are similar to those of the SPA but also include the following species:

IBA qualifying bird species	Number of individual birds
During the breeding season	
Kittiwake <i>Rissa tridactyla</i>	31,700 (1995)
Razorbill <i>Alca torda</i>	3,220 (1995)

The site holds 38,400 pairs of breeding seabirds and 36,100 pairs of breeding waterbirds on a regular basis. It is also nationally important for breeding *Larus argentatus* (4,200 pairs, 1995, 2%), and for one of only two *Sula bassana* breeding colonies on the UK mainland.

Vulnerability and management issues

Oil pollution is a potential threat. Monitoring for the JNCC Seabird Colony Register is carried out here.

Component designations at national and local level

Gamrie and Pennan Coast SSSI

Sources of information

JNCC birds of conservation concern: reference card

http://www.jncc.gov.uk/species/Birds/PosB/Pop_status_of_birds_card.pdf

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002471.htm>

Birdlife International website

http://www.birdlife.net/datazone/search/sites_search.html?action=SitHTMDetails.asp&sid=2625&m=0

3.1.14 Rosehearty to Fraserburgh coast IBA

Summary information	Figure 3.1	14
Location: 57°41'N, 02°03'W		
Area: 130ha		
Birds of conservation concern: <i>Amber list:</i> purple sandpiper, turnstone		

An exposed north-facing rocky and sandy shoreline running west from the town of Fraserburgh. The IBA includes a narrow fringe of sand dunes and saltmarsh.

General site characteristics

Habitats

Wetland (70%; mudflat/sandflat, saltmarsh, sand dunes/sand beach, shingle/stony beach, coastal lagoon)

Rocky areas (30%; sea cliff/rocky shore)

Land Use

Not utilised (100%)

IBA qualification

Those bird populations responsible for IBA qualification of the site are shown below:

IBA qualifying bird species	Number of birds
Over winter	
Purple sandpiper <i>Calidris maritime</i>	120 (1995)
Turnstone <i>Arenaria interpres</i>	570 (1995)

The IBA is important for waders.

Vulnerability and management issues

Oil pollution and illegal dumping pose a threat to the IBA.

Component designations at national and local level

Rosehearty to Fraserburgh Coast SSSI

Sources of information

JNCC birds of conservation concern: reference card

http://www.jncc.gov.uk/species/Birds/PosB/Pop_status_of_birds_card.pdf

Birdlife International website

http://www.birdlife.net/datazone/search/sites_search.html?action=SitHTMDetails.asp&sid=2587&m=0

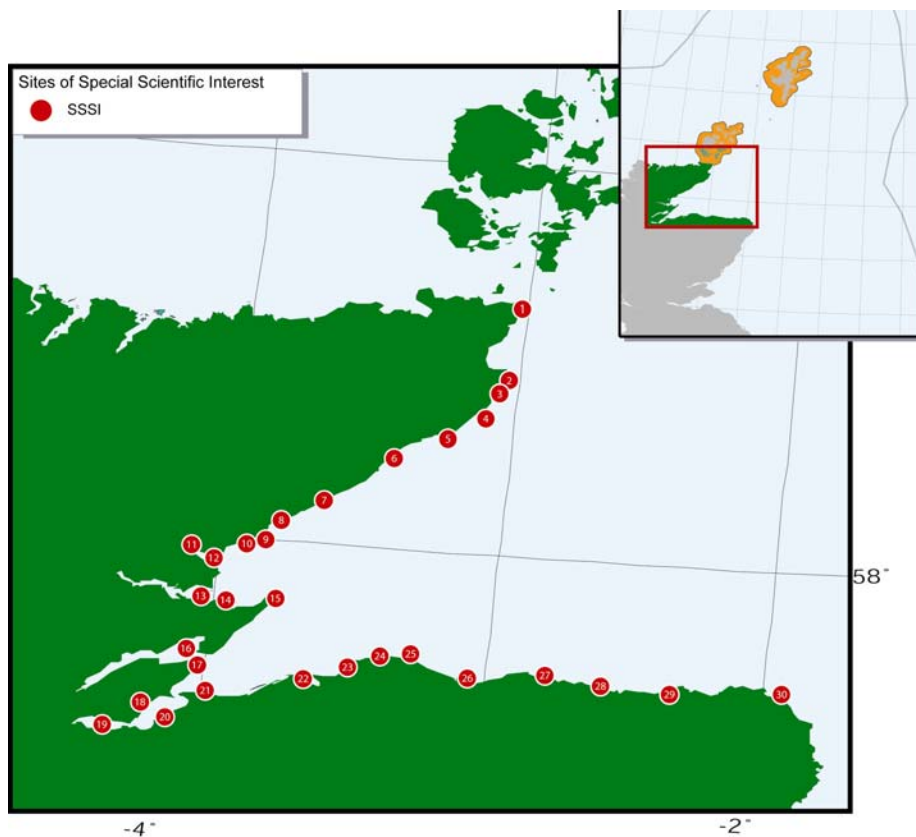
3.2 Sites of national and local importance

There are a number of sites of national and local importance in the Moray Firth region including National Nature Reserves, Sites of Special Scientific Interest and Scottish Wildlife Trust reserves. These sites are described in this section. SSSI's have been marked on a separate map (Figure. 3.2) for clarity. Figure 3.3 shows the location and reference numbers of other nationally and locally important sites (the number given in the associated text for each of these sites refers to their location on Figure 3.3). Numbering of the sites attempts to follow the coast in a north-south direction.

3.2.1 Sites of Special Scientific Interest (SSSI)

For more detailed information relating to designation please refer to the SNH website (www.snh.gov.uk), or consult the appropriate area office. For the definition of Site of Special Scientific Interest, see Appendix 2.

Figure 3.2 - SSSI's in the Moray Firth



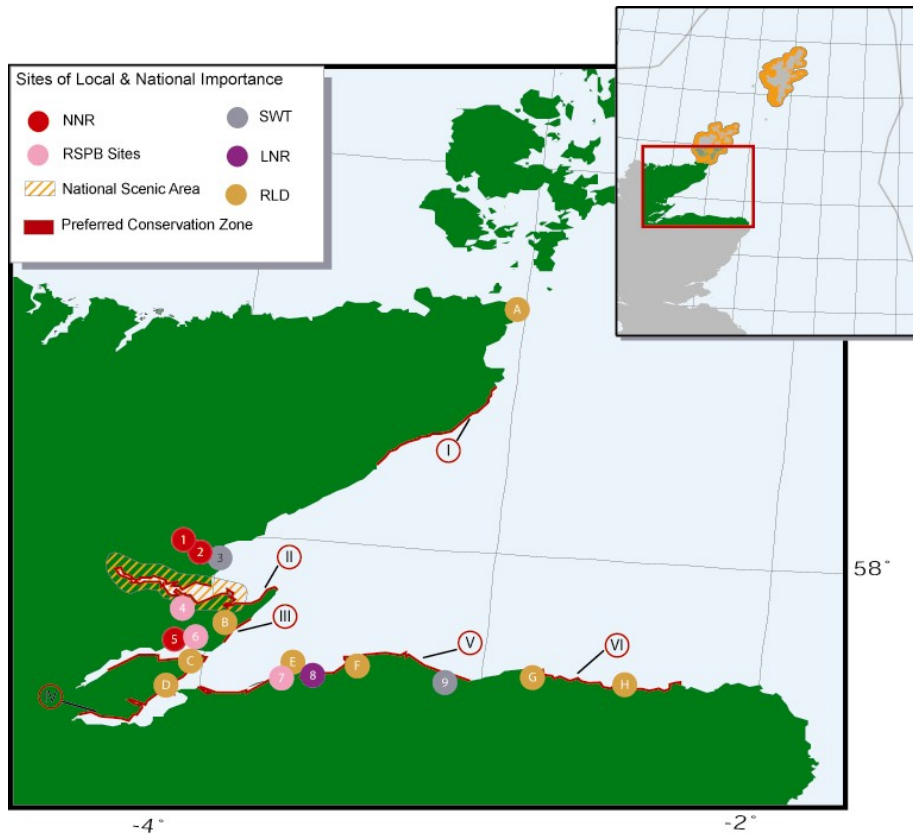
Map ref.	Site Name	Location	Area (ha)	Site Description
1	Duncansby Head	ND397710	83	Seabird colonies Maritime cliff vegetation
2	Long Berry Coast	ND377498	9	Geological
3	Castle of Old Wick – Craig Hammel	ND371489	25	Maritime cliff vegetation
4	Craig Hammel - Sgaps Geo	ND362464	72	Seabird colonies
5	Dunbeath – Sgaps Geo	ND297371	146	Seabird colonies Maritime cliff vegetation
6	Berriedale Cliffs	ND158280	234	Seabird colonies Maritime cliff vegetation
7	Helmsdale Coast	NC929077	148	Geological
8	Ballinreach Coastal Gorges	NC932087	8	Geological
9	Inverbrora	NC906033	56	Geological
10	Dunrobin Coast	NC856008	5	Geological
11	Mound Alderwoods	NH765990	292	Breeding birds Woodland Saline lagoon
12	Loch Fleet	NH800960	1,238	Wintering birds Pinewood Coastal vegetation
13	Dornoch Firth	NH760860	3,577	Wintering birds Coastal vegetation
14	Morrich More	NH830840	2,975	Wintering birds Coastal vegetation
15	Tarbet Ness	NH949879	60	Maritime cliff vegetation
16	Cromarty Firth	NH650670	3,585	Wintering birds Coastal vegetation
17	Rosemarkie to Shandwick Coast	NH744586	451	Coastal vegetation Seabirds Geological
18	Munlochy Bay	NH672528	267	Wintering birds Coastal vegetation
19	Beauly Firth	NH580480	2,062	Wintering birds Coastal vegetation
20	Longman and Castle Stuart Bays	NH739497	421	Wintering birds Saltmarsh
21	Whiteness Head	NH790580	412	Wintering birds Coastal vegetation
22	Culbin Sands, Forest and Findhorn Bay	NH990625	4,916	Coastal vegetation Invertebrates Geological
23	Masonhaugh	NJ120693	37	Geological
24	Clashach-Covesea	NJ167704	23	Geological
25	Lossiemouth Shore	NJ228711	8	Geological
26	Spey Bay	NJ325660	492	Coastal vegetation Geological
27	Cullen to Stakeness Coast	NJ574669	348	Geological
28	Whitehills to Melrose Coast	NJ702645	94	Geological

Map ref.	Site Name	Location	Area (ha)	Site Description
29	Gamrie to Pennan Coast	NJ824673	322	Maritime cliff vegetation Seabird colony Geological
30	Rosehearty to Fraserburgh Coast	NJ967675	139	Wintering birds Coastal vegetation Geological

Sources of information

Barne J, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom Region 3 North-east Scotland*. Peterborough, Joint Nature Conservation Committee.

Figure 3.3 - Coastal sites of national and local importance in the Moray Firth region



3.2.2 National Nature Reserves (NNR)

Figure 3.3

Map ref.	National Nature Reserves	Location	Area (ha)	Site description
1	Mound Alderwoods	NH765990	267	Estuary, alder woodland, fen.
2	Loch Fleet	NH800960	1058	Common seals, wildfowl and waders. Sand dunes, coastal heath
5	Nigg and Udale Bays	NH765715	640	Intertidal mud and sand flats, eelgrass beds

Sources of information

Scottish Natural Heritage website

<http://www.snh.org.uk/index/i-frame.htm>

Scotland's National Nature Reserves website

<http://www.nnr-scotland.org.uk/>

Barne J, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom Region 3 North-east Scotland*. Peterborough, Joint Nature Conservation Committee.

3.2.3 Local Nature Reserve (LNR)

Map ref.	Local Nature Reserves	Location	Area (ha)	Date declared	Site description
8	Findhorn Bay	NH862841	858.8	1998	Intertidal mud flats, dunes, salt marsh

Sources of information

Scottish Natural Heritage Website

www.snh.org.uk

Barne J, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom Region 3 North-east Scotland*. Peterborough, Joint Nature Conservation Committee.

3.2.4 Dornoch Firth National Scenic Area (NSA)

The most northerly of the four inner firths of the Moray Firth, the Dornoch Firth, extends from the wide sandy beaches and the large bays at the entrance to the firth, inland to Newton Point. It is relatively unaffected by industrial development and supports large areas of intertidal flats, heaths and sand dunes, saltmarsh and a stretch of rocky shore. The main settlements on the Dornoch Firth are Dornoch and Tain.

The Dornoch Firth NSA, designated in 1980, covers an area of 7,500ha. National Scenic Areas are Scotland's only national landscape conservation designation. They represent areas of land considered of national significance on the basis of their outstanding scenic interest or unsurpassed attractiveness which must be conserved as part of the country's natural heritage. The Dornoch Firth is also important for wild birds and as such it has been designated as a Ramsar site, and a Special Protection Area. The dune systems at Dornoch Links and Morrich More are of international importance for their flora and geomorphology.

Sources of information

Scottish Natural Heritage Website

<http://213.121.208.4/index/i-frame.htm>

The Moray Firth Partnership

www.morayfirth-partnership.org/TOP.html

3.2.5 Geological Conservation Review (GCR) Sites

Detailed scientific accounts of coastal and inland GCR sites are contained in volumes of a planned 42-volume Geological Conservation Review series by the JNCC. 28 of these volumes have been published to date. Sites in the list below marked with an asterisk have been identified in the recent JNCC publication 'Coastal Geomorphology of Great Britain', a volume of the GCR Series which 'summarises the results of the site evaluation and selection programme of Britain's coastal regions ... with the aim of representing the highlights of Britain's coastal geomorphology, 99 sites were selected

eventually for this part of the GCR, to be considered for long-term conservation under British law' (May & Hansom, 2003).

GCR Single Interest Locations (SILs)		
Duncansby to Skirza Head*	Cromarty & Rosemarkie Inliers	Lossiemouth, East Quarry
Wick Quarries, South Head	Eathie Fishing Station	Spey Bay*
Helmsdale	Munlochy Bay	Cullen
Culgower Bay	Arderseir	Cullen - Troupe Head,
Brora (4 SILs)	Whiteness Head*	Banffshire Coast
Dunrobin Coast Section	Culbin *(2 SILs)	Boyne Quarry
Morrich More* (2 SILs)	Masonhaugh (2 SILs)	Castle Hill
Tarbat Ness*	Clashach-Covesea	Den of Findon
Cadh'-an-Righ	Lossiemouth Shore	Rosehearty - Fraserburgh

Sources of information

Barne J, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom Region 3 North-east Scotland*. Peterborough, Joint Nature Conservation Committee.

May V J & Hansom J D (2003). *Coastal Geomorphology of Great Britain*. Peterborough, Joint Nature Conservation Committee

3.2.6 Regional Landscape Designations (RLD)

In the Moray Firth area there are 8 areas covered by RLD's. They are known as Areas of Great Landscape Value (AGLV) in Highland and Areas of Regional Landscape Significance (ARLS) in Grampian. The area of many of these sites is not available. There has been no monitoring or further comprehensive study of the number of RLDs since the study by Cobham Resource Consultants (1988). The following sites can be located on Figure 3.3.

- A. Duncansby Head
- B. Shandwick Beach
- C. Sutors of Cromarty
- D. Rosemarkie Burn
- E. Culbin
- F. Burghead/Branderburgh
- G. Cullen/Portsoy
- H. Macduff/Quarryhead

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom. Region 3 North-east Scotland*. Peterborough, Joint Nature Conservation Committee.

3.2.7 Preferred Conservation Zones (PCZ)

Preferred Conservation Zones (PCZ's) are non-statutory coastal areas in Scotland, of particular national scenic, environmental or ecological importance, in which major new oil and gas related developments would be inappropriate or would have a socio-economic impact on a small community. They are areas with a distinctive aesthetic appeal, heritage and character, where tourism and recreation take priority over major industrial processes. Figure 3.3 shows the location of the following sites.

- I. South Head - Helmsdale
- II. Dornoch - Tarbet Ness
- III. The North Sutor
- IV. The Black Isle
- V. Whiteness Head – Portgordon
- VI. Portnockie – Roseheartly

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom. Region 3 North-east Scotland*. Peterborough, Joint Nature Conservation Committee.

3.2.8 RSPB Reserves

Figure 3.3

Map ref.	RSPB Reserves	Location	Area (ha)	Description
4	Edderton Sands	NH729846	79.47	Intertidal mudflats with eelgrass, grazed saltmarsh, wintering and migrating wildfowl and waders, including wigeon and scaup.
6	Culbin Sands	NH945614	1180.63	Sandflats, saltmarsh, shingle bars and spits, sand dunes (mostly afforested), wintering waders and wildfowl, breeding waders and terns.
7	Nigg and Udale Bay	NH720660	1604.69	Mudflats, passage wildfowl and waders and wintering wildfowl, including pinkfooted goose and whooper swan.

Sources of information

RSPB Web Site

<http://www.rspb.org.uk>

Barne J, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom Region 3 North-east Scotland*. Peterborough, Joint Nature Conservation Committee.

3.2.9 Scottish Wildlife Trust (SWT) Reserves

Figure 3.3

Map ref.	Reserves	Location	Area (ha)	Site description
3	Loch Fleet	NH794965	1,163	A large tidal basin and sand dunes, coastal heath and pinewoods. Seals, terns, waders, wildfowl and many plants.
9	Spey Bay	NJ325657	127	Part of the largest vegetated shingle beach complex in Scotland.

Sources of information

Scottish Wildlife Trust website

www.swt.org.uk

Barne J, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom Region 3 North-east Scotland*. Peterborough, Joint Nature Conservation Committee

4 NORTHEAST COAST

The Northeast Coast of SEA 5 stretches from Kinnairds Head, near Fraserburgh, to Fife Ness which is the north limit of the Firth of Forth. Several small to medium sized rivers, the Ugie, Ythan, Don, Dee, North and South Esk and the Eden create small inlets and larger tidal basins, which from a conservational perspective are important, i.e. the Ythan, Montrose Basin and the Eden at St Andrews. Glacial and fluvio-glacial deposits on the relatively shallow sea bed and post-glacial sand deposition from the eastwards drainage from the interior mountains, have provided sand for many extensive sand dune systems, in association with extensive beaches, e.g. Sands of Forvie, St Cyrus-

Montrose, Barry Links and Tentsmuir – all of which have significant conservational status. The major inlet, however, is the Tay Estuary which receives very high fluvial discharges from the Tay and Teviot catchments. Partly due to the importance of the port at Dundee, this estuary has a long history of physical and biological research, especially in the University of Dundee.

Cliff sections are less common but are locally important both for geological and ornithological purposes, e.g. Bullers of Buchan and Fowlsheugh. Low rock platforms are found in north Fife where key sites occur in the Scottish Carboniferous Series.

This combination of tidal basins, dunes and beaches and high cliffs and rock platforms have created a high density of areas of conservational interest. Moreover, the large cities of Aberdeen and Dundee and second-order towns such as Peterhead, Stonehaven, Montrose, Arbroath, Carnoustie and St Andrews have created local and tourist pressures in the coastal zone for recreational purposes, including extensive and famous golf courses, e.g. Carnoustie, St Andrews. There is therefore a greater number of coastal planning and management groups and agencies which are trying to blend conservational and developmental pressures within a Coastal Zone Management framework.

The coastal zone is normally described as “open”. It suffers from North Sea coastal fog (haar). The tidal range is normally 2-3m but North Sea surges can occur when north winds, spring tides and low pressure systems prevail. These surges are less destructive than along the coast of East Anglia but can add 2-3m to the predicted tidal elevation. Accordingly, sea defences, e.g. at Aberdeen and Montrose have to be designed to counter these recurring, potentially damaging sea conditions. Damage potential has been exacerbated by a general reduction in coastal sediment, especially sand and many local authorities report erosion problems in beaches and dunes – mainly for wholly natural reasons.

Figure 4-1 The St.Cyrus NNR



Aberdeen and Dundee are very important seaports with the former having demonstrated considerable growth since the 1970s as the main service base for the North Sea oil industry. Aberdeen has declined as a fishing port with more activity now being centred on Peterhead. There are also local fishing efforts, e.g at Montrose, Arbroath and smaller harbours. Currently the level of fishing activity is in decline. Oil and general cargo movements at Aberdeen and Dundee, in contrast, continue to grow. At St. Fergus, north of Peterhead, nine natural gas pipelines deliver North Sea gas to the still-expanding terminal from which several pipelines run southwards to feed the National Gas Grid and also the power station at Boddam and the NGL plant at Mossmoran in Fife. The first North Sea oil pipeline also continues to operate at Cruden Bay and exports southwards to Grangemouth.

