

## BREYDON WATER

### *Site description*

Breydon Water is a bar-built estuary separated from the North Sea by the spit of land on which Great Yarmouth sits. The estuary forms the lower reaches of the Yare and Waveney rivers, which drain much of central East Anglia. The rivers are tidal for many miles inland but only the estuary area from the confluence of the rivers is considered here. At high tide, Breydon Water forms a large lake but as the tide recedes, the only water that remains forms a narrow channel, well marked by buoys for the numerous leisure cruisers. There are small areas of saltmarsh, principally at the eastern end. To the north of the estuary stretches the huge expanse of the Halvergate Levels, Breydon Marshes and Berney Marshes. These form an extensive area of grazing marsh that has been subject to varying degrees of drainage in recent years. The main high tide roosts occur at the RSPB reserve at Berney Marshes (only accessible by boat, train or a very long walk) and in the eastern saltmarsh. The site is designated as a SPA and is judged in favourable condition. The main conservation issues in the area involve boating, shooting and grazing marsh management. The river channel leading out through Great Yarmouth to the sea is highly industrialized.

### *General bird distribution 2004/05*

*Area covered 402 ha; Mean total birds 22,995; Mean bird density 57.2 birds per ha.*

Breydon Water supported the greatest average density of all sites surveyed in 2004/05, with a large number of birds from 27 different species packed into a relatively small area. Wigeon were present in highest densities (16 birds per ha on average across the winter), and were distributed densely from Berney Marshes to Breydon Junction. Avocet occurred primarily on the estuary sectors to the north east of Berney Marshes, and were found in slightly lower densities at Burgh Flats; the latter area was the most notable part of the site for Greylag Geese and held many Lapwing. The eastern end of the site supported greatest densities of waterbirds; most Oystercatcher, Lapwing, Knot and Dunlin were contained east of Pump House, in addition to Shelduck, whilst east of Breydon Junction, Mallard, Golden Plover and Teal densities were higher than elsewhere at the site. Curlew and Redshank were both comparatively thinly but widely spread around the sectors surveyed.

### *Comparative bird distribution*

Regular counts of Breydon Water at low tide are received by WeBS, the earliest survey made in 1998/99. For the purposes of comparison, the distribution from this winter has been selected. Patterns of change in distributions of Shoveler and Black-tailed Godwit, both of which are present in internationally important numbers at the site, are considered here.

Density of Shoveler has increased over the six winters between surveys discussed, from 0.04 to 0.2 birds per ha and mean numbers at low tide in 2004/05 stood at 96. Distribution across the site has not changed greatly, but sector densities have increased. All birds were recorded between Berney Marshes and Breydon Junction, but the Acle Marshes area exhibited the greatest changes. On the two sectors covered in this region, average winter density changed from 0.04 and 0.06 birds per ha to 0.58 birds per ha (on both sectors). Therefore it is apparent that at low tide, more Shoveler now use Breydon Water, but in the same areas as were used by fewer birds in 1998/99.

In common with many sites in eastern England, numbers of Black-tailed Godwits have increased over the past decade (Collier *et al.* 2005). The effect of this increase in numbers has been for both increased density on previously used sectors and expansion into new feeding areas. In 1998/99, Black-tailed Godwits were largely restricted to the intertidal north of the Yare between Acle Marshes and Breydon Junction. Although average winter density of the species fell in the Breydon Junction area, on all other previously occupied sectors there were notable increases in mean numbers. Furthermore, in 2004/05, large flocks were recorded on areas not apparently utilised in 1998/99. The southern bank of the River now holds comparatively high densities of Black-tailed Godwits, as does the area east of Breydon Junction. The distribution of the species has expanded towards Berney Marshes, and in particular Burgh Flats; the species occurred at an average 6.67 birds per ha here, amongst the highest densities on the site. It will be interesting to monitor future distributions in response to any further changes in numbers of Black-tailed Godwits.

