

BTO Research Report No. 71

A GUIDE TO BIRDS OF ESTUARIES
ENQUIRY COUNTING PROCEDURE DURING
THE 1982/83 TO 1988/89 PERIOD,
AND RECOMMENDATIONS FOR THE FUTURE.

by J.S. Kirby*

British Trust for Ornithology, Beech Grove,
Station Road, Tring, Hertfordshire, HP23 5NR.

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* Present address: The Wildfowl & Wetlands Trust, Slimbridge,
Gloucester, GL2 7BT.

S.J. Kirby

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ABSTRACT

Standard questionnaires (Appendix 1) and maps were sent to all Regional Organizers of the Birds of Estuaries Enquiry (BoEE) to establish details of counting procedures adopted at all estuarine sites during the 1982/83 to 1988/89 period. The information obtained is presented in here in a standardized format for each site; the completed original questionnaire forms and site map are retained in file in the BTO Estuaries Unit.

Examination of the information from all sites revealed that boundaries and counting technique at the majority (72%) had not changed over this period, whilst the situation at others had changed considerably. At only approximately half of the sites was the recommended BoEE date used for the counts, alternative dates being adopted at the remainder. At 50 sites (43.5%) counts were made during the high tide period, whilst those at a further 21% of sites spanned two consecutive phases of the tidal cycle, most commonly the rising and high tide period. Coverage at 98 (85%) of sites was synchronous within the site (conducted within a 3-4 hour period); full coverage at the remaining sites was obtained over a period of days. Liaison between site organizers regarding the timing of counts generally occurred only where there was a Regional (usually County) organizer in place. At the majority of sites (76%) all waders and wildfowl seen on fields within the counting area were included. Relatively little was known about waterfowl movements between sites.

The problems encountered by Site Organizers in attempting to achieve representative counts are outlined. A number of recommendations for improving the way BoEE data are collected and processed are made. These include complete standardization of site and section boundaries; the collation and computerization of count information at the smallest level appropriate for each site; and, the adoption of species-specific, rather than visit-specific, quality codes.

BACKGROUND

History of the Birds of Estuaries Enquiry

A pilot survey for the Birds of Estuaries Enquiry (BoEE) was organized in 1969/70 to establish the practicalities of adequately censusing estuarine bird populations. The success of the pilot fieldwork, combined with a growing awareness of the limited and unstandardized nature of information on estuarine birds, led to the Nature Conservancy (as it then was) funding a continuation of the BoEE for a further five years. The aims were to: (a) document the species and numbers of birds using each of the estuaries of Britain and Ireland; (b) to monitor annual variations in population levels; and (c) to document seasonal patterns of occurrence of each species. The Enquiry proved to be a great success, providing information of use both to those involved in planning decisions on estuaries and to those simply interested in the biology of the species themselves. The results of the first six years of the BoEE, up until June 1975, were comprehensively summarized by Prater (1981), and information on wildfowl up until 1982 formed part of Wildfowl in Great Britain by Owen *et al.* (1986).

Despite the widely recognized value of BoEE counts, constraints on both time and manpower after mid-1975 resulted in a gradual running down of BoEE data collection. Indeed, counts were requested from just three months in mid-winter, rather than from all months. Furthermore, some sites stopped submitting BoEE counts altogether and the Enquiry assumed low priority for the seven years that were to follow. This unsatisfactory situation, including the consequent lack of comprehensive up-to-date information, was thankfully corrected in October 1982 when new funding for the BoEE, provided by the BTO, Nature Conservancy Council (NCC) and Royal Society for the Protection of Birds (RSPB), allowed the appointment of a full-time organizer once again. The immediate priorities at this time were: (a) to restore participation in the BoEE to at least the level achieved in 1975; and (b) to computerize the entire data-set, thus facilitating analysis and the rapid provision of information to the conservation bodies. Counts were requested from all months of the 'counting-year' (July to June), although priority was given to the months of September, December, January and February. Although comprehensive coverage in the United Kingdom was soon reinstated, data collection for the BoEE in the Republic of Ireland was unfortunately not re-established. However, from 1986/87, the Irish Wildbird Conservancy (IWC) surveyed most major wetlands

(R. Sheppard, in prep.) resulting in some recent information for Ireland.

With an expansion of staff resources for the BoEE in 1986/87 arising from increased funding from the RSPB, and additional funding from 1987/88 provided by the Department of the Environment for Northern Ireland (DoENI), the Enquiry has now entered its twenty-first consecutive season. A report summarizing the results of the BoEE has been produced annually, the latest edition being Kirby et al. (1990).

BoEE methodology

The counting procedure and the collation of count data from the BoEE follows closely that agreed upon for the pilot survey. A three-tier system is most commonly employed, involving the counter(s), estuary organizer(s) and the national organizer. In all cases, the estuary organizer is also part of the counting team and in some instances may be the only counter for that estuary, thus representing a two-tier system. Conversely, there is sometimes a four-tier system, with the addition of a regional (usually county) organizer. The structure of the BoEE network and its relationship with The Wildfowl & Wetlands Trust's (WWT) National Wildfowl Counts (NWC) is summarized in Figure 1. Part, or the whole of, the counting network at particular sites may be the same for both the BoEE and the National Wildfowl Counts.

Estuary organizers are provided with counting cards/forms and a list of suggested count dates by the national organizer in the spring prior to the onset of the 'counting year' (July to June). The suggested dates are always on a Sunday, are preferably near to the middle of each month, and are timed to coincide with spring high tides. Experience has shown that, on most estuaries, such tides provide the optimal conditions for censusing estuarine birds. However, it has always been recognized that on some sites, for example the small, narrow estuaries of SW England, counts at low tide, or on the rising or falling tide, may afford better opportunities to count. The choice of when precisely to count in relation to tidal state has therefore been the responsibility of the estuary organizer, who also decides whether to count on a date different to the one suggested by the national organizer and the precise timing of the count within the day; these decisions are best made by those with local knowledge rather than by the national organizer. The estuary organizer also ensures that complete and synchronized coverage of the sections of his/her site is achieved whenever possible, maintains contact with the

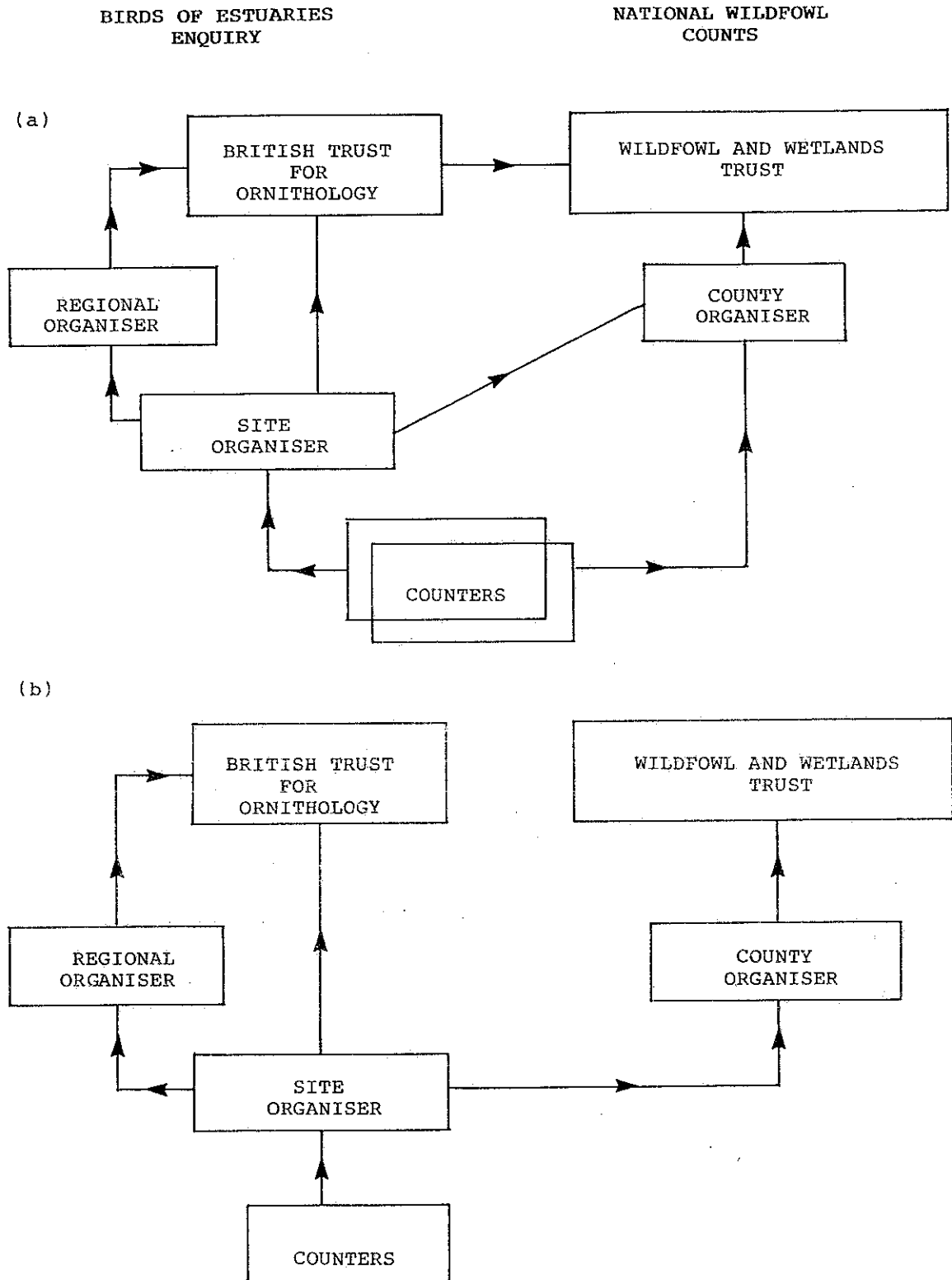


Figure 1 Summary of the structure of the Birds of Estuaries Enquiry Count network, and its relationship with the National Wildfowl Counts on coastal sites. a) - situation existing up to 1988/89; b) - situation following introduction of new count forms in November 1989. The BoEE collects information on all estuarine birds, whereas the NWC collects information on wildfowl.

section counters, collates the results and forwards these to the national organizer.

In the field, each counter visits the site, or his/her designated section of the site, during the set time period and locates and counts all the birds present, either in roosts or feeding in the adjacent intertidal area. If the number of birds involved is small, this usually presents few difficulties. However, where large numbers of birds are involved, one, or a combination of the following techniques, is usually employed in order to count or estimate the numbers of each species present: (a) the birds are counted as they arrive at traditional roost sites; (b) the birds are counted whilst stationary during the roosting period; (c) the birds are counted as they leave the roost and emerge onto the mudflats as the tide falls. In some instances a different method may be applied to different species, or groups of species, as appropriate. Very approximate estimates are recorded in parentheses and are thus distinguishable from 'accurate' estimates. The duration of the count varies according to the size of the area to be covered, the number of birds to be counted and the technique(s) employed. Generally speaking, counting takes place over a 3-4 hour period.

Traditionally, little guidance has been offered to either estuary organizers or counters as to where the precise boundaries of a site should be. Of particular concern has been the location of the inland boundary, as estuarine waders and wildfowl frequently range considerable distances inland at high tide. During the pilot study, the following instruction was issued, although it was recognized as being perhaps too vague: "Birds feeding or roosting on the landward side of the sea wall, and using the intertidal zone regularly as part of their daily routine, should be counted".

All estuarine/coastal bird species are included in counts for the BoEE, i.e. divers, grebes, cormorants, swans, geese, ducks, sawbills, waders, gulls and terns; and, at most sites, additional species, most commonly Herons, birds of prey and 'coastal' passerines (e.g. Twite, Lapland Bunting), have also been included. Coverage has included as many estuarine sites as possible and an increasing number of non-estuarine coastal sites.

Computerization of data

Computerization of BoEE data is carried out by the national organizer. For the majority of sites, only the grand totals for

the whole area combined have been computerized. However, for some of the larger sites, but by no means all of them, data have been computerized for the main areas of the estuary separately (known as "sub-sites"), and then combined to produce grand totals. The level of computerization adopted is unstandardized with respect to sub-sites.