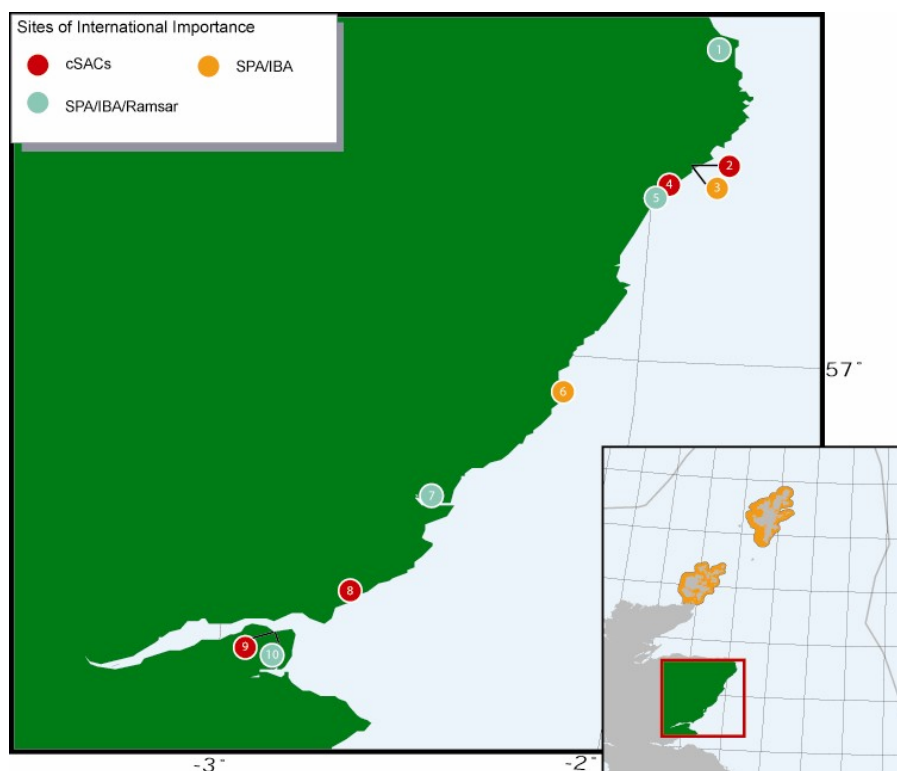
In spite of the commercial success along the coastline and the seasonal tourist pressure, large stretches remain relatively empty and under-utilised. Where there are cliffs, rich agricultural land tends to reach the coastline. In most lowland areas, however, there is a zone of sand dunes and links which provide a relatively natural buffer zone between the sea and the land.

Nearshore there are a few salmon fishing stations associated with the river mouths and in rocky areas shellfishing is important. Recreational use such as sailing, and surfing and sub aqua diving occurs near the larger settlements.

4.1 Sites of international importance

There are a number of sites of international importance along the coast from Fraserburgh to Fife Ness. These sites are described below and are located on the following map (Figure 4.1). The number given in the right-hand corner of the summary information box identifies that site on Figure 4.1. Where appropriate the habitat qualification sections have been condensed from the original JNCC text.

Figure 4.1 - Coastal sites of international importance along the Northeast coast



4.1.1 Loch of Strathbeg SPA/IBA/Ramsar

Summary information	Fig 4.1	1
Location: 57°37'24"N, 01°53'00"W Area: 615.94ha Date submitted: 27/11/1995 Birds of conservation concern: <i>Amber list:</i> sandwich tern, barnacle goose, whooper swan, greylag goose, pink-footed goose, teal		

The Loch of Strathbeg is located in Aberdeenshire, inland from Rattray Head. It is a shallow, naturally eutrophic loch with adjoining reedbeds, freshwater marshes, and alder *Alnus glutinosa* and willow *Salix* spp. Carr. The calcareous dunes and dune slacks within the site are relatively undisturbed and contain a rich flora. The loch constitutes the largest dune slack pool in the UK (200ha) and the largest waterbody in the north-east Scottish lowlands. It is separated from the sea by a 0.5-1km wide dune system. The SPA provides wintering habitat for a number of important wetland bird species, particularly wildfowl (swans, geese and ducks), and is also an important staging area for migratory wildfowl from Scandinavia and Iceland/Greenland. In summer, coastal parts of the site are an important breeding area for sandwich tern *Sterna sandvicensis*, which feed outside the SPA in adjacent marine areas. The IBA covers surrounding calcareous dunes and dune-slacks (57°37'N, 1°52'W, 913ha).

General site characteristics

Habitats

Wetland (80%; sand dunes/sand beach, standing freshwater, water-fringe vegetation, fen/transition mire/spring)

Artificial landscape (20%; highly improved reseeded grassland)

Land-use

Agriculture (15%)

Nature conservation/research (95%)

SPA species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
During the breeding season	
Sandwich tern <i>Sterna sandvicensis</i>	530 pairs representing up to 3.8% of the breeding population in Great Britain (5 year mean, 1993-1997)
Over winter	
Barnacle goose <i>Branta leucopsis</i>	226 individuals representing up to 1.9% of the wintering population in Great Britain (5 year peak mean 1991/2 – 1995/6)
Whooper swan <i>Cygnus Cygnus</i>	183 individuals representing up to 3.3% of the wintering population in Great Britain (5 year peak mean 1991/2 – 1995/6)
Greylag goose <i>Anser anser</i>	3,325 individuals representing up to 3.3% of the wintering Iceland/UK/Ireland population (winter peak means)
Pink-footed goose <i>Anser brachyrhynchus</i>	39,924 individuals representing up to 17.7% of the wintering Eastern Greenland/Iceland/UK population (5 year peak mean 1991/2 – 1995/6)

SPA assemblage qualification

Over winter, the area regularly supports 49,452 individual waterfowl (5 year peak mean 1991/2 – 1995/6) including teal *Anas crecca*, greylag goose *Anser anser*, pink-footed goose *Anser brachyrhynchus*, barnacle goose *Branta leucopsis* and whooper swan *Cygnus Cygnus*.

IBA qualification

The bird populations responsible for qualifying this site as an IBA are the same as those of the SPA. The IBA is important for wintering wildfowl and breeding terns, and holds 42,800 wintering waterbirds on a regular basis. The site is also nationally important for wintering *Anas crecca* (1,860 birds, 1%). *Anser anser* are from the Icelandic breeding population, while *Branta leucopsis* are from the Svalbard breeding population.

Ramsar features

Site information
<p>Location: 57°37'N 001°53'W Area: 616ha Date submitted: 27/11/1995 Importance: A shallow nutrient-rich loch constituting the largest dune slack pool in Britain. Vegetation consists of reedbeds, freshwater marshes, and alder-willow carr. Calcareous dunes and dune slacks are relatively undisturbed and provide habitat for a rich flora and fauna. This site provides wintering habitat for numerous important wetland bird species, notably internationally important numbers of geese and the Whooper Swan, <i>Cygnus cygnus</i>, and is an important staging area for migratory waterbirds.</p>

Vulnerability and management issues

Threats include pressure from shooting and a decrease in water quality that is thought to have resulted in a decline of the numbers of diving duck. There is a management plan for the RSPB Reserve, with research and monitoring ongoing.

Component designations at national and local level

Loch of Strathbeg SSSI

Loch of Strathbeg RSPB Reserve

Sources of information

JNCC birds of conservation concern: reference card

http://www.jncc.gov.uk/species/Birds/PosB/Pop_status_of_birds_card.pdf

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002211.htm>

The Annotated Ramsar list

http://www.ramsar.org/profiles_uk.htm

Birdlife International website

http://www.birdlife.net/datazone/search/sites_search.html?action=SitHTMDetails.asp&sid=2517&m=0

4.1.2 Buchan Ness to Collieston cSAC

Summary information	Figure 4.1	2
Location: 57°26'20"N, 01°48'30"W Area: 207.52ha Date submitted: 29/01/2001 Relevant qualifying habitats: Vegetated sea cliffs of the Atlantic and Baltic coasts Relevant qualifying species: N/A		

General site characteristics

Shingle. Sea cliffs. Islets (30%)
 Bogs. Marshes. Water fringed vegetation. Fens (0.5%)
 Heath. Scrub. Maquis and garrigue. Phygrana (5%)
 Humid grassland. Mesophile grassland (64.5%)

Habitat qualification

Annex I habitats that are a primary reason for selection of this site:

Vegetated sea cliffs of the Atlantic and Baltic coasts

The vegetated cliff slopes support a wide range of coastal vegetation types with an abundance of such local species as Scots lovage *Ligusticum scoticum* and roseroot *Sedum rosea*. In several places the cliff edge retains semi-natural plant communities such as maritime heath, acid peatland and brackish flushes. All these are now rare on the coast of north-east Scotland and this section of coastline contains some of the best remaining examples. Possibly due to the local microclimate and the presence of lime-rich soils, these communities contain several plants which are associated with dry, calcareous grassland, including carline thistle *Carlina vulgaris* and cowslip *Primula veris*. Sea wormwood *Seriphidium maritimum* also occurs. These species, more typical of southern Britain, are scarce in north-east Scotland. The cliffs and offshore stacks support a scattered but considerable colony of cliff-nesting seabirds with bird-influenced vegetation.

Vulnerability and management issues

Parts of the site are managed for grazing; others have not been grazed for some time. The varied vegetation would be vulnerable to changes in the management of these cliff-top grasslands. A coastal path runs along the cliff-top and is in part well used by walkers and naturalists. Parts of the site are also used by climbers. Current levels of recreational activity are compatible with maintenance of the cliff vegetation.

Component designations at national and local level

Bullers of Buchan Coast SSSI

Collieston to Whinnyfold Coast SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0030101>

4.1.3 Buchan Ness to Collieston coast SPA/IBA

Summary information	Figure 4.1	3
<p>Location: 57°26'20"N, 01°48'30"W Area: 208.62ha Date submitted: 30/03/1998 Birds of conservation concern: <i>Amber list:</i> guillemot, kittiwake, herring gull, shag, fulmar, razorbill</p>		

Buchan Ness to Collieston Coast SPA is located on the coast of Aberdeenshire in north-east Scotland. It is a 15km stretch of south-east facing cliff formed of granite, quartzite and other rocks running to the south of Peterhead, interrupted only by the sandy beach of Cruden Bay. The low, broken cliffs (generally less than 50m high) show many erosion features such as stacks, arches, caves and blowholes. The varied coastal vegetation on the ledges and cliff tops includes maritime heath, grassland and brackish flushes. The site is of importance as a nesting area for a number of seabird species (gulls and auks). These birds feed outside the SPA in the nearby waters, as well as more distantly.

The IBA comprises south-east facing granite cliffs, interrupted by the sandy beach at Cruden Bay, and offshore stacks (57°28'N 01°46'W, 208ha).

General site characteristics

Habitat

Scrub (2%; heathland)

Grassland (5%)

Wetland (2%; sand dunes/sand beach, standing brackish and salt water)

Rocky areas (91%; sea cliff/rocky shore, rock stack/islets)

Land use

Not utilised

SPA assemblage qualifications

During the breeding season, the area regularly supports 95,000 individual seabirds (count, as at mid-1980s) including guillemot *Uria aalge*, kittiwake *Rissa tridactyla*, herring gull *Larus argentatus*, shag *Phalacrocorax aristotelis* and fulmar *Fulmarus glacialis*.

IBA qualification

The species responsible for IBA qualification of this site is shown below:

During the breeding season;

Razorbill *Alca torda*, 1,940 birds (1995)

The site holds 23,800 pairs of breeding seabirds and 28,100 pairs of breeding waterbirds on a regular basis. The IBA is nationally important for breeding *Larus argentatus* (2,960 pairs, 1995, 2%), *Rissa tridactyla* (25,000 pairs, 1995, 5%) and *Uria aalge* (18,700 pairs, 1995, 3%).

Vulnerability and management issues

Auks are accidentally caught in fixed offshore salmon nets but this is a declining problem since many of the fishing licences have now been bought out. Monitoring for the JNCC Seabird Colony Register is carried out here.

Component designations at national and local level

Bullers of Buchan Coast SSSI

Collieston to Whinnyfold Coast SSSI

Sources of information

JNCC birds of conservation concern: reference card

http://www.jncc.gov.uk/species/Birds/PosB/Pop_status_of_birds_card.pdf


JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002491.htm>

Birdlife International website

http://www.birdlife.net/datazone/search/sites_search.html?action=SitHTMDetails.asp&sid=2433&m=0

4.1.4 Sands of Forvie cSAC

Summary information	Figure 4.1 
<p>Location: 57°20'00"N, 01°58'00"W</p> <p>Area: 734.05ha</p> <p>Date submitted: 26/03/1998</p> <p>Relevant qualifying habitats: Embryonic shifting dunes. Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes'). Decalcified fixed dunes with <i>Empetrum nigrum</i>. Humid dune slacks.</p> <p>Relevant qualifying species: N/A</p>	

General site characteristics

Coastal sand dunes. Sand beaches. Machair (46%)
 Shingle. Sea cliffs. Islets (1%)
 Inland water bodies (standing water, running water) (1%)
 Bogs. Marshes. Water fringed vegetation. Fens (1%)
 Heath. Scrub. Maquis and garrigue. Phygrana (50%)
 Humid grassland. Mesophile grassland (1%)

Habitat qualification

Annex I habitats that are a primary reason for selection of this site:

Sands of Forvie coastal dunes

Sands of Forvie is one of three sites on the east coast of Scotland which represent the northern part of the UK range of embryonic shifting dunes. The Sands of Forvie is one of the most geomorphologically active dune systems in the UK, and as a result, the site contains significant representation of dune types associated with shifting sand. Identifiable zones of both lyme-grass *Leymus arenarius* and sand couch *Elytrigia juncea* are present, although, as is common with this habitat type, they may be narrow and discontinuous. The Sands of Forvie are separated from Foveran Links to the south by the Ythan Estuary and together these form a complex, dynamic coastal and estuarine ecosystem which has been studied extensively, especially from a field station of the University of Aberdeen at Newburgh. The area also contains significant archaeological and historical remains. The dunes are superimposed on a pre-existing glacial topography. South Forvie also contains exposed raised beach surfaces. The south extremity next to the Ythan is a prominent bare sand hill. The south peninsula is reserved as an important nesting area for populations of terns and sea duck. Between the dune ridges and massive crescentic dune arcs with intervening wet slacks, some with shrubs, there are a series of low wet surfaces which flood in winter. At Rockend there is

an abrupt change to a coastline of rising rock cliffs which extend northwards to Collieston. This rock plateau is partly covered in glacial deposits. Some of the best examples of large migrating parabolic dune complexes in Britain are found on this plateau having been nourished by blown sand from the south Forvie dunes and beaches. Between the dune complexes of north Forvie there are extensive intervening surfaces of acidic heath.

Vulnerability and management issues

The Sands of Forvie cSAC lies within a sand dune system. This is highly active and mobile along the fringe but the older dunes have stabilised and largely support heathland and grassland. The land is a National Nature Reserve managed to an agreed management plan. Very little active management is required to maintain the habitats of interest. The Reserve has a visitor centre and is popular for recreational activities. Staff based on the Reserve undertake wardening duties.

Component designations at national and local level

Sands of Forvie and Ythan Estuary SSSI Forvie NNR Forvie Biogenetic Reserve

Sources of information

JNCC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0013042>

4.1.5 Ythan Estuary, Sands of Forvie and Meikle Loch SPA/IBA/Ramsar

Summary information	Figure 4.1	5
<p>Location: 57°20'30"N, 01°57'30"W Area: 1,016.24ha Date submitted: 30/03/1998 Birds of conservation concern: <i>Amber list:</i> sandwich tern, little tern, pink-footed goose, redshank, lapwing, eider</p>		

Ythan Estuary, Sands of Forvie and Meikle Loch are located north of Aberdeen on the east coast of Scotland. The site comprises the long, narrow estuary of the River Ythan and Meikle Loch. At its mouth, the river splits an extensive area of sand dunes with the Forveran Links on the west bank and the Sands of Forvie dune system on the east bank. Extensive mud-flats in the upper reaches of the estuary are replaced by coarser gravels with mussel *Mytilus edulis* beds closer to the sea. The margins of the estuary are varied, with areas of saltmarsh, reedbed and poor fen. Meikle Loch is an important roost site for geese, which feed away from the SPA on surrounding farmland in winter. It is a eutrophic loch supporting limited aquatic vegetation. In summer the coastal habitats of the dunes and estuary provide an important breeding site for three species of tern, whilst in winter the estuary holds large numbers of waders, ducks and geese.

General site characteristics

Habitats

Scrub (58%; heathland)

Wetland (42%; tidal river/enclosed tidal water, mudflat/sandflat, saltmarsh, sand dunes/sand beach, standing fresh water, river/stream, water-fringe vegetation)

Land use

Fisheries/aquaculture (15%)

Nature conservation/research (100%)

SPA species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
During the breeding season	
Common tern <i>Sterna hirundo</i>	265 pairs representing up to 2.2% of the breeding population in Great Britain (Count, as at early 1990s)
Sandwich tern <i>Sterna sandvicensis</i>	600 pairs representing up to 4.3% of the breeding population in Great Britain (Seabird Census Register)
Little tern <i>Sterna albifrons</i>	41 pairs representing up to 1.7% of the breeding population in Great Britain (Count, as at early 1990s)
Over winter	
Pink-footed goose <i>Anser brachyrhynchus</i>	17,213 individuals representing up to 7.7% of the wintering Eastern Greenland/Iceland/UK population (winter peak means)

SPA assemblage qualification

Over winter, the area regularly supports 51,265 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including redshank *Tringa totanus*, lapwing *Vanellus vanellus*, eider *Somateria mollissima*, and pink-footed goose *Anser brachyrhynchus*.

IBA species qualification

Those bird populations responsible for IBA qualification of the site are the same as the bird species listed for SPA qualification.

The IBA is important for breeding seabirds and holds 26,700 wintering waterbirds on a regular basis, including an important goose roost at Meikle Loch. It is also nationally important for breeding *Somateria mollissima* (370 pairs, 1995, 1%) and *Sterna hirundo* (175 pairs, 1991, 1%), for wintering *Somateria mollissima* (1,930 birds, 2%) and *Plectrophenax nivalis* (190 birds, 1994, 2%) and for summer moulting assemblages of *Somateria mollissima* (1,210 birds, 2%).

Ramsar features

Site information
<p>Location: 57°20'N 001°57'W Area: 314ha Date submitted: 30/03/1998 Importance: The site is a combination of inland wetlands and marine and coastal wetlands. The area is a waterfowl wintering ground and supports well over 20,000 waterfowl.</p>

Vulnerability and management issues

Threats include recreational disturbance from walkers, anglers, windsurfers and a local holiday park. Investigations into the causes of nutrient enrichment of the estuary, algal weed maps and depressed invertebrate populations are currently under way. The site is a candidate Nitrate Vulnerable Zone*. The University of Aberdeen, Scottish Environmental Protection Agency and Macaulay Land-use Research Institute are carrying out additional research projects. A reserve management plan exists.

* An area of land in Scotland which drains into and contributes to pollution of the waters which the Scottish Ministers have identified as waters affected by, and which could be affected by, pollution from nitrates.

Component designations at national and local level

Sands of Forvie and Ythan Estuary SSSI Forvie NNR Forvie Biogenetic Reserve

Sources of information

JNCC birds of conservation concern: reference card

http://www.jncc.gov.uk/species/Birds/PosB/Pop_status_of_birds_card.pdf

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002221.htm>

The Annotated Ramsar list

http://www.ramsar.org/profiles_uk.htm

Birdlife International website

http://www.birdlife.net/datazone/search/sites_search.html?action=SitHTMDetails.asp&sid=2638&m=0

4.1.6 Fowlsheugh SPA/IBA

Summary information	Figure 4.1
<p>Location: 56°54'45"N, 02°11'45"W</p> <p>Area: 10.15ha</p> <p>Date submitted: 31/08/1992</p> <p>Birds of conservation concern: <i>Amber list:</i> kittiwake, guillemot, razorbill, herring gull, fulmar</p>	6

Fowlsheugh is located on the east coast of Aberdeenshire in north-east Scotland, overlooking the North Sea. The sheer cliffs, between 30-60m high, are cut mostly in basalt and conglomerate of Old Red Sandstone age. They form a rock face with diverse structure providing ideal nesting sites for seabirds. The cliffs support major numbers of breeding seabirds, especially gulls and auks. The seabirds feed outside the SPA in nearby waters, as well as more distantly in the North Sea.

The IBA covers sheer cliffs on the east coast of Grampian region, and associated species-poor cliff-top grassland (56°54'N 02°11'W, 10ha).

General site characteristics

Habitats

Grassland (10%)

Rocky areas (90%; sea cliff/rocky shore)

Land-use

Nature conservation/research (100%)

SPA species qualification

SPA qualifying bird species	Number of individual birds
<i>During the breeding season</i>	
Kittiwake <i>Rissa tridactyla</i>	34,870 pairs representing at least 1.1% of the breeding Eastern Atlantic - Breeding population (Count, as at 1992)
Guillemot <i>Uria aalge</i>	40,140 pairs representing at least 1.8% of the breeding East Atlantic population (Count as at 1992)

SPA assemblage qualifications

During the breeding season, the area regularly supports 170,000 individual seabirds including razorbill *Alca torda*, herring gull *Larus argentatus*, fulmar *Fulmarus glacialis*, guillemot *Uria aalge* and kittiwake *Rissa tridactyla*.

IBA qualifications

Those bird populations responsible for IBA qualification of the site are similar to those of the SPA but also include the species shown below:

IBA qualifying bird species	Number of individual birds
During the breeding season	
Herring gull <i>Larus argentatus</i>	6,250 (1992)
Razorbill <i>Alca torda</i>	5,650 (1992)

The site holds 52,900 pairs of breeding seabirds and 67,900 pairs of breeding waterbirds on a regular basis.

Vulnerability and management issues

Threats to the site are posed by offshore oil spills, an inshore fishery, and disturbance. The RSPB own the reserve and there is ongoing annual monitoring of seabird plots and productivity. A management plan exists for part of the site.