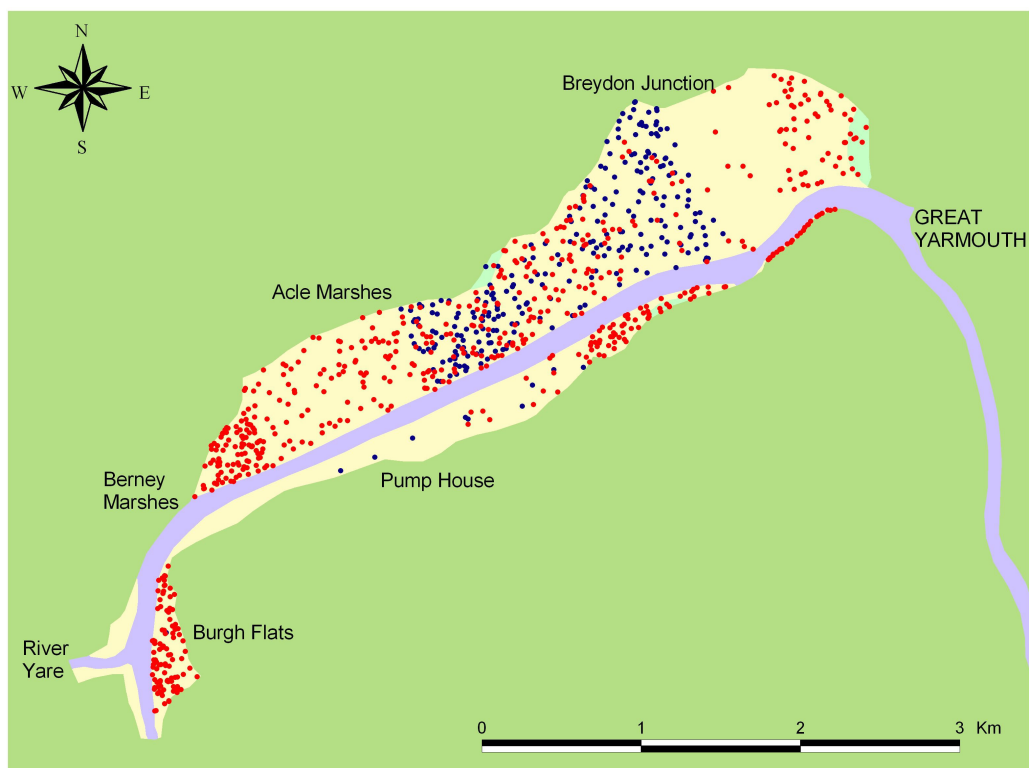
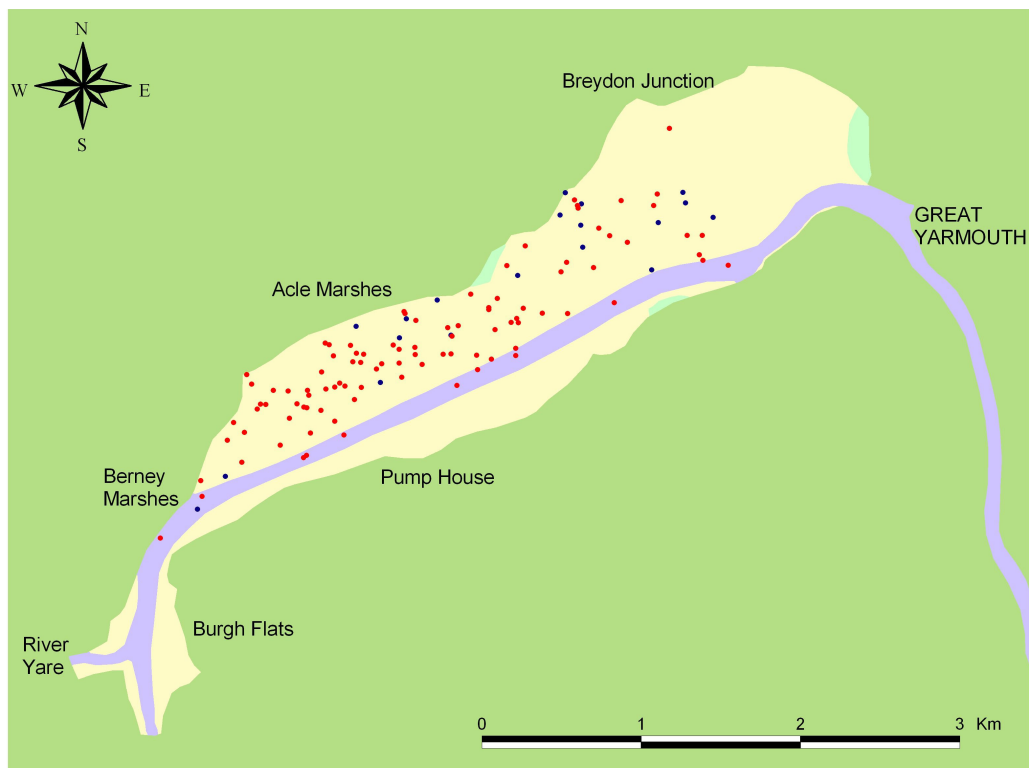


Figure 60. Low Tide distribution of Shoveler (above) and Black-tailed Godwit (below) for the winters of 1998/99 (blue) and 2004/05 (red). Yellow = intertidal; pale green = nontidal; blue = subtidal.