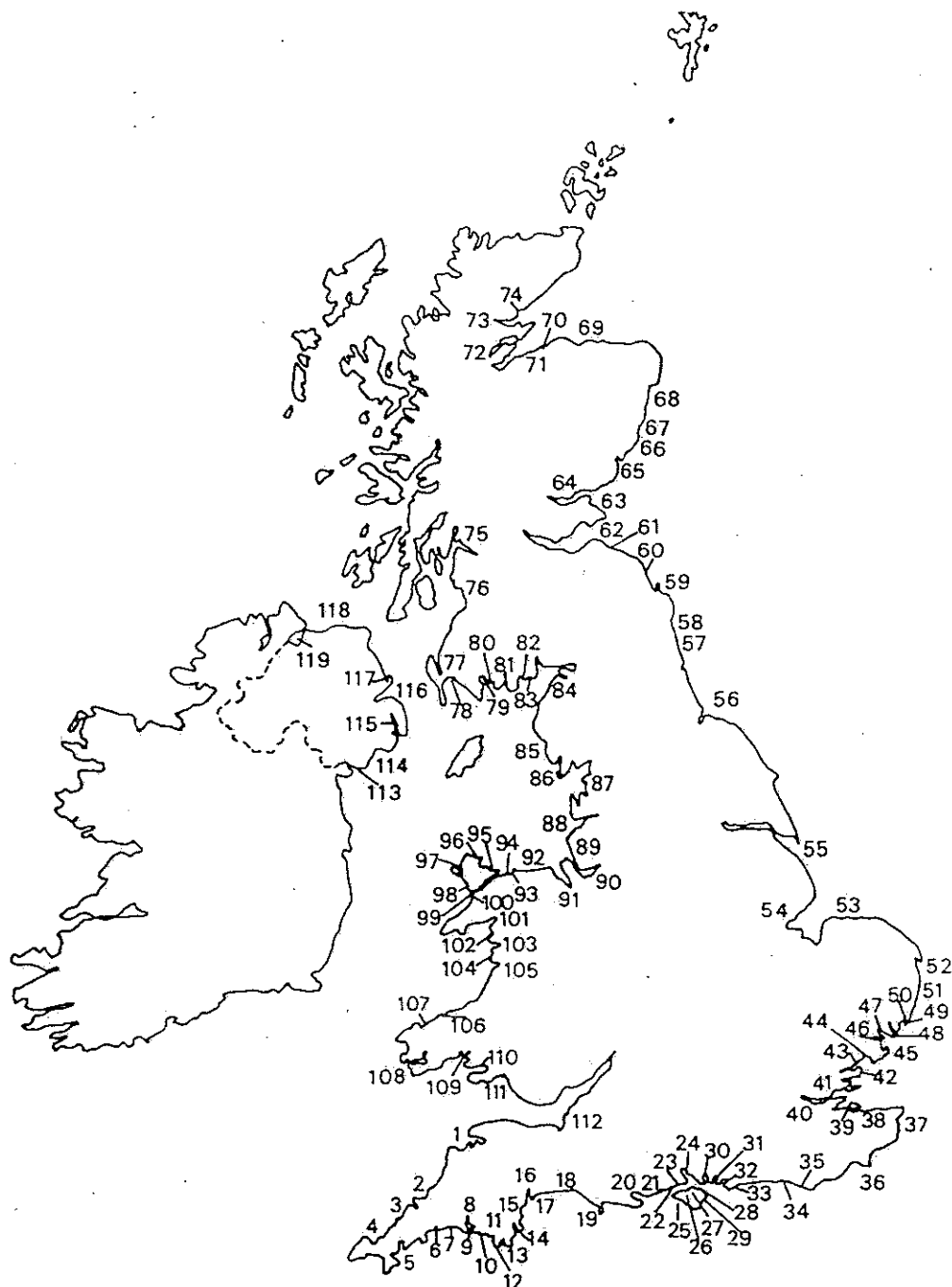
A quality code is assigned to each of the monthly counts received. The quality codes used are as follows:

- Code 1 - a complete, synchronized, count of the whole area.
- Code 2 - a complete, but un-synchronized, count of the whole area.
- Code 3 - a complete count, the quality of which was reduced by excessive disturbance or adverse weather conditions.
- Code 4 - an incomplete count of the area with significant gaps in coverage.

These codes represent little more than a qualitative assessment of the coverage achieved and the conditions during which each count was made, the assessment usually being made by the site organizer but sometimes by the national organizer.

Aims of the BoEE Estuarine Sites Review

Given this background, the aims of the present review were as follows: (a) to document the overall boundary of each estuarine BoEE site and of the sections into which it was divided for counting purposes; (b) to document the methodology adopted at each site; and (c) to collate additional relevant information, including the positions of the main roost sites and the degree to which short-term movements of bird populations between estuaries may occur. Such baseline information was considered fundamental to any correct understanding of the nature of the BoEE data-set, represents an important prerequisite to making changes to the way the BoEE functions, and was necessary to ensure consistency at sites from year-to-year, particularly at times of changeover of estuary organizer. Information was requested from all estuarine sites (Figure 2), and was focused primarily on the period from 1982/83, the 'counting-year' when comprehensive BoEE coverage was reinstated, to 1988/89 period.



Map of the British Isles showing the locations of all estuaries considered in this report. Site numbers are as follows: 1 Taw/Torridge; 2 Camel; 3 Gannel; 4 Hayle; 5 Fal complex; 6 Fowey; 7 Looe; 8 Tamar complex; 9 Plym; 10 Yealm; 11 Erme; 12 Avon; 13 Kingsbridge; 14 Dart; 15 Teign; 16 Exe; 17 Otter; 18 Axe; 19 The Fleet/Wey; 20 Poole Harbour; 21 Christchurch Harbour; 22 NW Solent; 23 Beaulieu; 24 Southampton Water; 25 Yar; 26 Newtown; 27 Medina; 28 Wootton; 29 Brading Harbour; 30 Portsmouth Harbour; 31 Langstone Harbour; 32 Chichester Harbour; 33 Pagham Harbour; 34 Adur; 35 Newhaven; 36 Rye Harbour/Pett Levels; 37 Pegwell Bay; 38 Swale; 39 Medway; 40 Thames; 41 Crouch; 42 Dengie; 43 Blackwater; 44 Colne; 45 Hamford Water; 46 Stour; 47 Orwell; 48 Deben; 49/50 Alde complex; 51 Blyth; 52 Breydon Water; 53 N Norfolk Marshes; 54 Wash; 55 Humber; 56 Tees; 57 Blyth; 58 Coquet; 59 Lindisfarne; 60 Tweed; 61 Tynninghame; 62 Forth; 63 Eden; 64 Tay; 65 Montrose Basin; 66 Dee; 67 Don; 68 Ythan; 69 Spey; 70/71 Inner Moray Firth; 72 Cromarty Firth; 73 Dornoch Firth; 74 Loch Fleet; 75 Inner Clyde; 76 Irvine; 77 Loch Ryan; 78 Luce Bay; 79 Wigtown Bay; 80 Fleet Bay; 81 Kirkcudbright Bay; 82 Auchencairn Bay; 83 Rough Firth; 84 Solway; 85 Irt/Mite/Esk; 86 Duddon; 87 Morecambe Bay; 88 Ribble; 89 Alt; 90 Mersey; 91 Dee; 92 Clwyd; 93 Conwy; 94 Lavan Sands; 95 Red Wharf Bay; 96 Dulas Bay; 97 Inland Sea; 98 Cefni; 99 Braint; 100 Foryd Bay; 101 Traeth Bach; 102 Artro; 103 Mawddach; 104 Dysynni; 105 Dyfi; 106 Teifi; 107 Nyfer; 108 Cleddau; 109 Carmarthen Bay; 110 Burry; 111 Swansea Bay; 112 Severn; 113 Carlingford Lough; 114 Dundrum Bay; 115 Strangford Lough; 116 Belfast Lough; 117 Lough Larne; 118 Bann; 119 Lough Foyle.

METHODS

The questionnaire

A standard questionnaire (Appendix 1) was sent to all estuary organizers together with a map of the area for which they were responsible. Thus for the smaller sites, with a single estuary organizer, just one questionnaire was completed. On the larger sites, where there may be up to four organizers, several questionnaires were necessary. The estuary organizers were asked to mark the following details on the map provided:

- (1) the overall limits, including inland boundaries, of the total counting area;
- (2) the sections into which the area was divided for counting purposes (not necessarily equivalent to the form in which the information is supplied to the national organizer);
- (3) the approximate positions of the main high tide roosts, recognizing that these may vary somewhat according to habitat changes, weather conditions and disturbance.

The following information was requested on the questionnaire:

- (1) details of any changes to the overall site/sub-site boundary, the section boundaries, or in the way the site has been counted over the 1982/83 to 1988/89 period;
- (2) the usual timing of counts in relation to the suggested BoEE date;
- (3) the usual timing of counts in relation to tidal state (high tide, falling tide, low tide, rising tide);
- (4) whether the counts were usually synchronized (*i.e.* conducted over not more than 3-4 hours) within the site. If not, the degree to which counts within the site were staggered;
- (5) whether there was any attempt to synchronize the counts with those made at adjacent sites;
- (6) whether waders and wildfowl on fields around the estuary were included in the counts;

(7) the degree to which regular (daily/weekly) movement to and from adjacent sites was observed or thought to occur;

(8) the degree to which the counts provided were thought to be representative of the estuarine bird populations present on the site.

Maps and questionnaires were returned from all estuaries apart from Dulas Bay (site 96, Figure 2), the Cleddau (site 108) and Carmarthen Bay (site 109). Information on the Cleddau was extracted from Prys-Jones (1989) and for Carmarthen Bay from Prys-Jones & Davies (1990). No information was submitted for Dulas Bay which is thus omitted from this report.

Presentation of results for individual sites

I have included all the information provided by the estuary organizers on the questionnaire in the site accounts (Appendix 2), although some editing has been necessary to transform each account into a standard format. Where a questionnaire was completed separately for each sub-site of the larger estuaries, the information has been integrated into a single account for the whole site. Site accounts are arranged in the order given in Figure 2 .

Each site account consists of information pertaining to site definition, the timing of counts, synchronization, field usage, movements, and whether the counts are considered by the estuary organizer to be representative of the bird populations present. It is important to recognize that the information presented in this report arises from the opinions of the present site organizers only, though some may have consulted their counters or previous site organizers. It was not logistically feasible to attempt to consult the 1,000 or so individual counters.

The originals of the site maps returned with the questionnaires are held in the BTO Estuaries Unit. Photocopy sets have been provided to the NCC, Peterborough, and to the RSPB, Sandy.

NATIONAL PERSPECTIVE

Site definition and the sub-division of sites

At 83 sites (72.2% of those counted), there have been no changes to either the overall site boundaries or to the way in which sites were divided for the purposes of counting during the period 1982/83 to 1988/89. At a further 14 sites, overall site boundaries have remained constant, but the internal section boundaries have changed, sometimes more than once. At 13 more sites, there has been appreciable expansion of coverage, resulting in enlarged counting areas; these are the Camel, Hayle, Kingsbridge, The Fleet/Wey, Thames, Dengie, Colne, North Norfolk Marshes, Mersey, Dee (England/Wales), Burry and Carlingford Lough. At the remaining five sites (Tamar complex, Southampton Water, Morecambe Bay, Lavan Sands and Belfast Lough) both the overall site boundary and the way in which each site has been counted has changed repeatedly, making these sites the ones in greatest need of data-checking (see Recommendations for the future).

Aside from alterations in counting technique, some sites have suffered major physical change over the time period. Current developments noted on the questionnaires that were impinging on counting areas included road-developments on the Conwy and dock-developments on the Orwell. Some readjustment of the area counted is occurring at the former but not at the latter site.

Timing of counts

Counts at 48 (41.7%) of the 115 UK estuaries for which information was available took place mainly on the recommended BoEE count date, with a further 56 of the sites (48.7%) being counted on alternative dates close to those recommended, presumably mostly at weekends. Where an alternative date was selected, these coincided with better tidal conditions for censusing birds at each particular site. At a small number of sites (eight - 6.9%), counts were made on a weekday rather than at weekends, as disturbance was much less of a problem during the week. At only 2.6% of the sites (three) were the counts timed to coincide with the dates set for the National Wildfowl Counts in preference to those recommended for the BoEE. At two sites, the counts were made on the middle day of the month, irrespective of recommended BoEE or NWC dates.

Counts at 93 sites (80.9%) took place during selected periods of the tidal cycle. At 50 sites (43.5%), counts were made during the high tide period. Counts at low tide took place at only nine sites (7.8%), and counts on the falling and rising tides at just five sites each. At 24 sites (20.9%), BoEE counts occurred through two consecutive phases of the tidal cycle, with counts that spanned the rising and high tide periods (16 sites) being the most common. A deliberate change from counting at high tide in the earlier years to counting at low tide was made at Poole Harbour; the converse change took place at both Medina and Dyfi. At two of these sites (Poole Harbour and Dyfi), the change was based on a period of experimentation, and the switch made to allow more accurate counts to be made.

At 13 sites (11.3%), BoEE counts were unsystematic with respect to tidal state, either because the counts were made at any time of the day, or because, on the larger sites, the counts were timed differently across the various sub-sites. At eight sites, counts always took place in the morning and at one site always in the afternoon, and were thus not timed to coincide with any particular phase of the tidal cycle but rather for the convenience of the participants.

Synchronization

A period of 3-4 hours was assumed necessary both to cover a site adequately and for the coverage to be 'synchronized' within the site. Using this definition, BoEE counts at 98 (85.2%) of sites were synchronized within the site, although this situation had been achieved only recently at three of these (Tamar complex, Poole Harbour and Severn). Counts at six of the remaining sites took more than 4 hours to complete, but were made within a single day. At a further six sites (Fal complex, The Fleet/Wey, Duddon, Burry, Carlingford Lough and Strangford Lough), complete coverage was achieved over a two day period, whilst at the remaining five sites (Southampton Water, Medway, Thames, Forth and Morecambe Bay) coverage extended over a period of several days. Many of the sites where the coverage was not synchronized within the site represent those which are large and complex and require large numbers of counters and considerable liaison.

