4.6 FIRTH OF FORTH

LTC site code:	BF
Centre grid:	NT0182
JNCC estuarine review site:	88
Habitat zonation:	5713 ha intertidal, 8032 ha subtidal, 64 ha nontidal
Statutory status:	Firth of Forth SPA (UK9004411), Firth of Forth Ramsar (7UK153)
Winter waterbird interest:	Red-throated Diver, Great Crested Grebe, Red-necked Grebe, Slavonian Grebe, Cormorant, Pink-footed Goose, Shelduck, Wigeon, Mallard, Scaup, Eider, Long-tailed Duck, Common Scoter, Velvet Scoter, Goldeneye, Red-breasted Merganser, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Knot, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Turnstone, Waterbird assemblage

SITE DESCRIPTION

The Firth of Forth occupies a large proportion of the coast of south-east Scotland, with the LTC site extending downstream from Stirling as far as Earlsferry on the north shore and North Berwick on the south shore. The inner parts of the site (upstream of the Forth Bridges) have extensive intertidal flats but much of the shore further downstream is essentially non-estuarine in character, with more isolated areas of flats, especially at Aberlady and Gosford Bays, Drum Sands and Musselburgh. Saltmarsh occurs in places around the site, notably between Alloa and Grangemouth and at Aberlady Bay. With such a large site, almost all types of possible human-related activities and disturbance occur, including leisure (onshore and offshore), industry (harbours, an offshore oil terminal, an oil rig repair site, *etc.*), dredging of sea-bed sand and exploitation of natural resources, whilst there is a history of reclamation for industrial uses (H. Dott pers. comm.).

COVERAGE AND INTERPRETATION

The Firth of Forth was counted during the winter of 1992–93, with all four months covered. The Forth is one of the largest sites covered by the LTCs. Figure 4.6.1 shows the positions of the 127 sections counted for the survey.

Figure 4.6.2 shows the overlap between the SPA and LTC areas. With such a large site, it is not feasible to discuss every slight departure in detail and a careful examination should be made by any user of the data. Broadly, however, the SPA extends further downstream than the LTC site, to Fife Ness on the north shore (although a long stretch of shore is not within the SPA) and to Dunbar on the south shore (including the Tyninghame Estuary). Additional areas at Gullane,

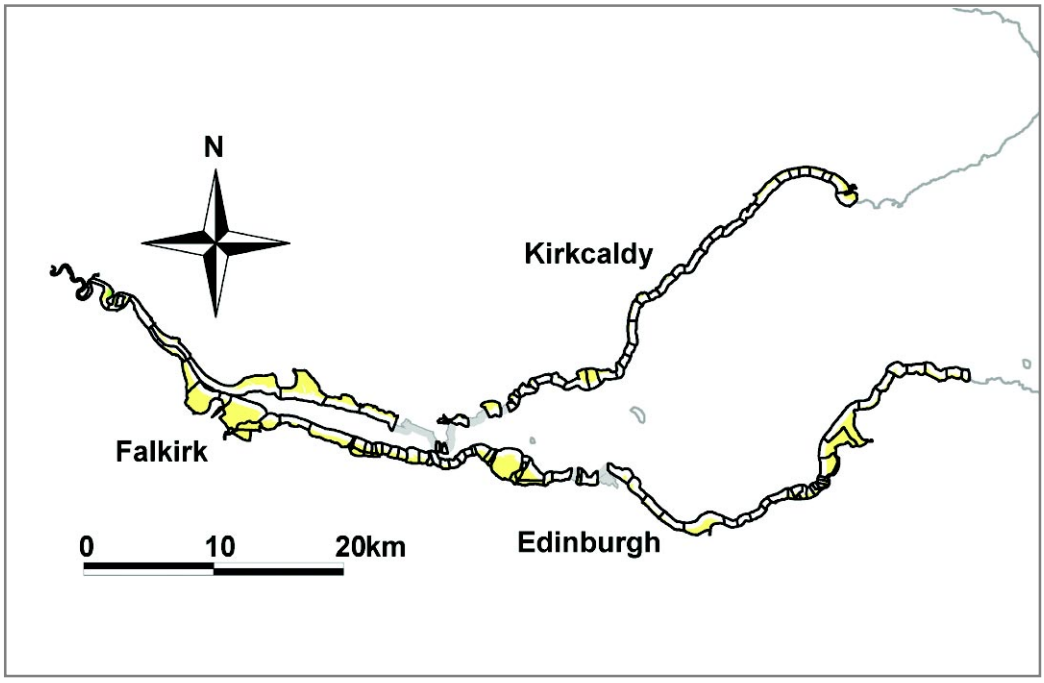


Figure 4.6.1: LTC sections at the Firth of Forth, winter 1992–93

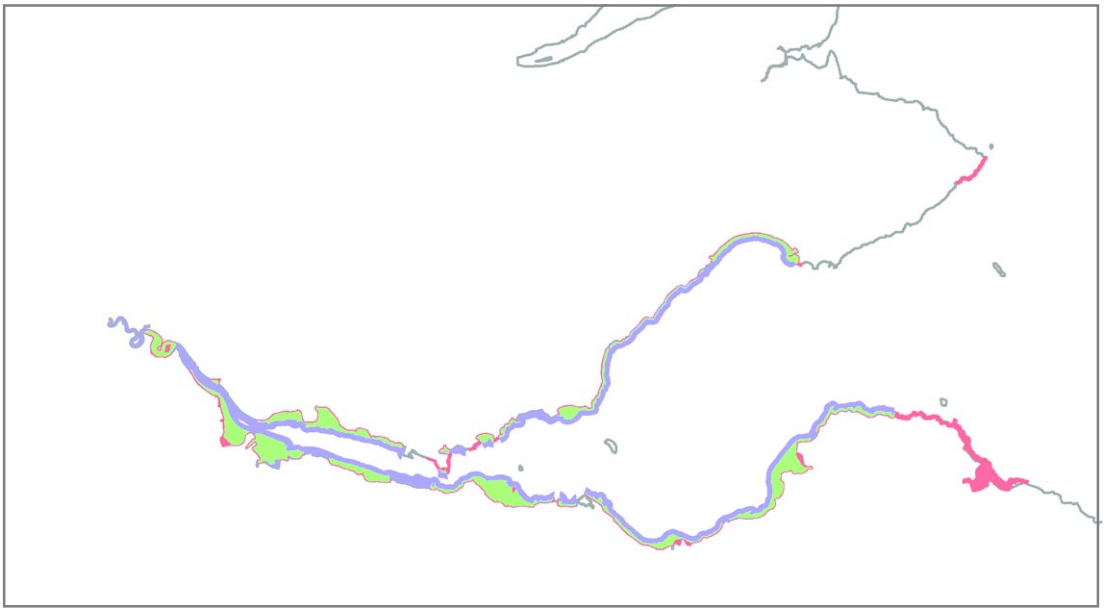


Figure 4.6.2: LTC and SPA boundaries, with overlap, at the Firth of Forth

Grangemouth and around the north end of the Forth Bridges are also included within the SPA. There are a few areas of the firth for which LTCs were carried out but which are not part of the SPA, such as west of Burntisland, parts of the inner firth upstream of the Kincardine Bridge and the south shore just west of the Forth Road Bridge. The boundaries of the Ramsar site are entirely coincident with those of the SPA.

Given that the Forth is such a large site, most bird movements take place within the site (*e.g.* Symonds *et al.* 1984), not to other neighbouring sites. There is no evidence for a daily interchange of birds between the Forth and the Eden Estuary to the north or the Tyninghame Estuary to the south-east (H. Dott pers. comm.). As with most sites, the wild geese on the site are mostly present at night-time roosts, spending the day feeding on surrounding farmland. Sea-duck movements are less clear, with the size of the site giving plenty of opportunity for birds to disperse far offshore.

WATERBIRD DISTRIBUTION

Low tide distribution maps from the winter of 1992–93 are presented for 22 of the 28 species of principal interest listed above. For clarity, smaller dots are used to display the distributions of several of these species. Additional maps of total birds and total birds weighted by 1% threshold value are also presented (Figure 4.6.3). Of the remaining species, Red-necked and Slavonian Grebes, Scaup and Velvet Scoters were unrecorded during the counts and Red-throated Divers and Common Scoters were recorded in only small numbers. It is unlikely that any of these species were entirely absent. During the 1992–93 winter the methodology of the scheme was still under development and the count form did not list any of the diving ducks or other more marine species. Although some counters recorded some of these species in the 'additional species' boxes on the recording forms, other evidently did not, as the focus of the scheme was on the intertidal habitat. As a result, the distribution maps for Eider, Long-tailed Duck, Goldeneye and Red-breasted Merganser probably should be considered incomplete to varying degrees.

The totals maps show a complex pattern around the site, but do reveal higher overall densities of birds around Aberlady Bay to Port Seton, Edinburgh to the Forth Bridge, either side of Grangemouth and in Largo Bay. Many species were widely distributed although perhaps localised at the smaller scale. Species found mostly on the outer estuary were Eider, Long-tailed Duck, Ringed Plover, Turnstone and Grey Plover. Species more restricted to the inner estuary were Great Crested Grebe and Pink-footed Goose, the latter species using the site mostly as a nocturnal roost. Shelducks and Wigeon were mostly found on the inner firth but also at Aberlady Bay and Burntisland. Black-tailed Godwits were almost exclusively recorded on the flats east of Grangemouth. Although widespread throughout the estuary, concentrations of Golden Plovers and, to a lesser extent, Lapwings were typically highly localised.

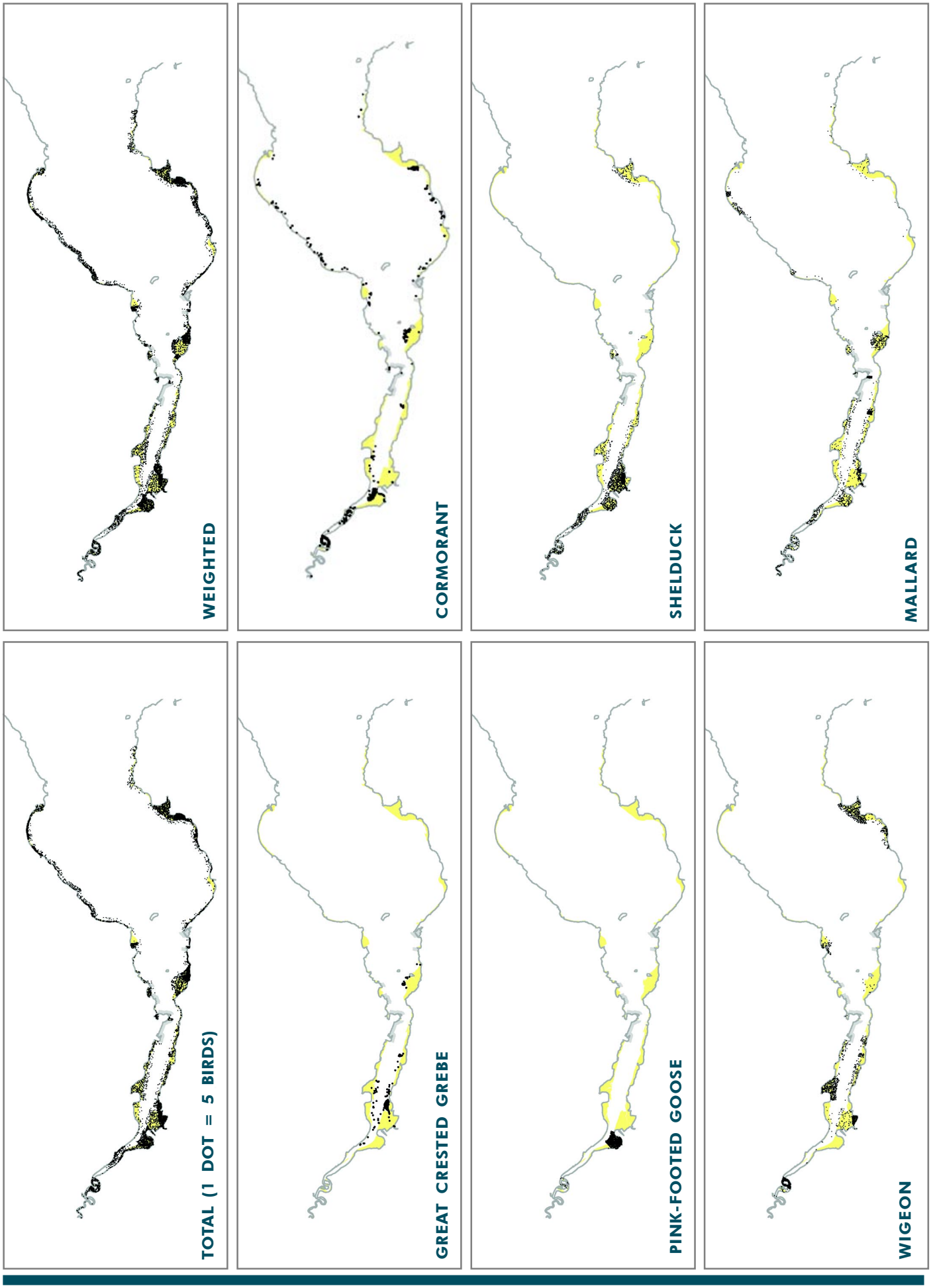


Figure 4.6.3 (i): Low tide waterbird distributions recorded at the Firth of Forth, winter 1992–93

