CROUCH & ROACH ESTUARIES

Site description

The Crouch Estuary is traditionally considered alongside its tributary, the Roach, as the two converge on the coast of south Essex in eastern England. The River Crouch carves a shallow valley between two ridges of London Clay, whilst the River Roach is set predominantly between areas of brick earth and loams with patches of sand and gravel. Both rivers form dendritic creeks and low-lying riverine islands. Surrounding habitat is almost exclusively lowland farmland and grazing marsh, with few urban developments. The intertidal zone along the rivers is 'squeezed' between the sea walls along both banks and the river channel, leaving a thin strip of tidal mud. The Crouch & Roach Estuary is an integral component of the phased Mid-Essex Coast SPA (Stroud et al. 2001). Threats to this SPA and environs are posed by disturbance caused by air activities, the development of a wharf, sea defences, homes and shops, car parks, marinas, holiday parks and an airport, and saltmarsh loss caused by sea-level rise (BirdLife International 2003). Threats specific to this site include drainage and reclamation of wetland habitats for agriculture. 75% of the site is deemed by English Nature to be in unfavourable declining condition due mainly to saltmarsh erosion.

General bird distribution 2004/05

Area covered 1,745 ha; Mean total birds 26,549; Mean bird density 15.2 birds per ha.

The large and diverse nature of the estuarine complex harboured 45 species of waterbird at low tide in 2004/05. Highest site densities for the winter were of Lapwing and Golden Plover, distributed widely but densely; the site is ideal for these species owing to the extent of bordering coastal pasture. The muddy creeks around Potton Island and inland to Rochford provide wide and shallow mud fringes, and were favoured by tall waders including Avocet and Bar-tailed Godwit, though Shelduck were also observed, with Wigeon present on marsh fringes. The latter also appeared at high density on marsh at Bridgemarsh Island, where locally high numbers of Pintail also grazed, and Stow Creek. The outer estuary was notable for Knot and Curlew, with Ringed Plover distributed from Burnham-on-Crouch to Bridgemarsh Island. The majority of other species recorded in comparatively high densities were widespread and either thinly spread (Oystercatcher, Grey Plover, Curelw) or more densely aggregated (Teal, Lapwing, Dunlin, Redshank).

Comparative bird distribution 2004/05

Dark-bellied Brent Geese are found in internationally important numbers on the Crouch & Roach Estuaries, but according to WeBS Alerts (Maclean *et al.* 2005), numbers have declined over a series of time scales triggering Medium Alerts for the species. Figure 62 shows the distribution of Dark-bellied Brent Geese at low tide in 2004/05, and for the winter of 1995/96, the last time the site was counted at low water for WeBS.

In the earlier of the two winters, notable concentrations of the species were located at Brandy Hole Creek, Bridgemarsh Island and at the confluence of the Crouch and Roach rivers. In 2004/05, Dark-bellied Brent Geese were absent from the Brandy Hole Creek area, and to the area north west of Bridgemarsh Island. At the confluence of the rivers, many more birds were counted between Foulness and Wallasea Islands in 1995/96, although on the adjacent sectors relative densities were greater in 2004/05. By contrast, the south east corner of Wallasea Island, where accretion of mud and saltmarsh has occurred, supported higher densities of Dark-bellied Brent Goose in the later of the winters. Inland, winter crops provide supplementary food. Even more birds were aggregated on the creeks around Potton Island extending toward the North Sea coast, an area not surveyed in 1995/96. In the earlier winter, many more of these geese were found on the stretch of the Roach north of Potton Island to Rochford.

The overall picture is one of changing distribution between 1995/96 and 2004/05, and overall average site densities were slightly lower in the later winter (0.73 compared to 0.81 birds per ha). It is thought that many individuals may have switched to foraging on winter crops on agricultural land, thus feeding beyond count sector boundaries. Such a behavioral switch could partially explain the absence of birds at previously used areas such as Brandy Hole Creek, though here local experts suggest disturbance may be an issue following seawall realignment, which has also induced habitat differences. Declines in site numbers suggested by Core Count data (Maclean *et al*. 2005) may explain reduced mean site density, but not changes in distribution within the site.