## CAMEL ESTUARY

### *Site description*

The gently sloping Camel Estuary, Cornwall, is part of the River Camel Special Area of Conservation (SAC), which includes a diversity of habitats, and is also a SSSI. Amongst these are mud and sandflats, lagoons, salt marshes and various fringe habitats such as scrub and especially deciduous woodland. The river rises 280 m above sea level on Bodmin Moor, and widens into an estuary at Wadebridge. The majority of marsh habitat is in this area, the narrowest stretch, with a series of muddy creeks and sandy coves developing further downstream. The fishing town of Padstow lies on the west bank, and the wide river mouth is flanked by St George's Cove and Daymer Bay. Apart from fishing vessels using the estuary, other pressures on birdlife include tourism, recreational sailing, windsurfing and jetskiing. The surrounding environment is typified by quarries (mostly disused) and farmland. English Nature report that over 50% of the SSSI is in unfavourable condition.

### *General bird distribution 2004/05*

*Area covered 523 ha; Mean total birds 5,339; Mean bird density 10.2 birds per ha.*

A wide variety of waterbirds were recorded on the Camel Estuary, reflecting the diversity of habitat contained. Some species were confined to specific areas, such as Mallard, which were largely restricted to a pool between Padstow and Little Petherick Creek, Turnstone on the rocky area around Porthilly Cove and Mute Swan near Wadebridge. Golden Plover were confined to the shore east of Pinkson Creek, whereas Lapwing shared some of the same habitat preference, their distribution ranging further east to Wadebridge. North of Padstow, few count sectors returned counts of waterbirds. Other species were more widely distributed throughout the estuary. Shelduck were spread across sectors east of Padstow, with only mudflats off the town itself supporting notably large mean numbers, whereas Wigeon favoured the south shore between Little Petherick and Pinkson Creeks. Oystercatcher occurred mostly south of the river channel, greatest mean numbers in the areas off Cant Cove and east of Little Petherick Creek. Curlew were present on most sectors upstream of Padstow, with the shore west of Pinkson Creek holding highest densities. Little Petherick Creek provided suitable habitat for Redshank, which were also thinly spread along the south bank of the estuary. Other species widely but thinly spread

were Cormorant, Grey Heron, Little Egret (in average numbers of 37) and Greenshank. Eighteen other waterbird species, including grebes, geese, ducks and waders, were recorded at very low density.