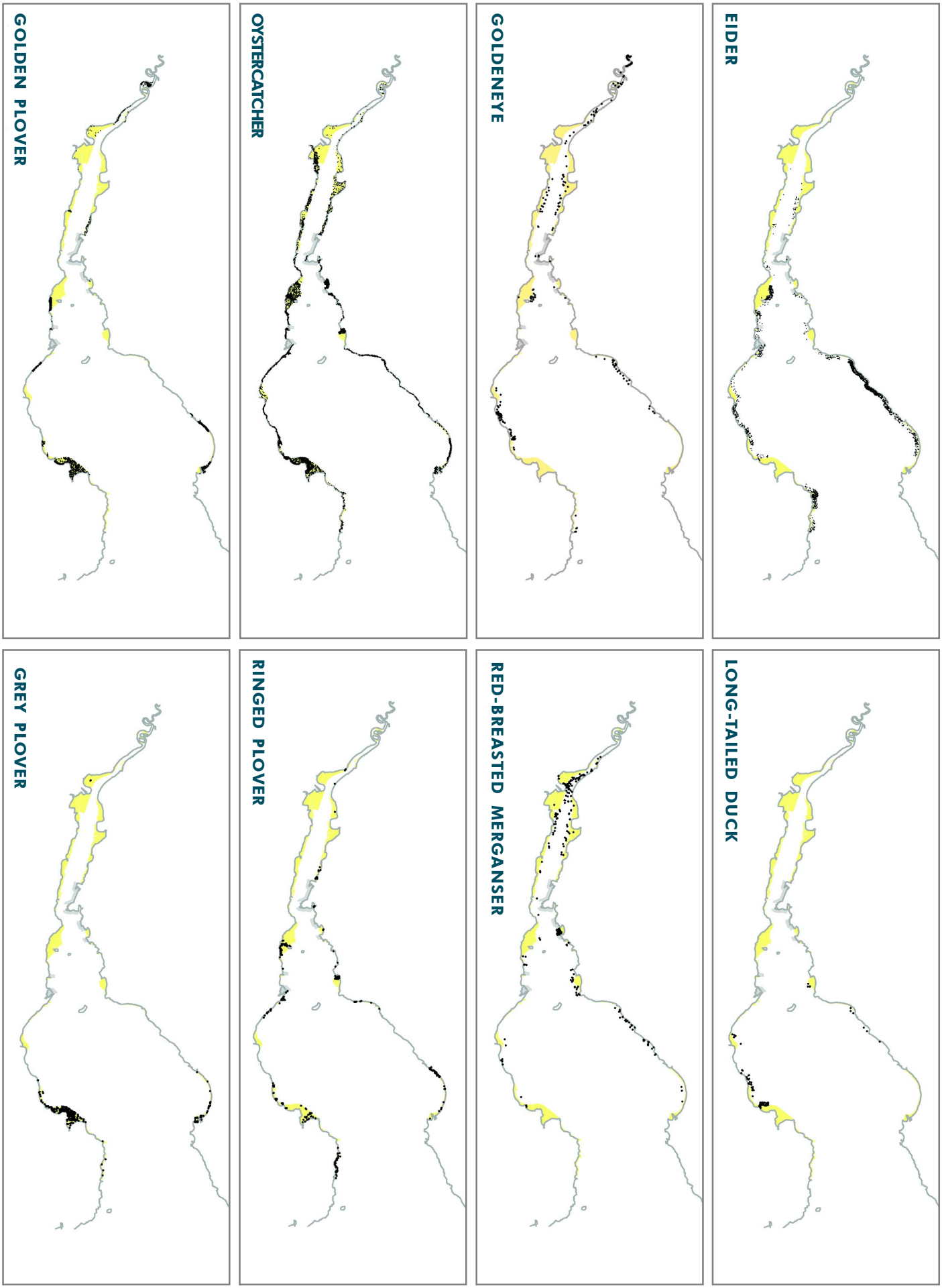


Figure 4.6.3 (ii): Low tide waterbird distributions recorded at the Firth of Forth, winter 1992–93

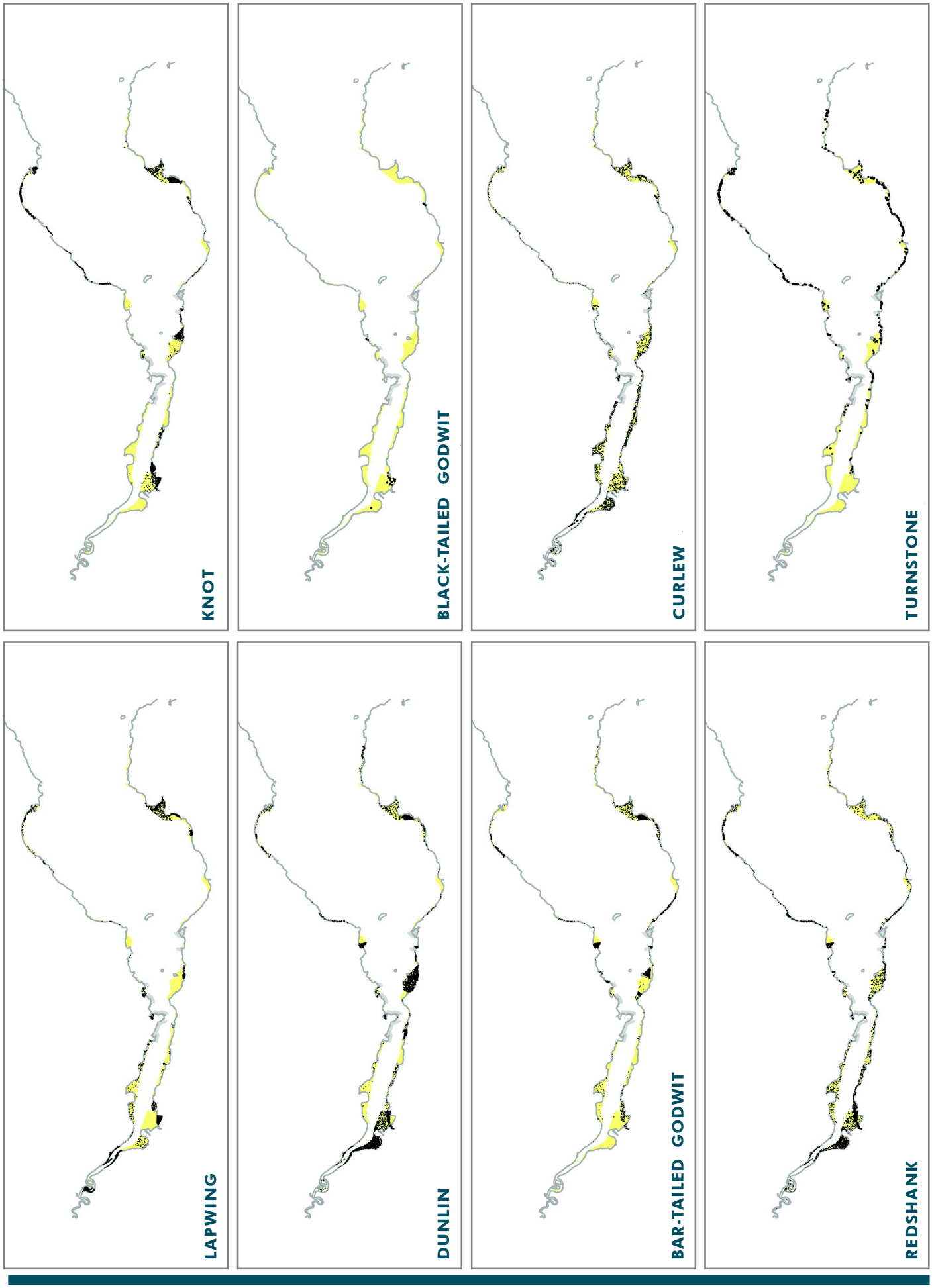


Figure 4.6.3 (iii): Low tide waterbird distributions recorded at the Firth of Forth, winter 1992–93

4.7 LINDISFARNE

LTC site code:	DL
Centre grid:	NU1141
JNCC estuarine review site:	91
Habitat zonation:	322 ha intertidal, 19 ha subtidal, 24 ha nontidal
Statutory status:	Lindisfarne SPA (UK9006011), Lindisfarne Ramsar (7UK005)
Winter waterbird interest:	Whooper Swan, Pink-footed Goose, Greylag Goose, Light-bellied Brent Goose, Shelduck, Wigeon, Eider, Common Scoter, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Knot, Dunlin, Bar-tailed Godwit, Redshank, Waterbird assemblage

SITE DESCRIPTION

Lindisfarne is one of the largest intertidal systems in north-east England and one of only two barrier beach estuarine systems in the UK. The intertidal flats are largely protected from the waves of the North Sea by Holy Island and by offshore dunes. Most of the site is predominantly sandy in nature, although Budle Bay and Fenham Flats are muddier. Extensive *Zostera* beds are present in places, with a fringe of saltmarsh around the margin. There is a small harbour on Holy Island but no other industry present, with most activities recreational in nature. Wildfowling occurs in some parts of the site but others are designated as refuges.

COVERAGE AND INTERPRETATION

Lindisfarne was included in the scheme during 1992–93, when four monthly counts were carried out. However, due to the limited counter availability at the time, only the Budle Bay area of the site was covered. Figure 4.7.1 shows the positions of the five sections counted for the survey.

Figure 4.7.2 depicts the relationship of the area covered by the 1992–93 LTCs to the greater SPA area. Coverage was limited to Budle Bay, but comprehensive within this area. Clearly, an assessment of bird usage of the SPA should take this limited coverage into account. The boundaries of the Ramsar site are entirely coincident with those of the SPA.

Whilst movement of waterbirds regularly occurs between different areas of the larger site (e.g. waders roosting at Budle Bay but feeding at Fenham Flats), Lindisfarne is rather isolated from other major estuarine sites, such as the Forth