Black-tailed Godwit numbers have shown large increases throughout much of the UK, and the Crouch & Roach Estuaries are no exception (see species account elsewhere in this report). Consequently, the distribution of the species across the site has changed markedly between 1995/96 and 2004/05 (Figure 62). In the former winter, an average site density of 0.04 birds per ha was recorded; this had risen to 0.33 by 2004/05, though the change may be over-estimated because some birds may have initially fed in coastal pools outside the count sectors. In 1995/96, the

species was largely restricted in its distribution to Rochford, with a few individuals west of Bridgemarsh Island. However, distribution in the later winter shows evidence of increasing density, in the same areas, with scattered individuals also elsewhere around Wallasea Island; the future effects of a managed breach at Wallasea (designed to mitigate for lost habitat at Lappel Bank, Medway and Fagbury Flats, Orwell) will be interesting to monitor. The muddy creeks around Potton Island are clearly suitable feeding grounds for Black-tailed Godwits, with high densities found in 2004/05.

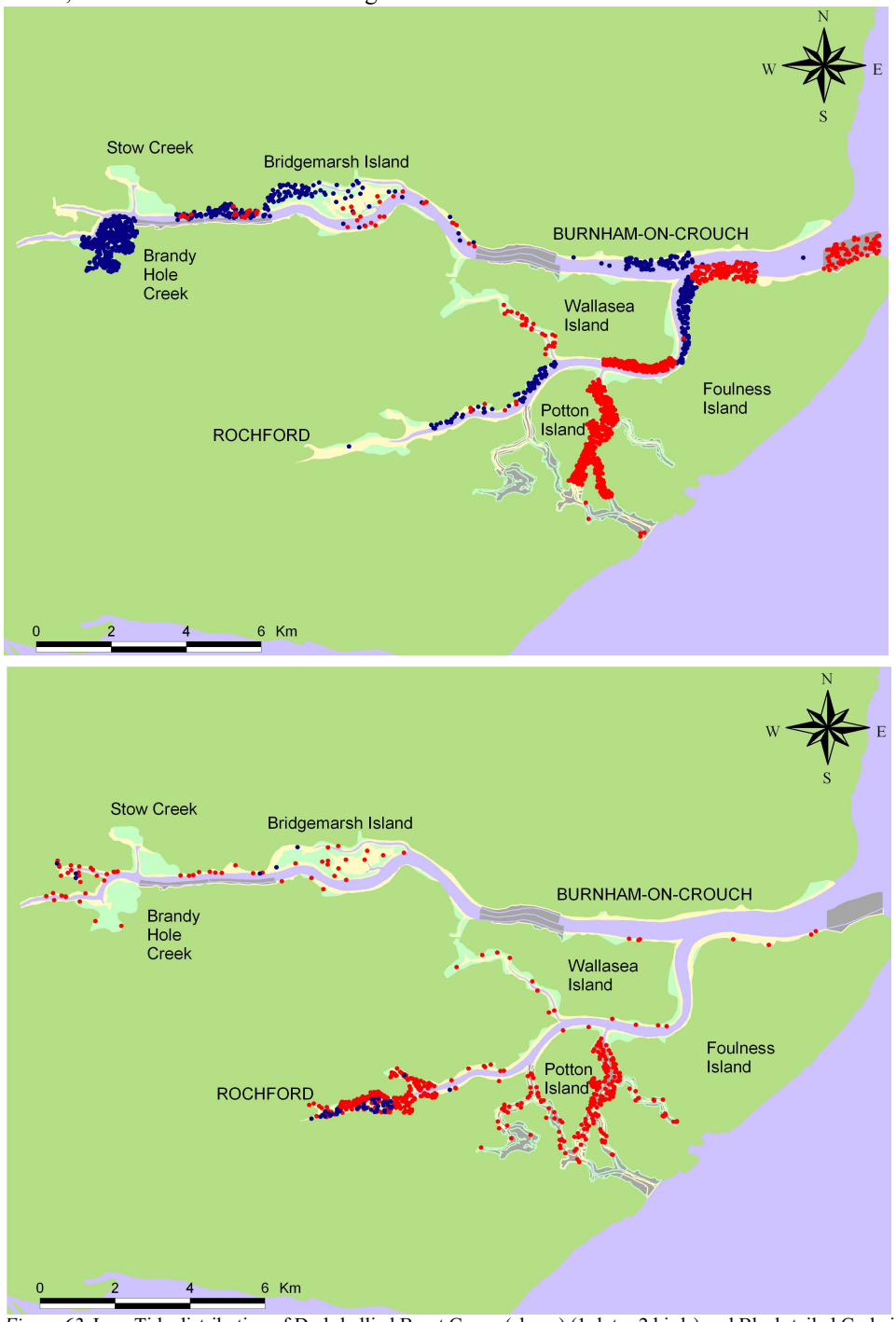

Figure 62. Low Tide distribution of Dark-bellied Brent Goose (above) (1 dot = 2 birds) and Black-tailed Godwit (below) for the winters of 1995/96 (blue) and 2004/05 (red). Yellow = intertidal; pale green = nontidal; pale blue = subtidal. Grey areas not covered in earlier winter.