Liaison between the organizers of adjacent sites over the precise timing of counts was rare and generally occurred only where there was a regional organizer in place (Cornwall, Devon, Hampshire, Sussex, Essex, Suffolk, Moray Basin, part of Merseyside and Gwynedd). Regional organizers sometimes selected alternative

dates to those recommended by the national organizer to coincide with more suitable local conditions for counting estuarine birds. Site organizers within these regions attempted to keep to these dates, but this was not always possible. Thus, even with additional coordination at a regional level, there may sometimes be little between-site synchronization.

Recording waders and wildfowl on fields

All waders and wildfowl seen on fields in the counting area were included in BoEE counts at 87 (75.7%) of the 115 UK estuaries. At a further nine sites, there was some selection of species that were included, with those known to use the estuary at some stage being included in the counts and the other species being ignored.

The choice of whether to include birds seen on fields in the counts was not consistent at 13 sites (11.3%), with birds being included in some sub-sites or sections but not others. At the remaining six sites, there are no fields within the counting area.

Movements between sites

Site organizers at 55 sites (47.8%) were either unaware of any regular interchange by waders and wildfowl with adjacent sites, or felt that it was likely to occur only on a small scale. In contrast, some regular interchange was considered to occur at the remaining 60 sites. The regular movements thought to take place, linking adjacent sites, are summarized in Figure 3. Although relatively few site organizers mentioned the species involved in such movements, those most frequently quoted included Brent Goose (5 sites), Oystercatcher (3), Curlew (3), Wigeon (2) and Lapwing (2).

Representativeness of the counts

Count data provided for 88 sites (76.5%) were considered representative of the wader and wildfowl populations using these sites. At two others (Teign and Brading Harbour), this was true for the waders only, some areas frequented by wildfowl being outwith the counting areas being used. At seven sites, large gaps in coverage occurred, though the main roosting areas were counted, and hence the count totals provided for these sites, although minima, provide reasonable estimates of the bird populations present. These were the Fal complex, Erme, Blackwater, Fleet Bay, Mersey, Clwyd and Swansea Bay. However, at a further three sites

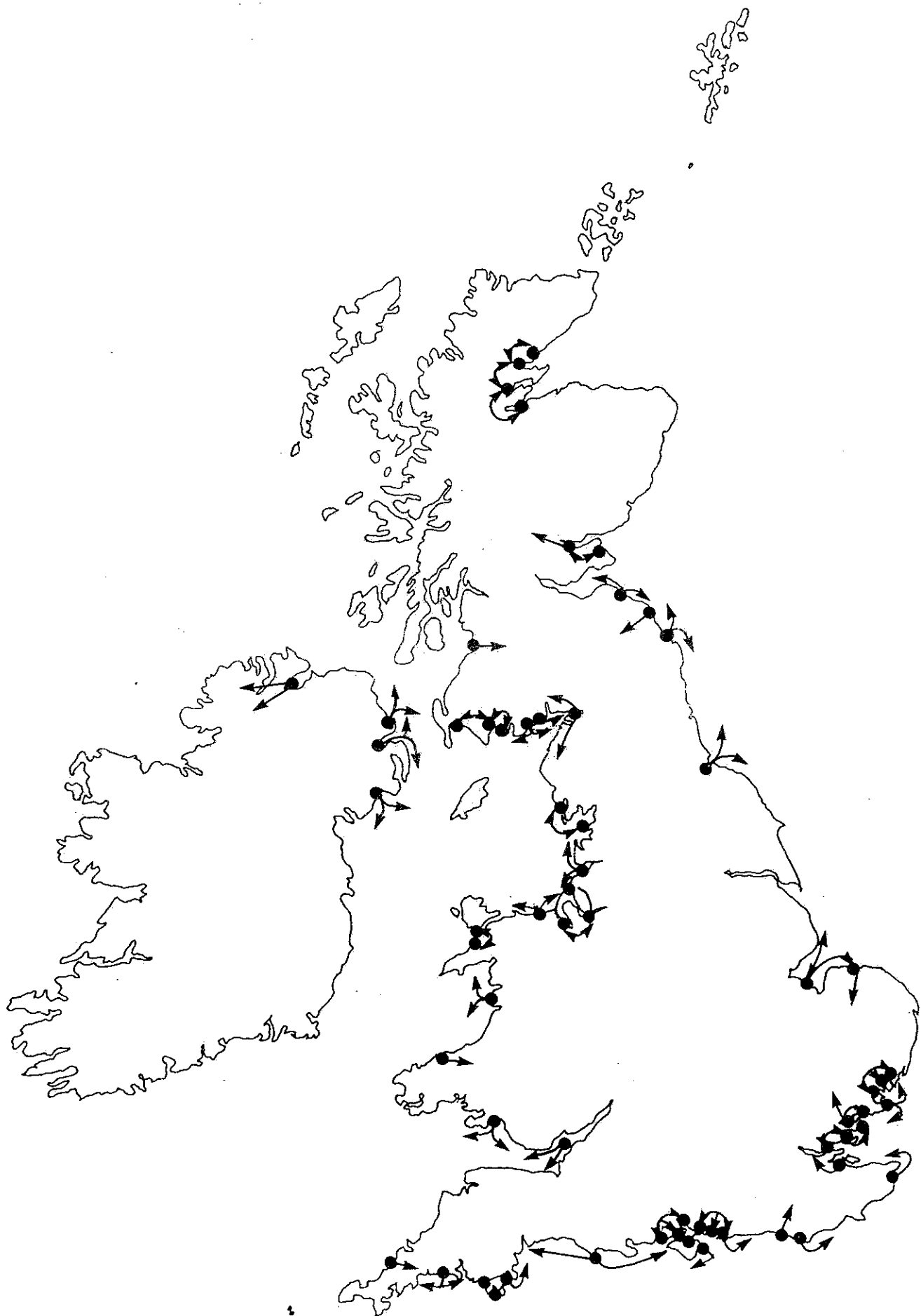


Figure 3 Summary of regular waterfowl movements thought to occur between adjacent BoEE sites.

(Dart, Crouch/Roach and Luce Bay), gaps in coverage resulted in incomplete assessments of the bird populations present as the gaps contained important roost sites. At the remaining 15 sites (13.0%), including many of the largest ones, the counts were considered to be only very approximate. The following reasons were those most frequently quoted as reducing the quality of the counts made at these sites:

- (a) shortage of counters resulting in gaps in coverage and lack of synchronization;
- (b) inaccessibility of known roost sites, or roost sites too distant to be counted accurately;
- (c) high levels of human disturbance causing mixing/movements of flocks, sometimes forcing birds to fly throughout the high tide period;
- (d) poor weather conditions making counts of wildfowl on the sea particularly difficult;
- (e) birds roosting in saltmarsh vegetation;
- (f) movements of birds inland.

The sites falling into this category were Poole Harbour, Southampton Water, Portsmouth Harbour, Thames, Dengie, North Norfolk Marshes, Wash, Humber, Forth, Tay, Montrose Basin, Solway, Morecambe Bay, Lavan Sands and Burry Inlet (north shore).

RECOMMENDATIONS FOR THE FUTURE

Site definitions

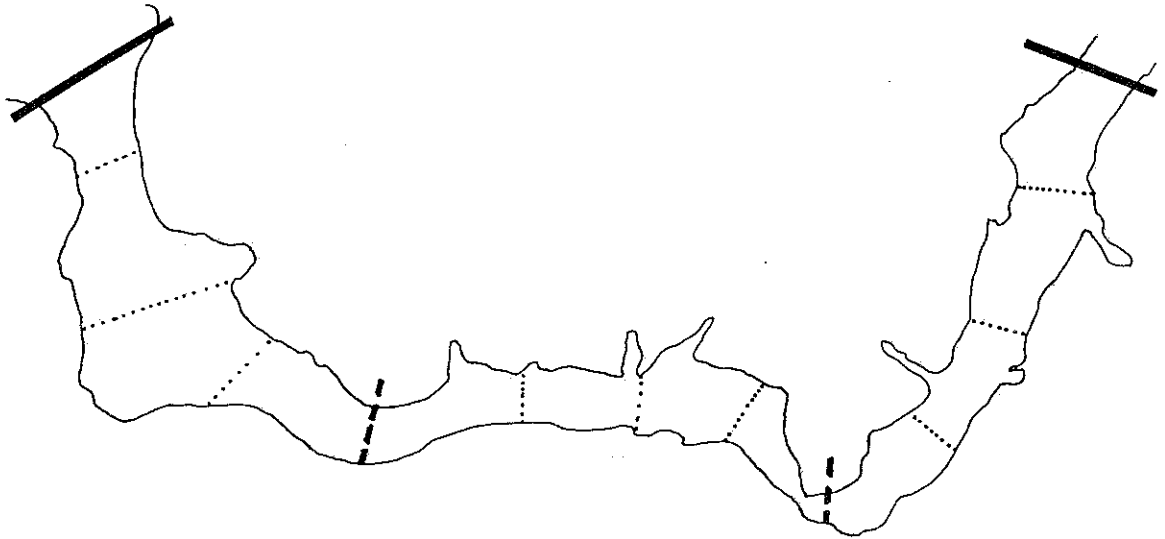
Now that BoEE site maps are available, it will be necessary to review the level of coverage being achieved at each individual site and the way in which the site is divided for the purposes of recording. Few changes to overall site boundaries will be necessary, although some adjustment of internal sub-site and section boundaries may prove worthwhile. However, in order to benefit fully from the way that BoEE data have been collected in previous years, such changes should be restricted to those considered to be essential. An important future aim should be to request an appropriate breakdown of the counts from all sites, apart from the very smallest ones, with precisely defined sub-site and section boundaries being established in consultation with the site organizers. In doing this, the largest sites should be divided into sub-sites, each embracing discrete sections, whilst the smaller sites need only be divided into sections. This would facilitate computerization of all BoEE data at either the level of sub-sites or at the section level, according to the resources available. Examples of "ideal" small and large sites are portrayed in Figure 4. In placing sub-site/section boundaries, consideration should, where possible, be given to changes in habitat types within the estuary and the need to provide separate data for protected areas (e.g. Nature Reserves, SSSIs etc.). Individual sections should preferably be of a size that is easily covered by one counter within a reasonable time period (ca. 3 hours).

Once the overall, sub-site and section boundaries have been finalized for each site, and the necessary adjustments made, every attempt must be made to stick to them. To ensure this, site maps should be sent to the site organizers at the beginning of each 'counting-year'. Each section of each particular site should be uniquely coded to facilitate computerization of count data at the level of sections. These individually-coded sections should form the basis of complete standardization of counts received by both the BTO and WWT.

Improvements to data recording

Much of this has already been achieved with the introduction of a new recording form in November 1989 and a complementary new card for field use in August 1990. The new form (Appendix 3) enables

(a)



— SITE BOUNDARY
- - - SUB-SITE BOUNDARY
..... SECTION BOUNDARY

(b)

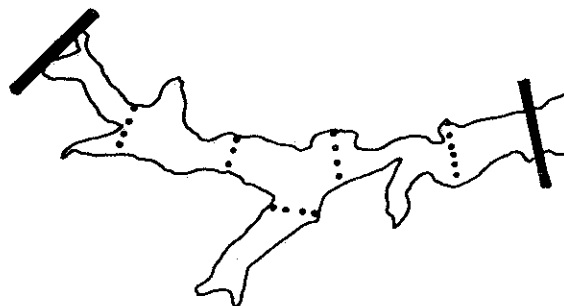


Figure 4 Examples of "ideal" large (a) and small (b) BoEE sites.

count data from coastal sites to be recorded in a standardized way and provided simply and easily to both the BTO and WWT; the top sheet of the form is partially carbonized enabling the count data for wildfowl to be reproduced on the second sheet. The form can be used in a number of ways: (a) for the recording of six, monthly counts at a time for a small site that is not divided into sections; (b) for recording a single monthly count for a medium-sized site that is divided into six or fewer sections; (c) for recording a single monthly count from a sub-site of a larger estuary, with the sub-site comprising up to six sections; in this way, the largest sites may contain several sub-sites each divided into six or fewer sections (see Figure 4). The new recording form also enables the precise timing and quality of the count made to be recorded, for each month and each section of the site, in a standardized and quantified manner. Site names, sub-site names and section codes used in supplying count data on the new form should be standardized and be consistent with the appropriate site map.

Synchronization

Given the extensive commitments of members of the counting network, it would be impossible to ensure that all BoEE counts are made on the same day. Furthermore, differences in local tidal conditions and patterns of disturbance mean that a single date cannot be set for the whole country. We can only recommend that those sites that are adjacent should be counted on the same day and encourage regular, regional meetings at which count dates can be set and coverage problems discussed.

Synchronization of the count within each site is important and will only be achieved by greater liaison amongst the counting team. To this end, site organizers must be encouraged to set times as well as dates for each count, coinciding with the most preferred tidal conditions for each site, and must convey the importance of synchronized coverage. Again, regular site-based counters' meetings would facilitate a higher degree of coordination and improved dialogue.

Movements between sites

This review has done little to quantify the degree of bird movement between adjacent sites. Such information could be gathered by means of a special project, with volunteers placed at suitable vantage points recording the movement that takes place

during the rising and falling tide periods. The project could be carried out regionally rather than nationally, and could focus particularly on those sites where there is thought to be much interchange taking place. Mitchell *et al.* (1988) used similar methodology to quantify wader movements between the Dee and Alt estuaries in NW England.