Component designations at national and local level

Fowlsheugh RSPB Reserve

Fowlsheugh SSSI

Sources of information

JNCC birds of conservation concern: reference card

http://www.jncc.gov.uk/species/Birds/PosB/Pop_status_of_birds_card.pdf


JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002271.htm>

Birdlife International website

http://www.birdlife.net/datazone/search/sites_search.html?action=SitHTMDetails.asp&sid=2479&m=0

4.1.7 Montrose Basin SPA/IBA/Ramsar

Summary information	Figure 4.1 
<p>Location: 56°42'40"N, 02°30'20"W</p> <p>Area: 984.61ha</p> <p>Date submitted: 09/02/1995</p> <p>Birds of conservation concern: <i>Amber list:</i> greylag goose, pink-footed goose, knot, redshank, dunlin, oystercatcher, eider, wigeon, shelduck, whooper swan</p>	

The Montrose Basin is located on the east coast of Scotland in Angus. It is an enclosed tidal basin fed by the River South Esk and contains areas of mud-flat, marsh and agricultural land, and Dun's Dish, a small eutrophic loch. It is a good natural example of an estuary, relatively unaffected by development, with high species diversity in the intertidal zone and supporting a large population of wintering waterbirds. The site is important for wintering populations of Iceland/Greenland pink-

footed goose *Anser brachyrhynchus* and Icelandic greylag goose *Anser anser*, along with ducks and waders. The geese feed away from the SPA on surrounding agricultural land during the day.

Montrose basin IBA is located at 56°42'N 02°30'W and covers 984ha.

General site characteristics

Habitats (no areal percentages available)

Wetland (tidal river/enclosed tidal water, mudflat/sandflat, fen/transition mire/spring)

Land-use

Agriculture

Hunting

Nature conservation/research

(no aerial percentages available)

SPA species qualification

SPA qualifying bird species	Number of individual birds
Over winter	
Greylag goose <i>Anser anser</i>	1,080 individuals representing at least 1.1% of the wintering Iceland/UK/Ireland population (5 year peak mean, 1987/8-1991/2)
Pink-footed goose <i>Anser brachyrhynchus</i>	31,622 individuals representing at least 14.1% of the wintering Eastern Greenland/Iceland/UK population (5 year peak mean 1991/2 - 1995/6)
Knot <i>Calidris canutus</i>	4,500 individuals representing at least 1.3% of the wintering Northeastern Canada/Greenland/Iceland/Northwestern Europe population (5 year peak mean 1991/2 - 1995/6)
Redshank <i>Tringa tetanus</i>	2,259 individuals representing at least 1.5% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6)

SPA assemblage qualifications

Over winter, the area regularly supports 54,917 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including dunlin *Calidris alpina alpina*, oystercatcher *Haematopus ostralegus*, eider *Somateria mollissima*, wigeon *Anas penelope*, shelduck *Tadorna tadorna*, redshank *Tringa totanus*, knot *Calidris canutus*, greylag goose *Anser anse* and pink-footed goose *Anser brachyrhynchus*.

IBA qualification

Those bird populations responsible for IBA qualification of the site are similar to those of the SPA but also includes the species shown below:

Over winter;

Whooper swan *Cygnus cygnus*, 105 birds (1995)

The IBA supports large numbers of wintering wildfowl and waders, holding 49,400 wintering waterbirds on a regular basis. The site is also nationally important for breeding *Somateria mollissima* (400 pairs, 1992, 1%), for wintering *Anas penelope* (4,440 birds, 2%) and *Somateria millissima* (1,790 birds, 2%), and for summer moulting assemblages of *Somateria mollissima* (880 birds, 1%).

Ramsar features

Site information
<p>Location: 56°43'N 002°30'W</p> <p>Area: 985ha</p> <p>Date submitted: 03/02/1995</p> <p>Importance: The site, relatively unimpacted by development, consists of an enclosed estuary, mudflats, marsh, and a small nutrient-rich loch. Due to its unusual hydrology, there is a high species diversity in the intertidal zone. Internationally important numbers of pink-footed geese <i>Anser brachyrhynchus</i>, greylag geese <i>Anser anser</i>, and redshank <i>Tringa totanus</i> winter at the site.</p>

Vulnerability and management issues

Shooting is restricted in the Basin since the creation of a Local Nature Reserve (LNR) in 1981. The Scottish Wildlife Trusts manage the LNR on behalf of Angus Council.

Component designations at national and local level

Montrose Basin SSSI

Montrose Basin LNR

Montrose Basin Wildlife Centre SWT

Sources of information

JNCC birds of conservation concern: reference card

http://www.jncc.gov.uk/species/Birds/PosB/Pop_status_of_birds_card.pdf

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9004031.htm>

The Annotated Ramsar list

http://www.ramsar.org/profiles_uk.htm

Birdlife International website

http://www.birdlife.net/datazone/search/sites_search.html?action=SitHTMDetails.asp&sid=2544&m=0

4.1.8 Barry Links cSAC

Summary information	Figure 4.1	8
<p>Location: 56°28'45"N, 02°45'00"W</p> <p>Area: 789.67ha</p> <p>Date submitted: 20/12/2000</p> <p>Relevant qualifying habitats: Embryonic shifting dunes. Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes'). Fixed dunes with herbaceous vegetation ('grey dunes'). Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>). Humid dune slacks.</p> <p>Relevant qualifying species: N/A</p>		

General site characteristics

Salt marshes. Salt pastures. Salt steppes (1%)

Coastal sand dunes. Sand beaches. Machair (87.3%)

Inland water bodies (standing water, running water) (0.2%)

Heath. Scrub. Maquis and garrigue. Phygrana (2.7%)

Broad-leaved deciduous woodland (1.3%)

Coniferous woodland (2.5%)

Other land (including towns, villages, roads, waste places, mines, industrial sites) (5%)

Habitat qualification

Annex I habitats that are a primary reason for selection of this site:

Dune and links system

Barry Links is an extensive, triangular dune system on the north side of the Firth of Tay which is nourished by shifting, but extensive, sandbanks. The east coast, however, is eroding and protected. Embryonic dunes of *Elymus arenarius* occur on the south and west sides and develop into larger backshore dunes with *Ammophila arenaria*. Other typical species of backshore and dune plants are found elsewhere in the dune system. The site is remarkably undisturbed and is mainly a MOD firing range. Between dune ridges, some of which are of the parabolic type, there are dune slacks and hollows. Some dunes are relatively decalcified and fixed by heath plants often with the *Caluna-Ulicetea* association. Wet heath is also common. Studies of dune ridges, parabolic dunes, intervening slacks and erosional features have been interpreted to provide an evolutionary history over a long period of time especially as the area is well preserved. The humid dune slacks are noted as being of particular ecological importance.

Vulnerability and management issues

Management of this site is addressed through a joint MoD/SNH Concordat - this includes grazing management, an SSSI and scrub management plan. There is also an active Conservation Group.

Component designations at national and local level


Barry Links SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0013044>

4.1.9 Firth of Tay and Eden Estuary cSAC

Summary information	Figure 4.1 
Location: 56°22'00"N, 02°57'00"W	
Area: 15412.53ha	
Date submitted: 10/05/2002	
Relevant qualifying habitats: Estuaries (sandbanks which are slightly covered by sea water all the time and mudflats and sandflats not covered by seawater at low tide – present)	
Relevant qualifying species: Common seal <i>Phoca vitulina</i>	

General site characteristics

Marine areas. Sea inlets (55.1%)

Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins) (27.7%)

Salt marshes. Salt pastures. Salt steppes (1.2%)

Coastal sand dunes. Sand beaches. Machair (8%)

Shingle. Sea cliffs. Islets (2%)

Inland water bodies (standing water, running water) (6%)

Habitat qualification

Annex I habitats that are a primary reason for selection of this site:

Estuaries

The Firth of Tay and the Eden estuary are two high-quality estuarine areas. The two estuaries have been proposed within a single site because they are integral components of a large, geomorphologically complex area that incorporates a mosaic of estuarine and coastal habitats. The Tay is the least-modified of the large east coast estuaries in Scotland, while the Eden estuary represents a smaller ‘pocket’ estuary. The inner parts of the estuaries are largely sheltered from wave action, while outer areas, particularly of the Tay, are exposed to strong tidal streams, giving rise to a complex pattern of erosion and deposition of the sandbank feature at the firths’ mouth. The sediments within the site support biotopes that reflect the gradients of exposure and salinity, and are typical of estuaries on the east coast of the UK. The abundance, distribution and composition of the associated plant and animal communities are ecologically representative of northern North Sea estuaries.

Species qualification

Common seal *Phoca vitulina*

The Firth of Tay and Eden Estuary supports a nationally important breeding colony of common seal *Phoca vitulina*, part of the east coast population of common seals that typically utilise sandbanks. Around 600 adults haul-out at the site to rest, pup and moult, representing around 2% of the UK population of this species.

Vulnerability and management issues

Tentsmuir Point is a National Nature Reserve and parts of the Eden Estuary and Inner Tay Estuary are Local Nature Reserves which attract many visitors. Levels of use are quite high, particularly between Tayport and Tentsmuir Point where large numbers of walkers (some with dogs), as well as illegal use by all-terrain bikes, cause some disturbance. These issues are being addressed through the management plan for the National Nature Reserve which also has a resident warden. Any other issues that arise elsewhere will be dealt with via a wider management plan for the whole site. Aggregate removal occurs in the Firth of Tay, but there are no apparent adverse effects of the Natura interests. Jet planes from a large military airbase adjacent to the Eden Estuary fly across the whole site but this has occurred for many years and has no apparent adverse effect on wildlife.

Component designations at national and local level

Barry Links SSSI	Eden Estuary SSSI
Inner Tay Estuary SSSI	Monifeith Bay SSSI
Tayport - Tentsmuir Coast SSSI	Tentsmuir Point NNR
Eden Estuary LNR	Inner Tay Estuary LNR

Sources of information

JNCC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0030311>

4.1.10 Firth of Tay and Eden Estuary SPA/Ramsar (Firth of Tay IBA and Eden Estuary, Tentsmuir Point and Abertay Sands IBA)

Summary information	Figure 4.1	10
Location: 56°24'30"N, 03°05'00"W Area: 6923.29ha Date submitted: 02/02/2000 Birds of conservation concern: <i>Red list:</i> common scoter, black-tailed godwit <i>Amber list:</i> little tern, marsh harrier, bar-tailed godwit, greylag goose, pink-footed goose, redshank, velvet scoter, cormorant, shelduck, eider, goldeneye, oystercatcher, grey plover, dunlin, long-tailed duck		

The Firth of Tay and Eden Estuary is located on the east coast of central Scotland. The Firth stretches for some 35km along the estuary from near Newburgh to the estuary mouth. For much of its length the main channel of the estuary lies close to the southern shore and the most extensive intertidal flats are on the north side, west of Dundee. In Monifieth Bay, to the east of Dundee, the substrate becomes sandier and there are also mussel *Mytilus edulis* beds. The south shore consists of fairly steeply shelving mud and shingle. The Inner Tay Estuary is particularly noted for the continuous dense stands of common reed *Phragmites australis* along its northern shore. These reedbeds, inundated during high tides, are amongst the largest in Britain. Eastwards, as conditions become more saline, there are areas of saltmarsh, a relatively scarce habitat in eastern Scotland. The site is of importance in summer for breeding terns and marsh harrier *Circus aeruginosus*, whilst in the migration periods and in winter the estuary holds major concentrations of waterbirds, especially waders, seaducks and geese. Seaducks also feed, loaf and roost outside the SPA in the open waters of the Firth.

The Firth of Tay IBA (56°25'N 03°05'W, 6,100ha) includes the Inner Tay, with some of the largest reedbeds *Phragmites* in Britain, and the extensive intertidal mudflats on one side of the mouth of the river.

The Eden Estuary, Tentsmuir Pont and Abertay Sands IBA (56°22'N 02°48'W, 3,000ha) includes extensive sandflats at the mouth of the estuary, and mudflats that support eel-grass *Zostera*. Saltmarsh, wetland and sand dune habitats also occur.

SPA species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
During the breeding season	
Little tern <i>Sterna albifrons</i>	44 pairs representing at least 1.8% of the breeding population in Great Britain (Seabird Census Register)
Marsh harrier <i>Circus aeruginosus</i>	4 pairs representing at least 2.5% of the breeding population in Great Britain (1997)
Over winter	
Bar-tailed godwit <i>Limosa lapponica</i>	2,400 individuals representing at least 4.5% of the wintering population in Great Britain (winter peak mean)
Greylag goose <i>Anser anser</i>	1,355 individuals representing at least 1.4% of the wintering Iceland/UK/Ireland population (5 year peak mean 1991/2 - 1995/6)
Pink-footed goose <i>Anser brachyrhynchus</i>	3,769 individuals representing at least 1.7% of the wintering Eastern Greenland/Iceland/UK population (5 year peak mean 1991/2 - 1995/6)

SPA qualifying bird species	Number of individual birds
During the breeding season	
Redshank <i>Tringa totanus</i>	1,800 individuals representing at least 1.2% of the wintering Eastern Atlantic - wintering population (winter peak mean)

SPA assemblage qualifications

Over winter, the area regularly supports 34,074 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including velvet scoter *Melanitta fusca*, pink-footed goose *Anser brachyrhynchus*, greylag goose *Anser anser*, redshank *Tringa totanus*, cormorant *Phalacrocorax carbo*, shelduck *Tadorna tadorna*, eider *Somateria mollissima*, bar-tailed godwit *Limosa lapponica*, common scoter *Melanitta nigra*, black-tailed godwit *Limosa limosa islandica*, goldeneye *Bucephala clangula*, red-breasted merganser *Mergus serrator*, goosander *Mergus merganser*, oystercatcher *Haematopus ostralegus*, grey plover *Pluvialis squatarola*, sanderling *Calidris alba*, dunlin *Calidris alpina alpina* and long-tailed duck *Clangula hyemalis*.

IBA qualification

Firth of Tay IBA

Those bird populations (bar-tailed godwit) responsible for IBA qualification of the site are included in the list of qualifying species for the SPA.

The IBA is important for wintering and passage wildfowl and waders, and supports several breeding reedbed species. It is also nationally important for breeding *Rallus aquaticus* (125 pairs, 1992, 18%) and *Panurus biarmicus* (18 pairs, 1994-1995, 4%), and for wintering *Somateria mollissima* (1,730 birds, 2%).

Eden estuary, Tentsmuir Point and Abertay Sands IBA

Those bird populations (bar-tailed godwit and little tern) responsible for IBA qualification of the site are included in the list of qualifying species for the SPA.

The IBA supports large numbers of wintering waders and wildfowl, holding 35,100 wintering waterbirds on a regular basis. The site is also nationally important for wintering *Tadorna tadorna* (1,190 birds, 2%), *Somateria mollissima* (15,000 birds, 1992, 19%), *Melanitta nigra* (1,630 birds, 4%), *Mergus serrator* (115 birds, 1%), *Haematopus ostralegus* (4,210 birds, 1%), *Pluvialis squatarola* (940 birds, 2%), *Limosa limosa* (155 birds, 2%) and *Tringa totanus* (1,370 birds, 1%), and for passage *Pluvialis squatarola* (735 birds, 2%), *Limosa limosa* (130 birds, 2%) and *Tringa tetanus* (1,320 birds, 1%). Breeding species of global conservation concern that do not meet IBA criteria: *Crex crex*.

Ramsar features

Site information
Location: 56°24'N 003°05'W
Area: 6,923ha
Date submitted: 28/07/00
Importance: A complex of estuarine and coastal habitats in eastern Scotland adjacent to the city of Dundee. The site includes extensive invertebrate-rich intertidal mudflats and sandflats created by the massive sediment load deposited by the River Tay, as well as large areas of reedbed and sand dune and a small amount of saltmarsh. At least four species of wintering waterfowl are present above the 1% threshold of international importance, and on average some 48,000 waterfowl are supported there in winter, including 14 species in nationally important numbers.

Site information

Some disturbance is caused in some parts of the site by large numbers of walkers and illegal use of all-terrain bicycles, but these and other potential threats are considered manageable. Students from many nearby universities conduct research on the site.

Vulnerability and management issues

Threats to the Firth of Tay IBA include disturbance from recreational activities, landfill on the intertidal area, dumping of rubbish in the reedbeds, and reedbed fires during the *Panurus biarmicus* breeding season. The landfill can support large rat *Rattus* populations in the estuary reedbeds, which in turn threaten breeding birds.

Threats to the Eden Estuary, Tentsmuir Point and Abertay Sands IBA include coastal erosion, and disturbance from the adjacent airport and from wildfowling. SNH has a management plan for Tentsmuir Point, and a management plan exists for the Eden estuary Local Nature Reserve.

Component designations at national and local level

Barry Links SSSI	Eden Estuary SSSI
Inner Tay Estuary SSSI	Monifeith Bay SSSI
Tayport - Tentsmuir Coast SSSI	Tentsmuir Point NNR
Eden Estuary LNR	Inner Tay Estuary LNR

Sources of information

JNCC birds of conservation concern: reference card

http://www.jncc.gov.uk/species/Birds/PosB/Pop_status_of_birds_card.pdf

JNCC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0030311>

Birdlife International website

http://www.birdlife.net/datazone/search/sites_search.html?action=SitHTMDetails.asp&sid=2473&m=0

http://www.birdlife.net/datazone/search/sites_search.html?action=SitHTMDetails.asp&sid=2464&m=0

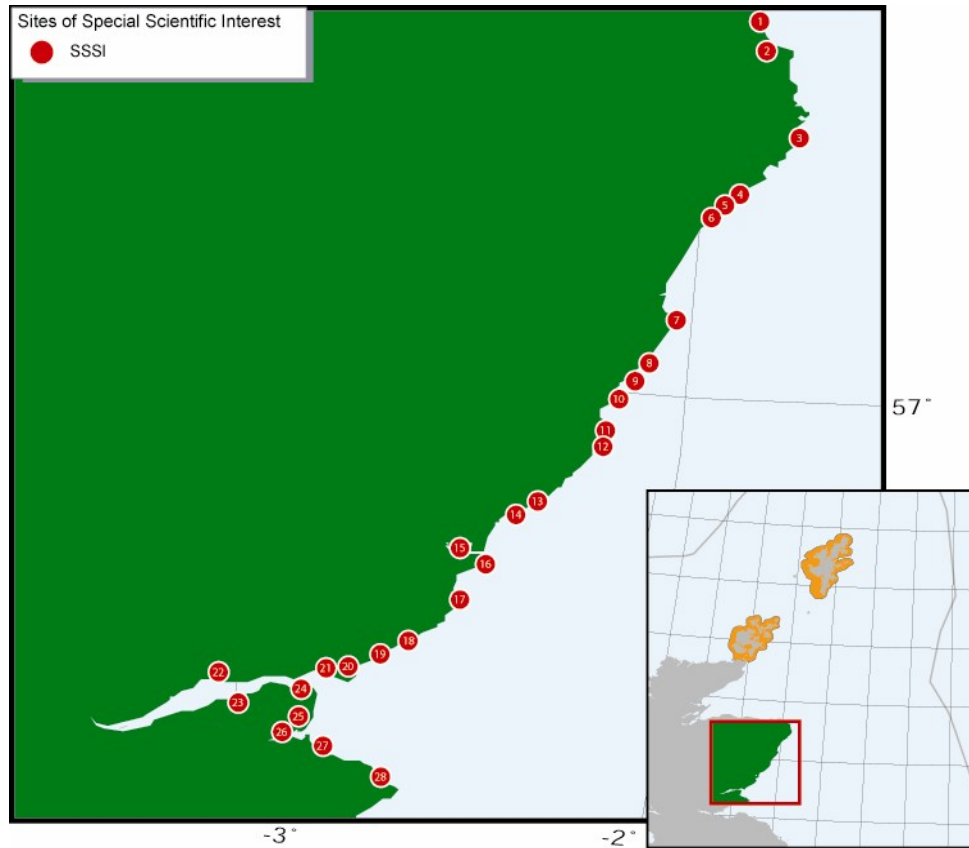
4.2 Sites of national and local importance

There are a number of sites of national and local importance along Scotland's northeast coast including National Nature Reserves, Sites of Special Scientific Interest and Scottish Wildlife Trust Reserves. These sites are described in this section. SSSI's have been marked on a separate map (Figure 4.2) for clarity. Figure 4.3 shows the location and reference numbers of other nationally and locally important sites (the number given in the associated text for each of these sites refers to their location on Figure 4.3). Numbering of the sites attempts to follow the coast in a north-south direction.

4.2.1 Sites of Special Scientific Interest (SSSI)

For more detailed information relating to designation please refer to the SNH website (www.snh.gov.uk), or consult the appropriate area office. For the definition of Site of Special Scientific Interest, see Appendix 2. Site descriptions are summarised from information provided by SNH regional offices. For the purposes of SEA 5 the term 'geological' subsumes features that are of geomorphological significance in addition to the normal definition of a geological site.