DUDDON ESTUARY

Site description

The Duddon Estuary is a dynamic estuary, fed by the river Duddon that drains part of the Lake District in Cumbria. A system of large sand banks has developed, the estuary being 6 km at its mouth. The banks of the estuary are flanked by grazing marsh and farmland, with small urban developments such as Millom and Askam in Furness. Iron ore extraction was previously the main industrial activity associated with the estuary. Land claim, sea level rise and coastal defence exert some coastal squeeze on the intertidal habitat, though intertidal and saltmarsh habitats on the SPA are judged to be in favourable condition. Other pressures exist from bait digging, development and land claim. Movements of birds between the Duddon and neighbouring Morecambe Bay are likely.

General bird distribution 2004/05

Area covered 3,439 ha; Mean total birds 15,544; Mean bird density 4.5 birds per ha.

Areas of most concentrated bird distribution on the Duddon can be loosely defined into five areas, and the species occurring on each depend on feeding ecology. Firstly, Walney Channel, including Scarth Bight at the north east corner, is important for mud-foragers such as Oystercatcher, Curlew and Shelduck, with Wigeon also aggregated on the fringing marsh and Turnstone on rocky areas. Secondly, the mudflats south of Askam in Furness support high densities of Shelduck, Oystercatcher, Ringed Plover, Dunlin, Redshank and Curlew. Further upriver, the area of Whelpshead Crag was notable for Shelduck, Dunlin and Redshank, plus the only Teal recorded at the site. Millom Marsh, on the west bank of the estuary, was favoured by geese, including Greylag and Pink-footed. Finally, the nature reserve south of Millom, including Hodbarrow Lagoon, held a number of species including Lapwing and the only Black-tailed Godwits present.

Comparative bird distribution

Low Tide Counts on the Duddon Estuary had taken place four times before the winter of 2004/05, and here distributions from 1994/95 are considered. WeBS Alerts over a similar time frame have been identified (Maclean *et al.* 2005) and thus it is worthwhile to see if declines are reflected by changing distributions. Two species issued with 'High' Alerts (-50% or more) are highlighted; Pintail and Knot: the former are still found in internationally important numbers at the site, the latter are not.

In both winters, the most important area of the site for Pintail was that between Dunnerholme and Soutergate. Average densities on the count sectors here were higher than elsewhere on the Duddon, up to 11 birds per ha in 1994/95 and just over 7 birds per ha in 2004/05 (Figure 63). In the earlier winter, additionally high densities of Pintail (winter average of 125 birds at 1.1 birds per ha) were recorded south of this main location, between Dunnerholme and Askam Pier. No Pintail were found in this area in the later winter, which could indicate a change in habitat suitability. However, between Soutergate and Whelpshead Crag, large flocks of Pintail were recorded in 2004/05 that were not present in 1994/95, at a mean density of 3.2 birds per ha. It is therefore possible that Pintail have undergone within-site movement between surveys, such that new areas are now favoured and previously used areas are now avoided. The overall effect of these movements indicates stability of numbers at low water (winter averages of 1,049 and 1,096 on the two surveys), but with localised movements between count sectors. High Alerts issued for this species suggest that either birds roost at the Duddon and feed elsewhere, possibly in neighbouring Morecambe Bay, or that some birds are in nontidal areas at low tide, leading to stable low water, but not roosting, numbers.

In common with Pintail, Knot show a strong association with specific areas of the Duddon. Firstly, the intertidal habitat between Walney Channel and the mainland at Barrow-in-Furness tends to support high densities of the species. Between 1994/95 and 2004/05 surveys, the average number of Knot using this area at low tide declined from just over 2 birds per ha to only 0.25 birds per ha. Although the distribution in the later winter was slightly more scattered to the north and west, overall usage of the general area was still lower by Knot. The other major concentrations of Knot were found off the shore south of the pier at Askam-in-Furness. In 1994/95, all Knot in this area were recorded between the branches of the river channel. This sector was not surveyed in the later winter, so it is impossible to know whether the concentrations found closer to shore in 2004/05 were an overspill from the previously used area or whether there was a general movement between surveys. In either case, average numbers recorded closer to shore were greater than those on the adjacent sector in 1994/95. In conclusion, differing coverage between the surveys allows limited speculation on the extent of change in Knot distribution;

however, there are certainly less Knot in the Walney Channel. Whether other, un-surveyed, areas are now favoured, or whether declining numbers of birds at the site have led to a thinner distribution, is unclear.