Computerization

At a number of sites, considerable expansion of coverage or numerous changes to boundaries have taken place, and therefore some checking of the computerized data would seem to be important for these. Those most in need of checking include the Camel, Hayle, Tamar complex, Kingsbridge, The Fleet/Wey, Southampton Water, Thames, Dengie, Colne, North Norfolk Marshes, Morecambe Bay, Mersey, Dee (England/Wales), Lavan Sands, Burry, Carlingford Lough and Belfast Lough.

With the new recording form in place, computerization of count data at the level of individual sections would seem essential, despite being time consuming. This would greatly facilitate the provision of count data for parts of an estuary, and would increase the research potential of the data-set.

A major flaw in the current system is that the quality code assigned to any particular count is not species-specific. Thus, a gap in coverage results in the whole count being coded as incomplete (and therefore less accurate). However, the gap in coverage may contain only roosts of one species, for example Turnstone, and thus for all other species the count is in fact a complete one. There are two possible ways of dealing with this problem. Firstly, one could amend the recording form to enable species-specific quality codes to be recorded. However, this would provide considerable additional work in completing the form. As an alternative, it should be possible to use existing count data to work out the likely significance of a gap in coverage for each species, based on past observations, enabling the flagging of incomplete counts accordingly. In a similar way, it should be possible to quantify systematically the coverage achieved during a particular count. Progress in this regard should involve close liaison between the BTO, WWT, NCC and RSPB to ensure production of a standardized, mutually acceptable system.

Maintaining contact with participants

It would seem worthwhile to issue a new set of instructions for participants in the BoEE, both counters and site organizers. Such instructions should describe the new recording form and the way it should be used, and should introduce the idea of having site maps showing the overall boundaries and the sectors into which they are divided. It should be emphasized that these divisions are not flexible and, unless changes are agreed in advance with the National Organizer, should be adhered to rigorously. Also, there is a need for further guidance on the recording of waterfowl on fields. I would recommend that all waders and wildfowl seen within the recording area should be included in the counts.

Regular regional meetings and site-based meetings must be high on the agenda for the coming years. Such meetings enable many of the requirements outlined above to be discussed and can only lead to a more systematic approach to counting. Large gaps at a number of sites exist because of the lack of counters. Every effort must be made to encourage more people to help with the BoEE and National Wildfowl Counts, particularly at the larger sites. The problem of ensuring regular recruitment to the existing counting teams must be addressed as a matter of urgency.

ACKNOWLEDGEMENTS

I am grateful to the many site organizers who have contributed information enabling this review to be produced, and to their counting teams. Dorothy Smallwood (BTO) and Nicola Bliss (BTO) provided secretarial support and Liz Murray (BTO) produced the figures. Robert Prys-Jones provided encouragement throughout this project. I am pleased to acknowledge the support of all these people.

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APPENDIX 1

The questionnaire

BoEE Site Information

SITE NAME:

SITE ORGANISER:

NUMBER OF COUNTERS:

DATE:

A. Please mark the following on the enclosed map of your site:

1. The exact extent, including inland boundaries, of the total counting area. Please use a black marker-pen to do this.
2. The sections into which the total counting area is divided for the purpose of counting. Please mark these in red.
3. The positions of known high-tide roosts. Please use a black solid-circle for these.

B. Please answer the following questions in the space provided:

1. Have the boundaries of your site, the sections into which it is split or the way in which the site is counted changed noticeably over the recent past?
.....
.....
If so, when and how?
.....
.....
.....
2. Are all parts of your site counted at about the same time? ...
.....
.....
.....
3. If so, when are the counts conducted in relation to the state of the tide?
.....
.....
4. If not covered synchronously, by how much are the counts of the various sections staggered?
.....
.....
.....
5. If you organise counts for part of a large site which has more than one organiser, do you time your counts to coincide with those of adjacent areas?
.....
.....
6. Do you usually count on the dates specified by the BTO?
If not, why are these dates unsuitable?
.....
.....

Cont. over

7. Do you (a) include all waders on fields adjacent to the estuary in your counts? (b) only those known to use the estuary at some stage? (c) none at all?
.....
.....
.....
.....
8. Do any species of estuary birds move on a frequent basis between your site and other?
.....
.....
.....
.....
9. Do you have an adequate number of counters to cover your site properly?
.....
.....
.....
10. Do you feel the counts you send us are representative of the estuarine bird populations present?
.....
.....
If not, why not?
.....
.....
.....

Please feel free to add any further comments below:

This image shows a full page of dot grid paper. The dots are arranged in a precise, repeating pattern across the entire surface, forming a grid that is useful for writing, drawing, or organizing information. The dots are small and dark, set against a light background.

RETURN TO JEFF KIRBY, BTO, BEECH GROVE, STATION RD, TRING,
HERTS, HP23 5NR.

APPENDIX 2

Individual site accounts

SITE NAME:	Taw/Torridge	BTO REFERENCE:	0020
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	10

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Morning counts, irrespective of state of tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: n/a

FIELD USE All waders and wildfowl seen on fields in the counting area are included. The use made of fields for roosting is greatest on the highest tides.

MOVEMENTS Not aware of any regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Camel	BTO REFERENCE:	0040
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS A smaller area was covered than at present during the pre-1980 period as access to part of the area was not possible at that time. The conversion of a disused railway into a footpath made complete coverage possible.

TIMING OF COUNTS

(a) date: Count on BoEE date or an alternative close to it.

(b) hour: Count during low and rising tide period.

SYNCHRONIZATION

(a) within site: Not synchronized. Counts span 3-6 hours.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Not aware of any regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Gannel	BTO REFERENCE:	0050
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on the 15th of each month.

(b) hour: Count at any time, irrespective of state of tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS There is some movement of birds to other sites, particularly of Curlew, which return to the estuary each evening.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Hayle	BTO REFERENCE:	0060
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	2

SITE DETAILS From 1984/85, Copperhouse Creek has been included and recorded separately from the main estuary, though is incorporated into the grand totals.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Waders and wildfowl are counted at high tide.
 Gulls are counted at low tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	There are no fields included in the counting area.
-----------	--

MOVEMENTS	Not aware of any regular interchange with adjacent sites.
-----------	---

REPRESENTATIVE?	Representative of the bird populations present.
-----------------	---

SITE NAME:	Fal complex	BTO REFERENCE:	0080
NO. OF SUB-SITES:	4	NO. OF SECTIONS:	11

SITE DETAILS No changes since at least 1987/88.

TIMING OF COUNTS

(a) date: Counts normally span a two-day period close to the BoEE date.

(b) hour: Counts are mainly made during the low and rising tide periods.

SYNCHRONIZATION

(a) within site: Not synchronized, though each sub-site is covered within a short time period.

(b) between sites: None.

FIELD USE In general, few waders and wildfowl are seen on fields due to the timing of the counts. On the Tresillian, only those species known to use the estuary itself are included. At Ruan Lanihorne, all waterfowl seen on fields within the counting area are included in the totals.

MOVEMENTS There are thought to be regular movements of birds within the Fal complex itself, but little regular movement outside it.

REPRESENTATIVE? Representative of the bird populations present in the areas of the Fal complex that are counted. SITE NAME: Fowey

Name FOWEY BTO REFERENCE: 0090
NO. OF SUB-SITES: None NO. OF SECTIONS: 8

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Count on the rising tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE Only those species seen on fields in the counting area and known to use the estuary itself are included.

MOVEMENTS Not aware of any regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Looe	BTO REFERENCE:	0100
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	2

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Count on the rising tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS At high tide, there is some movement of waders and gulls to the adjacent open-coast, especially to Looe Island.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Tamar complex	BTO REFERENCE:	0108
NO. OF SUB-SITES:	5	NO. OF SECTIONS:	25

SITE DETAILS Many changes. Prior to 1988/89, only parts of the Upper and Mid Tamar were covered, and the counts from these were amalgamated with those from the Lynher, Tavy and St. Johns/Millbrook. A major reorganization then took place, when the Lower Tamar was established as an additional sub-site, and the boundaries of the above were formalized. At the same time, each sub-site was counted in sections.

TIMING OF COUNTS

(a) date: Prior to 1988/89, counts of most areas were conducted on the BoEE date or an alternative close to it. However, the Tavy was counted during the week following the BoEE date at this time. All areas are now counted on the same day.

(b) hour: Prior to 1988/89, counts took place at various states of tide: always in the morning on the Upper Tamar; on the falling tide on the Mid Tamar and Lynher; during low tide on the Tavy; and on the rising tide at St. Johns/Millbrook. All areas are counted at present.

SYNCHRONIZATION

(a) within site: Prior to 1988/89, counts were rarely synchronized.

(b) between sites: None.

FIELD USE On the Upper Tamar, Tavy and Lynher, all waders and wildfowl seen on fields in the counting area are included. At St. Johns/Millbrook, only those species known to use the estuary at some stages are included. On the Mid and Lower Tamar, birds on fields are ignored.

MOVEMENTS There is thought to be regular movement of birds within the Tamar itself, particularly of Wigeon, Pintail and Curlew. Not known whether there are regular interchanges of birds with adjacent sites.

REPRESENTATIVE? Prior to 1988/89, the counts were not representative due to the large gaps in coverage. The counts are now considered to be representative.

SITE NAME:	Plym	BTO REFERENCE:	0150
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	5

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count during the falling and low tide periods.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Not aware of any regular interchange with adjacent sites. However, thought to be some interchange of Avocets and Black-tailed Godwits with the Tamar complex, especially in freezing conditions.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Yealm	BTO REFERENCE:	0160
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at low tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Not aware of any regular interchange with adjacent sites, except perhaps for Canada Geese.
-----------	--

REPRESENTATIVE?	Representative of the bird populations present.
-----------------	---

SITE NAME:	Erme	BTO REFERENCE:	0170
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on a weekday close to the BoEE date.

(b) hour: Count at low tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	No waders or wildfowl are seen on fields during the counting period.
-----------	--

MOVEMENTS	Not aware of any regular interchange with adjacent sites.
-----------	---

REPRESENTATIVE?	Representative of the bird populations present in the area counted. The areas not counted are very disturbed and less attractive to birds.
-----------------	--

SITE NAME:	Avon	BTO REFERENCE:	0180
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on NWC date.

(b) hour: Morning counts, irrespective of state of tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought to be regular movements by Mute Swans to Kingsbridge and the Yealm.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Kingsbridge	BTO REFERENCE:	0190
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	4

SITE DETAILS From 1973/74 to 1983/84 only section 1 was covered regularly. In 1984/85, coverage was expanded to include sections 2-4. Since this time, two sets of counts have been supplied; those for section 1 only, and the totals for the whole site.

TIMING OF COUNTS

(a) date: Count on the Sunday closest to the 15th of the month.

(b) hour: Morning counts, irrespective of state of tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
-----------	---

MOVEMENTS	Grey Plover and some Dunlin move to Slapton Sands to roost at high tide.
-----------	--

REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Dart	BTO REFERENCE:	0200
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	2

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count during the rising, high and falling tide periods.

SYNCHRONIZATION

(a) within site: Counts sometimes take several hours to complete.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought to be some regular interchange of ducks with Slapton Ley.

REPRESENTATIVE? Probably not representative of the bird populations present as such a small part of the estuary is covered.

SITE NAME:	Teign	BTO REFERENCE:	0210
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count during the falling tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included, although this is a rare occurrence.

MOVEMENTS Not aware of any regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the wader populations only. Many wildfowl are missed as the lower reaches of the estuary are not covered.

SITE NAME:	Exe	BTO REFERENCE:	0220
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	8

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought to be little regular interchange with adjacent sites.

REPRESENTATIVE? In general, the counts are representative of the bird populations present.

SITE NAME:	Otter	BTO REFERENCE:	0230
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on NWC date or an alternative date close to it.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Not aware of any regular interchange with adjacent sites, though some movement is apparent during periods of severe weather.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Axe	BTO REFERENCE:	0240
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	3

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at low tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Not aware of any regular interchange with adjacent sites.

REPRESENTATIVE? Generally representative of the bird populations present. Snipe are probably under-recorded.

SITE NAME:	The Fleet/Wey	BTO REFERENCE:	0265
NO. OF SUB-SITES:	3	NO. OF SECTIONS:	8

SITE DETAILS This is a new site established in 1988/89 and incorporating the previously recorded sub-sites of the Fleet and Portland Harbour, with the addition of Lodmoor/Radipole. The areas of the Fleet and Portland Harbour that are covered for the counts have not changed in the recent past.

TIMING OF COUNTS

- (a) date: Count on NWC date or on an alternative date close to it.
- (b) hour: Morning counts, irrespective of state of tide.
-

SYNCHRONIZATION

- (a) within site: Synchronized within sub-sites. However, counts for the whole site may span a few days.
- (b) between sites: None.
-

FIELD USE All waders and wildfowl seen on fields in the Fleet counting area are included. There are no fields within the areas counted at Portland Harbour and Lodmoor/Radipole.