Figure 4.2 - SSSI's along the northeast coast



Map ref.	Site Name	Location	Area (ha)	Site Description
1	Cairnbulg to St. Combs Coast	NK053641	55	Geological
2	Loch of Strathbeg	NK075590	983	Geological Wildfowl
3	Bullers of Buchan Coast	NK110380	109	Geological Breeding seabirds
4	Collieston to Whinnyfold Coast	NK060310	104	Geological Seabirds Maritime cliff vegetation
5	Sands of Forvie & Ythan Estuary	NK020275	976	Geological Breeding seabirds Wildfowl
6	Foveran Links	NK000225	203	Geological
7	Nigg Bay	NJ966045	5	Geological
8	Cove	NJ954005	10	Maritime cliff vegetation Geological
9	Findon Moor	NO941974	26	Maritime cliff
10	Garron Point	NO887874	60	Maritime cliff vegetation Butterflies Geological
11	Fowlsheugh	NO881799	8	Breeding seabirds Maritime cliff
12	Crawton Bay	NO879796	9	Geological
13	Milton Ness	NO769649	26	Geological

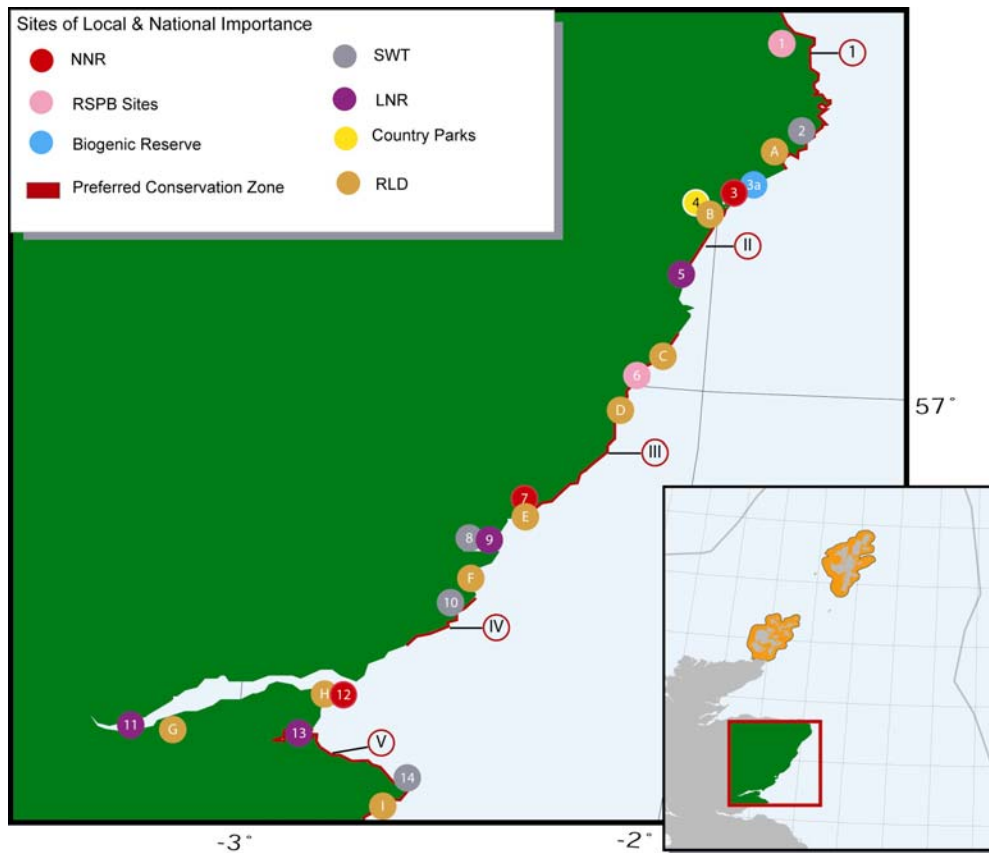
Map ref.	Site Name	Location	Area (ha)	Site Description
14	St. Cyrus & Kinnaber Links	NO745630	312	Breeding birds (inc. seabirds) Butterflies Invertebrates Geological Vegetation
15	Montrose Basin	NO685580	889	Geological Wildfowl Waders
16	Rickle Craig – Scurdie Ness	NO727545	73	Saltmarsh Geological Molluscs
17	Whiting Ness – Ethie Haven	NO670428	153	Geological Invertebrates Butterflies Vegetation Breeding seabirds Migrating birds
18	Elliot Links	NO620390	29	Botanical Invertebrates
19	Easthaven	NO588356	1	Botanical
20	Barry Links	NO532319	1,041	Botanical Breeding and wintering birds Geological
21	Montifeith Bay	NO485313	213	Seaduck Waders
22	Inner Tay Estuary	NO280220	6,747	Wildfowl & waders Saltmarsh & wetlands Botanical
23	Balmerino – Wormit Shore	NO380257	85	Geological
24	Tayport-Tentsmuir Coast	NO452294	1,202	Coastal habitats Birds Seals Invertebrates Botanical & geological
25	Earlshall Muir	NO485220	432	Biological Sand dunes
26	Eden Estuary	NO475195	1,161	Coastal habitats Botanical Birds
27	St. Andrews – Craig Hartle	NO545152	133	Saltmarsh & wetlands Geological
28	Fife Ness Coast	NO625107	117	Saltmarsh Cliff vegetation Geological

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom Region 3 North-east Scotland* Peterborough, Joint Nature Conservation Committee.

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997a) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

Figure 4.3 - Coastal sites of national and local importance along the northeast coast of Scotland



4.2.2 National Nature Reserves (NNR)

Figure 4.3

Map ref.	National Nature Reserves	Location	Area (ha)	Site description
3	Forvie	NK020275	973	Sand dunes, foreshore, estuarine spit, dune heath, slacks, rough pasture, cliffs, wintering geese and waders, largest colony of breeding eider duck in Britain
7	St Cyrus	NO745630	92	Sandy foreshore, salt marsh, dunes, dune pasture and cliff, insects (particularly butterflies and over 200 types of moth), breeding birds
12	Tentsmuir Point	NO510275	515	Roosting and feeding area for huge gatherings of seaduck, waders and wildfowl, haul-out area for common and grey seals.

Sources of information

Scottish Natural Heritage website

<http://www.snh.org.uk/index/i-frame.htm>

Scotland's National Nature Reserves website

<http://www.nnr-scotland.org.uk/>

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom Region 3 North-east Scotland*. Peterborough, Joint Nature Conservation Committee.

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997a) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

4.2.3 Local Nature Reserves (LNR)

Figure 4.3



Map ref.	Local Nature Reserves	Location	Area (ha)	Date declared	Site description
5	Donmouth	NJ948094	36	1992	Mud flats, dunes, saltmarsh, woodland
9	Montrose Basin	NO695580	1,020	1991	Estuarine basin, brakish water, freshwater
11	Inner Tay Estuary	NO349290	1,294	1996	Saltmarsh, grassland, woodland
13	Eden Estuary	NO475195	9,81	1977	Intertidal mud/sand flats, saltmarsh

Sources of information

Scottish Natural Heritage Website

www.snh.org.uk

Barne J, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom Region 3 North-east Scotland*. Peterborough, Joint Nature Conservation Committee.

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997a) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

4.2.4 Country Park

Figure 4.3



Country Parks are primarily intended for recreation and leisure opportunities close to population centres and do not necessarily have any nature conservation interest. Nevertheless, many are in areas of semi-natural habitat and so form a valuable network of locations at which informal recreation and the natural environment co-exist. They are statutorily declared and managed by local authorities under section 7 of the Countryside Act 1968.

Map ref.	Country Park	Location	Area (ha)	Date declared	Site description
4	Balmedie Country Park	NJ976182	75	1983	Sandy beach, dunes and links

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom. Region 3 North-east Scotland*. Peterborough, Joint Nature Conservation Committee.

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997a) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

4.2.5 Geological Conservation Review (GCR) sites

Detailed scientific accounts of coastal and inland GCR sites are contained in volumes of a planned 42-volume Geological Conservation Review series by the JNCC. 28 of these volumes have been published to date. Sites in the list below marked by an asterisk have been identified in the recent JNCC publication 'Coastal Geomorphology of Great Britain', a volume of the GCR Series which 'summarises the results of the site evaluation and selection programme of Britain's coastal regions ... with the aim of representing the highlights of Britain's coastal geomorphology, 99 sites were selected eventually for this part of the GCR, to be considered for long-term conservation under British law' (May & Hansom, 2003).

GCR Single Interest Locations (SILs)		
Cairnbulg to St. Combs	Garron Point to Slug head	Black Rock to East Comb
Strathbeg*	The Toutties	Whiting Ness
Bullers of Buchan*	Crawton Bay (2 SILs)	Barry Links*
Forvie*	Milton Ness	Carey
Bay of Nigg	Maryton	Balmerino-Wormit
Coast north of Cove Bay	Scurdie Ness	Tentsmuir*
Garron Point	Scurdie Ness to Usan Harbour	East Sands - Buddo Ness

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom. Region 3 North-east Scotland*. Peterborough, Joint Nature Conservation Committee.

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997a) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

May V J & Hansom J D (2003). *Coastal Geomorphology of Great Britain*. Peterborough, Joint Nature Conservation Committee

4.2.6 Regional Landscape Designations (RLD)

Along Scotland's northeast coast there are 9 areas covered by RLD's. They are known as Areas of Great Landscape Value (AGLV) in Highland and Areas of Regional Landscape Significance (ARLS) in Grampian. The area of many of these sites is not available. There has been no monitoring or further comprehensive study of the number of RLD's since the study by Cobham Resource Consultants (1988). The sites below can be located on Figure 4.3.

- A. Longhaven/Cruden Bay
- B. Collieston/Balmedie
- C. Downies/Stonehaven
- D. Stonehaven/Todhead Point
- E. St Cyrus

- F. Lunan Bay and Coast
- G. Tay Coast
- H. Tentsmuir Shore
- I. East Neuk Coast

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom. Region 3 North-east Scotland*. Peterborough, Joint Nature Conservation Committee.

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997a) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

4.2.7 Preferred Conservation Zones (PCZ)

Preferred Conservation Zones (PCZ's) are non-statutory coastal areas in Scotland, of particular national scenic, environmental or ecological importance, in which major new oil and gas related developments would be inappropriate or would have a socio-economic impact on a small community. They are areas with a distinctive aesthetic appeal, heritage and character, where tourism and recreation take priority over major industrial processes. There are five PCZ's along the northeast coast, (which are located on Figure 4.3) as follows;

- I. Fraserburgh Bay - St. Fergus
- II. Bullers of Buchan - River Don
- III. Dunnottar - River North Esk
- IV. South of Montrose - North of Arbroath
- V. Lundin Links – Tentsmuir

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom. Region 3 North-east Scotland*. Peterborough, Joint Nature Conservation Committee.

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997a) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

4.2.8 Biogenetic Reserve

Figure 4.3



Two Scottish NNR's, covering 2,388ha, were included in the Biogenetic Reserve network in 1992. One of which can be found in SEA 5. Forvie NNR, in Aberdeenshire, covers an area of 973ha (NK020275).

Sources of information

Scottish Natural Heritage 'facts and figures'

www.snh.org.uk/publics/docs/factsandfigures/docs/Des_Areas.pdf

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom. Region 3 North-east Scotland: Cape Wrath to St. Cyrus*. Peterborough, Joint Nature Conservation Committee.

Figure 4.3



4.2.9 RSPB Reserves

Map ref.	RSPB Reserves	Location	Area (ha)	Description
1	Loch of Strathbeg	NK067599	851	Large shallow freshwater loch, fen, marsh, saltmarsh, woodland and sand dunes, migrant and breeding waterfowl, migrant waders, breeding terns, rails and passerines
6	Fowlsheugh	NO879808	12	Red sandstone grass-topped cliffs, colonies of nesting seabirds, nesting passerines

Sources of information

RSPB Web Site

<http://www.rspb.org.uk>

Barne J, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom Region 3 North-east Scotland*. Peterborough, Joint Nature Conservation Committee.

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997a) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

4.2.10 Scottish Wildlife Trust (SWT) Reserves

Figure 4.3

Map ref.	Reserves	Location	Area (ha)	Site description
2	Longhaven Cliffs	NK116394	50	Spectacular granite cliffs with breeding seabirds and cliff top plants
8	Montrose Basin Wildlife Centre	NO700564	1,013	The reserve provides a rich feeding ground for thousands of resident and migrant birds including eider duck, pink-footed and greylag geese
10	Seaton Cliffs	NO667416	11	Red sandstone cliffs and interesting rock formations, marine plants, seabirds, cliff-nesting house martins, and butterflies
14	Fife Ness Muir	NO625107	1	Low coastline with bushes, grassland, migrant birds, plants, lichen and mosses

Sources of information

Scottish Wildlife Trust website

www.swt.org.uk

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997a) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

Barne J, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1996) *Coasts and seas of the United Kingdom Region 3 North-east Scotland*. Peterborough, Joint Nature Conservation Committee.

5 FIRTH OF FORTH AND BORDERS

This part of SEA 5 contains two different coastal types – the major estuary of the south side of the Forth and the open northeast facing coastline from North Berwick to Berwick-upon-Tweed at the English border.

The Firth of Forth extends 70km inland from its outermost limit at Fife Ness; a product of coastal submergence on a regional scale. It combines two types of environmental processes; estuarine, especially west of the famous Forth Rail and Road Bridges, and open coast tidal and wave action further east. The tidal range is 2.5 to 3.5m on the outer coasts and increases in the inner firth to over 4.0m.

Figure 5.1 - The Bass Rock (from Canty Bay)



Both geological structures and rock types are variable but mainly of Carboniferous limestones and sandstones, including extensive and once important coal measures. Ancient volcanic features are locally prominent on both sides of the Firth and give rise to rocky outcrops and distinctive coastal “high points”. As is typical of Scotland, raised shorelines are common and, in this region, take the form of flat carse lands and marginal plains in the inner estuary west of the “Bridges”, but, further east, old shorelines are distinctive and often found at two levels.

From a conservational perspective many sites are geological. This is explained by the fact that bedrock is exposed at the coastline whereas the same features inland are covered in glacial deposits, peat, soil and vegetation. Beaches and dunes are less common – only Largo Bay is important on the north side, and on the south side dunes and links only occur east of Gullane, with most areas being golf courses. The Inner Firth of Forth is almost entirely mud and occasional sandy and gravelly patches.

The Firth has been an important maritime trade axis from medieval times with Leith being a major port for Edinburgh. On the north side there are many fishing harbours, especially east of St Monance with analogous harbours at North Berwick and further east Dunbar on the south side. Historically several other harbours were important but are now semi-derelict. A unique harbour west of the

“Bridges” is the major naval base of Rosyth which still functions but on a reduced scale and within the last two years has become a ferry terminal for Europe. Equally specialised is the major oil importing port of Grangemouth with the vast BP refineries nearby. Oil import and export facilities are also found east of the “Bridges” at Braefoot Bay (for the Mossmoran facility) and the Hound Point jetty on the south side near Queensferry. In general, the south side is more developed with extensive sections of protected, reclaimed built-up areas at the shoreline.

The Firth of Forth has been studied for many years for hydrographic purposes. Oil spill contingency plans have been developed. With considerable industry, including recently abandoned coals fields, major power stations, commercial properties and housing, harbours along both sides (and as far inland as Stirling and Alloa), SEPA (Scottish Environmental Protection Agency), has been most active in monitoring coastal and nearshore water quality discharges which are now largely under control and “clean”. The Coastal Forum for the Forth is also well-established, and is developing coastal zone management (CZM) proposals for this area.

The coastline from North Berwick to Berwick-upon-Tweed is relatively short – approximately 50km – but has more than ten different geological series which create considerable coastal diversity. Of particular interest is the Southern Boundary Fault which reaches the coast at Dunbar. The most prominent conservational area, St Abb’s Head, is a local outcrop of basaltic lavas of Old Red Sandstone Age. For the most part, however, this is a coastline of platforms and low cliffs with an absence of well-defined or extensive sand beaches. The exception is Sandhaven Bay west of Dunbar. This large intertidal series of sand flats and salt marshes and the extensive Ravensheugh Sands to the north form the John Muir Country Park.

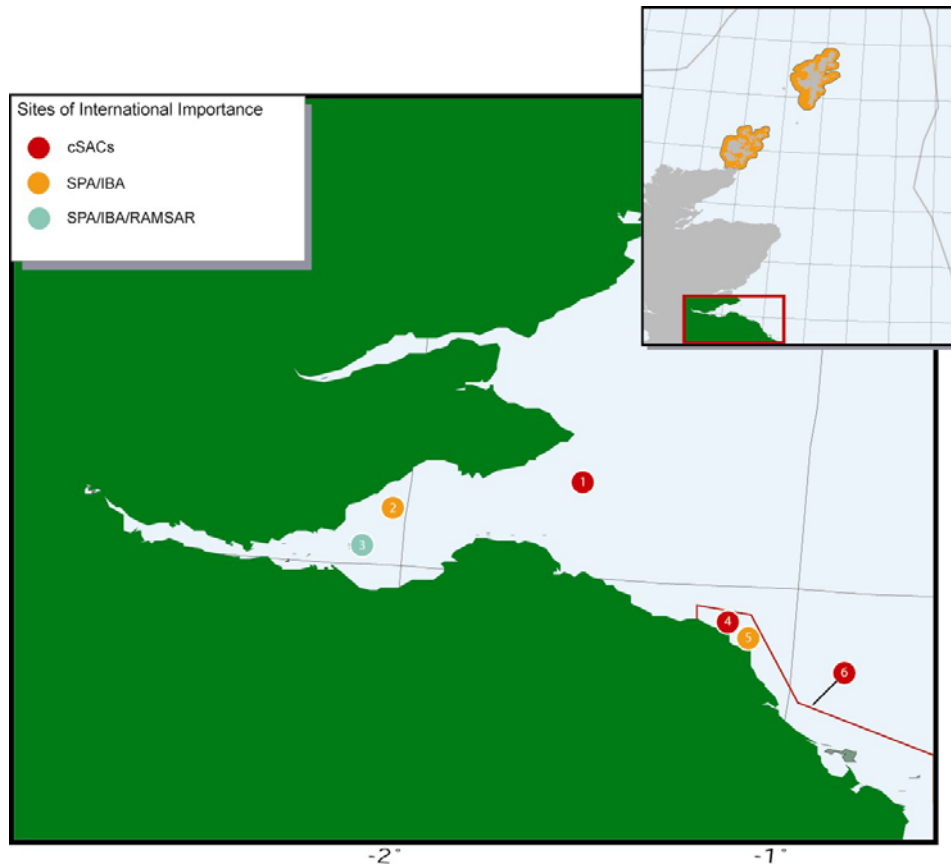
At North Berwick, several volcanic islands – notably Bass Rock, are major conservational sites for breeding sea birds. Further south, Barns Ness is also a conservational area with a coastal “geology trail” and seabird interests. The coastline also contains several features called “nesses”. These also occur further south in Northumberland. Nesses are best described as low promontories of rock platforms, boulders and shingle. Torness Point is the site of a nuclear power generating station. Berwick-upon-Tweed is the main harbour but is mainly used by small craft. A cross-border European Marine Site has been identified recently and is developing as a significant UK example of a managed marine site with several different types of marine habitats.

This is a varied coastline with equally varied usage – small harbours, local tourist attractions (often historical), cliffs, inlets, offshore islands and small sandy bays offer diversity, with the John Muir Country Park and the extensive Marine Conservation area which stretches southwards from St Abb’s Head to the Farne Islands in Northumberland being of particular conservational interest.

5.1 Sites of international importance

There are a number of sites of international importance along the coast of Fife, Lothians and Borders. These sites are described below and are located on the following map (Figure. 5.1). The number given in the right-hand corner of the summary information box identifies that site on Figure 5.1.

Figure 5.1 - Coastal sites of international importance along the coast of Fife, Lothians and Borders



5.1.1 Isle of May cSAC

Summary information	Figure 5.1 1
Location: 56°11'25"N, 02°34'25"W Area: 356.75ha Date submitted: 29/01/2001 Relevant qualifying habitats: (Reefs – present) Relevant qualifying species: Grey seal <i>Halichoerus grypus</i>	

General site characteristics

Marine areas. Sea inlets (87%)
 Salt marshes. Salt pastures. Salt steppes (11.3%)
 Shingle. Sea cliffs. Islets (1.7%)

Species qualification

The annex II species that is a primary reason for selection of this site is:

Grey seal *Halichoerus grypus*

The Isle of May, lying at the entrance to the Firth of Forth on the east coast of Scotland, supports a breeding colony of grey seals *Halichoerus grypus*. The site is the largest east coast breeding colony

of grey seals in Scotland and the fourth-largest breeding colony in the UK, contributing approximately 4.5% of annual UK pup production.

Vulnerability and management issues

The terrestrial part of the cSAC is a National Nature Reserve with a history of recreational pressure. However, the site is owned and managed by SNH, which ensures adequate protection for nature conservation. Visitor pressure to the island is concentrated outwith the seal-breeding season and is managed by a permit system for tourist boats. No landings are allowed during the seal-breeding season except by special permission and permit. At present, pressure from recreational divers is principally during the seals' non-breeding season.

Component designations at national and local level

Isl of May NNR

Isle of May SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUcode=UK0030172>

5.1.2 Firth of Forth Islands SPA (Forth Islands IBA)

Summary information	Figure 5.1 2
<p>Location: 56°11'10"N, 02°33'20"W Area: 105.06ha Date submitted: 25/04/1990 Birds of conservation concern: <i>Red list:</i> roseate tern <i>Amber list:</i> Arctic tern, sandwich tern, gannet, lesser black-backed gull, puffin, shag, razorbill, guillemot, kittiwake, herring gull, cormorant, fulmar</p>	

The Firth of Forth Islands are located in or near to the Firth of Forth on the east coast of central Scotland. The SPA comprises a number of separate islands or island groups, principally Inchmickery (together with the nearby Cow and Calves) off Edinburgh, Fidra, Lamb and Craigleith together with the Bass Rock off North Berwick, and the much larger Isle of May in the outer part of the Firth. The site also includes additional other small islands. The inner islands are very low lying whilst those in the outer Firth are higher, steeper and rockier. This applies especially to the Bass Rock which is a volcanic plug rising to over 100m, and to the Isle of May, which is surrounded by cliffs up to 50m. The islands support important numbers of a range of breeding seabirds, in particular terns, auks and gulls. The colony of gannets *Morus bassana* is the largest on the east coast of the UK. The seabirds feed outside the SPA in nearby waters, as well as more distantly in the North Sea. The IBA covers an area of 132ha and is located at 56°04'N 02°46'W.