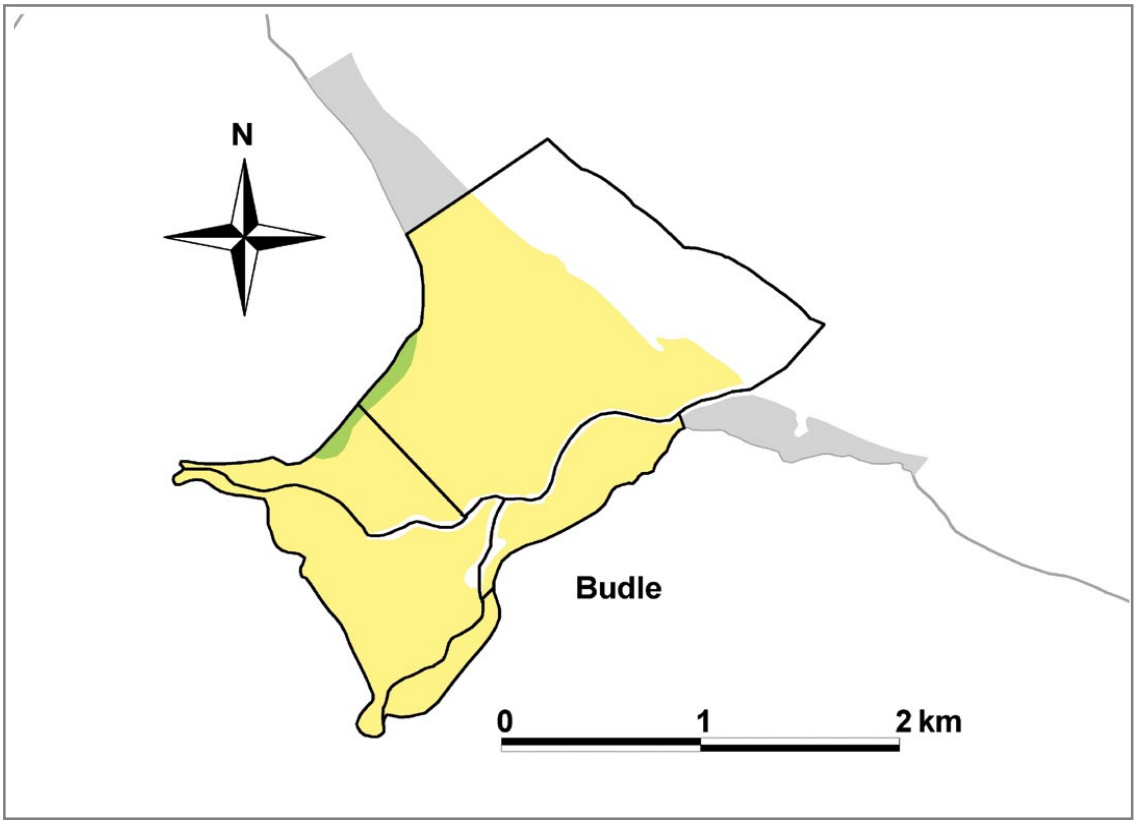


Figure 4.7.1: **LTC sections at Lindisfarne, winter 1992–93**

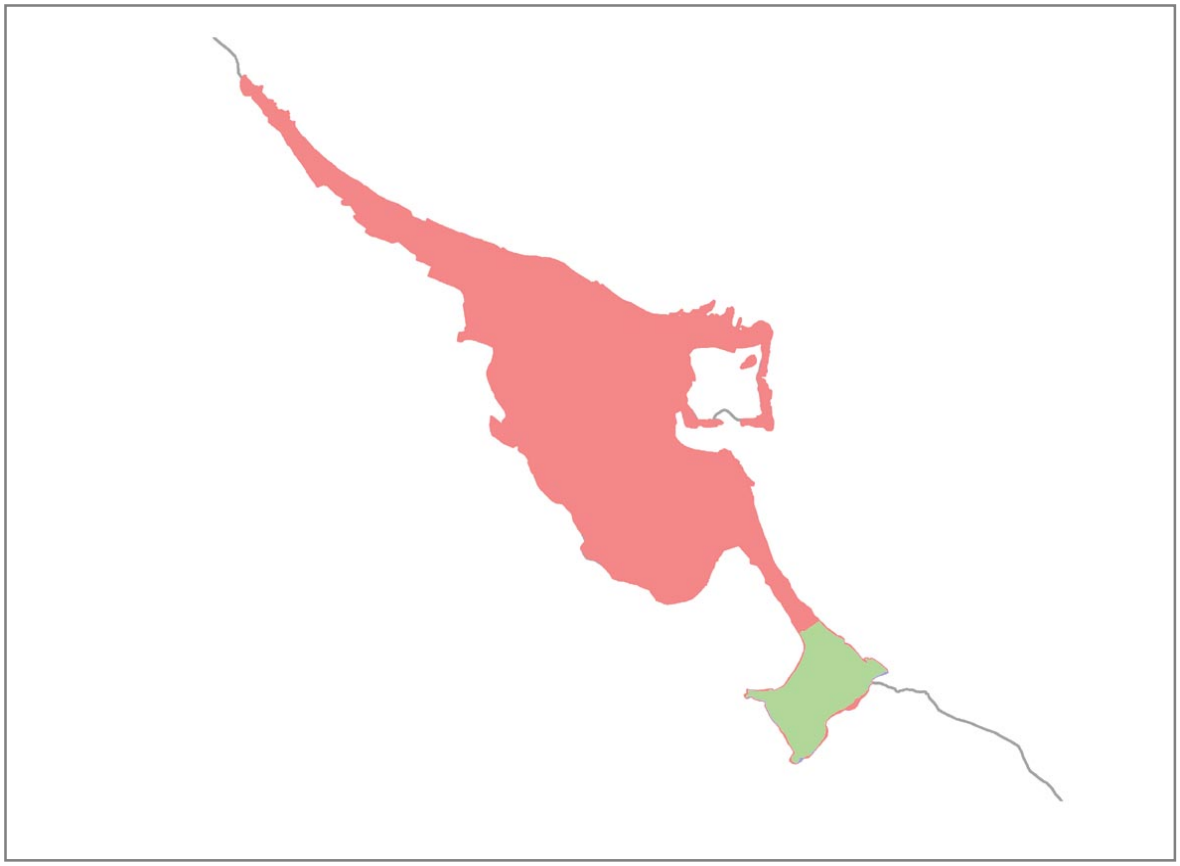


Figure 4.7.2: LTC and SPA boundaries, with overlap, at Lindisfarne

and Tees, or even more minor ones at the Tweed and Alnmouth. It seems unlikely that many birds move between Lindisfarne and any of these sites on a daily basis. However, the non-estuarine coast north and south of the site is highly suitable for many waterbirds and some dispersal is likely to occur. Greylag and Pink-footed Geese disperse inland to feed and also use nearby Holburn Moss as an alternative roost site. Common Scoters and, to a lesser extent, Eiders may move well offshore at times (M. Hodgson pers. comm.).

WATERBIRD DISTRIBUTION

Low tide distribution maps from the winter of 1992–93 are presented for 11 of the 16 species of principal interest listed above. Additional maps of total birds and total birds weighted by 1% threshold value are also presented (Figure 4.7.3). Of the remaining species, Whooper Swan, Light-bellied Brent Goose and Common Scoter were not recorded on the part of the site covered by the counts, whilst Pink-footed Goose and Ringed Plover were noted in only very small numbers.

The totals and weighted totals maps shows that the inner part of Budle Bay, especially east of the Waren Burn, was much more densely occupied than the outer bay. The only species mapped showing a preference for the outer bay was Eider (in small numbers), with Redshank fairly evenly distributed. Bar-tailed Godwits and Dunlin both used the outer bay but in lower concentrations than the inner parts. Other waders were almost exclusively found on the inner bay, Golden Plovers occurring in the highest concentrations of any of the waders here. Wigeon was the dominant species of wildfowl, found on all count sections but mostly on the north-west and south-east sections of the inner bay. Small numbers of Greylag Geese (and the few Pink-footed Geese) occurred in the north-west inner bay and Shelducks were found evenly around the inner bay.

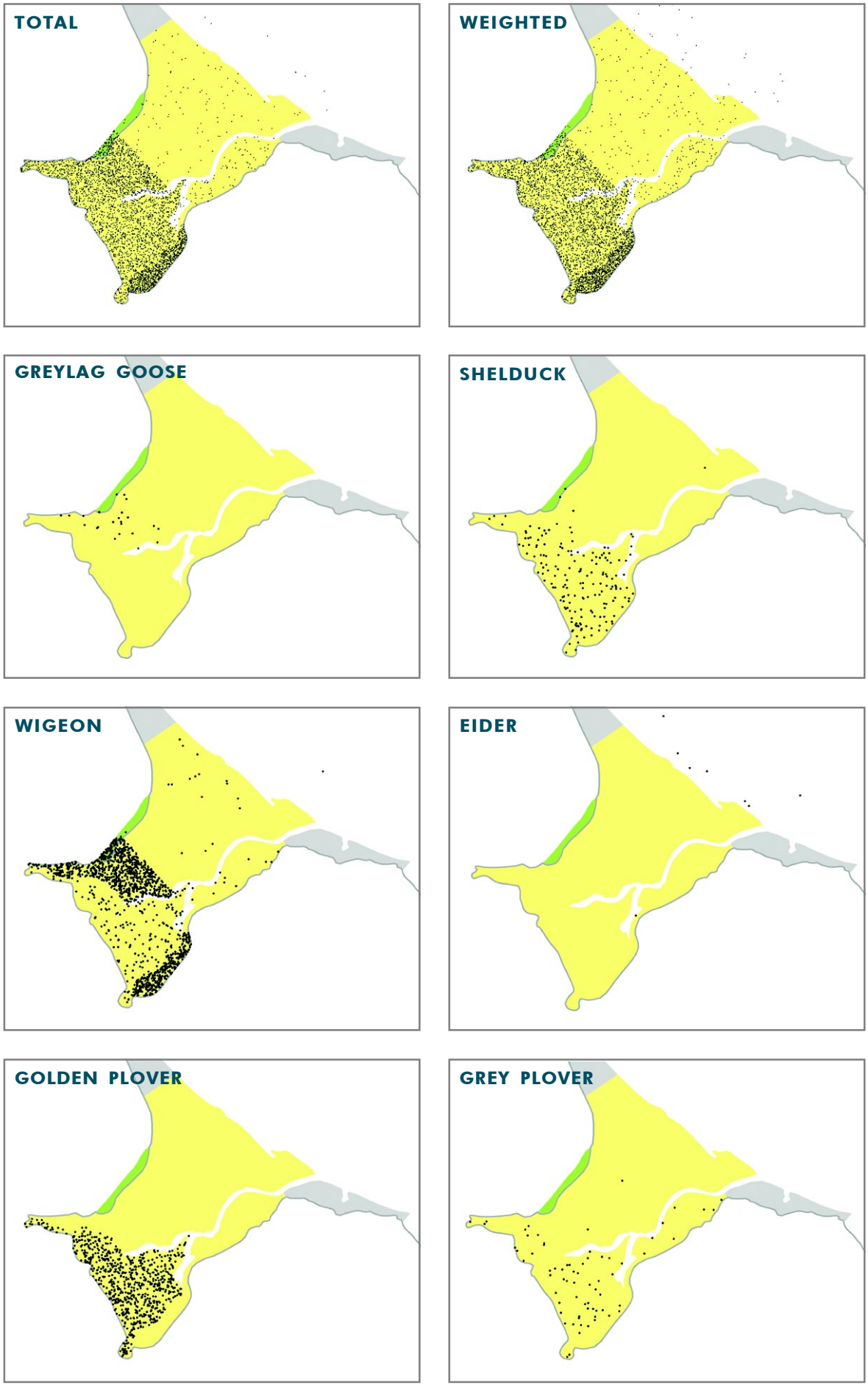


Figure 4.7.3 (i) Low tide waterbird distributions recorded at Lindisfarne, winter 1992-93

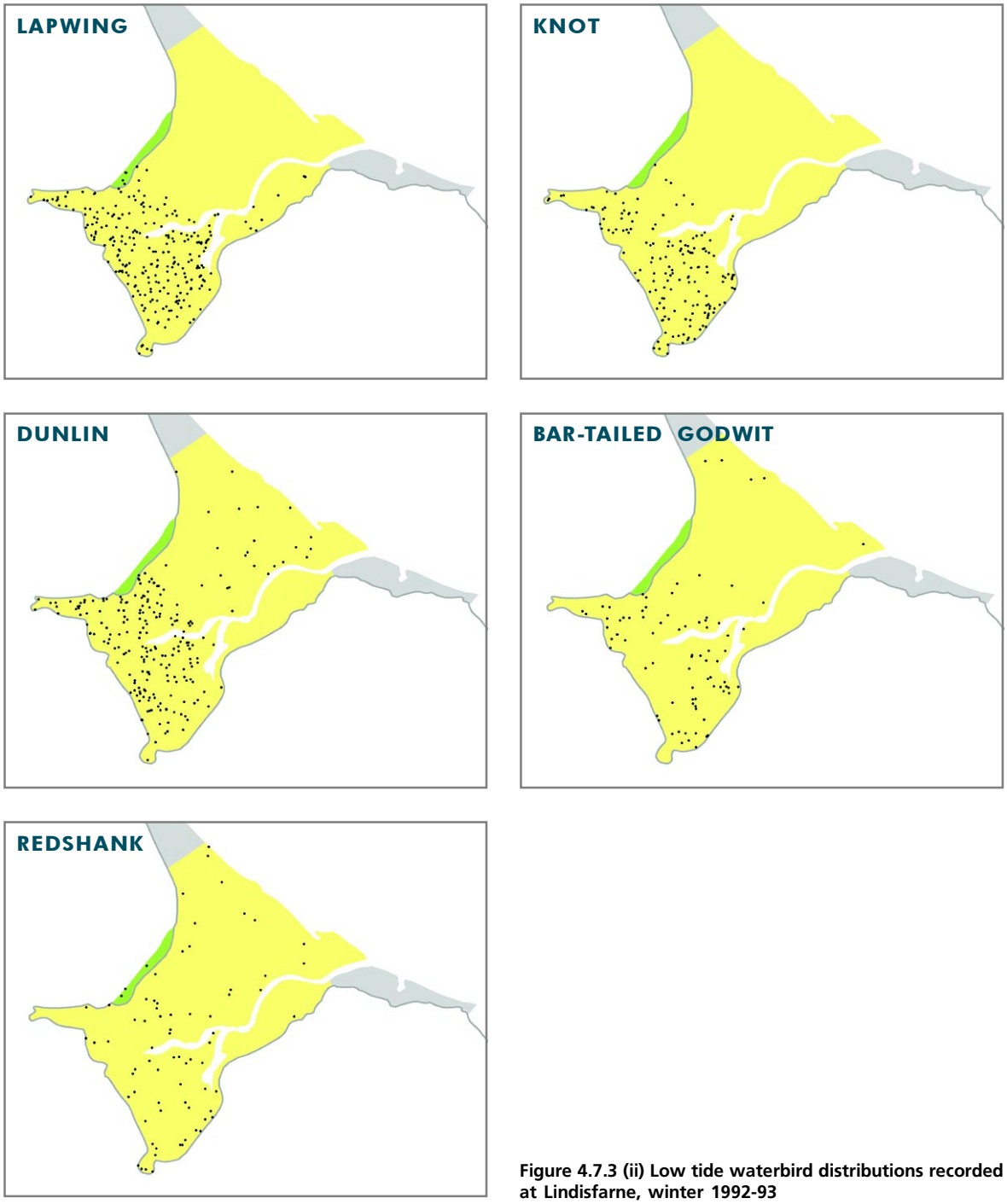


Figure 4.7.3 (ii) Low tide waterbird distributions recorded at Lindisfarne, winter 1992-93