MOVEMENTS There is much interchange within the Fleet/Wey system, and probably also regular movements of Brent Geese to the Exe and the Solent.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Poole Harbour	BTO REFERENCE:	0280
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	23

SITE DETAILS No changes to the overall site boundary. From November 1988, some sections were sub-divided further to improve count accuracy by reducing the size of the area each person has to cover.

TIMING OF COUNTS

(a) date: Counted on or around BoEE date up until August 1988. From then, switched to counting at low tide and therefore on a day affording suitable conditions.

(b) hour: Counted at high tide pre September 1988. Now counted at low tide.

SYNCHRONIZATION

(a) within site: The counts made before September 1988 were rarely synchronized, sometimes taking place over a period of a few days. They are now synchronized as far as possible.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought to be little regular interchange with adjacent sites.

REPRESENTATIVE? Studies summarized by Ward (1989) indicate that several wader, and possibly some wildfowl, species were previously under-recorded. The switch to low tide counts should produce more accurate assessments of the numbers of birds present.

SITE NAME:	Christchurch Harbour	BTO REFERENCE:	0290
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at various times, irrespective of the
state of tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE There are no fields in the counting area.
Fields adjacent to the area are used by
waders at night, until disturbed in the morning.

MOVEMENTS Not aware of any regular interchange with
adjacent sites.

REPRESENTATIVE? Generally representative of the bird
populations present. However, Snipe were
formally counted by walking the marshy areas. This is no longer
possible and thus far fewer Snipe are now recorded for the
counts.

SITE NAME:	NW Solent	BTO REFERENCE:	0300
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	6

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date or an alternative close to it.

(b) hour: Counts are done at all stages of the tide within a single day in order to obtain the most accurate assessment of all species present.

SYNCHRONIZATION

(a) within site: Not synchronized (see above).

(b) between sites: Synchronized within Hampshire.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Not aware of any regular interchange of waders with adjacent sites. Wildfowl, however, interchange regularly with areas to the east.

REPRESENTATIVE? Generally representative of the bird populations present though Snipe in particular are under-recorded.

SITE NAME:	Beaulieu	BTO REFERENCE:	0310
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	2

SITE DETAILS	Not sure whether there have been any recent changes.
--------------	--

TIMING OF COUNTS

(a) date:	Count on BoEE date or an alternative close to it.
-----------	---

(b) hour:	Count during the high and falling tide periods.
-----------	---

SYNCHRONIZATION

(a) within site:	Synchronized.
------------------	---------------

(b) between sites:	Synchronized within Hampshire.
--------------------	--------------------------------

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
-----------	---

MOVEMENTS	Thought to be much regular interchange, by waders in particular, with Southampton Water.
-----------	--

REPRESENTATIVE?	Generally representative of the bird populations present, though some birds maybe missed or duplicated as the counter drives to the other side of the estuary.
-----------------	--

SITE NAME:	Southampton Water	BTO REFERENCE:	0320
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	24

SITE DETAILS The area covered has altered greatly over recent years. From 1988/89, counts at Dibden Bay were restarted after a lapse of several years, and a new site on the Hamble River was included for the first time.

TIMING OF COUNTS

(a) date: Counts occur on BoEE dates at Calshot, Eling Great Marsh, Weston and Dibden. Alternative dates, sometimes as much as a week from the BoEE date, are used at Fawley, Warsash/Hamble and Titchfield Haven.

(b) hour: Counts take place during the rising and high tide periods.

SYNCHRONIZATION

(a) within site: Not synchronized.

(b) between sites: The preferred date selected corresponds with that used throughout Hampshire.

FIELD USE In most areas, all waders and wildfowl seen on fields in the counting area are included. However at Warsash/Hamble, birds on fields are ignored. At Fawley/Calshot and Titchfield Haven, there are few fields within the areas counted, and they are rarely used by waterfowl.

MOVEMENTS Thought to be considerable movement of waders and wildfowl within Southampton Water, and probably within the Solent as a whole.

REPRESENTATIVE? The counts are probably not as accurate as they could be due to the difficulties of counting this site. Some areas are inaccessible and many roosts difficult to observe. Also, there is much within-site movement which makes the precise synchronization of counts highly desirable.

SITE NAME:	Yar	BTO REFERENCE:	0340
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at low tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
-----------	---

MOVEMENTS	Not aware of any regular interchange with adjacent sites.
-----------	---

REPRESENTATIVE?	Representative of the bird populations present.
-----------------	---

SITE NAME:	Newtown	BTO REFERENCE:	0350
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	4

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Morning counts, irrespective of tide, and
counts repeated again at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
-----------	--

MOVEMENTS	Not aware of any regular interchange with adjacent sites.
-----------	--

REPRESENTATIVE?	Representative of the bird populations present.
-----------------	--

SITE NAME:	Medina	BTO REFERENCE:	0370
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS	No changes.
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TIMING OF COUNTS

(a) date:	Count on BoEE date.
-----------	---------------------

(b) hour:	Prior to February 1988, counts were done at low tide. Now count at high tide.
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SYNCHRONIZATION

(a) within site:	Synchronized.
------------------	---------------

(b) between sites:	None.
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FIELD USE	Only those species that are seen on fields and known to use the estuary at some stage are included in the counts.
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MOVEMENTS	Thought to be some regular interchange of waders with other sites in the Solent and with Newtown.
-----------	---

REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Wootton	BTO REFERENCE:	0360
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS	No changes.
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TIMING OF COUNTS

(a) date:	Count on BoEE date.
-----------	---------------------

(b) hour:	Count on the falling tide.
-----------	----------------------------

SYNCHRONIZATION

(a) within site:	Synchronized.
------------------	---------------

(b) between sites:	None.
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FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be some regular interchange with adjacent areas of open coast.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Brading Harbour	BTO REFERENCE:	0380
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	10

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative close to it.

(b) hour: Morning counts, irrespective of tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Not aware of any regular interchange with adjacent sites.
-----------	---

REPRESENTATIVE?	Representative of the wader populations present. However, some wildfowl present on a pond adjacent to the estuary are missed.
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SITE NAME:	Portsmouth Harbour	BTO REFERENCE:	0400
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	17

SITE DETAILS No changes to the overall site boundary. Traditionally, the area has been counted as one unit. From 1988/89, the area has been split into sections and more counters have been enlisted.

TIMING OF COUNTS

- (a) date: BoEE date rarely used. An alternative date, more appropriate to local conditions is selected.
- (b) hour: Count during the rising and high tide periods.

SYNCHRONIZATION

- (a) within site: Synchronized.
- (b) between sites: Synchronized within Hampshire.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought to be considerable regular interchange with adjacent sites, particularly with Langstone Harbour.

REPRESENTATIVE? Generally representative of the bird populations present. However, a number of areas (e.g. Peewit Island, MOD land) are very difficult to count and there is much human disturbance at certain times; on occasions, waders have been known to spend the entire high tide period in flight for this reason.

SITE NAME:	Langstone Harbour	BTO REFERENCE:	0410
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	3

SITE DETAILS	No changes. Counted in the same way since 1952.
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TIMING OF COUNTS

(a) date: An alternative to the BoEE date is selected as disturbance is too high on Sundays.

(b) hour: Count during the high and falling tide periods.

SYNCHRONIZATION

(a) within site: Synchronized within 3-6 hours.

(b) between sites: Synchronized within Hampshire and with Chichester Harbour.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be some regular interchange with adjacent sites, especially on the highest tides.
-----------	--

REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Chichester Harbour	BTO REFERENCE:	0420
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	12

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date whenever possible.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: Synchronized with Portsmouth and Langstone Harbours as far as possible.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Not aware of any regular interchange with Langstone or Pagham. However, movements of Brent Geese to and from Bracklesham Bay are frequent.

REPRESENTATIVE? Generally representative of the bird populations present. Some areas are very difficult to count.

SITE NAME:	Pagham Harbour	BTO REFERENCE:	0430
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	6

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be some regular interchange with adjacent sites.
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REPRESENTATIVE?	Generally representative of the bird populations of the site. In some cases, however, species like Golden Plover and Brent Geese may vacate the counting area on the day of the count and return the following day.
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SITE NAME:	Adur	BTO REFERENCE:	0436
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count during rising and high tide periods.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: Synchronized with other Sussex sites.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought to be only Lapwings that interchange frequently with adjacent sites.

REPRESENTATIVE? Generally representative of the bird populations present. However, some birds may frequent the Airfield itself, either when feeding or roosting, and are difficult to count there.

SITE NAME:	Newhaven	BTO REFERENCE:	0438
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS	No changes.
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TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: Synchronized with other Sussex sites.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be some regular interchange with adjacent coastal sites, including Cuckmere.
-----------	---

REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Rye Hbr./Pett Levels	BTO REFERENCE:	0460
NO. OF SUB-SITES:	2	NO. OF SECTIONS:	8

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: Synchronized with other Sussex sites.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Not aware of any regular interchange with adjacent sites.
-----------	---

REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Pegwell Bay	BTO REFERENCE:	0480
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	2

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE Only Curlew seen in the counting area are included, as they make considerable use of the estuary; Lapwings and Golden Plovers are excluded.

MOVEMENTS There are regular movements of waders to and from the North Kent shoreline.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Swale	BTO REFERENCE:	0500
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	6

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Not aware of any regular interchange with adjacent sites.
-----------	---

REPRESENTATIVE?	Generally representative of the bird populations present; all major roost sites are counted.
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SITE NAME:	Medway	BTO REFERENCE:	0510
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	12

SITE DETAILS No changes to the overall site boundary.
 However, the Isle of Grain Oil Refinery has
not been included since September 1986 as access is now
restricted. The acquisition of a boat has allowed some island
groups (e.g. Burntwick, Deadmans and Stoke Ooze) to be counted.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Not synchronized and may span several days.

(b) between sites: None.

FIELD USE	Only those species on fields in the counting area that are known to use the estuary are included.
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MOVEMENTS	There is thought to be regular interchange of waders with the North Kent Marshes.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Thames	BTO REFERENCE:	0515
NO. OF SUB-SITES:	4	NO. OF SECTIONS:	22

SITE DETAILS	Few changes overall. Dartford Marshes were incorporated for the first time in September 1984.
--------------	---

TIMING OF COUNTS

(a) date:	Count on BoEE date or an alternative date close to it.
-----------	--

(b) hour:	Most of the area is counted during the rising and high tide periods. The Inner Thames sub-site is occasionally counted at low tide.
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SYNCHRONIZATION

(a) within site:	Mostly synchronized within each sub-site but not synchronized overall.
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(b) between sites:	None.
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FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	There are regular movements of waders within the Thames itself, and to and from the Medway, Crouch/Roach and Dengie. Movements from the North Kent Marshes to the Medway on the rising tide are common; many more birds feed in the former area than roost there. Brent Geese commonly move from Foulness to sites within the Thames and to the Dengie.
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REPRESENTATIVE?	Broadly representative though there are movements to other sites, areas that are inaccessible and some gaps in coverage. Could be improved with more people.
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SITE NAME:	Crouch/Roach	BTO REFERENCE:	0550
NO. OF SUB-SITES:	2	NO. OF SECTIONS:	7

SITE DETAILS	No changes to the overall site boundary, although the Roach has not been included since 1984/85.
--------------	--

TIMING OF COUNTS

- | | |
|-----------|--|
| (a) date: | Count on the day before the BoEE date as some counters count elsewhere on the BoEE date. |
| (b) hour: | Count during the rising and high tide period. |
-

SYNCHRONIZATION

- | | |
|--------------------|---------------|
| (a) within site: | Synchronized. |
| (b) between sites: | None. |
-

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be little regular interchange from the inner estuary to other sites. Birds from the outer estuary, particularly Oystercatchers, do however interchange with Foulness and the Dengie.
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REPRESENTATIVE?	The most recent counts are under-estimates as the Roach has been omitted.
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SITE NAME:	Dengie	BTO REFERENCE:	0570
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	3

SITE DETAILS	From December 1988, coverage was extended to include the middle section.
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TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be regular interchange with Foulness and the Blackwater. Far more birds feed in the Dengie than roost there.
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REPRESENTATIVE?	The coverage achieved has been improved from December 1988. However, many of the roosts are very distant and are difficult to count. The counts are therefore likely to under-estimate the true numbers present.
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SITE NAME:	Blackwater	BTO REFERENCE:	0575
NO. OF SUB-SITES:	2	NO. OF SECTIONS:	11

SITE DETAILS	No changes. Two inland gravel pits, Maldon and Chigborough, are included in the counting area.		
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TIMING OF COUNTS			
(a) date:	Count on BoEE date or on an alternative date close to it.		
(b) hour:	Count during the rising and high tide periods.		

SYNCHRONIZATION			
(a) within site:	Counts may span several hours.		
(b) between sites:	Synchronized with other Essex sites.		