### *Comparative bird distribution*

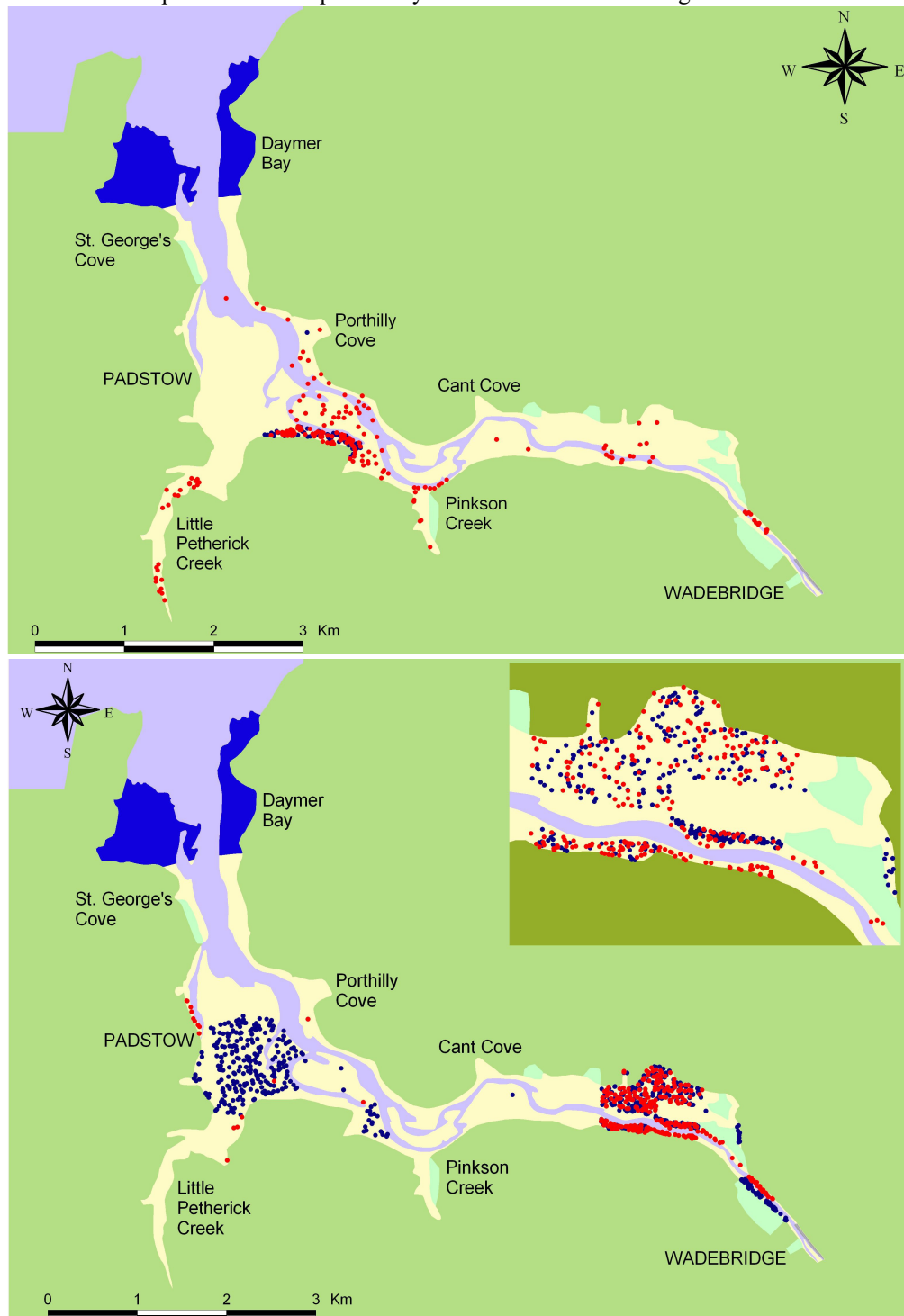
The Camel Estuary was included in the inaugural winter of WeBS Low Tide Counts (1992/93), but had not been revisited under the scheme until 2004/05. Therefore, distributions displayed are from surveys made 12 years apart. One wildfowl species, Wigeon, and one wader, Dunlin, are considered further.

In 1992/93, Wigeon distribution was restricted to one area of high concentration, between Little Petherick and Pinkson Creeks. However, in 2004/05, Wigeon appeared more dispersed throughout the site (Figure 61). Mean site numbers increased by 130 birds between the two winters, and as coverage was similar, mean site density also increased. General expansion of the species was apparent, with average site density at the main area of concentration in 1992/93 very consistent. The count sector to the north of this important area showed high relative site density, as did creeks such as Little Petherick Creek. It is unclear whether the Camel has experienced an influx of Wigeon, or whether these birds foraged previously in areas outside the low tide count sector boundaries.

Patterns of change in Dunlin distribution are very different than those of Wigeon, as average site density for the winter halved in the twelve years between surveys. Examining this change at finer resolution, some of the sectors used by Dunlin in the earlier winter were still important in 2004/05. At Wadebridge, similar site densities were recorded, although on opposite sides of the river channel. To the west, on the muddy intertidal upstream of Pinkson Creek, the 2004/05 distribution is more scattered than in 1992/93, but overall the sum of mean numbers produces very similar mean densities of Dunlin. Where the major change has taken place is on the sandier substrate off the Padstow coast known as Town Bar. On the earlier survey, a large flock of Dunlin was recorded in this location, yet by 2004/05 only isolated counts of individuals were made. The effect of this is to greatly reduce the average number of Dunlin supported by the Camel. Possible explanations of the contraction include a general reduction in Dunlin on the west coast of Britain (Austin & Rehfish 2005); if the intertidal flats at Wadebridge are

preferred by Dunlin, it may be that these areas are filled first, and that any additional birds forage elsewhere on the estuary. Should there be fewer birds present than in previous years

then such secondary feeding areas may be avoided. Alternatively, local factors, such as disturbance or habitat alteration, may have influenced the change.



*Figure 61.* Low Tide distribution of Wigeon (above) and Dunlin (below) for the winters of 1992/93 (blue) and 2004/05 (red). Inset shows Wadebridge area in detail. Yellow = intertidal; pale green = nontidal; pale blue = subtidal. Grey area at Wadebridge not covered in earlier winter; dark blue areas never covered.