4.8 TYNE ESTUARY

LTC site code:	ET
Centre grid:	NZ3466
JNCC estuarine review site:	96
Habitat zonation:	89 ha intertidal, 283 ha subtidal, 0 ha nontidal
Statutory status:	Northumbria Coast SPA (UK9006131), Northumbria Coast Ramsar (7UK140)
Winter waterbird interest:	Purple Sandpiper, Turnstone

SITE DESCRIPTION

The Tyne Estuary is relatively long and narrow, with steep sides and consequently only small amounts of intertidal habitat. Much habitat has been lost to industrial development over the last two centuries, including about 60 ha of intertidal mud at Jarrow Slake in 1992. The Tyne is now largely urbanised and industrialised from the mouth up to Ryton, some 20 km up river. As well as the city of Newcastle itself, the estuary is flanked by Tynemouth, Jarrow, Wallsend and Gateshead. Water quality has inevitably been poor, but is now improving following implementation of secondary and tertiary treatment in conjunction with the decline in heavy industry. Disturbance levels are high and better water quality may further increase recreational pressures. One small high tide refuge has been incorporated in the redevelopment in the upper estuary and a refuge was recently incorporated in the secondary sewage treatment works in the lower estuary. The North Shields Fish Quay, well known for its gull populations, is to be developed for housing. Despite the small intertidal area on the Tyne and the highly industrialised nature of the site, bird numbers have increased dramatically since the 1980s and the remaining intertidal habitat is thus of importance in a regional context (R. Norman, D. Turner pers. comm.).

COVERAGE AND INTERPRETATION

Counts were made for the scheme during all four months of the 1998–99 winter. Figure 4.8.1 shows the positions of the 14 sections counted for the survey. As can be seen, much of the length of the lower estuary was not counted, due partly to access difficulties but also because most of the intertidal flats in the lower estuary are typically only a few metres wide and hold few birds (R. Norman pers. comm.).

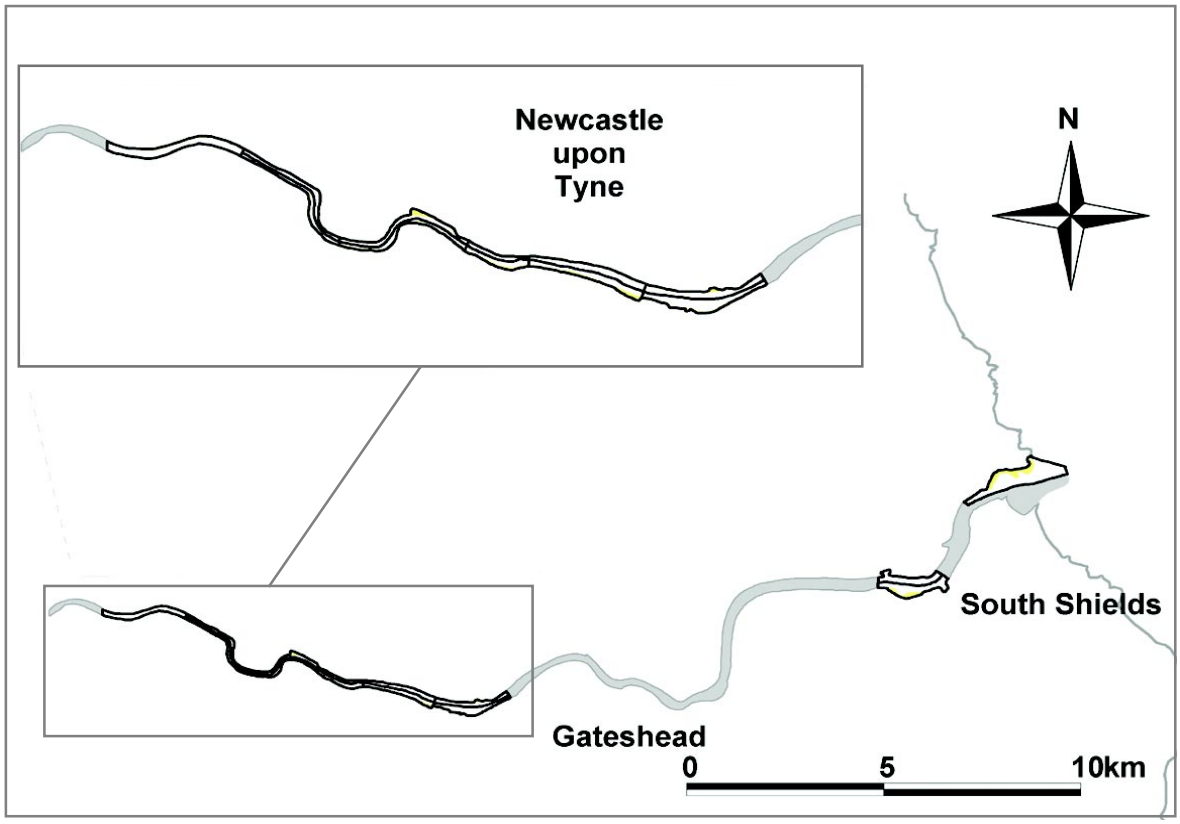


Figure 4.8.1: **LTC sections at the Tyne Estuary, winter 1998–99**

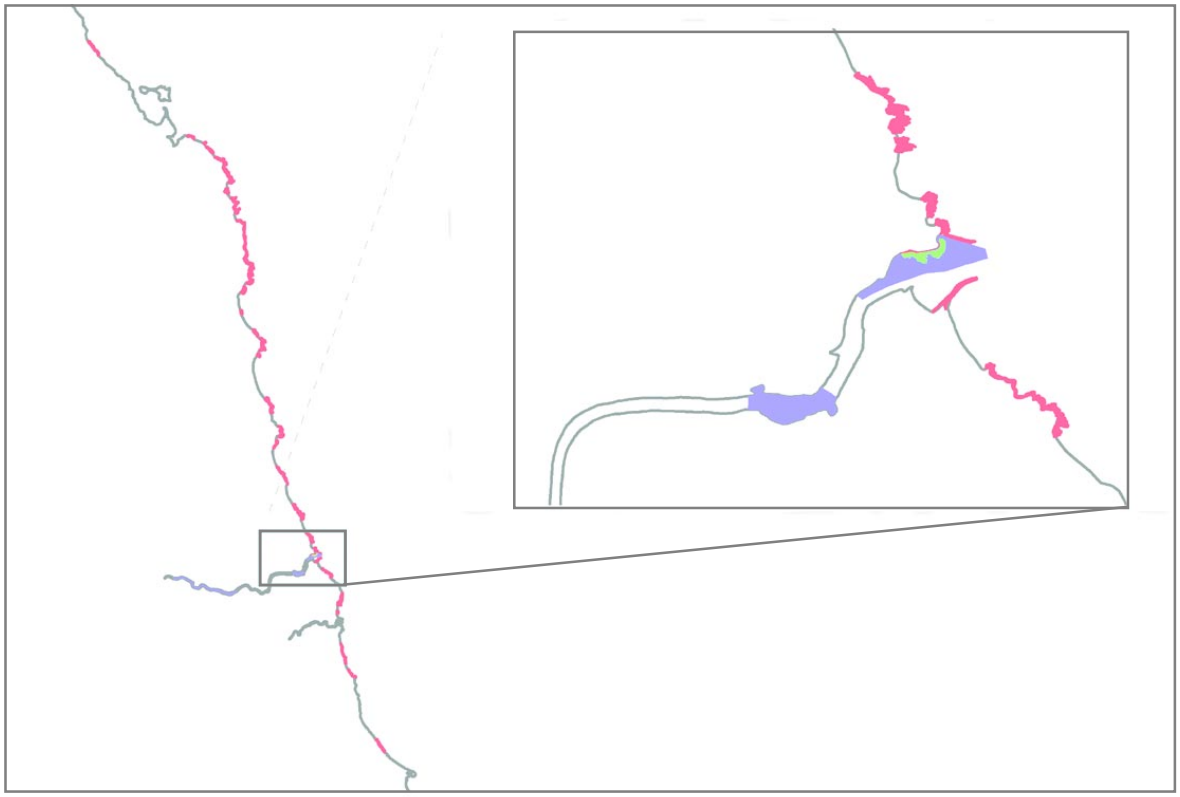


Figure 4.8.2: LTC and SPA boundaries, with overlap, at the Tyne Estuary

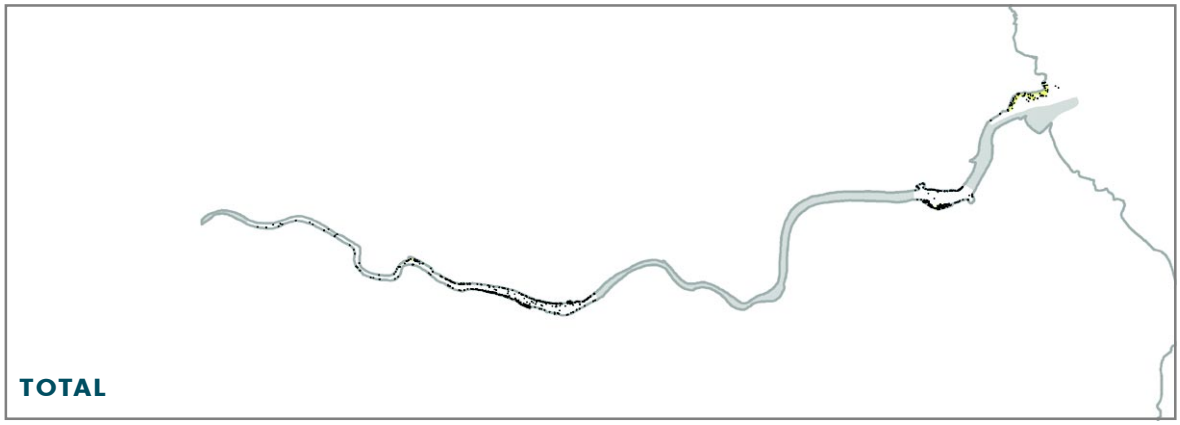
The area covered for the LTCs overlaps with the Northumbria Coast SPA but only marginally so, at Tynemouth (Figure 4.8.2). Clearly the LTCs provide few data for an assessment of the bird usage of the SPA (or the equivalent Ramsar site, the boundaries of which are almost entirely coincident with those of the SPA).