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.		
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MOVEMENTS	Thought to be regular interchange of waders with the Colne estuary, and of wildfowl with Abberton Reservoir.		
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REPRESENTATIVE?	Generally representative of the bird populations present; all important roost sites are counted.		
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SITE NAME:	Colne	BTO REFERENCE:	0590
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	8

SITE DETAILS	In September 1986, the important areas of Langenhoe Marsh and West Mersea were included in the count area for the first time.
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TIMING OF COUNTS

(a) date:	Count on BoEE date or on an alternative date close to it.
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(b) hour:	Count at high tide.
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SYNCHRONIZATION

(a) within site:	Synchronized.
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(b) between sites:	Synchronized within Essex.
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FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Not aware of any regular interchange with adjacent sites.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Hamford Water	BTO REFERENCE:	0600
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	3

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: Synchronized within Essex.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought to be some regular interchange with adjacent sites, especially by Black-tailed Godwits.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Stour	BTO REFERENCE:	0610
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	10

SITE DETAILS No changes within the last 3 years.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: Synchronized within Essex and with the
Orwell.

FIELD USE All waders and wildfowl seen on fields in the
counting area are included.

MOVEMENTS Thought to be some regular interchange with
Hamford Water and the Orwell.

REPRESENTATIVE? Representative of the bird populations
present.

SITE NAME:	Orwell	BTO REFERENCE:	0620
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	13

SITE DETAILS No changes to the overall site boundary
 although section 13 is being reduced in size
by the dock developments.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count during the rising and high tide period.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: Synchronized within Suffolk.

FIELD USE All waders and wildfowl seen on fields in the
 counting area are included.

MOVEMENTS Waders, particularly Oystercatchers and
 Black-tailed Godwits, move extensively
between the Stour and Orwell. Brent Geese interchange with the
Stour, Orwell and the Deben. The degree of movement between the
Orwell and Stour is currently being quantified.

REPRESENTATIVE? Representative of the bird populations
 present.

SITE NAME:	Deben	BTO REFERENCE:	0630
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	9

SITE DETAILS	Relatively little change to the overall site boundary. From 1986/87, the number of sections covered increased from seven to nine.
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TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at waders at high tide and wildfowl during the rising tide period.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: Synchronized within Suffolk.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Not aware of any widescale regular interchange with adjacent sites, although Cormorants move regularly to roost at Melton.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Alde complex	BTO REFERENCE:	0635
NO. OF SUB-SITES:	2	NO. OF SECTIONS:	13

SITE DETAILS	No changes. A new site formed in 1988/89 by amalgamating Ore/Butley/Havergate and the Alde.
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TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at either low or high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: Synchronized within Suffolk.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Not aware of any regular interchange with adjacent sites.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Blyth (Suffolk)	BTO REFERENCE:	0680
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	4

SITE DETAILS	No changes.
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TIMING OF COUNTS

(a) date:	Count on BoEE date.
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(b) hour:	Count during the rising tide period.
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SYNCHRONIZATION

(a) within site:	Synchronized.
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(b) between sites:	Synchronized within Suffolk.
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FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Not aware of any regular interchange with adjacent sites.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Breydon Water	BTO REFERENCE:	0690
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	5

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count throughout the day and then assess the numbers present.

SYNCHRONIZATION

(a) within site: See under "Timing of counts (b)".

(b) between sites: None.

FIELD USE Only those species that are seen on fields in the counting area and are known to use the estuary are included in the counts.

MOVEMENTS Not thought to be regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	N Norfolk Marshes	BTO REFERENCE:	0702
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	8

SITE DETAILS Coordinated counts of the whole area began in 1984/85. Prior to this, only part of the area was counted and never very systematically.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Count during the high and falling tide periods.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought to be regular interchange of waders with the Wash, and of wildfowl with inland waters and fields.

REPRESENTATIVE? Generally representative of the bird populations present. However, counts of wildfowl on adjacent freshwater bodies must take place on the same day as those on the coast. Also, counts of geese on the coast are unreliable due to frequent interchanges with inland areas.

SITE NAME:	Wash	BTO REFERENCE:	0710
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	28

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE or on an alternative close to it.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included. Fields represent a very important roosting habitat on the Wash, and sometimes support the majority of the birds counted. Field roost sites are not fixed; their positions depend on cropping regime.

MOVEMENTS Thought to be some regular interchange with adjacent sites.

REPRESENTATIVE? BoEE counts probably give good estimates of the birds present. The site is large and complex, some roosts are difficult to observe and disturbance is frequently great. Also, some roosts may form on fields far inland, outwith the areas normally visited.

SITE NAME:	Humber	BTO REFERENCE:	0715
NO. OF SUB-SITES:	4	NO. OF SECTIONS:	28

SITE DETAILS No changes to overall site boundary, though counts are frequently incomplete. Some sections have been covered intermittently. On the Inner South, the sections upstream from Read's Island were counted as one in 1987/88.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Count during the rising and high tide period.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included in all areas apart from the Outer South. Here, fields are not included.

MOVEMENTS Not aware of any regular interchange with adjacent sites.

REPRESENTATIVE? Broadly representative given the size and complexity of the site, and some small gaps in coverage. Some areas, notably the Outer South, are extremely difficult to count: much of the area remains uncovered by water, except on the very highest tides, and consequently roosts do not form. Also, some roosts are largely inaccessible and most are at extreme distances. Curlew and Brent Geese numbers may be under-estimates as they frequent fields that are sometimes missed.

SITE NAME:	Tees	BTO REFERENCE:	0740
NO. OF SUB-SITES:	2	NO. OF SECTIONS:	19

SITE DETAILS	No changes, but formerly non-estuarine site of Hartlepool Bay included within Tees site from 1988/89.
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TIMING OF COUNTS

(a) date:	Count on BoEE date or on an alternative date close to it.
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(b) hour:	Count at high tide.
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SYNCHRONIZATION

(a) within site:	Synchronized whenever possible. Sometimes the counts span a two day period.
------------------	---

(b) between sites:	None.
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FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be regular interchange with adjacent coastal areas.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Blyth (Northumberland)	BTO REFERENCE:	0766
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	3

SITE DETAILS	No changes.
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TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	There are no fields within the counting area.
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MOVEMENTS	Not aware of any regular interchange with adjacent sites.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Coquet	BTO REFERENCE:	0776
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	2

SITE DETAILS	No changes.
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TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Not aware of any regular interchange with adjacent sites.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Lindisfarne	BTO REFERENCE:	0790
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	6

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on the day after the BoEE date.

(b) hour: Count at any time, irrespective of tidal state.

SYNCHRONIZATION

(a) within site: Not synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought likely to be regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Tweed	BTO REFERENCE:	0800
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS	No changes.
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TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Some wildfowl, for example Goldeneye and Goosander, move regularly to and from inland riverine areas.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Tynninghame	BTO REFERENCE:	0820
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS	No changes.
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TIMING OF COUNTS

(a) date:	Count on BoEE date or on an alternative date close to it.
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(b) hour:	Count at high tide.
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SYNCHRONIZATION

(a) within site:	Synchronized.
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(b) between sites:	Synchronized with the Forth.
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FIELD USE	There are no fields within the counting area.
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MOVEMENTS	Thought likely to be regular interchange with adjacent sites.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Forth	BTO REFERENCE:	0830
NO. OF SUB-SITES:	3	NO. OF SECTIONS:	24

SITE DETAILS No changes to the overall site boundary.
 However some sections have been counted very
 infrequently. On the Outer South Forth, the three sections from
 Silverknowles to Seafield were counted as one in some years.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date
 close to it.

(b) hour: Count at various stages of the tide,
 especially on the Outer South. Most areas,
 however, are counted during the rising and high tide periods.

SYNCHRONIZATION

(a) within site: Not synchronized. On the Outer South, sections
 are counted at different times of the day,
 and sometimes on different dates. Most areas of the Outer
 South are counted on the same day as those of the Outer
 North. Counts on the Inner, however, frequently take place
 on a different date.

(b) between sites: Whenever possible, counts on the Outer South
 occur on the same day as those at Tynninghame.

FIELD USE In all areas except the Outer North, all
 waders and wildfowl seen on fields in the
 areas counted are included. On the Outer North, some counters
 include them, some do not.

MOVEMENTS Thought to be regular movements of birds
 within the Forth itself.

REPRESENTATIVE? Only very approximate. Problems include lack
 of synchronization, excessive disturbance and
 frequently poor sea conditions. Also, there is much roosting on
 islands, many of which cannot be counted, particularly on
 weekends when disturbance is highest.

SITE NAME:	Eden	BTO REFERENCE:	0850
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes since 1978 though access to roosts on the north shore, adjacent to RAF Leuchars, is restricted.

TIMING OF COUNTS

(a) date: Rarely count on BoEE date. Usually count on a week day with a very high spring tide.
The National Wildfowl Counts take place on different dates to those for the BoEE.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Some species, especially Bar-tailed Godwits, certainly interchange regularly with the Tay; however, with what regularity is unknown.

REPRESENTATIVE? Broadly representative of the bird populations present.

SITE NAME:	Tay	BTO REFERENCE:	0856
NO. OF SUB-SITES:	3	NO. OF SECTIONS:	15

SITE DETAILS No changes to the overall site boundary.
 However, the frequency with which some
sections have been covered, and the positions of section
boundaries has varied a lot. At present, the Inner estuary is,
not counted as thoroughly as it used to be.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date
 close to it.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the
 counting area are included.

MOVEMENTS Thought to be regular interchange with both
 coastal areas to the south and with inland
 areas.

REPRESENTATIVE? Generally representative of the bird
 populations present. However, some roosts are
very hard to count and there is some inland movement at high
tide. On the Inner estuary in particular, species moving inland
at high tide (e.g. Lapwing, Golden Plover and Curlew) are
under-estimated.

SITE NAME:	Montrose Basin	BTO REFERENCE:	0870
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	4

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be little regular interchange with adjacent sites.
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REPRESENTATIVE?	BoEE counts provide approximate estimates. The estuary is difficult to count and the abilities of counters very variable. Species most likely to be under-estimated include Snipe, Redshank and female ducks.
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SITE NAME:	Dee (Scotland)	BTO REFERENCE:	0880
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Not aware of any regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Don	BTO REFERENCE:	0890
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	2

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Count at any time, irrespective of tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Not aware of any regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Ythan	BTO REFERENCE:	0900
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	2

SITE DETAILS	No changes.
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TIMING OF COUNTS

(a) date:	Count on BoEE date or on an alternative date close to it.
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(b) hour:	Count during the low tide period.
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SYNCHRONIZATION

(a) within site:	Synchronized.
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(b) between sites:	None.
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FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be little regular interchange with adjacent sites.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Spey	BTO REFERENCE:	0930
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS	No changes. Not counted since 1985/86 as very few birds are present.
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TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at low tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be little regular interchange with adjacent sites.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Inner Moray Firth	BTO REFERENCE:	0944
NO. OF SUB-SITES:	2	NO. OF SECTIONS:	18

SITE DETAILS	A new site formed in 1988/89 by amalgamating the old Inner Moray Firth with Findhorn/Culbin/Nairn. Otherwise no changes since January 1985. Prior to then, many sections were covered irregularly (<u>e.g.</u> Nairn).
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TIMING OF COUNTS

(a) date:	Count on BoEE date or on an alternative date close to it.
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(b) hour:	Count at high tide.
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SYNCHRONIZATION

(a) within site:	Mostly synchronized.
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(b) between sites:	Attempt to synchronize with other sites in the Moray Basin. Flock movements are noted to check for double recording.
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FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be regular interchange by various wader species with other sites in the Moray Basin.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Cromarty Firth	BTO REFERENCE:	0980
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	12

SITE DETAILS	No changes since January 1985. Prior to then, some sections were rarely counted.
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TIMING OF COUNTS

(a) date:	Count on BoEE date or on an alternative date close to it.
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(b) hour:	Count at high tide.
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SYNCHRONIZATION

(a) within site:	Synchronized.
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(b) between sites:	Mostly synchronized within the Moray Basin, with flock movements noted to allow checking for double recording.
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FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be regular interchange by a variety of wader species with other sites in the Moray Basin.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Dornoch Firth	BTO REFERENCE:	0990
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	8

SITE DETAILS	No changes since January 1985. Prior to then, many sections were counted irregularly.		
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TIMING OF COUNTS			
(a) date:	Count on BoEE date or on an alternative date close to it.		
(b) hour:	Count at high tide.		

SYNCHRONIZATION			
(a) within site:	Synchronized.		
(b) between sites:	Mostly synchronized within the Moray Basin, with flock movements noted to allow checking for double recording.		

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.		
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MOVEMENTS	Thought to be regular interchange of various wader species with other areas in the Moray Basin.		
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REPRESENTATIVE?	Generally representative, though sometimes the birds roost on the NE side of Innis Mhor where they are difficult to count.		
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SITE NAME:	Loch Fleet	BTO REFERENCE:	1000
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	5

SITE DETAILS	No changes. In the years prior to 1985, this site was counted by two observers rather than just one as at present.
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TIMING OF COUNTS

(a) date:	Count on BoEE date or on an alternative date close to it.
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(b) hour:	Count at high tide.
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SYNCHRONIZATION

(a) within site:	Synchronized.
------------------	---------------

(b) between sites:	Mostly synchronized within the Moray Basin, and flock movements are recorded to allow checking for double recording.
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FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be regular interchange by a variety of wader species with other sites in the Moray Basin.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Inner Clyde	BTO REFERENCE:	1200
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	10

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be little regular interchange with adjacent sites.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Irvine	BTO REFERENCE:	1214
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Count during the falling tide period.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought to be regular interchange by Lapwing and Golden Plover with adjacent inland sites.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Loch Ryan	BTO REFERENCE:	1230
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Each count spans various tidal states.