General site characteristics

Habitats (no areal percentages available)

Grassland

Rocky areas (rock stacks/islets)

Land-use

Nature conservation/research (100%)

Tourism/recreation (80%)

SPA species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
During the breeding season	
Arctic tern <i>Sterna paradisaea</i>	540 pairs representing at least 1.2% of the breeding population in Great Britain (Mean 1992 to 1996)
Common tern <i>Sterna hirundo</i>	800 pairs representing at least 6.5% of the breeding population in Great Britain (Seabird Census Register)
Roseate tern <i>Sterna dougallii</i> *	9 pairs representing at least 15.0% of the breeding population in Great Britain (5 year mean 1994-1998)
Sandwich tern <i>Sterna sandvicensis</i>	22 pairs representing at least 0.2% of the breeding population in Great Britain (5 year mean, 1993-1997)
Gannet <i>Morus bassana</i>	34,400 pairs representing at least 13.1% of the breeding North Atlantic population (Count, as at 1994)
Lesser black-backed gull <i>Larus fuscus</i>	2,920 pairs representing at least 2.4% of the breeding Western Europe/Mediterranean/Western Africa population (Count, as at 1994)
Puffin <i>Fratercula arctica</i>	21,000 pairs representing at least 2.3% of the breeding population (Count, as at 1992)
Shag <i>Phalacrocorax aristotelis</i>	2,887 pairs representing at least 2.3% of the breeding Northern Europe population (Count as at 1987)

SPA assemblage qualifications

During the breeding season, the area regularly supports 90,000 individual seabirds (three year mean, 1986-1988) including razorbill *Alca torda*, guillemot *Uria aalge*, kittiwake *Rissa tridactyla*, herring gull *Larus argentatus*, cormorant *Phalacrocorax carbo*, fulmar *Fulmarus glacialis*, puffin *Fratercula arctica*, lesser black-backed gull *Larus fuscus*, shag *Phalacrocorax aristotelis*, gannet *Morus bassana*, Arctic tern *Sterna paradisaea*, common tern *Sterna hirundo*, roseate tern *Sterna dougallii* and sandwich tern *Sterna sandvicensis*.

IBA qualification

Those bird populations responsible for IBA qualification of the site are similar to those of the SPA but also include the species shown below:

IBA qualifying bird species	Number of individual birds
During the breeding season	
Cormorant <i>Phalacrocorax carbo</i>	470 (1995)
Herring gull <i>Larus argentatus</i>	13,000 (1995)
Guillemot <i>Uria aalge</i>	20,700 (1995)
Razorbill <i>Alca torda</i>	2,480 (1994)

The IBA holds 84,700 pairs of breeding seabirds and 32,500 pairs of breeding waterbirds on a regular basis. It is also nationally important for breeding *Somateria mollissima* (1,660 pairs, 1995, 5%), *Rissa tridactyla* (9,900 pairs, 1995, 2%) and *Sterna paradisaea* (540 pairs, 1994, 1%).

* According to a Scottish Executive news release of 16/02/04, this SPA has recently been extended onto the island of Long Craig as it regularly supports some 13% of the UK breeding population of roseate tern.

Vulnerability and management issues

Threats include gull predation, which may lower the breeding success of terns. A management plan is in preparation.

Component designations at national and local level

Isle of May NNR	Inchmickery SSSI
Inchmickery RSPB Reserve	Long Craig Island SSSI
Bass Rock SSSI	Fidra Islands RSPB Reserve
Isle of May SSSI	Long Craig Reserve (part of SWT)
Forth Islands SSSI	Inchmickery AoSP

Sources of information

JNCC birds of conservation concern: reference card

http://www.jncc.gov.uk/species/Birds/PosB/Pop_status_of_birds_card.pdf

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9004171.htm>

Birdlife International website

http://www.birdlife.net/datazone/search/sites_search.html?action=SitHTMDetails.asp&sid=2477&m=0

The Annotated Ramsar List

http://www.ramsar.org/profiles_uk.htm

5.1.3 Firth of Forth SPA/IBA/Ramsar

Summary information	Figure 5.1	3
<p>Location: 56°00'57"N 03°15'59"W</p> <p>Area: to be confirmed upon site classification</p> <p>Date submitted: not yet available</p> <p>Birds of conservation concern: <i>Red list:</i> common scoter <i>Amber list:</i> sandwich tern, bar-tailed godwit, red-throated diver, Slavonian grebe, knot, pink-footed goose, redshank, shelduck, turnstone, scaup, cormorant, curlew, eider, long-tailed duck, velvet scoter, goldeneye, oystercatcher, ringed plover, grey plover, lapwing, dunlin, wigeon, lesser black-backed gull</p>		

The Firth of Forth is located on the east coast of central Scotland. It is a complex estuarine site, stretching for over 100km from the River Forth at Stirling eastwards past Edinburgh and along the coasts of Fife and East Lothian to a wide estuary mouth. A wide range of coastal and intertidal habitats is found within the site, including saltmarshes, dune systems, maritime grasslands, heath and fen, cliff slopes, shingle and brackish lagoons. Extensive mud-flats occur particularly in the Inner Firth, notably at Kinneil Kerse and Skinflats on the south shore and Torry Bay on the north shore. Typically, the flats support a rich invertebrate fauna, with eelgrass *Zostera* spp. growing on the main mud-flats, both features providing important food sources for the large numbers of migrating and wintering waterbirds that depend on the estuary. In the Outer Firth, the shoreline diversifies, with sandy shores, some rocky outcrops, mussel beds and some artificial sea walls. The North Berwick coast includes cliffs and dune grassland, with extensive dune systems at Aberlady. The Firth is of major importance for a rich assemblage of waterbirds in the migration periods and through the winter, including divers, sea-ducks, geese, other ducks, waders and terns. Some of these species, notably the sea-ducks and divers, also feed, loaf and roost outside the SPA in the open waters of the estuary.

The IBA covers large areas of intertidal flats and inshore waters, in addition to saltmarsh and sand dune systems, maritime grassland, heath and fen.

General site characteristics

Habitats (no areal percentages are available)

Scrub (heathland)

Grassland

Wetland (tidal river/enclosed tidal water, mudflat/sandflat, saltmarsh, sand dunes/sand beach, shingle/stony beach, coastal lagoon, standing brackish and salt water, water-fringe vegetation, fen/transition mire/spring)

Marine areas (open sea, sea inlet/coastal features)

Rocky areas (sea cliff/rocky shore)

Land Use

Nature conservation/research (5%)

Tourism/recreation

Urban/industrial/transport (5%)

SPA species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of birds
On passage	
Sandwich tern <i>Sterna sandvicensis</i>	1,611 individuals representing at least 3.8% of the population in Great Britain
Over winter	
Bar-tailed godwit <i>Limosa lapponica</i>	2,600 individuals representing at least 4.9% of the wintering population in Great Britain (winter peak mean)
Golden plover <i>Pluvialis apricaria</i>	2,970 individuals representing at least 1.2% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)
Red-throated diver <i>Gavia stellata</i>	88 individuals representing at least 1.8% of the wintering population in Great Britain (WeBS 1992 to 1997 mean)
Slavonian grebe <i>Podiceps auritus</i>	71 individuals representing at least 17.8% of the wintering population in Great Britain (5 year mean 1992/3-1996/7)
Knot <i>Calidris canutus</i>	8,013 individuals representing at least 2.3% of the wintering Northeastern Canada/Greenland/Iceland/Northwestern Europe population (winter peak mean)
Pink-footed goose <i>Anser brachyrhynchus</i>	12,400 individuals representing at least 5.5% of the wintering Eastern Greenland/Iceland/UK population (winter peak mean)
Redshank <i>Tringa tetanus</i>	3,700 individuals representing at least 2.5% of the wintering Eastern Atlantic - wintering population (winter peak mean)
Shelduck <i>Tadorna tadorna</i>	3,586 individuals representing at least 1.2% of the wintering Northwestern Europe population (winter peak mean)
Turnstone <i>Arenaria interpres</i>	1,286 individuals representing at least 1.8% of the wintering Western Palearctic - wintering population (winter peak mean)

SPA assemblage qualification

Over winter, the area regularly supports 86,067 individual waterfowl including scaup *Aythya marila*, Slavonian grebe *Podiceps auritus*, golden plover *Pluvialis apricaria*, bar-tailed godwit *Limosa lapponica*, pink-footed goose *Anser brachyrhynchus*, shelduck *Tadorna tadorna*, knot *Calidris canutus*, redshank *Tringa totanus*, turnstone *Arenaria interpres*, great crested grebe *Podiceps*

cristatus, cormorant *Phalacrocorax carbo*, red-throated diver *Gavia stellata*, mallard *Anas platyrhynchos*, curlew *Numenius arquata*, eider *Somateria mollissima*, long-tailed duck *Clangula hyemalis*, common scoter *Melanitta nigra*, velvet scoter *Melanitta fusca*, goldeneye *Bucephala clangula*, red-breasted merganser *Mergus serrator*, oystercatcher *Haematopus ostralegus*, ringed plover *Charadrius hiaticula*, grey plover *Pluvialis squatarola*, lapwing *Vanellus vanellus*, dunlin *Calidris alpina alpina* and wigeon *Anas penelope*.

IBA species qualification

Those bird populations responsible for IBA qualification are similar to those of the SPA, but also include the species shown in the table below:

IBA qualifying bird species	Number of birds
Over winter	
Scaup <i>Aythya marila</i>	195 (1995)
Dunlin <i>Calidris alpina</i>	8,650 (1995)
On passage	
Golden plover <i>Pluvialis apricaria</i>	3,340 (1995)
Bar-tailed godwit <i>Limosa lapponica</i>	1,530 (1995)
Redshank <i>Tringa totanus</i>	4,150 (1995)
During the breeding season	
Lesser black-backed gull <i>Larus fuscus</i>	865 (1990)
Common tern <i>Sterna hirundo</i>	690 (1996)

The site holds 82,100 wintering and 28,600 passage waterbirds on a regular basis. It is also nationally important for wintering *Podiceps cristatus* (655 birds, 6%), *Phalacrocorax carbo* (710 birds, 5%), *Anas crecca* (1,570 birds, 1%), *Somateria mollissima* (7,550 birds, 10%), *Clangula hyemalis* (710 birds, 3%), *Melanitta nigra* (2,650 birds, 7%), *Bucephala clangula* (2,300 birds, 7%), *Mergus serrator* (610 birds, 6%), *Haematopus ostralegus* (8,650 birds, 2%), *Charadrius hiaticula* (355 birds, 1%) and *Pluvialis squatarola* (665 birds, 2%), for passage *Haematopus ostralegus* (8,200 birds, 2%), *Charadrius hiaticula* (470 birds, 2%) and *Pluvialis squatarola* (565 birds, 1%), and for summer moulting assemblages of *Somateria mollissima* (5,950 birds, 8%).

Ramsar features

Site information
<p>Location: 56°01'N 002°53'W Area: 6,314ha Date submitted: 30/10/01 Importance: A large coastal area comprising a complex of estuaries, mudflats, rocky shorelines, beaches and saltmarshes, including many fragmentary bits of shoreline considered to act as a single ecological unit. Several large urban areas, including Edinburgh, are adjacent to the site and include areas of heavy industry and well-used maritime shipping lanes. The site provides habitat for large numbers of wintering waders and wildfowl, many in nationally and internationally important numbers, and a number of aesthetic, archaeological, sporting and recreational interests lend added value. Coastal industrial development is seen as a source of pressure but is subject to detailed planning control, and the potential for rising sea levels are foreseen in "planned retreat" coastal realignment schemes.</p>

Vulnerability and management issues

Threats include pollution from refuse disposal, disturbance from increased recreational activity, nutrient enrichment of the estuary and sea-level rise. Infrastructure development and industrial expansion pose additional problems, with housing, marina and oil terminal developments planned,

and a proposal put forward for a barrage. Proposals also exist for marine aggregate extraction and deep mining, which may lead to subsidence and habitat change. A Forth Estuary Forum has been established. The area is a candidate SPA, to include the existing Firth of Forth Islands SPA.

Component designations at national and local level

Carlingnose SSSI	Dumbarnie Links SSSI
Fife Ness Coast SSSI	Fife Ness Coast SSSI
Firth of Forth SSSI	Torry Bay LNR
St. Margarets Marsh SSSI	

Sources of information

JNCC birds of conservation concern: reference card

http://www.jncc.gov.uk/species/Birds/PosB/Pop_status_of_birds_card.pdf

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9004411.htm>

Birdlife International website

http://www.birdlife.net/datazone/search/sites_search.html?action=SitHTMDetails.asp&sid=2472&m=0

The Annotated Ramsar List

http://www.ramsar.org/profiles_uk.htm

5.1.4 St. Abbs Head to Fast Castle cSAC

Summary information	Figure 5.1 4
<p>Location: 55°55'10"N, 02°11'45"W</p> <p>Area: 127.52ha</p> <p>Date submitted: Dec 2000</p> <p>Relevant qualifying habitats: Vegetated sea cliffs of the Atlantic and Baltic coasts</p> <p>Relevant qualifying species: N/A</p>	

General site characteristics

Shingle. Sea cliffs. Islets (99.97%)

Habitat qualification

The annex I habitat that is a primary reason for selection of this site is:

Vegetated sea cliffs of the Atlantic and Baltic coasts

St Abb's Head to Fast Castle is a spectacular area of cliff coastline in south-east Scotland, comprising high cliffed sections and rich vegetated areas in more sheltered localities. While some sections are dominated by large seabird colonies which restrict the vegetation in their vicinity, elsewhere extensive vegetated areas are found. A very high number of flowering plant species are present, including many of local distribution, reflecting the range of micro-habitat conditions.

Vulnerability and management issues

The coastal cliffs, seabird colonies and dramatic scenery attract many thousands of visitors each year, ranging from walkers to keen naturalists. Part of the site forms a National Nature Reserve and is managed for nature conservation (and for recreational enjoyment) by the National Trust for Scotland.

Management is agreed through a Management Plan which is approved by the National Trust for Scotland, Scottish Natural Heritage and the Scottish Wildlife Trust. Visitor management forms part of the overall plan, to protect the area from recreational pressure. The cliffs themselves are largely inaccessible and not subject to the same recreational and grazing pressures as the grasslands bordering the cliffs.

Component designations at national and local level

St. Abb's Head to Fast Castle SSSI
St. Abb's NNR

St. Abb's Head VMR
St Abb's SWT

Sources of information

JNCC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0030281>

5.1.5 St. Abb's Head to Fast Castle SPA/IBA

Summary information	Figure 5.1 5
<p>Location: 55°55'00"N, 02°10'00"W</p> <p>Area: 247.85ha</p> <p>Date submitted: 11/08/1997</p> <p>Birds of conservation concern: <i>Amber list:</i> razorbill, guillemott, kittiwake, herring gull, shag</p>	

St Abb's Head to Fast Castle lies on the coast of Berwickshire in south-east Scotland. It is a 10km stretch of cliffs comprised of Old Red Sandstone and Silurian rocks, in places reaching over 150m in height. The cliffs are backed by areas of grassland, open water, flushes and splash zone communities. The site is important for large numbers of breeding seabirds, especially auks and gulls, which feed outside the SPA in surrounding marine areas, as well as further away in the North Sea.

General site characteristics

Habitats

Forest. Broadleaved deciduous woodland (1%)

Shrubland. Scrub (5%)

Wetlands (inland). Standing freshwater (5%)

Coastline. Sea cliffs and rocky shores (89%)

Land-use (no areal percentages available)

Agriculture

Nature conservation and research

SPA assemblage qualifications

The SPA is a seabird assemblage of international importance. During the breeding season, the area regularly supports 79,560 individual seabirds (Count, as at 1987) including razorbill *Alca torda*, guillemot *Uria aalge*, kittiwake *Rissa tridactyla*, herring gull *Larus argentatus* and shag *Phalacrocorax aristotelis*.

IBA qualification

Those bird populations responsible for IBA qualification of the site are similar to those of the SPA but also include the species shown below:

IBA qualifying bird species	Number of individual birds
During the breeding season	
European shag <i>Phalacrocorax aristotelis</i>	430 (1995)
Common murre <i>Uria aalge</i>	20800 (1993)
Razorbill <i>Alca torda</i>	1470 (1993)

Vulnerability and management issues

Unsustainable fishing poses a potential threat to seabirds. Annual seabird monitoring is undertaken at the site.

Component designations at national and local level

St. Abb's Head to Fast Castle SSSI
St. Abb's NNR

St. Abb's Head VMR
St Abb's SWT

Sources of information

JNCC birds of conservation concern: reference card

http://www.jncc.gov.uk/species/Birds/PosB/Pop_status_of_birds_card.pdf


JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9004271.htm>

Birdlife International website

http://www.birdlife.net/datazone/search/sites_search.html?action=SitHTMDetails.asp&sid=2602&m=0

5.1.6 Berwickshire and North Northumberland Coast cSAC

Summary information	Figure 5.1 
<p>Location: 55°39'14"N, 01°40'20"W</p> <p>Area: 65334.94ha</p> <p>Date submitted: October 1996</p> <p>Relevant qualifying habitats: Mudflats and sandflats not covered by seawater at low tide. Large shallow inlets and bays. Reefs. Submerged or partially submerged sea caves</p> <p>Relevant qualifying species: Grey seal <i>Halichoerus grypus</i></p>	

General site characteristics

Marine areas. Sea inlets (73.2%)

Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins) (13.4%)

Salt marshes. Salt pastures. Salt steppes (1.3%)

Coastal sand dunes. Sand beaches. Machair (4.5%)

Shingle. Sea cliffs. Islets (6.7%)

Improved grassland (0.5%)

Other land (including towns, villages, roads, waste places, mines, industrial sites) (0.4%)

Habitat qualification

The annex I habitat that is a primary reason for selection of this site is:

Mudflats and sandflats not covered by seawater at low tide

This is an extensive and diverse stretch of coastline in northeast England and southeast Scotland. There is variation in the distribution of features of interest along the coast. Stretches of the coast in England support a very extensive range of intertidal mudflats and sandflats, ranging from wave-exposed beaches to sheltered muddy flats with rich infaunal communities. These have been selected as biologically diverse and extensive examples of clean sandflats on the east coast. Those in the Lindisfarne and Budle Bay area and on the adjacent open coast flats north of Holy Island are the most extensive in north-east England, with the largest intertidal beds of narrow-leaved eelgrass *Zostera angustifolia* and dwarf eelgrass *Z. noltei* on the east coast of England, a diverse infauna, and some large beds of mussels *Mytilus edulis*. Some of the bays along the open coast have mobile sediments, with populations of sand-eels *Ammodytes sp.*, small crustaceans and polychaete worms. More sheltered sediments have very stable lower shore communities of burrowing heart-urchins *Echinocardium cordatum* and bivalve molluscs.

Large shallow inlets and bays

Whilst predominantly rocky, this extensive and diverse stretch of coastline has several characteristic, sediment-dominated embayments in northeast England, including Budle Bay, Beadnell Bay and Embleton Bay. Each of these areas is relatively exposed and uniform in nature and is characterised by crustacean /polychaete- and bivalve/polychaete-biotopes. Budle Bay is adjacent and continuous with the bay to the north between the island of Lindisfarne and the mainland. This area forms one of the most extensive areas of sandflats between the Firth of Forth and the Wash, and these are some of the richest examples of these biotopes in northeast England. In the sublittoral, Beadnell and Embleton Bays form a sandy break in the otherwise continuous reef habitat in this site. These areas are characterised by extensive areas of clean sand with often dense populations of the heart urchin *Echinocardium cordatum*, and razor clams *Ensis siliqua* and *E. arcuatus*.

Reefs

Moderately wave-exposed reef habitats occur throughout the site. The subtidal rocky reefs and their rich marine communities, together with the wide variety of associated littoral reefs, are the most diverse known on the North Sea coast. Their remarkably varied nature is due to the wide range of physical conditions in the area, from wave-exposed locations on the open coast, through more sheltered reefs within bays, to those exposed to strong tidal streams in sounds and off headlands. There is also a diverse range of rock types, including soft limestones and hard volcanic rock. The Farne Islands are of special importance as they are among the very few rocky islands with extensive reefs in the enclosed North Sea. A large number of the species present are characteristic of cold water and several reach their southern or eastern limit of distribution within the area.

Submerged or partially submerged sea caves

Caves occur throughout the site in both the intertidal and the subtidal zones in a range of different hard rock exposures. There are examples of partially submerged caves in the cliffs north of Berwick and in the limestone at Howick (south of Craster), and there are submerged sea caves, tunnels and arches in the volcanic rock of the Farne Islands and around St Abb's Head. Caves occur in association with reefs, in both the intertidal and the subtidal zones. Depending on the depth of the cave and its morphology, the site supports a range of distinct biological communities.

Species qualification

The annex II species that is a primary reason for selection of this site is:

Grey seal *Halichoerus grypus*

The northeast England coastal section is representative of grey seal *Halichoerus grypus* breeding colonies in the southeast of its breeding range in the UK. It is the most southeasterly site selected for this species, and supports around 2.5% of annual UK pup production.

Vulnerability and management issues

The varied geological sequence along the coast forms a mixture of cliffs, rocky shores and sandy bays that attract a variety of recreational users for angling, diving, watersports, etc. In the case of diving, the most popular areas are subject to a voluntary code of practice. Any difficulties arising from recreational activities would be addressed by the site management scheme.

The estuarine reef communities support an important crustacean fishery whilst offshore fisheries exist for Nephrops and some pelagic and demersal fish species. Wastewater discharges could have a localised effect on the site but will be subject to EC water quality legislation. Much of the inshore area in Scotland is a Voluntary Marine Nature Reserve

Component designations at national and local level

Berwickshire MCA

St. Abb's to Fast Castle SSSI

Berwickshire and Northumberland Coast SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/SAC.asp?EUCode=UK0017072>

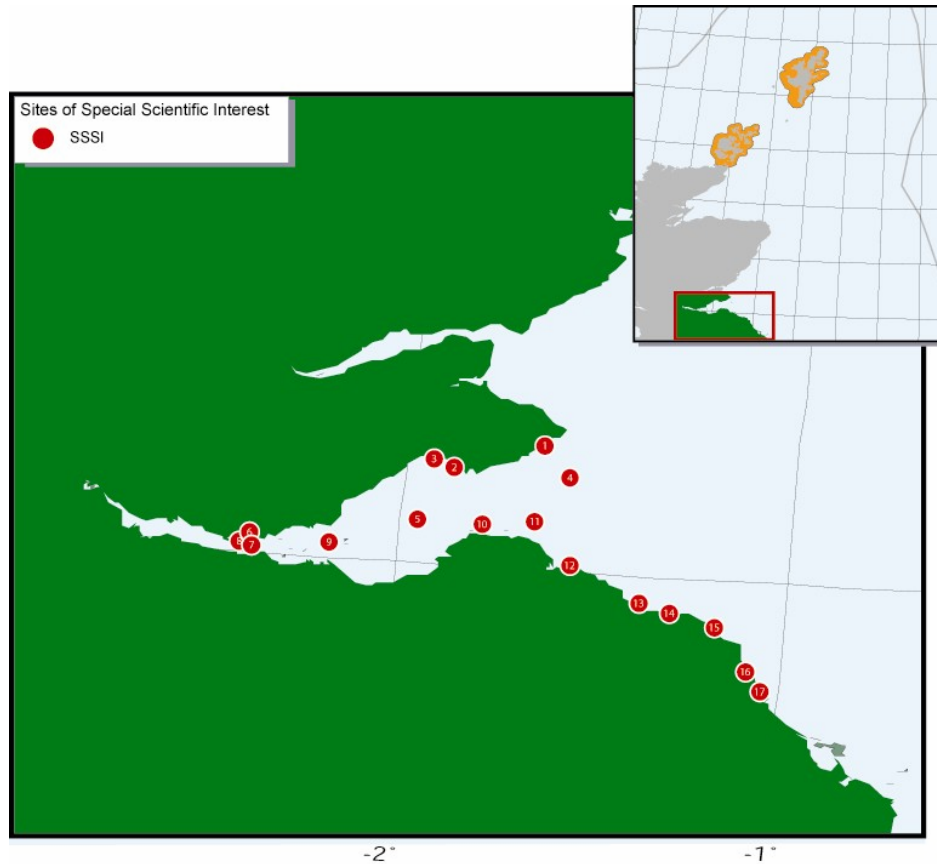
5.2 Sites of national and local importance

There are a number of sites of national and local importance along Scotland's northeast coast including National Nature Reserves, Sites of Special Scientific Interest and Scottish Wildlife Trust reserves. These sites are described in this section. SSSI's have been marked on a separate map (Figure. 5.2) for clarity. Figure 5.3 shows the location and reference numbers of other nationally and locally important sites (the number given in the associated text for each of these sites refers to their location on Figure 5.3). Numbering of the sites attempts to follow the coast in a north-south direction.

5.2.1 Sites of Special Scientific Interest (SSSI)

For more detailed information relating to designation please refer to the SNH website (www.snh.gov.uk), or consult the appropriate area office. For the definition of Site of Special Scientific Interest, see Appendix 2.

Figure 5.2 - SSSI's along the Fife, Lothians and Borders coastline



Map ref.	Site Name	Location	Area (ha)	Site Description
1	Barnsmuir Coast	NO602060	20	Coastal habitats
2	Ruddons Point	NO457006	9	Coastal habitats
3	Dumbarnie Links	NO451017	40	Coastal habitats Botanical
4	Isle of May	NT655995	57	Cliffs Birds Seals
5	Firth of Forth*	NS865920 to NO615075 & NT678794	7,420	Sand dunes Saltmarsh Saline lagoons Cliffs Plants Invertebrates Birds Geological
6	St. Margaret's Marsh	NT116816	26	Wetland & saltmarsh
7	Carlingnose	NT134806	6	Grasslands & heath
8	Longcraig Island	NT125802	2	Birds

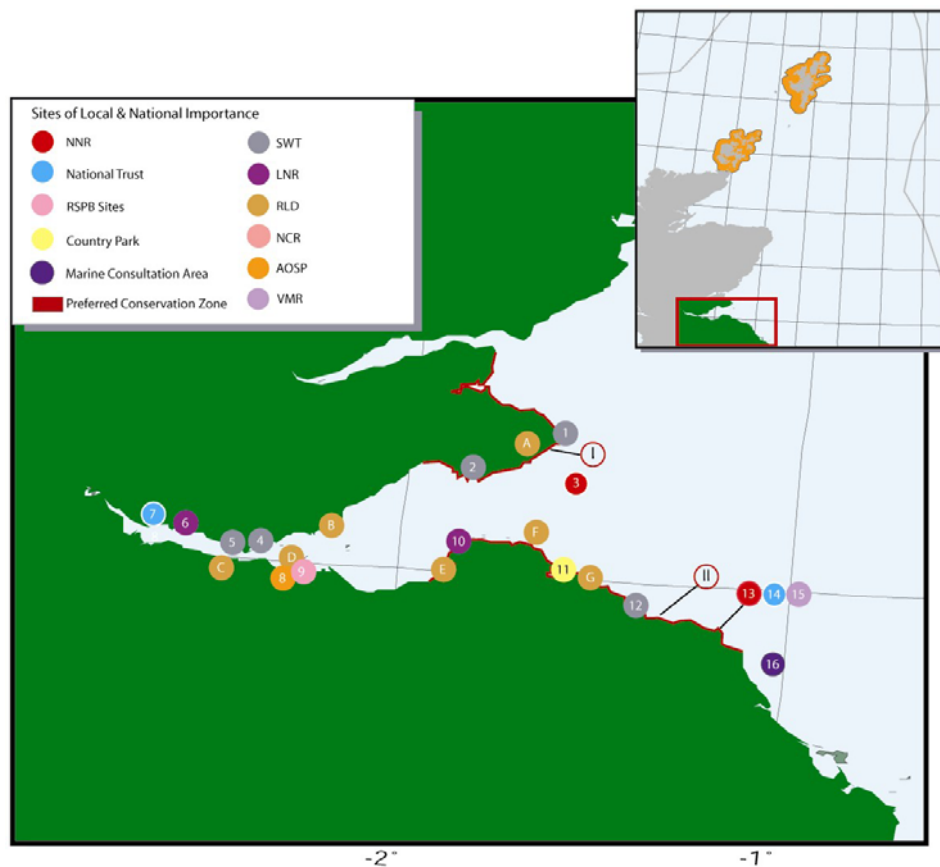
* This site replaces; East Wemyss - Anstruther Coast; Burntisland - Kirkcaldy Coast; Torry Bay; Alloa Inches; Skinflats; Kinneil Kerse; Blackness Bay; Forth Bridges - Granton Shore; Wardie Shore; Leith - Prestonpans; Gosford Bay - Port Seton; Aberlady Bay; Gullane - Broadsands; North Berwick Coast; Tynninghame Shore; Dunbar Coast

Map ref.	Site Name	Location	Area (ha)	Site Description
9	Inchmickery	NT207805	5	Birds
10	Forth Islands (Craigleith, Fidra & Lamb)	NT513868	23	Birds
11	Bass Rock	NT602873	8	Birds
12	Barnsness Coast	NT696781	271	Coastal habitats Geological
13	Pease Bay Coast	NT781718	65	Coastal habitats Geological
14	Siccar Point	NT811709	6	Geological
15	St. Abb's Head - Fast Castle	NT880699	257	Cliffs Birds
16	Berwickshire Coast (intertidal)	NT880699		Coastal habitats Non-vascular plants Cliffs Invertebrates
17	Burnmouth Coast	NT960610	169	Geological

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

Figure 5.3 - Coastal conservation sites of national and local importance along the Fife, Lothians and Borders coastline



5.2.2 National Nature Reserves (NNR)

Figure 5.3



Map ref.	National Nature Reserves	Location	Area (ha)	Site description
3	Isle of May	NT655995	57	Important research centre for breeding seabirds (inc. puffins, guillemots and razorbills). Breeding grey seals
13	St. Abb's Head	NT914689	77	Steep cliffs support large colonies of breeding kittiwakes, fulmars, guillemots, razorbills, shags and puffins.

Sources of information

Scottish Natural Heritage website

<http://www.snh.org.uk/index/i-frame.htm>

Scotland's National Nature Reserves website

<http://www.nnr-scotland.org.uk/>

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

5.2.3 Local Nature Reserve (LNR)

Figure 5.3



Map ref.	Local Nature Reserves	Location	Area (ha)	Date declared	Site description
6	Torry Bay	NT005855	890.7	1996	Intertidal mud/sand flats, saltmarsh, grassland
10	Aberlady Bay	NT472803	582	1952	Tidal sand, mudflats and pioneer saltmarsh

Sources of information

Scottish Natural Heritage Website

www.snh.org.uk

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

5.2.4 Areas of Special Protection (AoSP)

Figure 5.3



'Area of Special Protection' (AoSP) is a designation replacing Bird Sanctuary Acts, which were repealed and amended under the Wildlife and Countryside Act 1981. Designation aims to prevent the disturbance and destruction of the birds for which the area is identified, by making it unlawful to damage or destroy either the birds or their nests and in some cases by prohibiting or restricting access to the site. There is one AoSP in SEA 5, at Inchmickery (designated in 1963).

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

5.2.5 Country Park

Figure 5.3



There is one Country Park along the Fife and Borders coastline. John Muir Country Park incorporates Tynninghame shore and Dunbar Coast SSSI's.

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

5.2.6 Nature Conservation Review (NCR) Site

The ornithological importance of Kinneil Kerse SSSI is complementary to that of Skinflats, Torry Bay and Alloa Inches. Together they form the Inner Forth Estuary component of the Firth of Forth Nature Conservation Review (NCR) site.

Sources of information

Aberdeen University website

www.abdn.ac.uk/geography/old-geography/fe/facts/conserve.htm

5.2.7 Geological Conservation Review (GCR) Sites

Detailed scientific accounts of coastal and inland GCR sites are contained in volumes of a planned 42-volume Geological Conservation Review series by the JNCC. 28 of these volumes have been published to date. *Sites marked with an asterisk have been identified in the recent JNCC publication 'Coastal Geomorphology of Great Britain', a volume of the GCR Series which 'summarises the results of the site evaluation and selection programme of Britain's coastal regions ... with the aim of representing the highlights of Britain's coastal geomorphology, 99 sites were selected eventually for this part of the GCR, to be considered for long-term conservation under British law' (May & Hansom, 2003).

GCR Single Interest Locations (SILs)		
Randerston Coast	Pettycur	Weak Law
Elie Ness	Bruntisland - Kinghorn Coast	Dunbar* (2 SILs)
Elie - Anstruther	North Queensferry (A90) Road Cuttings	Barns Ness Coast
Kincraig Point	Queensferry Shore	Cove
East Fife Coast	Joppa Shore (2 SILs)	Oxroad Bay
Ardross Castle	Wardie Shore	Hawks Heugh
East Wemyss to Buckhaven Coast	South Queensferry - Hound Point	Old Cambus Quarry
Inchkeith	Granton Shore	Siccar Point
Kinghorn Coast	Wardie	St. Abb's Head*
Inveriel	Cheese Bay	Pettico Wick to St. Abb's Harbour
Kingswood	North Berwick Coast	Lennel Braes
Abden		Burnmouth

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

May V J & Hansom J D (2003). *Coastal Geomorphology of Great Britain*. Peterborough, Joint Nature Conservation Committee

5.2.8 Marine Consultation Area (MCA)

Figure 5.3



The non-statutory Marine Consultation designation identifies areas considered by Scottish Natural Heritage to deserve particular distinction in respect of the quality and sensitivity of the marine environment within them. Their selection encourages coastal communities and management bodies to be aware of marine conservation issues in the area. There is one MCA in SEA 5. Berwickshire MCA was established in 1986 and covers an area of 4,838ha.

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

5.2.9 Voluntary Marine Reserve (VMR)

Figure 5.3



The single VMR in SEA 5 (at St. Abb's Head) is the only one in Scotland. The marine reserve covers some 8km of coastline from Hairy Ness, Eyemouth, in the south to Thrummie Carr in the north, and extends offshore to the 50m-depth contour, an average distance of 1.5km. The whole area covers 1030ha.

Sources of information

St. Abbs and Eyemouth Voluntary Marine Reserve website
www.marine-reserve.org.uk/welcome/introduction.htm

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

5.2.10 Regional Landscape Designations (RLD)

In the Firth of Forth and Scottish Borders region there are 7 areas covered by RLD's. They are known as Areas of Great Landscape Value (AGLV) in Highland and Areas of Regional Landscape Significance (ARLS) in Grampian. The area of many of these sites is not available. There has been no monitoring or further comprehensive study of the number of RLD's since the study by Cobham Resource Consultants (1988). The following sites are located on Figure 5.3.

- A. East Neuk Coast
- B. Burntisland Coastal Area
- C. Hopetoun Coastline
- D. Crammond Isle, Cow and Calves and Inchmickery
- E. Longniddry to Dirleton Coastline
- F. Islands of Bass Rock, Craigleith and the Lamb
- G. Dunbar to Dunglass Burn Coastline

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

5.2.11 Preferred Conservation Zones (PCZ)

Preferred Conservation Zones (PCZ's) are non-statutory coastal areas in Scotland, of particular national scenic, environmental or ecological importance, in which major new oil and gas related developments would be inappropriate or would have a socio-economic impact on a small community. They are areas with a distinctive aesthetic appeal, heritage and character, where tourism and recreation take priority over major industrial processes. There are two PCZ's in the Firth of Forth region (which can be found on Figure 5.3);

- I. Lundin Links – Tentmuir
- II. St. Abb's - Longniddry

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

5.2.12 National Trust for Scotland sites

Figure 5.3

Map ref.	National Trust for Scotland sites	Site description
7	The Royal Burgh of Culross	16 th and 17 th burgh
14	St. Abb's Head	Coastal headland

Sources of information

National Trust for Scotland website

<http://www.nts.org.uk/>

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

5.2.13 RSPB Reserves

Figure 5.3

Map ref.	RSPB Reserves	Location	Area (ha)	Description
9	Inchmickery	NT207806	4	Rocky shore, low cliffs, sand/shingle beach, overgrown coastal grassland, wartime fortifications with breeding gulls and terns including roseate tern <i>Sterna dougalli</i>

Sources of information

RSPB Web Site

<http://www.rspb.org.uk>

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

5.2.14 Scottish Wildlife Trust (SWT) Reserves

Figure 5.3



Map ref.	Reserves	Location	Area (ha)	Site description
1	Kilminning Coast	NO634091	9	Low coastline with bushes, grassland, migrant birds, plants, lichen and mosses.
2	Dumbarnie Links	NO441022	7.3	Birds, butterflies and insects, flowers
4	Carlingnose Point	NT135809	6	Butterflies and insects, flowers
5	Long Craig Island	NT126123	1	Bird colonies (inc. terns)
12	Pease Dean	NT790704	32	Butterflies and insects, flowers, lichens and mosses

Sources of information

Scottish Wildlife Trust website

www.swt.org.uk

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

6 CONTIGUOUS AREAS

6.1 North coast of Caithness (SEA 4)

The north limit of SEA 5 is Duncansby Head in Caithness and the Pentland Skerries lie less than 7km to the northeast, with the south tip of Orkney (Brough Ness) a further 4km to the north. The cliffs of Duncansby Head and the remarkable Stacks to the south continue similar formations on the contiguous north coast and continue the geological formations which lie within SEA 4. Tidal races can be seen from the lighthouse on the headland at Duncansby which is a popular viewing point for the many visitors to John O'Groats, 2km to the west. Despite the landscape continuity of this part of Caithness the north-easterly point of the Scottish Mainland does mark the boundary between the North Sea and the Pentland Firth which opens westwards to the Atlantic Ocean. Tidal streams, wave energy, solid geology, the legacy of glaciation and post-glacial sea level history change progressively southwards. In terms of weather, the east coast is conspicuously drier with more pronounced seasonal differences than most of the regions embraced in SEA 4. Nevertheless, many of the characteristics of the coastline of north and east Caithness are similar in form and process and the cultural and social

Photo 6.1 - John O'Groats in Caithness



geography of the area are also similar. Nevertheless, with the exception of Thurso, the north coast lacks the same historical dependence on small harbours which prospered in the herring boom at the turn of the 20th Century. Further along the north coast of Caithness is the gateway to the Orkney Islands whereas the east coast looks southwards to Inverness and Aberdeen. Thus, although the coastal boundary between SEA 5 and SEA 4 does not demarcate an abrupt change in physical and

biological features, the change to the more sheltered North Sea environment of the Moray Firth is distinctively different in environmental and increasingly socio-economic characteristics.

Sources of information

SEA 4 Coastal Conservation Sites

www.offshore-sea.org.uk/sea/dev/html_file/udsea4_document.php?documentID=30

6.2 Northumberland (SEA 3)

The boundary between SEA 5 and SEA 3 is the border between Scotland and England with the maritime boundary extending north-eastwards into the North Sea at Berwick-upon-Tweed. This is a political boundary with little or no geomorphological or biological significance. Statutory and Planning regimes do change, with, for example Scottish National Heritage giving way to English Nature; with Scottish planning law changing to English law and with County organisational structures altering from Scottish to English arrangements. Bodies such as the Royal Society for Protection of

Birds and the Joint Nature Conservation Committee do not change other than to take cognisance of English Law, e.g. in ownership of land. Other agencies such as Wildlife Trust and National Trust are essentially similar in England and Scotland. The two main types of conservational designation, e.g. SSSI's and NNR's are identical in form and definition in both England and Scotland. The overriding importance of UK designations which are driven within European conventions and designation e.g. RAMSAR, cSAC, Birds Directive, Natura 2000 sites, SPA's and IBA's, are all increasing in importance.

Photo 6.2 - Lindisfarne on Holy Island



From a conservational perspective these formal and legal distinctions are of little real consequence. The coastline south and north of Berwick-upon-Tweed is broadly similar, especially in terms of the process environment along the open North Sea coastline of Berwickshire and Northumberland. Symptomatic of this transboundary similarity is the Berwickshire and North Northumberland Coast European Marine Site which extends from Fast Castle in Scotland southwards to Alnmouth

in England. Geology, glacial history and the sequence of sea level changes are also similar. The most significant coastal feature lies 14km farther south of the Scottish border in the extensive intertidal strand of Holy Island Sands with its causeway across the Nature Reserve to Lindisfarne and its monastery which was founded in 634AD. There is no equivalent of this coastal feature in the contiguous part of SEA 5, and from this area southwards the coastline of Northumberland becomes increasingly modified by human activities, especially in the greater Newcastle area.

Sources of information

SEA 3 Coastal Conservation Sites

www.offshore-sea.org.uk/sea/dev/html_file/udsea3_document.php?documentID=19

7 SPECIES CONSERVATION WITHIN THE SEA 5 AREA

In addition to the designation of specific conservation sites within the SEA 5 area, a number of individual marine species have been afforded protection. At a European level, a number of marine species including all cetacean species and otters, a number of fish species and a range of marine invertebrates are listed on Annex IV (Animal and Plant Species of Community Interest in Need of Strict Protection) of the Habitats Directive. Under this Annex, the deliberate capture, killing or disturbance of such species is banned, as is their keeping, sale or exchange.

Several marine species are also protected in UK waters under Schedule 5 of *The Wildlife And Countryside Act, 1981*. These include all cetacean species, otters, all turtle species, a range of fish including sturgeon, allis shad, twaite shad and basking shark, and a number of marine invertebrates.

The management and monitoring of protected species as well as many additional marine species, is co-ordinated through the implementation of individual and grouped species action plans under the UK Biodiversity Action Plan (<http://www.ukbap.org.uk/>).

8 COASTAL AND MARINE NATURE CONSERVATION INITIATIVES

8.1 Management plans for marine cSACs

A management group, facilitated by the Moray Firth Partnership was set up for the Moray Firth marine cSAC in November 1999. The management scheme produced in 2003 sets out a framework for the co-operative management of activities affecting the cSAC. The scheme covers six broad areas: boat traffic; fishing; noise; environmental contaminants; oil related development and activity, and monitoring (Moray Firth Partnership website - <http://www.morayfirth-partnership.org>).

A management scheme for the Berwickshire and North Northumberland Coast European marine site was produced in 2001 and covers the Berwickshire and North Northumberland Coast cSAC and Lindisfarne SPA. The scheme outlines a framework for the effective management of the marine site, identifies activities with the potential to affect the site, and assesses the effectiveness of current management measures (http://www.xbordercurrents.com/management_scheme.html).

8.2 Initiatives to establish offshore conservation sites

Initiatives at both national and European level are in the process of identifying potential offshore sites which may warrant protection. These initiatives include the Offshore Natura 2000 Project and OSPAR's Marine Protected Areas programme.

These initiatives have been reviewed previously in the Conservation Reports for SEAs 3 and 4. Given their ongoing nature, this section will review progress and identify important sources of information.

Progress in identifying offshore Natura 2000 sites

JNCC have completed an assessment to inform the selection of *Natura 2000* sites in offshore waters (Johnston *et al.* 2002). The report describes selection criteria and identifies potential areas which may qualify for protection.

The most recent update on the selection of criteria and potential areas for SACs and SPAs is provided in the JNCC paper (Johnston *et al.* 2003). This paper identifies areas of Annex 1 habitat within the 12-200 nautical mile zone which could be classified into Group 1 or Group 2 depending (respectively) on the confirmation/suspicion of the presence of Annex I habitat, adequacy/inadequacy of biological information, and absence/presence of sites of such character in territorial waters (0-12nm).

Therefore, it is possible to determine which areas wholly in UK offshore waters can be considered against Annex III selection criteria immediately (Group 1) and those which require new survey or consideration before an assessment against selection criteria can be made (Group 2). Sites will be selected from Group 2 as well as areas of habitat in Group 1 to fully represent the range of marine habitat types under Annex I of the Directive in UK waters (Johnston *et al.* 2003).

Guidance from JNCC (Johnston & Reid 2002) indicates that there are likely to be three main types of marine SPA, namely:

- Seaward extensions of existing seabird breeding colony SPAs beyond low water mark
- Inshore marine areas used by birds in the non-breeding seasons (e.g. divers, grebes and seaduck)
- Marine feeding areas

Current JNCC recommendations (Johnston & Reid 2002) indicate that all existing colony SPAs at which guillemot, razorbill and puffin are qualifying species, be extended by 1km from mean low water mark. Similarly, colony SPAs at which fulmar, shag and kittiwake are qualifying species should be extended by 1km. It is also recommended that existing colony SPAs at which gannet are a qualifying species be extended by 2km.

Qualifying habitats and species in the SEA 5 area

In SEA 5, the East Shetland shelf and Pobie Bank have been classified as Group 2 for bedrock and stony reef habitats. The area is composed of bedrock with a thin, patchy veneer of mainly gravely sand, the location of bedrock outcrops is scattered and limited to small patches which occur from inside Scottish territorial waters into the offshore (BGS 1984, cited by Johnston *et al.* 2003).

Pockmarks with carbonate structures formed by leaking gases are the only features known to occur in UK offshore waters that may conform to the Annex I habitat 'Submarine structures made by leaking gases'. To date, a number of areas where pockmarks may occur have been identified in the northern North Sea including the Forties Field, the Fladen and Witch Grounds (Johnston *et al.* 2002). Two examples of the pockmark variant of this habitat are currently known in UK waters, both outwith the SEA 5 area. These are Scanner pockmark (Block 15/25) and a number of unnamed pockmarks near the Braemar oil field (Block 16/3); both sites having sufficient data to be classified as Group 1 (Johnston *et al.* 2003).

The SEA 5 area supports a number of Annex II species for which offshore SACs may possibly be designated including grey seal, common seal, bottlenose dolphin and harbour porpoise. Further research is needed to clarify the offshore distributions of these species but it is likely, given the importance of the area for seal breeding and foraging as well as our current knowledge of cetacean distribution, that offshore areas within SEA 5 may be protected in the future.

JNCC recommendations (see above - Johnston & Reid 2002) could result in the extension of a number of colony SPAs within the SEA 5 area (Table 8.1).

Table 8.1 – Coastal SPAs in SEA 5 that may be extended due to their qualifying species						
SPA	Guillemot	Razorbill	Puffin	Gannet	Shag	Kittiwake
Shetland						
Hermaness, Saxa Vord & Valla Field			✓	✓		
Noss	✓			✓		
Fair Isle	✓					
Orkney						
Marwick Head	✓					
West Westray	✓					
East coast						
East Caithness Cliffs	✓	✓			✓	✓
Troup, Pennan and Lion Heads	✓					
Fowlsheugh	✓					✓
Firth of Forth Islands			✓	✓	✓	
Farne Islands	✓		✓			
Coquet Islands			✓			

JNCC consider in principle that the guidelines for the designation of terrestrial SPAs can be applied to inshore areas used by birds such as seaduck, divers and grebes in the non-breeding seasons. Given the importance of a number of areas within the SEA 5 area, including the Moray Firth, Montrose Basin, and the Firths of Tay and Forth as overwintering areas for such species, it is likely that inshore areas of SEA 5 could be protected in the future.

Darwin Mounds

Although well to the west of the SEA 5 area, the Darwin Mounds represent the only offshore conservation site that has so far been identified in UK waters and as such provides a useful example of the issues associated with the designation of offshore SACs. The Darwin Mounds are an area of sandy mounds on the Wyville Thomson Ridge to the north west of Scotland which currently supports the best known natural occurrence of the cold water coral, *Lophelia pertusa* in UK waters. Formal proposing of the site by the UK Government will proceed when regulations are in place to implement the EC Habitats Directive in UK offshore waters.

A public consultation on *The Offshore Marine Conservation (Natural Habitats &c.) Regulations 2003* was launched by DEFRA in August 2003. This set out the proposed Regulations to apply the Habitats and Birds Directives to the UKCS and waters beyond 12 nautical miles over which the UK exercises sovereignty (DEFRA website - <http://www.defra.gov.uk/corporate/consult/offshore-marine/index.htm>).

In August 2003 the European Commission adopted emergency measures banning the use of bottom trawled gear over the Darwin Mounds. These measures were applicable for 6 months and allowed time for the Commission to adopt a Council Regulation permanently banning the use of the fishing gear concerned. The measures were extended to August 2004 and in March 2004 the EC Fisheries Council adopted a Council Regulation making the protection measures for the Darwin Mounds permanent (EUROPA website – <http://europa.eu.int/>).

Progress in identifying OSPAR Marine Protected Areas (MPAs)

This section provides details of progress since the previous review of the MPA initiative (Section 6 of the SEA 4 Conservation report).

The OSPAR 2003 meeting (Bremen) agreed an Initial OSPAR List of Threatened and/or Declining Species and Habitats, those present within the Greater North Sea are highlighted in Table 8.2. Justifications for the inclusion of species and habitats on the initial list have been published and these provide information on the current status and threats to the species/habitats in the OSPAR maritime area (OSPAR Commission 2004). The initial list has not been finalised and additional species and habitats may be added following further research and discussion. Much of this discussion will be channeled through the Working Group on Marine Protected Areas and Species and Habitats (MASH) set up by OSPAR 2003 under its Biodiversity Committee.

Table 8.2 – Initial OSPAR list of threatened and/or declining species and habitats in the Greater North Sea

Species	Habitats
Invertebrates	Description
<i>Arctica islandica</i> (Ocean quahog)	Intertidal mudflats
<i>Nucella lapillus</i> (Dog whelk)	Littoral chalk communities
<i>Ostrea edulis</i> (Flat oyster)	<i>Lophelia pertusa</i> reefs
Birds	<i>Ostrea edulis</i> beds
<i>Sterna dougallii</i> (Roseate tern)	Sea-pen and burrowing megafauna communities
Fish	<i>Zostera</i> beds

Table 8.2 – Initial OSPAR list of threatened and/or declining species and habitats in the Greater North Sea

<p><i>Acipenser sturio</i> (Sturgeon)</p> <p><i>Alosa alosa</i> (Allis shad)</p> <p><i>Cetorhinus maximus</i> (Basking shark)</p> <p><i>Coregonus lavaretus oxyrinchus</i> (Houting)</p> <p><i>Dipturus batis</i> (Common skate)</p> <p><i>Raja montagui</i> (Spotted ray)</p> <p><i>Gadus morhua</i> (Cod)</p> <p><i>Petromyzon marinus</i> (Sea lamprey)</p> <p><i>Salmo salar</i> (Salmon)</p> <p>Reptiles</p> <p><i>Dermochelys coriacea</i> (Leatherback turtle)</p> <p>Mammals</p> <p><i>Balaenoptera musculus</i> (Blue whale)</p> <p><i>Eubalaena glacialis</i> (Northern right whale)</p> <p><i>Phocoena phocoena</i> (Harbour porpoise)</p>

The Working Group on Marine Protected Areas and Species and Habitats (MASH) reported to a recent meeting of the OSPAR Biodiversity Committee held in Bruges, Belgium in February 2004. Following a MASH proposal, the Biodiversity Committee agreed to recommend to OSPAR 2004 that two fish (seahorse) species *Hippocampus hippocampus* and *Hippocampus guttulatus*, and three habitats, maerl beds, *Modiolus modiolus* beds, and *Sabellaria spinulosa* reefs should be added to the Initial List of threatened and/or declining species and habitats. The Committee will also recommend, subject to a reservation by the EC that the habitat intertidal *Mytilus edulis* beds on sediment should also be added to the list.

In relation to MPAs, OSPAR 2003 adopted OSPAR Recommendation 2003/3 on a Network of Marine Protected Areas, together with the Guidelines for the Identification and Selection of MPAs in the OSPAR Maritime Area (2003-17) and the Guidelines for the Management of MPAs in the OSPAR Maritime Area (2003-18).

OSPAR Ministers agreed in the Bremen Statement that, working with HELCOM and the European Community, OSPAR will identify the first set of MPAs by 2006, establish what gaps then remain and complete by 2010 a joint network of well-managed marine protected areas that, together with the Natura 2000 network, is ecologically coherent.

The Contracting Parties' status on designation of MPAs was presented at the first meeting of MASH (November 2003) held in Tavira, Portugal. The UK has yet to propose areas but aims to do so to MASH 2004. Potentially up to 60 inshore Natura 2000 sites may be submitted as OSPAR MPAs. The UK has yet to submit offshore Natura 2000 sites to the EC (the Darwin Mounds will be submitted once regulations implementing the EC Habitats Directive in UK offshore waters are in place) but hopes to consider these sites against the OSPAR MPA criteria by MASH 2005.

Further details of the Initial OSPAR List, MASH and the MPA initiative can be found on the OSPAR website (<http://www.ospar.org/eng/html/welcome.html>).

8.3 Review of marine nature conservation

Final report of the Irish Sea Pilot

The purpose of the Irish Sea Pilot was to help develop a strategy for marine nature conservation that could be applied to all UK waters and, with international collaboration, the waters of the north-east Atlantic. The Pilot was commissioned by Defra as part of the Review of Marine Nature Conservation (RMNC) and undertaken by the JNCC.

A proposed framework for marine nature conservation, developed as part of the RMNC, envisaged the need to take action at a range of scales, i) the Wider Sea, ii) the Regional Sea, iii) Marine Landscapes, and iv) Nationally-important habitats and species. The proposed framework anticipated that a range of measures would be needed to conserve marine biodiversity, including protected areas, spatial planning and other measures. The Pilot tested the practicality and potential method of operation of the proposed framework and the additional measures needed to put it into effect (Vincent *et al.* 2004).

Published in April 2004, the final report of the Irish Sea Pilot made 64 recommendations for consideration by the RMNC. Some background details are given below as are the primary conclusions of the Pilot and their operational scale (Vincent *et al.* 2004).

The Wider Sea - The seas make an important contribution to the economy and quality of life of the UK through their contribution to a wide range of human activities. The regulation of many of these activities is determined or influenced by international Conventions and by EU legislation.

Primary conclusions:

- Ensure that international and national policy, legislation and financial incentive measures support the achievement of the strategic goals set for the marine environment.
- Human activity should be managed effectively at the national level to achieve the maintenance, or restoration, of good ecological conditions, and the conservation and sustainable use of the marine environment.
- National system of co-ordinated environmental monitoring, together with the monitoring of human activities, should be implemented.

Regional Sea – The Pilot proposed boundaries for a series of UK Regional Seas, determined initially in terms of biogeography. Regional Seas provide an appropriate scale at which to map and describe biodiversity and at which to manage human activities within the marine environment.

Primary conclusions:

- A system of biogeographical Regional Seas should be developed for the north-east Atlantic.
- These Regional Seas should be considered as a basis for marine strategic planning and management.
- Consideration should be given to the establishment of fora at the Regional Sea level to improve co-ordination and collaboration in management planning, data collection, survey and research.

A map of proposed Regional Seas around the UK indicates that the SEA 5 area would likely form part of the Northern North Sea Regional Sea, although its northern extent is under debate.

Marine Landscapes - The Pilot tested the concept of 'Marine Landscapes' which is based on using geophysical and hydrographical data to identify habitat types in the absence of biological data. The Pilot successfully applied this approach to the Irish Sea, identifying and mapping 18 coastal and seabed marine landscape types, and 4 water column marine landscape types.

Primary conclusions:

- The marine landscape approach should be adopted as a key element for marine nature conservation, and utilised in spatial planning and the marine environment.
- A list of internationally-agreed marine landscapes for the north-east Atlantic should be developed, and work to map these should be undertaken in collaboration with other countries.

Nationally-important marine features - A draft set of criteria for the identification of nationally-important marine landscapes, habitats and species was tested.

Primary conclusions:

- Slightly modified criteria could be adopted by the UK for the identification of nationally-important marine landscapes, habitats and species.
- Further work should be undertaken to determine which marine nationally-important features would benefit from specific Action Plans, and a unified process (incorporating the work undertaken under the UK Biodiversity Action Plan) should be operated.

Nationally-important marine areas - The Pilot investigated the concept of ecologically-coherent networks of important marine areas as envisaged under the EC Habitats Directive and under OSPAR, tested draft criteria for the identification of important marine areas, and investigated a range of methods to develop a network of areas for the Irish Sea.

Primary conclusions:

- The identification and appropriate management of an ecologically-coherent network of important marine areas is a crucial element of the framework for marine nature conservation.
- Such a network should be identified at the regional sea level.
- Appropriate measures should be taken to manage areas within the network, including measures which will ensure that the areas develop and sustain the full range of biodiversity characteristic of those habitats.

Other important recommendations of the Pilot included:

- A statutory process of marine spatial planning involving national planning guidelines, strategic plans at the Regional Sea scale, and more detailed local plans should be introduced.
- Additional legislation needed to ensure that an ecologically-coherent network of nationally important areas can be established and conserved.
- The revised marine nature conservation framework should be adopted for the UK and promoted with other countries in the north-east Atlantic.

The Pilot's final report as well as details of underpinning reports can be found on the JNCC Irish Sea Pilot website (http://www.jncc.gov.uk/marine/irishsea_pilot/default.htm).

8.4 Mapping European seabed habitats (MESH)

JNCC are to lead an EU Interreg-funded international marine habitat mapping programme entitled 'Development of a framework for Mapping European Seabed Habitats' (MESH), which will start in spring 2004 and last for three years. MESH has 12 partners across the UK, Ireland, the Netherlands, Belgium and France and aims to produce seabed habitat maps covering the marine waters of north west Europe, together with the development of international standards for seabed mapping.

Further information on MESH can be found on the JNCC website (www.jncc.gov.uk/).

8.5 Biodiversity initiatives

At both a national and local level, Biodiversity Action Plans (BAPs) are an important element of the UK's efforts to conserve biodiversity (UKBAP website - www.ukbap.org.uk). A key component of the UKBAP is the creation and implementation of Local Biodiversity Action Plans (LBAPs). LBAPs relevant to SEA 5 are presented in Table 8.3, details of each plan can be accessed through the relevant link.

Table 8.3 - LBAPs of relevance to SEA 5	
Plan name:	Living Shetland Project
Plan coverage:	Shetland
Details of plan:	http://www.ukbap.org.uk/asp/lbap.asp?ID=459
Plan name:	Orkney's Community Biodiversity Project
Plan coverage:	Orkney
Details of plan:	http://www.ukbap.org.uk/asp/lbap.asp?ID=441
Plan name:	Undecided
Plan coverage:	Highland
Details of plan:	http://www.ukbap.org.uk/asp/lbap.asp?ID=421
Plan name:	North East Scotland Biodiversity Partnership
Plan coverage:	North East Scotland
Details of plan:	http://www.ukbap.org.uk/asp/lbap.asp?ID=431
Plan name:	Tayside Biodiversity Action Plan
Plan coverage:	Tayside (Perth & Kinross, Angus and Dundee)
Details of plan:	http://www.ukbap.org.uk/asp/lbap.asp?ID=486
Plan name:	Fife
Plan coverage:	Fife
Details of plan:	http://www.ukbap.org.uk/asp/lbap.asp?ID=391
Plan name:	Edinburgh Biodiversity Partnership
Plan coverage:	Edinburgh
Details of plan:	http://www.ukbap.org.uk/asp/lbap.asp?ID=381
Plan name:	East Lothian Biodiversity
Plan coverage:	East Lothian
Details of plan:	http://www.ukbap.org.uk/asp/lbap.asp?ID=380
Plan name:	Scottish Borders Biodiversity Action Plan
Plan coverage:	Scottish Borders
Details of plan:	http://www.ukbap.org.uk/asp/lbap.asp?ID=445

Source: UKBAP website – <http://www.ukbap.org.uk>

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Scottish Wildlife Trust website

www.swt.org.uk

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www.offshore-sea.org.uk/sea/dev/html_file/udsea3_document.php?documentID=19

SEA 4 Coastal Conservation Sites

www.offshore-sea.org.uk/sea/dev/html_file/udsea4_document.php?documentID=30

SNH Area Offices: Aberdeen, Coupar, Edinburgh (Anderson Place), Edinburgh (Hope Terrace), Galashiels, Golspie, Inverness and Red Gorton (Perth)

UK Biodiversity Action Plan website

www.ukbap.org.uk/

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Wetlands International Website

www.wetlands.org/RDB/Ramsar_Dir/UnitedKingdom/UK113D02.doc

APPENDIX 1: GLOSSARY AND ABBREVIATIONS

Term	Definition
Accretion	An increase in land resulting from depositional processes
AGLV	Areas of Great Landscape Value
Alluvial deposits	Sediment deposited by flowing water, as in a riverbed, flood plain, or delta
Amphipods	Small flat-bodied semi-terrestrial crustaceans
AoSP	Areas of Special Protection
Aquaculture	The cultivation of aquatic plants and animals for food or other purposes
ARLS	Areas of Regional Landscape Significance
Biodiversity	Diversity of species
Biogenetic Reserve	An area of conservation which includes species for the purposes of genetic preservation
Biotopes	The smallest unit of habitat where all environmental conditions and all types of organisms found within it are the same throughout
Bivalves	Marine or freshwater mollusks having a soft body with plate like gills enclosed within two shells hinged together
Brackish	Slightly salty
Carse	A low flat, peat or marsh covered plain, normally estuarine
Coniferous	Trees or shrubs bearing cones and evergreen leaves
CSAC	Candidate Special Area of Conservation
Deciduous	Shedding foliage at the end of the season
EC	European Community
ESA	Environmentally Sensitive Area
Estuary	The wide part of a river where it nears the sea; normally where fresh and salt water mix
Eutrophic	Rich in dissolved nutrients, photosynthetically productive and often deficient in oxygen during warm weather
Flora	All the plant life in a particular region
Gastropods	A class of mollusks typically having a one-piece coiled shell and flattened muscular foot with a head bearing stalked eyes
GCR	Geological Conservation Review Sites
Geomorphology	The study of the underlying form, and weathering processes, of rocks and land surfaces
Geos	Steep, very narrow inlets in rocky cliffs
Grey dunes	Mature dunes, normally vegetated and inland
Ha	Hectare
IBA	Important Bird Area
Intertidal	The coastal zone between high water mark and low water mark
Invertebrate	Animals without backbones
Islets	Very small islands
IUCN	The World Conservation Union
JNCC	Joint Nature Conservation Committee
Km	Kilometre
LNR	Local Nature Reserve

Term	Definition
Lochan	A small lake or pond
Machair	Gaelic word for links or dune pasture
Maquis and garrigue	Terms defining vegetation in the mediterranean area, normally developing on limestone, and degraded
MCA	Marine Consultation Area
Morphological	Concerned solely with shape
Mud-flats	Intertidal areas which are composed of mud and silt
Natura 2000 Network	Sites of conservational value designated under the EU Habitats Directive
NCR	Nature Conservation Review sites
Nesses	Low promontories of rock platforms, boulders and shingle
Nitrate Vulnerable Zone	An area of land in Scotland which drains into and contributes to pollution of the waters which the Scottish Ministers have identified as waters affected by, and which could be affected by, pollution from nitrates
NNR	National Nature Reserve
Non-statutory	Having no basis in statute or in law
NSA	National Scenic Area
Oligochaetes	Hermaphroditic terrestrial and aquatic annelids (worm) having bristles borne singly along the length of the body
Parabolic dunes	Mobile dunes having a distinctive parabolic (V-shape) which migrates in the direction of the apex of parabola
PCZ	Preferred Conservation Zone
Perennial	Recurring again and again
Polychaetes	Chiefly marine annelids (worms) possessing both sexes and having paired appendages bearing bristles
Progradation	General term for a coastline which is advancing into the sea
Ramsar Sites	Areas designated by the UK under the Ramsar Convention (Convention on Wetlands of International Importance especially as waterfowl habitat)
Red Data Book	Documents the current status of globally threatened biodiversity
Riverine	Relating to or resembling a river
RLD	Regional Landscape Designation
RSPB	Royal Society for the Protection of Birds
SAC (Special Areas of Conservation)	Areas designated as European Sites (Natura 2000) under the Habitats and Species Directive
Salt pastures	General term, usually applied to higher levels of saltmarshes which are used for grazing
Saltmarsh	Low coastal grassland normally overflowed by the tide
SCI	Sites of Community Importance
Screes	A sloping mass of rocks at the base of a cliff
SEA (Strategic Environmental Assessment)	An appraisal process through which environmental protection and sustainable development is considered in advance of decisions on policy, plans and programmes
SEPA	Scottish Environmental Protection Agency
SNH	Scottish Natural Heritage
SPA (Special Protection Areas)	Areas designated as European Sites under the Wild Birds Directive

Term	Definition
SSSI	Site of Special Scientific Interest
Statutory	Prescribed, authorised or punishable under a statute
SWT	Scottish Wildlife Trust
Taxa	Taxonomic category or group
UK	United Kingdom
UNESCO	United Nations Organisation for Education, Science, Culture and Communications
VMR	Voluntary Marine Reserve
Waders	Any of many long-legged birds that wade in water in search of food. Includes oystercatcher, whimbrel, snipe, avocets, stilts, plovers, sandpipers, godwits, curlews, snipe and phalarope
Waterbirds	Group of birds which include divers and grebes, bitterns and herons, rails, crakes and coots, wildfowl ¹ and waders.
Waterfowl	Collective term for all swimming waterbirds including grebes, coots and all wildfowl
White dunes	Embryonic small dunes on the upper beach
Wildfowl	Collective term for all ducks, shelducks, geese and swans

¹ JNCC refer to this group as waterfowl

APPENDIX 2: CONSERVATION DESIGNATIONS

This appendix identifies and gives details of the major statutory and non-statutory mechanisms that operate at international, national and local level to conserve the SEA 5 environment, including those administered by voluntary bodies and other organisations.

Sites of international importance

The numbers of sites of international importance in the SEA 5 region (including the SEA 4 component of the Shetland and Orkney Islands) are detailed in Box A.1

Box A.1 - Sites of international importance in the SEA 5 area.	
Special Areas of Conservation (SACs)	26
Special Protection Areas (SPAs)	37
Ramsar Sites	11
Important Bird Areas (IBAs)	35
World Heritage Site	1

The UK Government has entered into a number of international natural heritage obligations. These flow from European Directives affecting all Member States of the European Union, and from the UK being a signatory to several wider international conventions or treaties on habitats and species. Consequently a number of international natural heritage designations now exist in addition to national ones. They are normally based on national designations, notably SSSIs.

EC Habitats and Birds Directives

In 1979 the European Community adopted *Council Directive 79/409/EC on the conservation of wild birds*, known as the Birds Directive. One of the key provisions of this Directive is the establishment of an internationally co-ordinated network of protected areas. Member states are required to identify and classify the most suitable territories in size and number for rare or vulnerable species listed in Annex I to the Directive and for regularly occurring migratory species. These sites are known as Special Protection Areas (SPAs).

In 1992 the Community adopted *Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora*, known as the Habitats Directive. The Habitats Directive includes a requirement to establish a European network of important high quality conservation sites that will make a significant contribution to conserving the habitat types and species listed in Annexes I and II of the Directive. The listed habitat types and species are those considered to be most in need of conservation at a European level. Each member state is required to prepare and propose to the EC a national list of sites, which will be evaluated in order to form a network of Sites of Community Importance (SCIs). These will eventually be designated by Member States as Special Areas of Conservation (SACs). SACs and SPAs will together be known as the *Natura 2000 Network*.

Special Areas of Conservation (SAC)

The UK statutory provisions applying to *Natura 2000* sites are contained in the *Conservation (Natural Habitats &c) Regulations 1994* which includes marine areas in or up to the seaward limit of territorial waters (12 nautical miles).

Advice to Government on the selection of possible SACs has been provided by the statutory nature conservation agencies – Countryside Council for Wales (CCW), English Nature (EN) and Scottish Natural Heritage (SNH), coordinated through the Joint Nature Conservation Committee (JNCC).

Sites are submitted to the European commission, following consultation with site owner/occupiers and other interested parties. At this stage, sites become known as candidate Special Areas of Conservation (cSACs). The process that the UK Government and the European Commission must follow for cSAC selection is in two stages and is described in Box A.2.

Box A.2- cSAC Selection Process

Stage 1 – Assessment of relative importance of sites containing examples of the individual Annex I habitats and Annex II species in each member state. Factors considered:

- Percentage of national resources contained within the site series
- The quality of habitats, including features that are important for associated species
- Member States' special responsibility for particular habitats and species
- Coverage of geographical range of habitat or species within the site series
- Coverage of ecological variation of habitat or species within the site series

Stage 2 – Assessment of overall importance of sites in the context of the biogeographical region and the EU as a whole. Factors considered:

- The relative value of the site at a national level
- The relationship of the site to migration routes
- The total area of the site
- The diversity of habitats and species present on the site
- The overall quality of the site in the context of the biogeographical region and/or the EU

Currently, 567 cSACs covering an area of over 2.3 million hectares have been submitted by the UK, a number of which are found within the SEA 5 area. A total of 115 candidate SACs had been submitted by Scotland to the European Commission by August 1998. Those on land represent about 6% of Scotland. There is a considerable overlap in sites with SPAs.

Sources of information

Joint Nature Conservation Committee website

<http://www.jncc.gov.uk/>

UK Marine SAC Project website

<http://www.ukmarinesac.org.uk/>

Special Protection Areas (SPA)

Natura 2000 will also comprise Special Protection Areas (SPAs) classified under the *EC Birds Directive*. The process of selecting SPAs in the UK has been hindered by lack of agreed selection criteria formalised at a European level. The UK has therefore used internationally recognised criteria, especially those given under the Ramsar Convention (see Box 3 - Categories of criteria for site selection under the Ramsar Convention) to select SPAs.

The UK SPA network has been compiled by the JNCC together with the various UK conservation agencies and comprises 243 sites (c.a. 1,454,500ha). The Government is considering making approximately 150 SPAs in Scotland, of which 91 were classified at the beginning of August 1998. The total area of those on land will be about 6% of Scotland. Marine SPAs may be introduced in due course.

Sources of information

JNCC UK SPA Network website

<http://www.jncc.gov.uk/UKSPA/sites/>

Birds of Conservational Concern

The leading governmental and non-governmental conservation organisations in the UK have reviewed the population status of the birds that are regularly found here. A total of 247 species has been assessed, and each has been placed onto one of three lists - red, amber or green. Many of the birds in the SEA 5 area appear on the amber list and have been noted in the site boxes of the SPA's and IBA's. Amber list species are those with an unfavourable conservation status in Europe; those whose population or range has declined moderately in recent years; those whose population has declined historically but made a substantial recent recovery; rare breeders; and those with internationally important or localised populations. Seven quantitative criteria were used to assess the population status of each species and place it onto the red, amber or green list, as listed below:

Global Conservation Status
 Recent Decline
 Historical Decline
 European Conservation Status
 Rare Breeders
 Localised Species
 International Importance

The common scoter, black-tailed godwit and the roseate tern, which can be found in SEA 5, have been placed on the red list (indicating the highest conservation concern). They are most likely to be located in areas such as the Moray and Nairn Coast, the Firth of Tay and Eden Estuary and the Firth of Forth.

Sources of information

JNCC website

www.jncc.gov.uk/species/Birds/Conservation.htm

Ramsar sites

The *Convention on Wetlands of International Importance, Especially as Waterfowl Habitats (The Ramsar Convention, 1971)* is an intergovernmental treaty that aims to stem the progressive encroachment on and loss of wetland habitat. Ramsar sites are designated for their important waterfowl populations and rare or endangered plant and animal species. The criteria for site selection are shown in Box A.3.

Box A.3 - Categories of criteria for site selection under the Ramsar Convention.

- Representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region
- Supports vulnerable, endangered, or critically endangered species or threatened ecological communities
- Supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region
- Supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions
- Regularly supports 20,000 or more waterbirds
- Regularly supports 1% of the individuals in a population of one species or subspecies of waterbird
- Supports a significant proportion of indigenous fish subspecies, species or families, life-history stages, species interactions and/or populations that are representative of wetland benefits and/or values and thereby contributes to global biological diversity
- An important sources of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend

The Convention on Wetlands of International Importance was adopted in 1971 at Ramsar in Iran. There were 42 designated Ramsar sites in Scotland by August 1998 and another 20 potential Scottish sites have been identified. The application of the Ramsar label indicates that an SSSI is a valued wetland site, a habitat which has declined world-wide and is often important for water-fowl and other wetland birds.

Sources of information

Joint Nature Conservation Committee website

<http://www.jncc.gov.uk/>

Important Bird Areas (IBA)

The Important Bird Areas (IBA) Programme of Birdlife International is a worldwide initiative aimed at identifying and protecting a network of sites that are important for the long-term viability of naturally occurring bird populations. The programme aims to guide national conservation strategies and assist the conservation activities of international organisations.

Box A.4 - Relevant categories of criteria for IBA site selection

- A4i – Site is known or thought to hold, on a regular basis, 1% or more of a biogeographic population of a congregatory waterbird species
- A4iii - Site is known or thought to hold, on a regular basis, at least 20,000 waterbirds, or at least 10,000 pairs of seabird, of one or more species
- B1i - Site is known or thought to hold 1 % of a flyway population or other distinct population of a waterbird species
- B2 – Site is one of the 'n' most important sites for a species with an unfavourable conservation status in Europe
- B3 - Site is one of the 'n' most important sites for a species with a favourable conservation status in Europe but with its global range concentrated in Europe
- C2 – Site is known to regularly hold at least 1% of the flyway or EU population of a species considered to be threatened in the EU
- C3 - Site is known to regularly hold at least 1% of the flyway or EU population of a species not considered to be threatened in the EU
- C4 – Site is known to regularly hold at least 20,000 migratory waterbirds, or at least 10,000 pairs of migratory seabird, of one or more species
- C6 – Site is one of the five most important in the European region for a species or subspecies considered threatened in the EU

Sources of information

Birdlife International website

<http://www.birdlife.org.uk/>

Important Bird Areas in Europe: Priority sites for conservation. Vol. 1: Northern Europe. Birdlife International

Sites of national and local importance

The numbers of sites of national and local importance in the SEA 5 region (including the SEA 4 component of The Northern Isles) are detailed in Box A.5.

Box A.5 - Sites of national and local importance in the SEA 5 area

National Nature Reserve (NNR)	11
Sites of Special Scientific Interest (SSSI)	145
Local Nature Reserve (LNR)	7
National Scenic Area (NSA)	3
Areas of Special Protection (AoSP)	1

Box A.5 - Sites of national and local importance in the SEA 5 area

Country Park	2
Nature Conservation Review (NCR) Site	1
Geological Conservation Review (GCR) Site	129
Marine Consultation Area (MCA)	5
Voluntary Marine Reserve (VMR)	1
Regional Landscape Designation (RLD)	24
Preferred Conservation Zone (PCZ)	14
Biogenetic Reserve	1
National Trust for Scotland Site	5
Royal Society for the Protection of Birds (RSPB) Reserve	21
Scottish Wildlife Trust (SWT) Reserve	13

The main national land-based designations are Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNR), and National Scenic Areas (NSA). SSSIs and NNRs are both nature conservation designations, and apply throughout Britain. The NSA is the main landscape designation, and is unique to Scotland. The vast majority of the total area of these designated sites are on privately-owned land, but some are also found on public land.

Sources of information

The Countryside Agency website
<http://www.countryside.gov.uk/nationalparks/>

World Heritage Sites

World Heritage Sites - arising from the 1984 World Heritage Convention - are generally considered to be the ultimate accolade. Sites are listed by the World Heritage Committee of UNESCO to provide recognition that a site is of "outstanding universal value" and also that the national Government has provided it with an especially high level of assured protection. There are both natural and cultural categories of site. St Kilda is the only "natural" World Heritage Site in Scotland at present. The Heart of Neolithic Orkney is included as a World Heritage Site and the citation includes archaeological sites, which are located at the coastline. The Government is consulting on placing a number of other sites on a provisional list for future assessment. SNH advises Government on natural sites, and Historic Scotland on cultural sites.

Sources of information

Scottish Natural Heritage website
<http://www.snh.org.uk/index/i-frame.htm>

Environmentally Sensitive Area

The Environmentally Sensitive Areas Scheme was introduced in 1987 to offer incentives to encourage farmers to adopt agricultural practices which would safeguard and enhance parts of the country of particularly high landscape, wildlife or historic value.

The ESAs scheme aims to maintain and often to enhance the conservation, landscape and historical value of the key environmental features of an area, and, where possible, improve public access to these areas.

Farmer managed ESAs include some of our most important landscapes - upland: wetland; moor; coastal marsh; river valleys, which offer protection for some of our rarest plants (orchids, cornflower) and establish a suitable environment for the recovery of native species (brown hare, otter, water vole).

There is one ESA in the region, which extends across the entirety of Shetland and Fair Isle.

Sources of information

DEFRA website

<http://www.defra.gov.uk>

Council of Europe Diploma site

The Council of Europe awards a Diploma, which is an accolade to acknowledge the European interest of sites and the quality of their protection and management. Scotland has two Diploma sites - Beinn Eighe NNR which is outwith SEA 5 and Fair Isle NSA which is described in this report.

Sources of information

Scottish Natural Heritage website

<http://www.snh.org.uk/index/i-frame.htm>

National Nature Reserve (NNR)

National Nature Reserves (NNR's) were established to protect the most important areas of wildlife habitat and geological formations in Britain, and to provide a resource for scientific research. NNR's are usually designated for their broader ecological value rather than for the presence of any rare species. A number of factors may contribute to the designation of a NNR including; how fragile a site is, the size of the site, how 'natural' the site is and the presence of species rich communities.

Within Scotland and England, the reserves are either owned or controlled by Scottish Natural Heritage or English Nature respectively, or held by approved bodies such as the Wildlife Trusts.

Sources of information

Scottish Natural Heritage

<http://www.snh.org.uk/index/i-frame.htm>

Sites of Special Scientific Interest (SSSI)

Sites of Special Scientific Interest (SSSI) are the main nature conservation designation in Great Britain. These sites are special for their plants, animals or habitats, their rocks or landforms or a combination of these.

In both Scotland and England, a SSSI is an area that has been notified as being of special interest under the Wildlife and Countryside Act 1981. The 1981 Act was amended by the Countryside and Rights of Way Act 2000 which improved protection for SSSIs in England.

There are 1,446 SSSIs in Scotland covering 917,000 hectares, which is 11.6% of Scotland's land area. Many of the larger sites are in the north and west, with the largest assemblage being in the Flow Country of Caithness and Sutherland and measuring, in total, more than 150,000 hectares. There are other large SSSIs in the uplands, including some in the Cairngorms over 10,000 hectares.

Scottish Natural Heritage and English Nature are responsible for identifying and protecting SSSIs in Scotland and England respectively.

Sources of information

Scottish Natural Heritage website
<http://www.snh.org.uk/index/i-frame.htm>

Local Nature Reserve (LNR)

Local Authorities can designate Local Nature Reserves (LNR's) where they own or lease the land or have an agreement with the landowner. LNRs should be managed to promote nature conservation, and may have facilities to enable people to enjoy them, and help to understand them. There are currently 28 in Scotland covering over 8,000 hectares, the largest being Wigtown Bay in Dumfries and Galloway at 2,800 hectares.

Sources of information

The Scottish Executive Website
<http://www.scotland.gov.uk/library/documents-w4/nhd-06.htm>

National Scenic Area (NSA)

National Scenic Areas are nationally important areas of outstanding natural beauty. They were identified by CCS (since incorporated into SNH) in the report "Scotland's Scenic Heritage" and introduced by the Government in 1980 under Town and Country Planning legislation. There is one National Scenic Area in SEA 5 at Dornoch Firth.

Sources of information

Scottish Natural Heritage
<http://www.snh.org.uk/index/i-frame.htm>

Areas of Special Protection (AoSP)

In Great Britain, legislation provides for the establishment of Areas of Special Protection (AoSP). The designation of such areas increases the protection afforded to birds beyond that which is contained in the species protection legislation. AoSP's have replaced many areas formerly designated as bird sanctuaries.

Areas of Special Protection may be designated on land (or land covered by water) or territorial waters. The appropriate Minister may make an Order in relation to a specified area, which prohibits the killing, injuring or taking of any wild bird, the taking, damage or destruction of the nest (while in use or being built) or eggs of such a bird, the disturbance of such a bird while building a nest or which is on or near a nest containing eggs or young, or the disturbance of dependent young. The Order may prohibit the public from entering the area, or part of it, during specified periods. The legislative provisions for Areas of Special Protection (AoSP) in Great Britain are contained in the Wildlife and Countryside Act, 1981 in Section 3.

Sources of information

UK Clearing House Mechanism for Biodiversity website
www.chm.org.uk

Country Parks

Country Parks are primarily intended for recreation and leisure opportunities close to population centres and do not necessarily have any nature conservation interest. Nevertheless, many are in areas of semi-natural habitat and so form a valuable network of locations at which informal recreation and the natural environment co-exist. They are statutorily declared and managed by local authorities under section 7 of the Countryside Act 1968.

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC, Eds. (1997a) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

Nature Conservation Review (NCR) Site

Nature Conservation Review sites are those considered to be of national importance in Great Britain as examples of natural and semi-natural habitats. Descriptions of the habitats and sites can be found in Ratcliffe 1977. Whilst the identification of these areas has no statutory significance it provided the basis for selection of National Nature Reserves and subsequently was used as a first sift for SACs.

Sources of information

English Nature Website
www.english-nature.org.uk/

Geological Conservation Review (GCR) Site

A major initiative to identify and describe the most important geological sites in Britain began in 1977, with the launching of the Geological Conservation Review (GCR). The initiation of the Geological Conservation Review (GCR) was a major step forward in Earth heritage conservation. It was designed to identify those sites of national and international importance needed to show all the key scientific elements of the Earth heritage of Britain. The sites selected - GCR sites - form the basis of statutory geological and geomorphological site conservation in Britain. The results of the Geological Conservation Review programme are to be published in a series of 42 volumes, the Geological Conservation Review Series, each of which provides a public record of the evaluation of each Geological Conservation Review site placed in a national and, where appropriate, international context. To date, 28 of these volumes have been published.

Sources of information

JNCC GCR website
<http://www.jncc.gov.uk/gcr/gcrweb/gcrhome.htm>

Marine Consultation Area (MCA)

Marine Consultation Areas are non-statutory areas introduced in 1986 by Scottish Natural Heritage. The areas are considered to deserve particular distinction in respect of the quality and sensitivity of the marine environment within them. They are areas in which SNH wish to be consulted on developments, in particular fish farms, which are likely to have an impact on the marine environment.

There are 28 sites, all in Scotland, either on the West Coast or the Islands, and one in the Scottish Borders. MCA's were not reviewed by JNCC in terms of sensitivity to marine pollution.

Sources of information

DEFRA website

<http://www.defra.gov.uk/environment/consult/mehra/pdf/appx4pt2.pdf>**Voluntary Marine Reserve (VMR)**

The St. Abbs and Eyemouth Voluntary Marine Reserve (the only VMR in the SEA 5 area) is controlled by a management committee consisting of representatives from local and national organisations with a vested interest in the marine environment of the area. The committee's aim is:

'To conserve the biodiversity of the coastal waters and to raise awareness of the marine environment through education and promote sensible recreational use alongside a sustainable fishery to the mutual benefit of all'.

The VMR is run on a voluntary basis i.e. the Committee has no legal powers to make or enforce bylaws. The VMR does however have a Code of Practice which divers, in particular, are requested to respect.

Sources of information

St. Abbs and Eyemouth Voluntary Marine Reserve website

www.marine-reserve.org.uk/welcome/introduction.htm

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997a) *Coasts and seas of the United Kingdom. Region 4 South-east Scotland: Montrose to Eyemouth*. Peterborough, Joint Nature Conservation Committee.

Regional Landscape Designation (RLD)

Regional Landscape Designations (RLD's) provide a mechanism whereby Scottish planning authorities can identify sites where there should be a strong presumption against development (Cobham Resource Consultants 1988). The designation recognises that these scenic areas have considerable unexploited potential for tourism and therefore for benefiting local economies. Local circumstances and the absence of central guidance since 1962 means that regional landscape designations vary in title, scale and objectives from one planning authority to another (Cobham Resource Consultants 1988), such that there are at least five types of RLD.

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997a) *Coasts and seas of the United Kingdom. Region 3 North-east Scotland*. Peterborough, Joint Nature Conservation Committee.

Preferred Conservation Zone (PCZ)

Preferred Conservation Zones (PCZ's) are non-statutory coastal areas in Scotland, of particular national scenic, environmental or ecological importance, in which major new oil- and gas-related developments would be inappropriate or would have a socio-economic impact on a small community. They are areas with a distinctive aesthetic appeal, heritage and character, where tourism and recreation take priority over major industrial processes.

Sources of information

Joint Nature Conservation Council Website

<http://www.jncc.gov.uk/communications/natcons/wildlife.htm#PreferredConservationZones>

Biogenetic Reserve

In response to the Bern Convention ratified by the UK Government in 1983, the Council of Europe established a network of Biogenetic Reserves, to continue to conserve representative example of European fauna and flora and natural areas. They are intended primarily for biological research, and are selected from existing NNR's. No special controls are imposed by the designation. SNH advises Scottish Ministers on appropriate NNR's for nomination to the Council of Europe.

Sources of information

Scottish Natural Heritage 'facts and figures'

www.snh.org.uk/publics/docs/factsandfigures/docs/Des_Areas.pdf

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC Eds. (1997a) *Coasts and seas of the United Kingdom. Region 3 North-east Scotland: Cape Wrath to St. Cyrus*. Peterborough, Joint Nature Conservation Committee.

The National Trust for Scotland

The National Trust for Scotland is a registered charity and acts to protect architectural, scenic and historic sites and properties in Scotland.

Sources of information

National Trust for Scotland website

<http://www.nts.org.uk/stabb.html>

Royal Society for the Protection of Birds (RSPB) Reserve

The RSPB (Royal Society for the Protection of Birds) maintain a large number of nature reserves in the UK covering a wide range of wildlife habitats.

Sources of information

RSPB website

<http://www.rspb.org.uk/wildlife/reserves/england.asp>

Scottish Wildlife Trust (SWT) Reserve

These are areas managed or owned by the Scottish Wildlife Trust to protect locally important plants, animals and other wildlife. There is no statutory requirement for SWT reserves.

Sources of information

Scottish Natural Heritage website

<http://www.snh.org.uk/index/i-frame.htm>