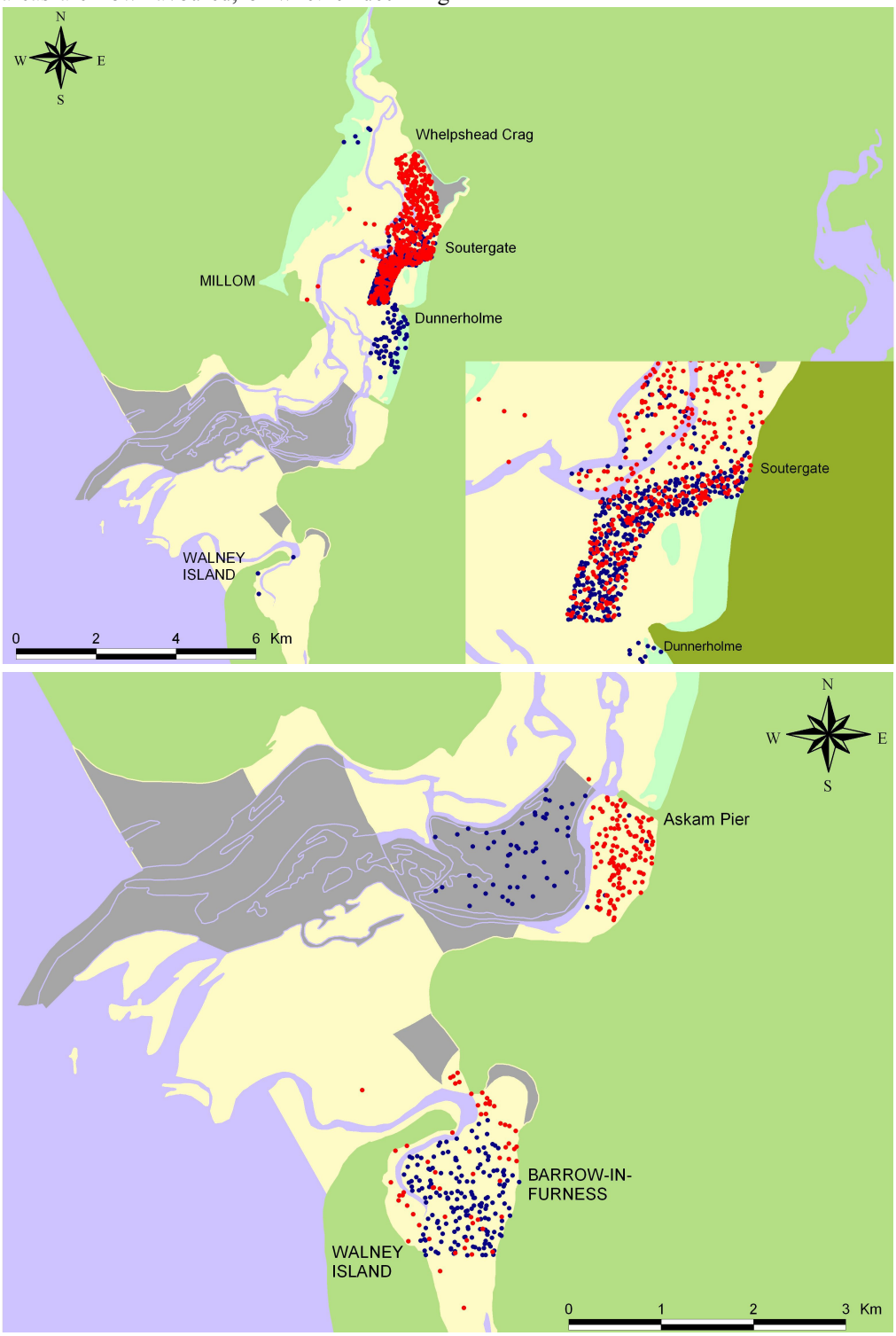

Figure 63. Low Tide distribution of Pintail (above) and Knot (below) for the winters of 1994/95 (blue) and 2004/05 (red); 1 dot = 2 birds. Inset shows Soutergate area in detail. Yellow = intertidal; pale green = nontidal; pale blue = subtidal. Grey areas not covered in later winter.