SYNCHRONIZATION

(a) within site: Count takes approximately 6 hours.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought to be little regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Luce Bay	BTO REFERENCE:	1240
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	3

SITE DETAILS	No changes, but note that only a small part of the Bay is included.
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TIMING OF COUNTS

(a) date:	Count on the Monday or Tuesday following the BoEE count date.
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(b) hour:	Count at high tide.
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SYNCHRONIZATION

(a) within site:	Synchronized.
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(b) between sites:	None.
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FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be little regular interchange with adjacent sites.
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REPRESENTATIVE?	Not representative of the whole Bay since only a small area is covered.
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SITE NAME:	Wigtown Bay	BTO REFERENCE:	1250
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	4

SITE DETAILS	No changes. Since 1986/87, the count has been conducted by a team of 3-5 people; previously counted by just one person.
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TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be regular interchange of Geese with Luce Bay and Fleet Bay.
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REPRESENTATIVE?	Generally representative of the bird populations present, though small numbers may be out of site at certain roosts, and a number of small roosts are missed altogether.
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SITE NAME:	Fleet Bay	BTO REFERENCE:	1260
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count during the rising tide period.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE Only those species that are seen on fields within the counting area and that are known to use the estuary at some stage are included in the counts.

MOVEMENTS Not aware of any regular interchange with adjacent sites.

REPRESENTATIVE? Not entirely representative of the bird populations present, since that area between Craigmore and Carrick is not covered and is known to hold roosting birds, as is Ardwall Island. Mossyard has yet to be surveyed.

SITE NAME:	Kirkcudbright Bay	BTO REFERENCE:	1270
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	6

SITE DETAILS	No changes.
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TIMING OF COUNTS

(a) date:	Count on an alternative date to that for the BoEE.
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(b) hour:	Count at high tide.
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SYNCHRONIZATION

(a) within site:	Synchronized.
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(b) between sites:	None.
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FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be regular interchange with Fleet Bay.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Auchencairn Bay	BTO REFERENCE:	1280
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	2

SITE DETAILS No changes. Includes Orchardton Bay.
 Currently counted by two, discrete, counting
teams, each covering different areas.

TIMING OF COUNTS

(a) date: One team counts on the BoEE date, the other
 on the Monday following the BoEE date.

(b) hour: One team counts at high tide, the other
 during the rising tide period.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the
 counting area are included by one team. The
other team includes only those known to use the estuary at some
stage.

MOVEMENTS Oystercatchers move into the Bay to roost
 after feeding elsewhere.

REPRESENTATIVE? Generally representative though one team
 covers only a small part of the Bays. Also,
there is a small roost on the northern tip of Hestan Island
which cannot be counted easily.

SITE NAME:	Rough Firth	BTO REFERENCE:	1290
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	3

SITE DETAILS No changes. Not covered since 1984/85.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Count during the high and falling tide periods.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS There is regular movement eastwards from the estuary as the tide falls.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Solway	BTO REFERENCE:	1345
NO. OF SUB-SITES:	3	NO. OF SECTIONS:	25

SITE DETAILS Outer S Solway, treated as a non-estuarine site during the early 1980s, was re-included in Solway as from 1988/89. Otherwise no changes to the overall site boundary. Counting has been resumed in 1988/89 at Browhouses on the north shore and has been initiated for two new sections on the inner south shore, the first in 1985/86 and the second section in 1988/89.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Count during the high and falling tide periods.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE On the Outer South Solway, no fields are included within the area counted. Elsewhere, all waders and wildfowl seen on fields are included.

MOVEMENTS There is thought to be much movement within the Solway itself, and probably regular interchange with adjacent sites.

REPRESENTATIVE? BoEE counts probably provide minimum estimates on the Solway as there are gaps in coverage and difficulties in counting the many roost sites and the sea. On some occasions, wader flocks have been observed flying throughout the high tide period and thus may be missed.

SITE NAME:	Irt/Mite/Esk	BTO REFERENCE:	1360
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	5

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count during the rising and high tide period.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought to be little regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Duddon	BTO REFERENCE:	1370
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	7

SITE DETAILS No changes to the overall site boundary.
Prior to November 1988, the Askham to
Foxfield sections were counted as one.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count during the rising and high tide
periods.

SYNCHRONIZATION

(a) within site: Not synchronized. Counts span Friday to
Monday of the BoEE count weekend.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the
counting area are included.

MOVEMENTS Thought to be regular interchange of birds
with Morecambe Bay.

REPRESENTATIVE? Representative of the bird populations
present.

SITE NAME:	Morecambe Bay	BTO REFERENCE:	1390
NO. OF SUB-SITES:	4	NO. OF SECTIONS:	10

SITE DETAILS No changes to the overall site boundary.
From January 1988, coverage was extended to incorporate the area from Glasson to Skerton Weir, Lancaster. From ca 1986/87, one counter remains at Heysham Harbour to count all wildfowl on the sea during the period of the count. Note the division of roosts on Walney Island between the Duddon and Morecambe Bay.

TIMING OF COUNTS

(a) date: Count on BoEE date in all areas except on the Keer. Here, counts take place twice a month during week days with very high tides.

(b) hour: Count during the rising and high tide periods.

SYNCHRONIZATION

(a) within site: Not synchronized on the North shore and on the Lune. In these areas, counts may sometimes span a two day period.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included in the North and Lune counting sectors. On the Keer and on the South shore of the Bay, only those birds known to use the estuary are included.

MOVEMENTS There are regular movements throughout the Bay itself. Opinions vary regarding the degree of regular movement to and from adjacent sites. There are thought to be strong links between bird populations of the Duddon, Morecambe Bay and the Ribble.

REPRESENTATIVE? Generally representative of the bird populations present. However, good counts of birds on the sea are dependent on calm conditions, and there are some small gaps in coverage of the main wader roost sites. Also, counts of the whole Bay are rarely synchronized.

SITE NAME:	Ribble	BTO REFERENCE:	1400
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	15

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: Synchronized with the Alt.

FIELD USE Only those fields that hold regular roosts are included. Other fields that frequently hold large numbers of Lapwings and Golden Plovers are not included.

MOVEMENTS Thought likely to be regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Alt	BTO REFERENCE:	1410
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	4

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: Synchronized with the Ribble.

FIELD USE All waders and wildfowl seen on fields in the counting area are included, though in all areas except Seaforth this rarely occurs.

MOVEMENTS There are regular interchanges of birds with the Ribble, Mersey and Dee. ref papers

REPRESENTATIVE? Representative of the bird populations present on weekend spring-tides.

SITE NAME:	Mersey	BTO REFERENCE:	1420
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	4

SITE DETAILS Only the inner south shore has been covered systematically. From September 1987, coverage was expanded to include part of the north shore.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields on the north shore, but not on the south shore, are included in the counts.
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MOVEMENTS	Thought to be regular interchange with the Dee estuary.
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REPRESENTATIVE?	BoEE counts under-estimate the number of birds on the Mersey due to gaps in coverage. However, all the principal roosting areas are covered.
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SITE NAME:	Dee (Eng/Wales)	BTO REFERENCE:	1430
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	21

SITE DETAILS	Coverage was extended in 1985/86 to include Leasowe Bay and a field roost at Bidston.
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TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Mostly synchronized.

(b) between sites: None.

FIELD USE	Only those waders and wildfowl seen on fields in counting area and known to use the estuary at some stage are included.
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MOVEMENTS	There is regular interchange with adjacent sites, particularly of Knot, Bar-tailed Godwit and Turnstone.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Clwyd	BTO REFERENCE:	1440
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	2

SITE DETAILS	No changes since 1986/87. Previous situation uncertain.
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TIMING OF COUNTS

(a) date:	Count on BoEE date.
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(b) hour:	Count during the rising and high tide periods.
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SYNCHRONIZATION

(a) within site:	Synchronized.
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(b) between sites:	None.
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FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be regular interchange with adjacent sites.
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REPRESENTATIVE?	Generally representative of the bird populations present. All main roost sites are covered.
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SITE NAME:	Conwy	BTO REFERENCE:	1450
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	11

SITE DETAILS Due to construction works for the Conwy tunnel, some of the mudflats closest to the existing road bridge have been claimed. As a result, the inland boundary in these areas has moved closer towards the main channel of the estuary.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Not aware of any regular interchange with adjacent sites.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Lavan Sands	BTO REFERENCE:	1470
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	2

SITE DETAILS Both the overall boundary, particularly the eastern "sea" boundary, and the sections used at this site change according to the number of counters available and weather conditions.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Mostly synchronized.

(b) between sites: Generally synchronized with the Conwy and Red Wharf Bay.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought to be little regular interchange with adjacent sites.

REPRESENTATIVE? The counts here are very approximate due to lack of counters, gaps in coverage, high levels of disturbance, the inaccessibility of some roosts and the need for calm sea to count adequately the wildfowl present. Also, waders may spend the entire high tide period in flight and may thus be missed or double-counted.

SITE NAME:	Red Wharf Bay	BTO REFERENCE:	1480
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: Generally synchronized with Lavan Sands.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought to be little regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Inland Sea	BTO REFERENCE:	1500
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be little regular interchange with adjacent sites.
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REPRESENTATIVE?	Representative of the bird populations present.
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SITE NAME:	Cefni	BTO REFERENCE:	1510
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Morning counts, irrespective of tidal state.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE Only those birds that are seen on fields in the counting area and known to use the estuary at some stage are included.

MOVEMENTS Not aware of any regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Braint	BTO REFERENCE:	1515
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Afternoon counts, irrespective of tidal state.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE There are no fields within the counting area.

MOVEMENTS Thought to be some regular interchange with Foryd Bay.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Foryd Bay	BTO REFERENCE:	1520
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS	No changes since at least 1985/86. Prior to this, the estuarine part of the River Seiont may not have been included in the counting area.
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TIMING OF COUNTS

(a) date:	Count on BoEE date or on an alternative date close to it.
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(b) hour:	Count at high tide.
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SYNCHRONIZATION

(a) within site:	Synchronized.
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(b) between sites:	None.
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FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
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MOVEMENTS	Thought to be regular interchange of Curlew and Wigeon with the Braint.
-----------	---

REPRESENTATIVE?	Generally representative although Teal, Snipe and Redshank may be under-counted as they are often concealed within vegetation.
-----------------	--

SITE NAME:	Traeth Bach	BTO REFERENCE:	1550
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	4

SITE DETAILS	No changes.
--------------	-------------

TIMING OF COUNTS

(a) date: Count on the Monday following the BoEE date.

(b) hour: Morning counts.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	There are no fields included within the counting area.
-----------	--

MOVEMENTS	Thought to be little regular interchange with adjacent sites.
-----------	---

REPRESENTATIVE?	Representative of the bird populations present.
-----------------	---

SITE NAME:	Artro	BTO REFERENCE:	1558
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	2

SITE DETAILS	No changes.
--------------	-------------

TIMING OF COUNTS

(a) date:	Count on BoEE date or on an alternative date close to it.
-----------	---

(b) hour:	Count during the falling tide period.
-----------	---------------------------------------

SYNCHRONIZATION

(a) within site:	Synchronized.
------------------	---------------

(b) between sites:	None.
--------------------	-------

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
-----------	---

MOVEMENTS	Thought to be little regular interchange with adjacent sites.
-----------	---

REPRESENTATIVE?	Representative of the bird populations present.
-----------------	---

SITE NAME:	Mawddach	BTO REFERENCE:	1560
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	17

SITE DETAILS	No changes since at least 1985/86.
--------------	------------------------------------

TIMING OF COUNTS

(a) date:	Count on a weekday that is close to the BoEE date.
-----------	--

(b) hour:	Count at high tide.
-----------	---------------------

SYNCHRONIZATION

(a) within site:	Synchronized.
------------------	---------------

(b) between sites:	None.
--------------------	-------

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
-----------	---

MOVEMENTS	Thought likely to be regular interchange with adjacent sites.
-----------	---

REPRESENTATIVE?	Representative of the bird populations present.
-----------------	---

SITE NAME:	Dysynni	BTO REFERENCE:	1625
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	5

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Count at low tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought to be regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Dyfi	BTO REFERENCE:	1580
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	4

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Prior to November 1984 the counts took place at low tide. From then, both high and low tide counts were made until August 1986. Present counting takes place at high tide only.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought to be little regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Teifi	BTO REFERENCE:	1590
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	6

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Not synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
-----------	---

MOVEMENTS	There are regular movements of Curlew to and from inland areas.
-----------	---

REPRESENTATIVE?	Representative of the bird populations present.
-----------------	---

SITE NAME:	Nyfer	BTO REFERENCE:	1600
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on the Monday following the BoEE date.

(b) hour: Count at low tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
-----------	---

MOVEMENTS	Not aware of any regular interchange with adjacent sites.
-----------	---

REPRESENTATIVE?	Representative of the bird populations present.
-----------------	---

SITE NAME:	Cleddau	BTO REFERENCE:	1620
NO. OF SUB-SITES:	7	NO. OF SECTIONS:	14

SITE DETAILS No changes to the overall site boundary. The first systematic counts were undertaken in 1982/83 when 20 counting sections were defined. However, for reasons outlined in Prys-Jones (1989), these have been revised and the counts now refer to just 14 sections.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Most areas are counted at high tide. However, Carew/Cresswell, Westfield Pill and Llandstadwell are usually counted at low tide.