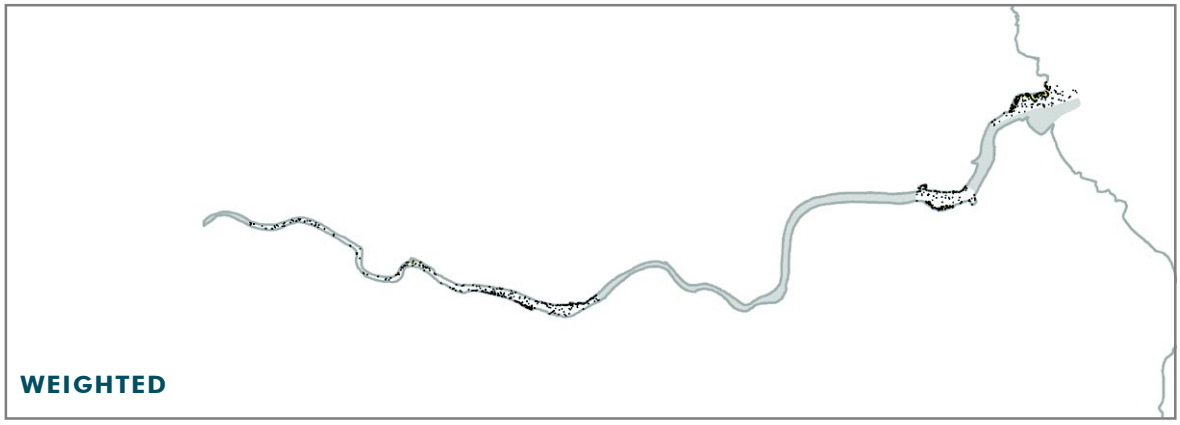
The Tyne Estuary is relatively isolated from other estuarine habitat, with interchange between here and the Wear Estuary to the south or the Blyth Estuary to the north not likely to be significant on a day-to-day basis. However, as Figure 4.8.2 shows, the mouth of the estuary overlaps with a stretch of non-estuarine coast which is important for wintering waterbirds and so some interchange here is likely. As at other estuaries, Lapwings and Golden Plovers making use of the estuary also use the surrounding countryside for feeding.

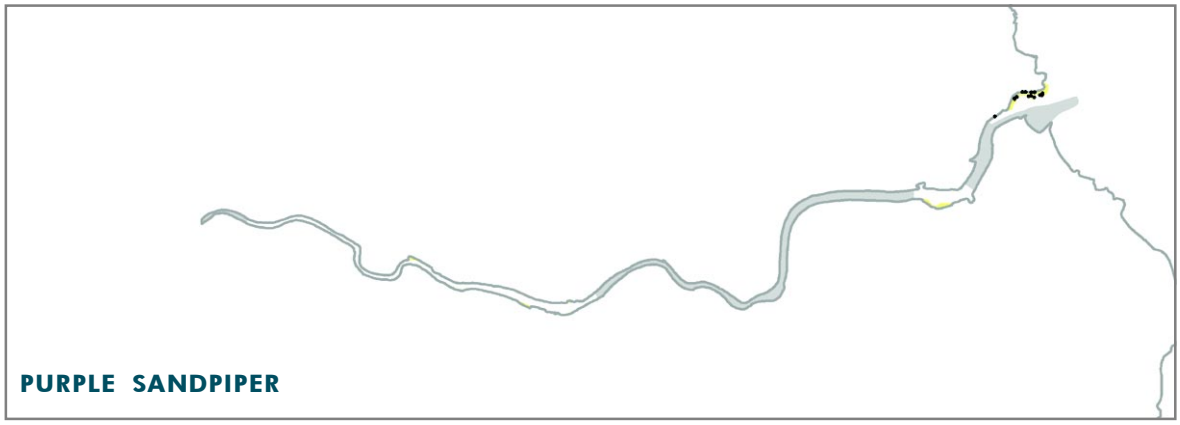
WATERBIRD DISTRIBUTION

Low tide distribution maps from the winter of 1998–99 are presented for the two species of principal interest listed above. Additional maps of total birds and total birds weighted by 1% threshold value are also presented (Figure 4.8.3).

Given the very narrow shore width over much of the site, bird densities can be relatively high. The key area in the upper estuary was between Redheugh Bridge and Derwenthaugh, with large flocks of waders using the mudflats on the south bank at low tide. The maps show that all of the Purple Sandpipers and almost all of the Turnstones recorded at the site occurred at North Shields, the area which overlaps the SPA. Amongst other species, Cormorants were widespread, with slightly higher densities towards the mouth. Small numbers of Teal were found in several places, the majority located between Redheugh Bridge and Derwenthaugh. Redshanks were widespread but densities were higher towards the mouth. Golden Plovers were localised into a few dense flocks, as is typical for this species.







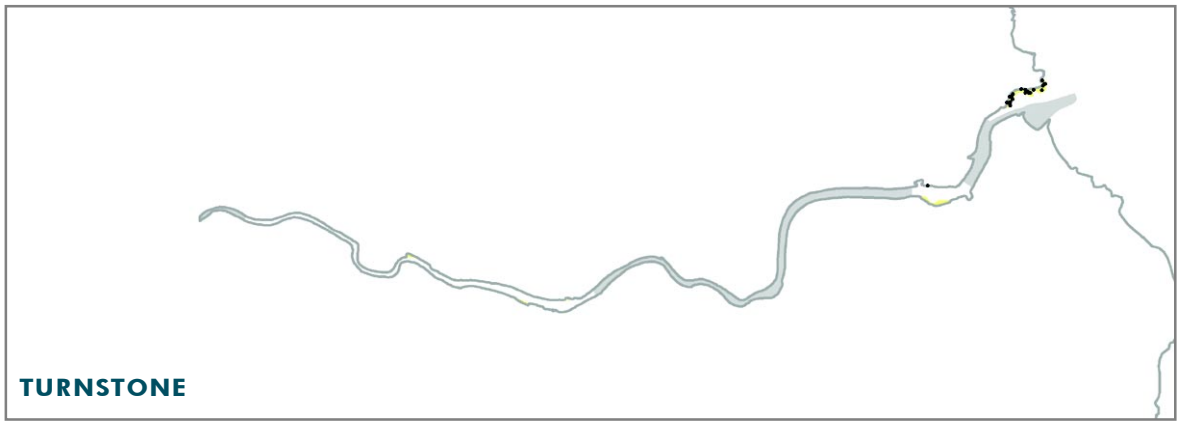


Figure 4.8.3: Low tide waterbird distributions recorded at the Tyne estuary, winter 1998-99

4.9 WEAR ESTUARY

LTC site code: CW
Centre grid: NZ3958
JNCC estuarine review site: 97
Habitat zonation: 20 ha intertidal, 42 ha subtidal, 0 ha nontidal
Statutory status: N/A
Winter waterbird interest: N/A

SITE DESCRIPTION

The river Wear flows down from the northern Pennines through the county of Durham before entering the North Sea at the port of Sunderland. The river is estuarine in character up to about as far as the Wildfowl and Wetlands Trust (WWT) centre at Washington. The estuary is very narrow and no mudflats of appreciable size are present. Around Washington WWT reserve, the estuary is flanked by parkland and farmland, but it soon enters the highly industrialised city of Sunderland, where pollution and general disturbance are an issue.

COVERAGE AND INTERPRETATION

The Wear Estuary was counted for the scheme during the four months of the 1995–96 winter. Figure 4.9.1 shows the positions of the 19 sections counted for the survey. It should be noted that coverage was patchy, partly due to access and partly due to a perceived lack of birds on some parts of the site.

The Wear Estuary overlaps with one SSSI but this (Wear River Bank SSSI) is designated only for its geological interest. At the mouth of the estuary, the area covered for the LTCs does not overlap the Northumbria Coast SPA.

The site is quite isolated from other estuaries and daily movements between here and the Tyne (to the north) or Tees (to the south) would seem unlikely. Interchange with adjacent non-estuarine habitats is likely, such as along the adjacent non-estuarine coastal shorelines, or with the Washington WWT reserve and other terrestrial habitats.

WATERBIRD DISTRIBUTION

Low tide distribution maps from the winter of 1995–96 are presented for total birds and total birds weighted by 1% threshold value (Figure 4.9.2).

The totals maps suggest that most bird interest was between the A19 bridge and the Queen

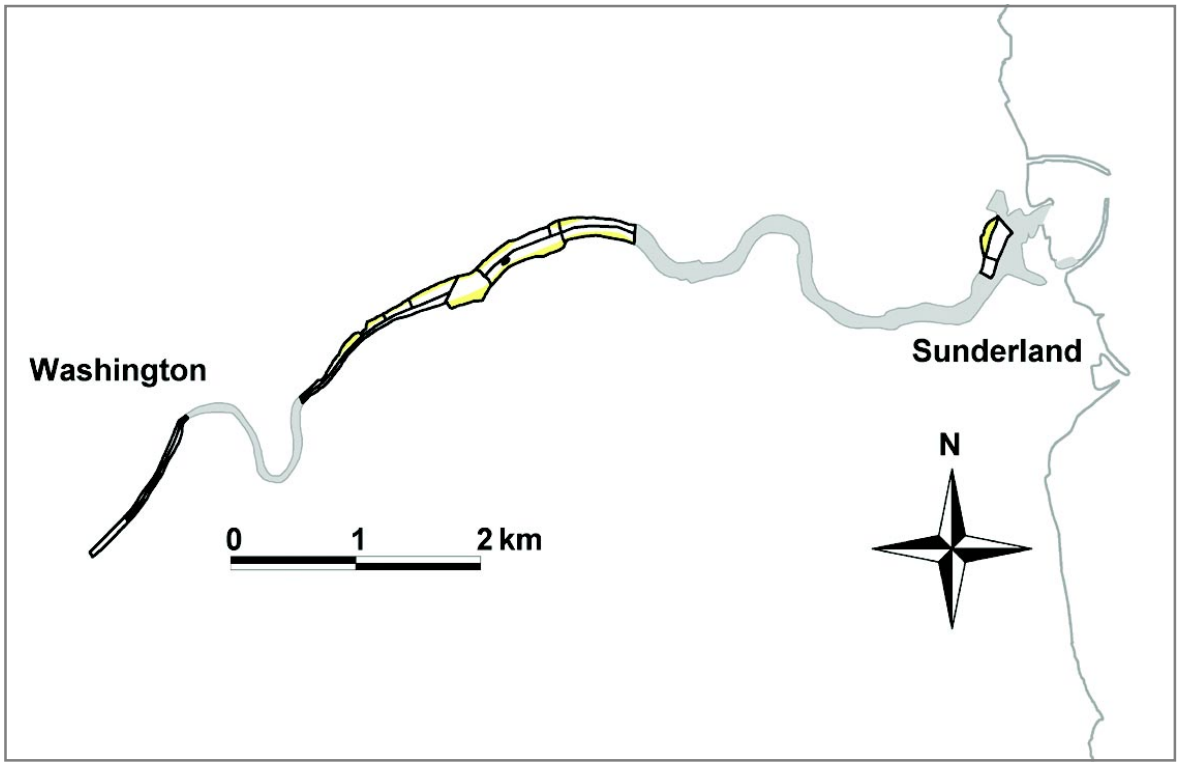


Figure 4.9.1: **LTC sections at the Wear Estuary, winter 1995–96**

Alexandra bridge, although they should be interpreted with care, given the partial coverage of the site. Overall density on the count sections near the mouth of the estuary was very low. Amongst the individual species, Goldeneyes were very localised along the north shore north of Pallion, with Lapwings concentrated along the south shore just upstream of here. Dunlin were more widely distributed within the area between the A19 and Queen Alexandra bridge. Curlews and Redshanks were found over most of the parts of the site that were counted.

Figure 4.9.2: Low tide waterbird distributions recorded at the Wear Estuary, winter 1995-96

4.10 TEES ESTUARY

LTC site code:	DT
Centre grid:	NZ5326
JNCC estuarine review site:	98
Habitat zonation:	574 ha intertidal, 1172 ha subtidal, 82 ha nontidal
Statutory status:	Teesmouth and Cleveland Coast SPA (UK9006061), Teesmouth and Cleveland Coast Ramsar (7UK089)
Winter waterbird interest:	Little Grebe, Cormorant, Shelduck, Shoveler, Lapwing, Knot, Sanderling, Redshank, Waterbird assemblage

SITE DESCRIPTION

The Tees Estuary is the largest and most important estuarine site on a long stretch of the east coast between the Humber and Lindisfarne. The surveyed site includes the lower estuary of the River Tees, the adjacent Greatham Creek and Seal Sands, along with the associated sandy beaches of Tees Bay between Hartlepool and Redcar. The Tees Estuary has suffered greatly from habitat loss caused by land-claim; around 3,300 hectares of intertidal land have been lost since 1720, initially for agriculture but latterly for industrial and port-related development, including the Tees Barrage. The result is a highly industrialised estuary, dominated by heavy industry and petro-chemical plants, which pose a potential pollution threat to the site's wintering waterfowl. However, given that little or no new land-claim is likely, more serious long-term impacts are thought to derive from sediment change (the incursion of coarser marine sediments) and the development of dense mats of *Enteromorpha* algae. Bran Sands, which lies close to the South Gare breakwater, is very heavily exploited by bait collectors. There is also disturbance from watersports around the estuary mouth and from beach recreation along some stretches of Tees Bay (M. Leakey, R. Ward pers. comm.).

COVERAGE AND INTERPRETATION

Low tide counts of the Tees took place during the four months of the 1996–97 winter. Figure 4.10.1 shows the positions of the 28 sections counted for the survey. The peripheral non-tidal wetlands were not counted for the LTCs.

Figure 4.10.2 shows how the LTC and SPA

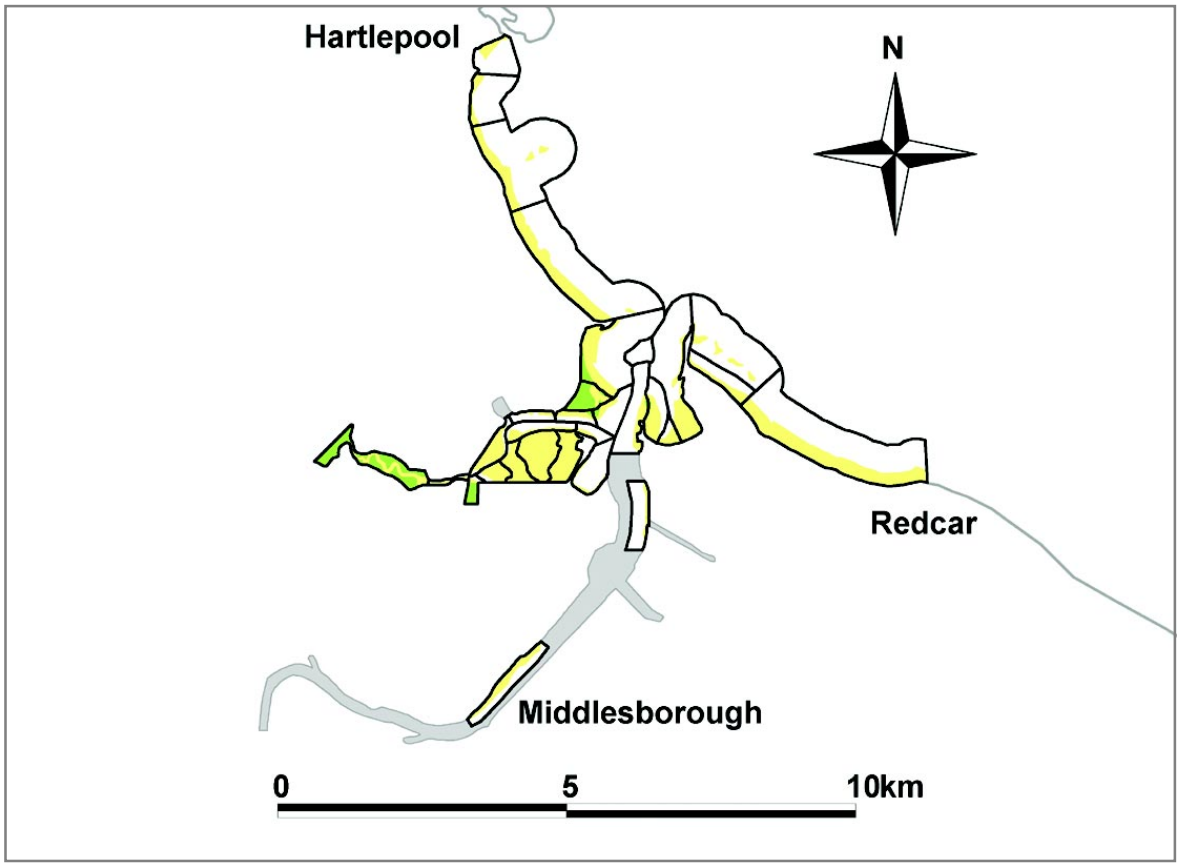


Figure 4.10.1: **LTC sections at the Tees Estuary, winter 1996–97**

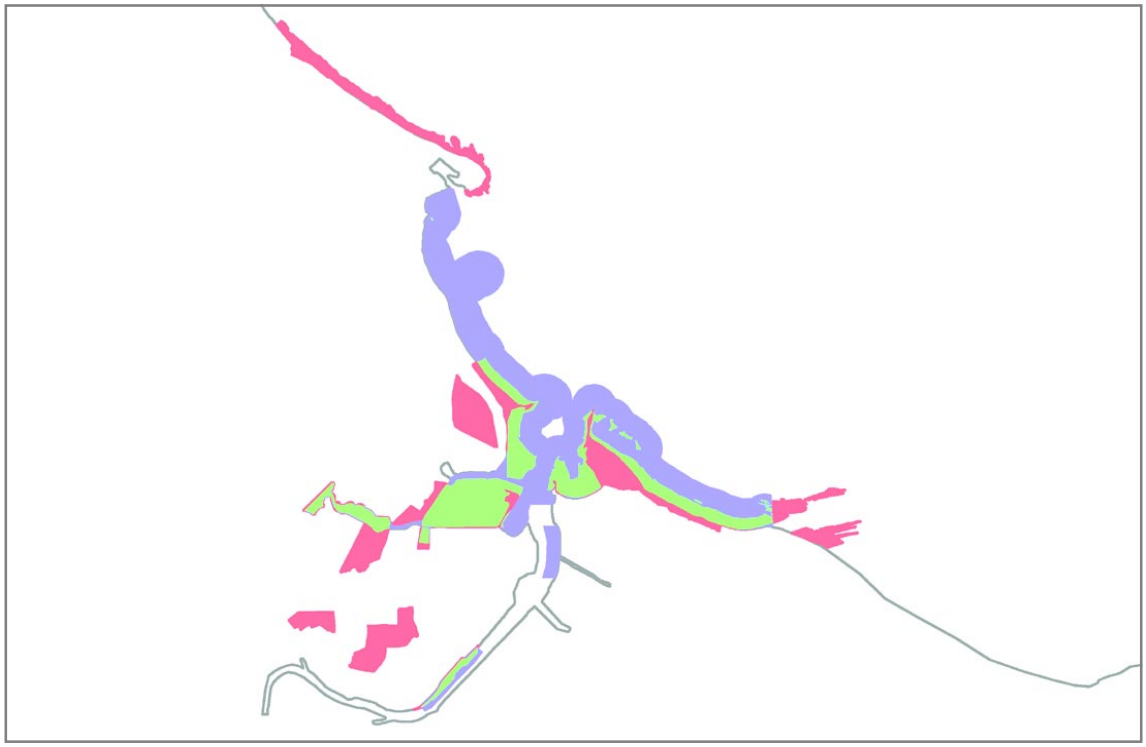


Figure 4.10.2: LTC and SPA boundaries, with overlap, at the Tees Estuary

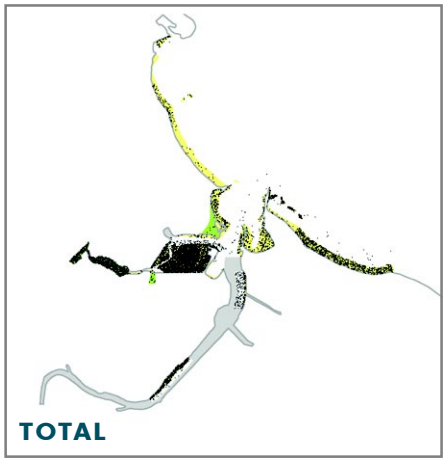
boundaries overlap. The large amount of land-claim and industrial development around the Tees has led to a very fragmented estuarine system, as can be seen from the SPA boundary. Much of the area designated as SPA is covered by the counts. The major areas which were not covered were the non-estuarine shore on and to the north of Hartlepool headland, some of the rocky scars off Redcar and the non-tidal marshes and freshwater pools. Areas covered by the LTCs but not designated as SPA included the shoreline between Seaton Carew and Hartlepool, the east bank of the River Tees around Dabholm Gut and the mudflats on the north bank of Seaton Channel, adjacent to Hartlepool Power Station. The Ramsar site covers a smaller area than the SPA, notably not including the mudflats along the main channel of the River Tees.

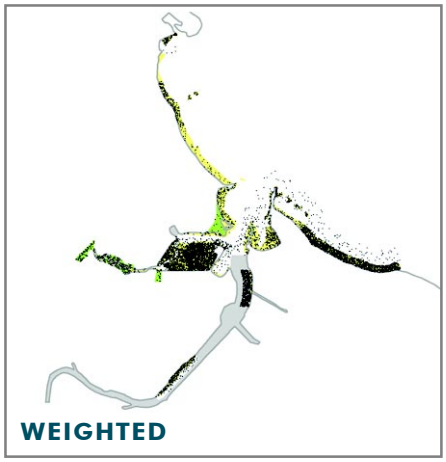
The Tees Estuary is very isolated from other estuarine systems and no interchange of birds with other estuaries takes place on a daily basis. However, the adjacent non-estuarine shores are highly suitable habitats for a number of species and interchange occurs on a daily basis, as evidenced by observations of colour-ringed birds and general observation of flight-lines. For example, Knot are known to feed and roost in large numbers on and to the north of Hartlepool Headland as well as to Coatham Rocks to the south-east (M. Leakey, R. Ward, M. Pienkowski pers. comm.).

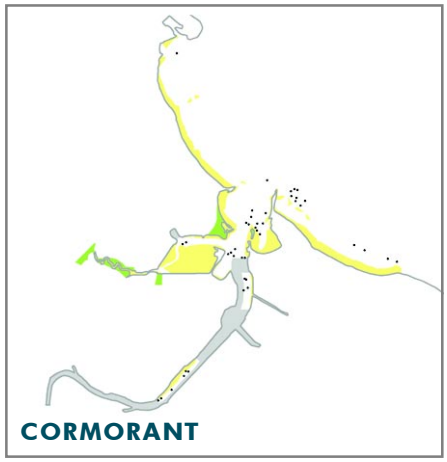
WATERBIRD DISTRIBUTION

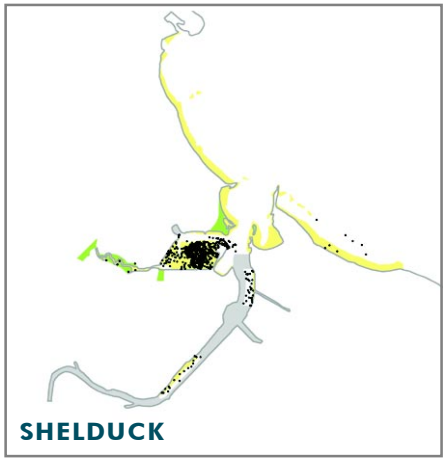
Low tide distribution maps from the winter of 1996–97 are presented for six of the eight species of principal interest listed above. Additional maps of total birds and total birds weighted by 1% threshold value are also presented (Figure 4.10.3). Of the remaining species, no Little Grebes and very few Shovelers were recorded, these species making more use of the adjacent non-tidal wetland habitats.

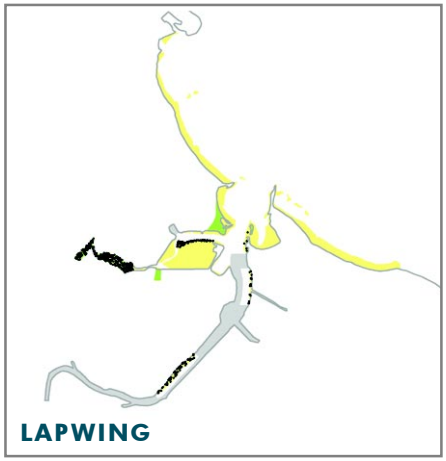
The totals map shows the highest densities on Seal Sands, at Greatham Creek and upstream along the river Tees, whilst the weighted map gives less emphasis to Greatham Creek but more to Coatham Sands, as well as an area towards the mouth of the river at Teesport, the latter largely due to the presence of a flock of Scaup there in February 1997. The northern outer beaches, between North Gare and Hartlepool, appeared to hold low densities of birds, although the difficulties of viewing birds on the offshore Long Scar may have given a somewhat false impression. Cormorants were widespread, especially around South Gare and Bran Sands. Shelducks were mostly concentrated on Seal Sands, with Lapwings highly concentrated at Greatham Creek and Sanderlings showing a clear preference for the outer parts of the site, especially Coatham Sands. Knot and Redshank were both more widespread, although the former showed a tendency towards the outer estuary and the latter towards the inner estuary.

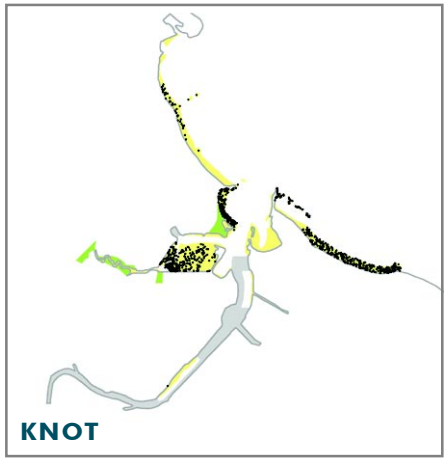


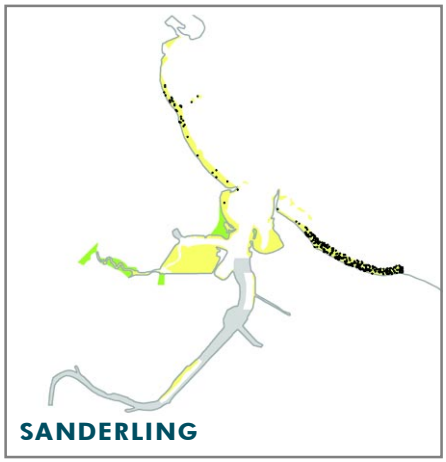












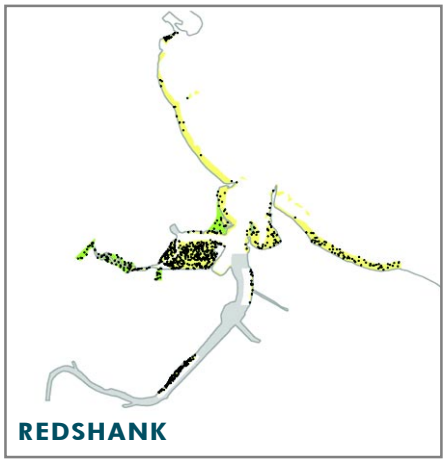


Figure 4.10.3: Low tide waterbird distributions recorded at the Tees Estuary, winter 1996-97

4.11 HUMBER ESTUARY

LTC site code:	CH
Centre grid:	TA2118
JNCC estuarine review site:	100
Habitat zonation:	9246 ha intertidal, 7525 ha subtidal, 863 ha nontidal
Statutory status:	Humber Flats, Marshes and Coast (Phase 1) SPA (UK9006111), Humber Flats, Marshes and Coast (Phase 1) Ramsar (7UK077) [Also Humber Flats, Marshes and Coast (Phase 2) proposed SPA (UK9006112), Humber Flats, Marshes and Coast (Phase 2) proposed Ramsar (7UK145)]
Winter waterbird interest:	Cormorant, Bittern, Dark-bellied Brent Goose, Shelduck, Wigeon, Teal, Mallard, Pochard, Scaup, Goldeneye, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Knot, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Waterbird assemblage

SITE DESCRIPTION

The upper parts of the Humber estuary are relatively narrow and muddy. At the confluence of the Rivers Ouse and Trent is the RSPB reserve of Blacktoft Sands which acts as an important high tide roost as well as comprising the most extensive area of reedbeds in the estuary. Downstream from here, several large islands are present mid-channel, although this part of the estuary is very mobile and their positions can vary between years (leading to a disparity with commercially available maps). From the Humber Bridge outwards, the north and south shores become increasingly distant from one another and the mudflats widen, reaching their widest at Spurn Bight. The outer parts of the southern shore contain the majority of the saltmarsh on the estuary, with the actual extent of saltmarsh around Grainthorpe much greater than that shown on currently available commercial maps (and thus on the maps here presented) (J. Walker pers. comm.). Being such a large site, there are both natural shorelines and extremely industrialised areas, the latter particularly around Hull and Grimsby. The petrochemical industry, commercial shipping and fishing are all important industries locally.

COVERAGE AND INTERPRETATION

The Humber Estuary was counted for the scheme during all four months of the 1998–99 winter. For reasons of counter availability, the south shore could only be covered out as far as Grainthorpe Haven. Figure 4.11.1 shows the positions of the 43 sections counted for the survey.

Figure 4.11.2 shows the overlap between the SPA and the area covered by the LTCs. It should be

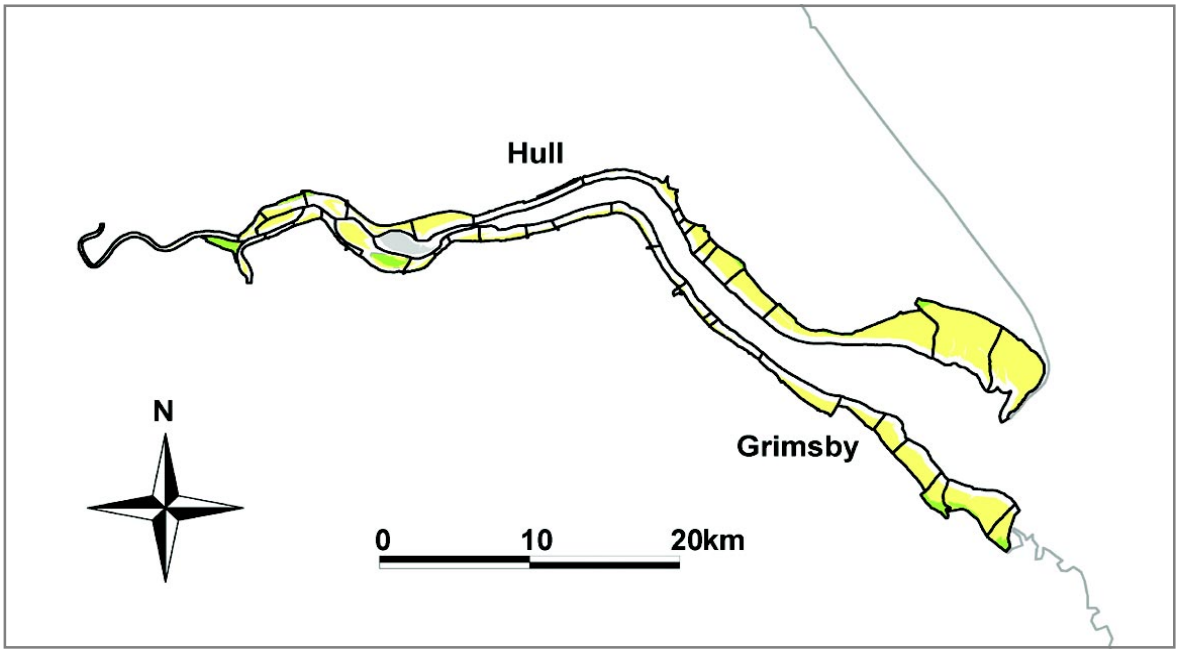


Figure 4.11.1: LTC sections at the Humber Estuary, winter 1998–99

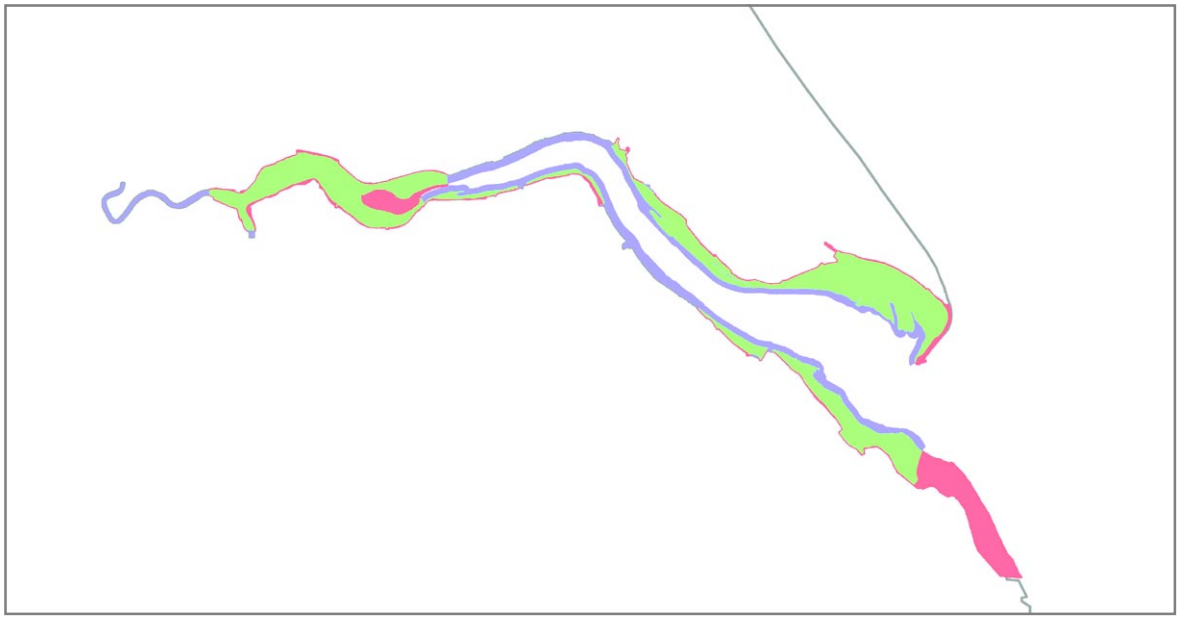


Figure 4.11.2: LTC and SPA boundaries, with overlap, at the Humber Estuary

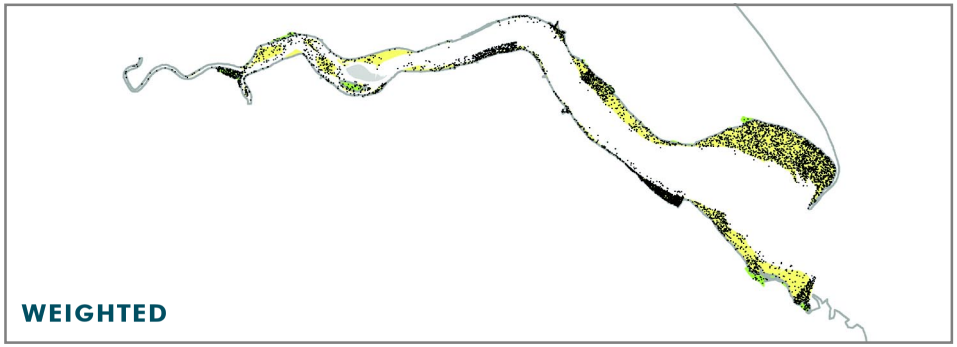
noted that the Humber is being designated as an SPA in two phases. Most of the Phase 1 area was covered by the LTCs, except for the outer south Humber. However, some areas counted for the scheme (notably the River Ouse between Blacktoft and Goole, the north shore adjacent to Hull and the south shore around Immingham) were out-with the Phase 1 designation. It is intended that these latter areas will be, in part at least, included within Phase 2 of the SPA designation (following preliminary designation as SSSIs), although the boundary has not, at time of writing, been determined. The Ramsar site status is similar, involving a two-phase designation, of which Phase 1 is complete and Phase 2 is ongoing. The boundaries of the Phase 1 Ramsar site are almost the same as those of the equivalent SPA, the slight differences being due to digitisation of slightly different mean low water marks in places, presumably from maps made in different years as the estuary is mobile and has an ever-changing shape.

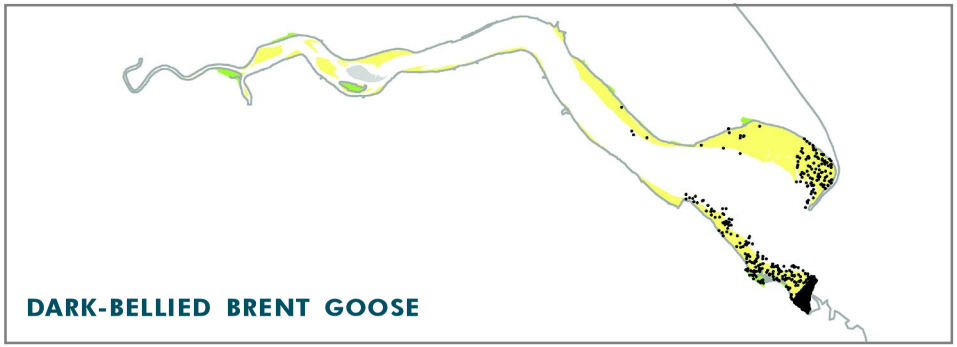
With such a large site, most short-term bird movements take place within the site as opposed to movements to other sites. Some dispersal takes place north and south along the coast and upstream along the Rivers Ouse and Trent. The large flocks of grassland plovers also disperse inland to feed during the day.

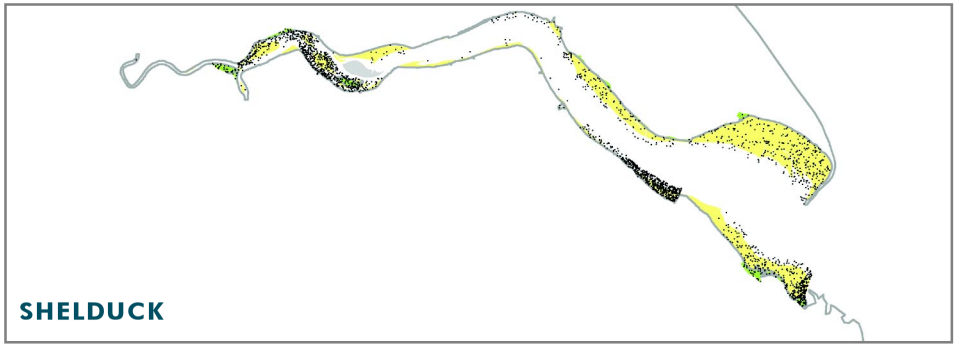
WATERBIRD DISTRIBUTION

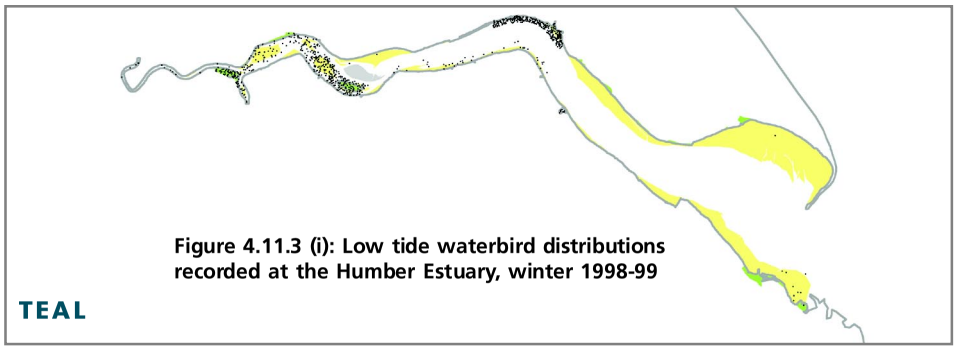
Low tide distribution maps from the winter of 1998–99 are presented for 20 of the 22 species of principal interest listed above. For clarity, smaller dots are used to display the distributions of many of these species. Additional maps of total birds and total birds weighted by 1% threshold value are also presented (Figure 4.11.3). Of the remaining species, low numbers of Scaup were noted during the counts and Bitterns were unrecorded; the latter species frequents adjacent reedbeds such as those at Blacktoft Sands. Scaup were present on the Humber (as well as on the North Norfolk Coast) in high numbers during the winters of 1995–96 and 1996–97, perhaps as a result of a cold-weather influx from the continent, but numbers have been much reduced subsequently.

The totals maps shows that the highest overall bird densities occurred at Blacktoft Sands, South Ferriby, Goxhill Haven, Pyewipe, Saltend and Little Humber. The weighted total map generally mirrors this picture with only slight local differences, such as an increased emphasis of the New Holland shore. Several species were found more commonly on the outer estuary, these being Brent Goose, Oystercatcher, Grey Plover, Knot, Sanderling and Bar-tailed Godwit. In contrast, species occurring completely or predominantly on the inner estuary were Wigeon, Teal and Mallard. The latter species, along with Pochard, Tufted Duck, Goldeneye and Mute Swan, were present in their highest concentrations around the jetty at New Holland where grain is spilt during unloading of ships. Black-tailed Godwits were highly localised, although numerous, in the Pyewipe area, a relatively recent development. Cormorant, Shelduck, Ringed Plover, Golden Plover, Lapwing, Dunlin, Curlew and Redshank were more widespread.









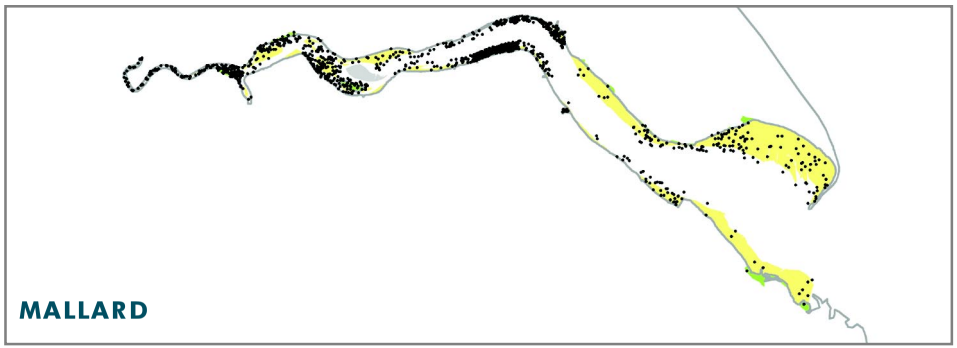


Figure 4.11.3 (i): Low tide waterbird distributions recorded at the Humber Estuary, winter 1998-99

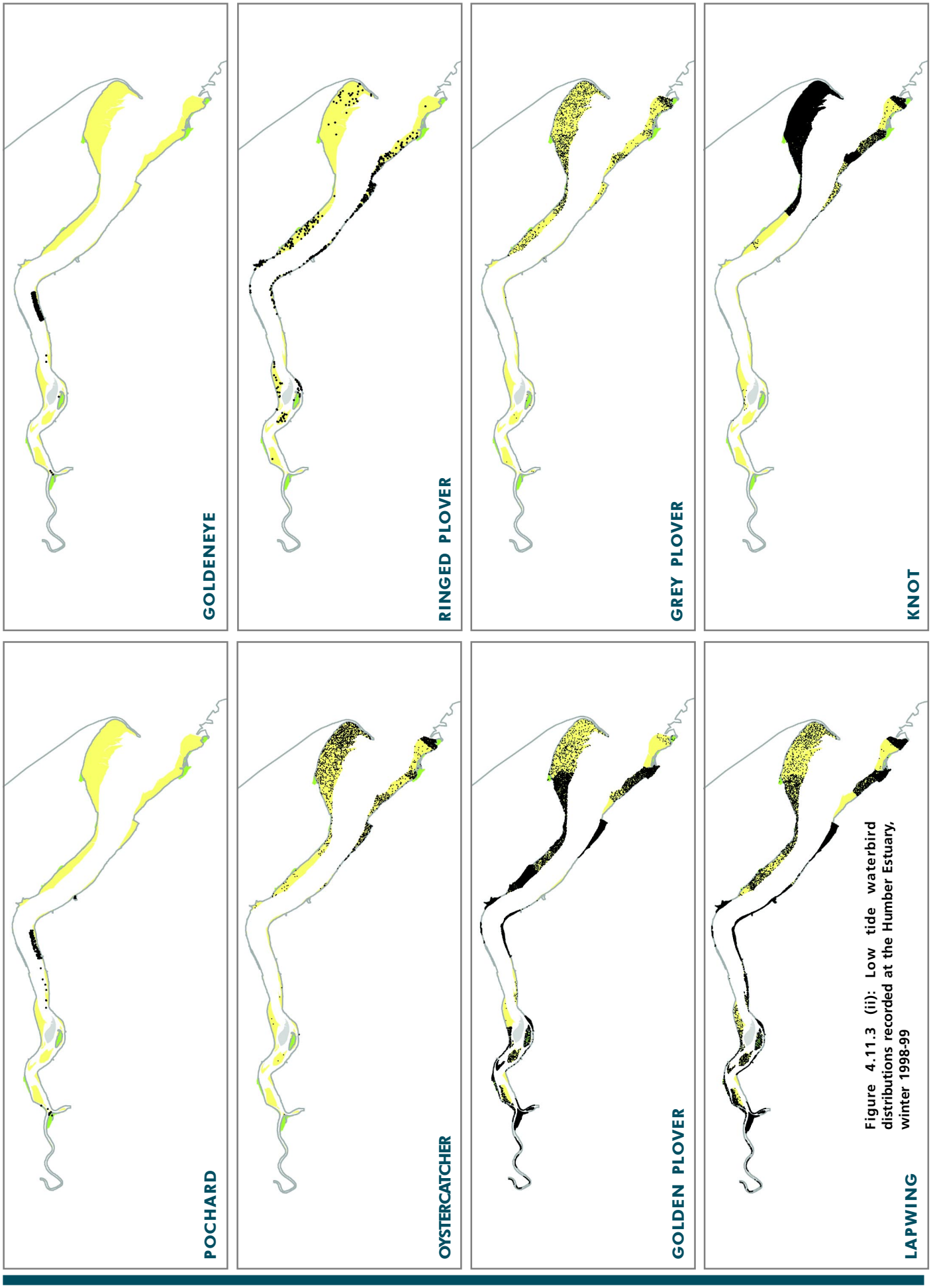


Figure 4.11.3 (ii): Low tide waterbird distributions recorded at the Humber Estuary, winter 1998-99

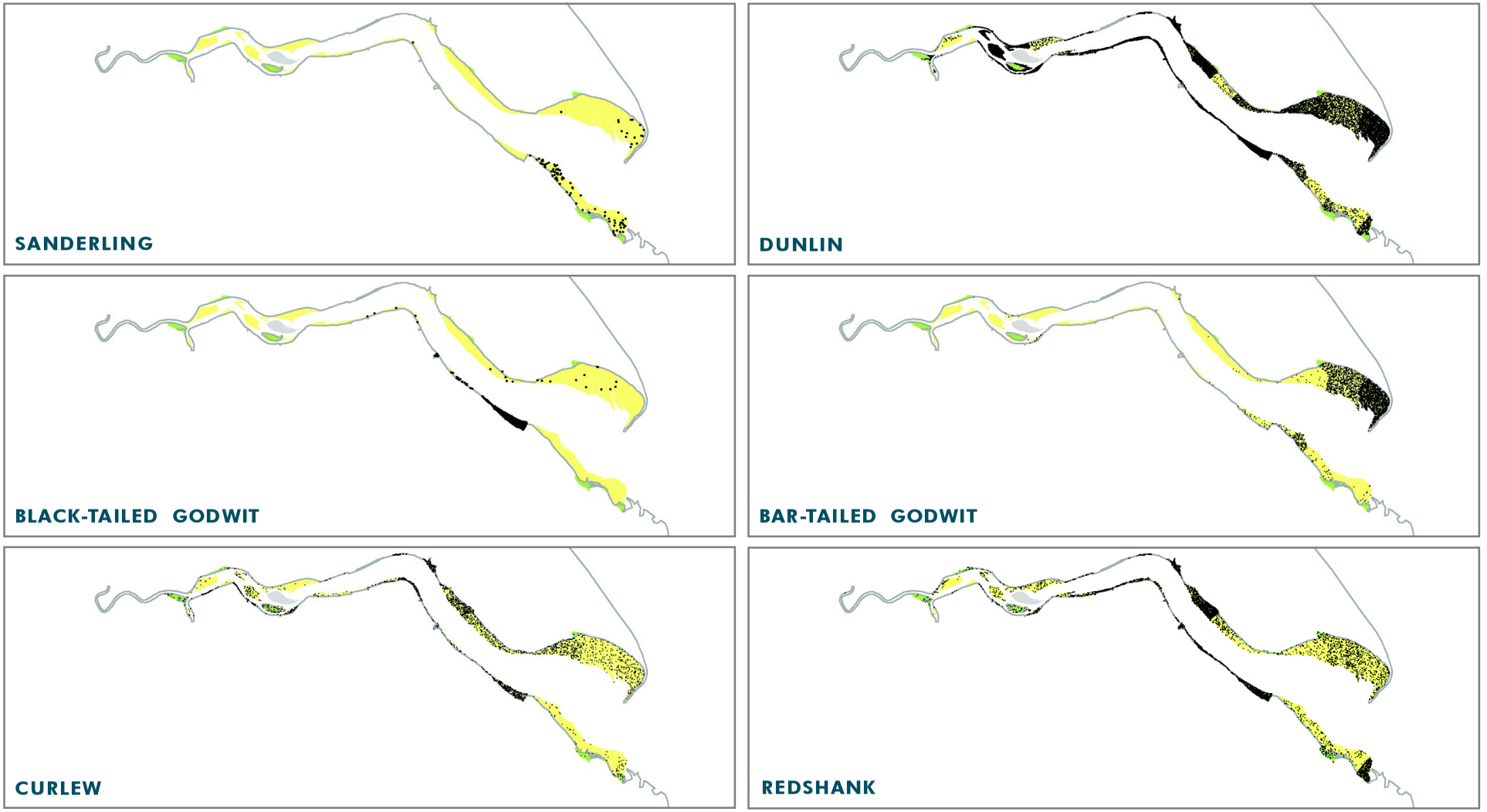


Figure 4.11.3 (iii): Low tide waterbird distributions recorded at the Humber Estuary, winter 1998-99