SYNCHRONIZATION

(a) within site: Not synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought to be little regular interchange with adjacent sites. There are considerable within site movements of Red-breasted Merganser, Shelduck and Wigeon.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Burry	BTO REFERENCE:	1647
NO. OF SUB-SITES:	3	NO. OF SECTIONS:	16

SITE DETAILS No changes to the overall site boundary. The South Burry has been counted systematically since 1969/70; the Loughor since 1986/87; and the North Burry only since 1987/88.

TIMING OF COUNTS

- (a) date: Count on BoEE date or on an alternative date close to it. The Loughor and South Burry are counted several times each month.
- (b) hour: Count during the rising, high and falling tide periods.

SYNCHRONIZATION

- (a) within site: Not synchronized between sub-sites.
- (b) between sites: None.

FIELD USE On the South Burry and on the Loughor, all waders and wildfowl seen on fields within the counting area are included. On the North Burry, only those known to use the estuary at some stage are counted.

MOVEMENTS Thought likely to be regular interchange with adjacent sites.

REPRESENTATIVE? In general, the counts are probably representative of the bird populations present. However, the fact that the counts are not synchronized and that the North Burry is subjected to a high level of disturbance means that the counts must be viewed as estimates.

SITE NAME:	Swansea Bay	BTO REFERENCE:	1655
NO. OF SUB-SITES:	2	NO. OF SECTIONS:	3

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on the BoEE date. Blackpill is counted daily.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Not synchronized between sub-sites.

(b) between sites: None.

FIELD USE Fields are only included in the counting area at Blackpill. Here, all waders and wildfowl seen on the fields are included.

MOVEMENTS Thought to be some regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the bird populations using the two areas. However, a large part of Swansea Bay is not covered for the counts.

SITE NAME:	Severn	BTO REFERENCE:	0001
NO. OF SUB-SITES:	5	NO. OF SECTIONS:	30

SITE DETAILS	No major changes to the overall site boundary.
--------------	--

TIMING OF COUNTS

- | | |
|-----------|--|
| (a) date: | Count on BoEE date or on an alternative date close to it. Parts of Severn (Somerset) are counted several times each month. |
| (b) hour: | Count during the rising and high tide periods. |

SYNCHRONIZATION

- | | |
|--------------------|---|
| (a) within site: | Rarely synchronized in the past. The degree of synchronization was improved in 1987/88 and has been maintained. |
| (b) between sites: | None. |

FIELD USE	In all areas except the Taff/Ely, all waders and wildfowl seen on fields within the counting area are included. There are no fields within the area counted on the Taff/Ely.
-----------	--

MOVEMENTS	Thought to be regular interchange with adjacent sites.
-----------	--

REPRESENTATIVE?	Generally representative of the bird populations present.
-----------------	---

SITE NAME:	Carlingford Lough	BTO REFERENCE:	1700
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	4

SITE DETAILS Originally only the north side of the estuary was counted. Partial coverage of the south was achieved from February 1974. Complete coverage of the south began in December 1977 and has been maintained.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Most of the area is counted at high tide.

SYNCHRONIZATION

(a) within site: Not synchronized. Count normally spans two days.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Not aware of any regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Dundrum Bay	BTO REFERENCE:	1710
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	8

SITE DETAILS From 1967/68 to 1982/83 the site was counted in two sections only, an inner and outer section. In 1982/83, the estuary itself was divided into 9 sections, and the open coast was counted. In 1985/86, the number of sections within the estuary was reduced to 7 and the open coast section was retained and recorded separately.

TIMING OF COUNTS

(a) date: Count on a weekday close to the BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
-----------	---

MOVEMENTS	Thought to be regular interchange of Brent Geese, Cormorant and Oystercatchers with adjacent coastal areas.
-----------	---

REPRESENTATIVE?	Representative of the bird populations present.
-----------------	---

SITE NAME:	Strangford Lough	BTO REFERENCE:	1720
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	62

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date or on an alternative date close to it.

(b) hour: Count during the rising and high tide periods.

SYNCHRONIZATION

(a) within site: Not synchronized. Counts usually span a two day period.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Not aware of any regular interchange with adjacent sites.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Belfast Lough	BTO REFERENCE:	1730
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	10

SITE DETAILS	Both the overall site boundary and the sections into which the area is divided have changed on several occasions. In particular, whereas the inner lough has been counted systematically since 1979/80, the outer lough has only been counted since 1985/86 (Austin & Leach 1986).
--------------	--

TIMING OF COUNTS

(a) date: Count on the Saturday before the BoEE date.

(b) hour: Count at high tide.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	Only those waders and wildfowl that are seen on fields within the counting area and are known to use the estuary at some stage are included.
-----------	--

MOVEMENTS	Thought likely to be regular interchange with adjacent sites.
-----------	---

REPRESENTATIVE?	Currently representative of the bird populations present (see Austin & Leach 1986).
-----------------	---

SITE NAME:	Lough Larne	BTO REFERENCE:	1740
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	4

SITE DETAILS No changes.

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count during the rising tide period.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE All waders and wildfowl seen on fields in the counting area are included.

MOVEMENTS Thought to be regular movements by Wigeon to and from the adjacent open coast.

REPRESENTATIVE? Representative of the bird populations present.

SITE NAME:	Bann	BTO REFERENCE:	1750
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	1

SITE DETAILS	No changes.
--------------	-------------

TIMING OF COUNTS

(a) date: Count on BoEE date.

(b) hour: Count during the falling tide period.

SYNCHRONIZATION

(a) within site: Synchronized.

(b) between sites: None.

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
-----------	---

MOVEMENTS	Not aware of any regular interchange with adjacent sites.
-----------	---

REPRESENTATIVE?	Representative of the bird populations present.
-----------------	---

SITE NAME:	Lough Foyle	BTO REFERENCE:	1760
NO. OF SUB-SITES:	None	NO. OF SECTIONS:	7

SITE DETAILS	No changes since at least 1980/81. Only the Northern Ireland side is covered.
--------------	---

TIMING OF COUNTS

(a) date:	Count on BoEE date or on an alternative date close to it.
-----------	---

(b) hour:	Count at high tide.
-----------	---------------------

SYNCHRONIZATION

(a) within site:	Synchronized.
------------------	---------------

(b) between sites:	Try to synchronize with the swan/geese counts at Lough Swilly, Co. Donegal.
--------------------	---

FIELD USE	All waders and wildfowl seen on fields in the counting area are included.
-----------	---

MOVEMENTS	Thought to be regular interchange of wildfowl with sites in Co. Donegal.
-----------	--

REPRESENTATIVE?	Representative of the bird populations present. However, turnover at this site is very rapid and is not quantified by BoEE counts.
-----------------	--

APPENDIX 3

The new recording form

Birds of Estuaries Enquiry

BRITISH TRUST FOR ORNITHOLOGY

Estuaries Unit, Thetford, Norfolk, IP24 2PU

Tel. Thetford (0842) 750050

A



1

NAME & ADDRESS - change of address? ☐

★ Please refer to the instructions on the back of Sheet B.

Tel. No.

2

DATE:

3

SITE:

SUB-SITE:

4

DATE or SECTION:

5

GRAND

TOTALS

6

TIME of COUNT:

7

Red - t. Diver	RH
Little Grebe	LG
Gt. C. Grebe	GG
Cormorant	CA
Mute Swan	MS
Bewick's Swan	BS
Whooper Swan	WS
Pink - f. Goose	PG
Whitefront (Eu/Gr)	WG
Greylag Goose	GJ
Canada Goose	CG
Barnacle Goose	BY
Brent (Dark/Light)	BG
Shelduck	SU
Wigeon	WN
Gadwall	GA
Teal	T
Mallard	MA
Pintail	PT
Shoveler	SV
Pochard	PO
Tufted Duck	TU
Scaup	SP
Eider	E
Long - t. Duck	LN
Common Scoter	CX
Goldeneye	GN
Red - b. Merganser	RM
Goosander	GD
Coot	CO

8

Oystercatcher	OC
Avocet	AV
Little R. Plover	LP
Ringed Plover	RP
Golden Plover	GP
Grey Plover	GV
Lapwing	L
Knot	KN
Sanderling	SS
Little Stint	LX
Curlew Sandpiper	CV
Purple Sandpiper	PS
Dunlin	DN
Ruff	RU
Jack Snipe	JS
Snipe	SN
Black - t. Godwit	BW
Bar - t. Godwit	BA
Whimbrel	WM
Curlew	CU

National Wildfowl Counts

THE WILDFOWL AND WETLANDS TRUST
Slimbridge, Gloucester, GL2 7BT.
Tel. Dursley, (0453 860) 333

B



NAME & ADDRESS - change of address? ☐

★ Please see
instructions overleaf

DATE:

SITE:

SUB-SITE:

DATE or SECTION:

TIME of COUNT:

GRAND
TOTALS

Red - t. Diver	RH
Little Grebe	→
Gt. C. Grebe	≠
Cormorant	?
Mute Swan	R
Bewick's Swan	T
Whooper Swan	S
Pink - f. Goose	X
Whitefront	W/V
Greylag Goose	U
Canada Goose	Y
Barnacle Goose	=
Brent Goose	Z/I
Shelduck	Q
Wigeon	C
Gadwall	I
Teal	B
Mallard	A
Pintail	D
Shoveler	E
Pochard	F
Tufted Duck	G
Scaup	J
Eider	N
Long - t. Duck	K
Common Scoter	M
Goldeneye	H
Red - b. Merganser	O
Goosander	P
Coot	^

13

ADDITIONAL INFORMATION

INSTRUCTIONS

Please complete this form with care. Sheet A is partially carbonized to provide a duplicate copy of the wildfowl counts on sheet B. Please write in block letters, using a fine-tipped ball-point pen.

The instructions below relate to the numbered/shaded boxes on the form. The form can be used in one of two ways and separate instructions for each use are given below.

RECORDING A SERIES OF MONTHLY COUNTS FROM A SINGLE SITE THAT IS NOT DIVIDED INTO SECTIONS

1 Please provide your address, particularly if you are a new counter. Also, tick the box provided if you wish us to note that you have changed address. **2** Leave blank. **3** Insert the site name (e.g. Thames Estuary). Leave the sub-site box blank. **4** Enter the dates of successive counts. **5** Leave this column blank. **6** Enter approximate start and end times of each count. **7** For each species, insert the numbers counted. If numbers of any species are crude estimates, please put them in parentheses (). Provide separate counts by race of Whitefronts and Brents if possible. Enter European Whitefronts before the slash and Greenland Whitefronts after it. Similarly, enter Dark-bellied Brent before the slash and Light-bellied Brent after it. If races cannot be separated, enter one figure and circle it. **8** Use these spaces for additional wildfowl species only. **9** Record additional wader species here. **10** Insert additional birds of prey, gulls, terns, seabirds or coastal passerines here. **11** Please complete the boxes to best describe the conditions of each count. Use one column of boxes for each month, ignoring the final column of boxes. In each case, insert the date (same as in box 4) where indicated and tick boxes 1, 2, 3 or 4 according to the categories given in the key. Recording the level of coverage achieved is particularly important: tick box 1 if the whole site was covered within a reasonable time period (usually 3-4 hours); tick box 2 if the whole site was covered but coverage was staggered over the tidal cycle or a number of days; tick box 3 if the whole site was covered but the quality of the count was seriously reduced by poor weather conditions or excessive disturbance; tick box 4 if coverage of the site was incomplete. Assessments of the level of disturbance should be relative to the 'norm' for the site. The disturbance boxes and the predator boxes should only be ticked when disturbance to birds by these agents was observed. **12** Record additional information as necessary here; **13** Repeat that specific to wildfowl on sheet B. If the information is specific to particular months, please indicate so.

RECORDING A SINGLE COUNT OF A LARGE SITE THAT IS DIVIDED INTO SECTIONS

Use one form per count if the site is divided into 6 or fewer sections. If however, a larger number of sections is used, each form should refer to a sub-site (with a maximum of 6 sections). In the latter case, more than one form will be required for each count.

1 See instruction given above. **2** Enter the date. **3** Insert the site name (e.g. Thames Estuary) and the sub-site name (e.g. Inner Thames) as agreed with your site organizer. **4** Enter section codes. Please use the same sections as in previous seasons. **5** Insert grand totals for all sections on the sheet combined. **6-10** See instructions given above. **11** Please complete the boxes to best describe the count conditions for each section. Use one column of boxes for each section, ignoring the final column of boxes. In each case, insert the section code where indicated and tick boxes 1, 2, 3 or 4 according to the categories given in the key. See further details in 11 above which relate now to the section rather than to the whole site. **12** Record additional information as necessary here; **13** Repeat that specific to wildfowl on sheet B. If the information is specific to particular sections, please indicate so.

Once the form is complete, please make sure that sheet B is legible. Return the form INTACT (i.e. both part A and B) to your designated site organizer.

* * * MANY THANKS FOR YOUR HELP * * *

Supported by:

