

AN ASSESSMENT OF THE IMPORTANCE OF THE EDEN ESTUARY
AND THE FIRTH OF TAY FOR NON-BREEDING POPULATIONS OF WADERS

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SUMMARY

Counts of waders collected for the Birds of Estuaries Enquiry were searched for evidence of the conservation importance of the Eden Estuary and Firth of Tay (Fife, E. Scotland) for non-breeding wader populations. Peak midwinter counts of 15000 and 16000 waders were recorded for the two sites respectively. Both estuaries regularly support nationally important numbers of Oystercatcher, Grey Plover, Bar-tailed Godwit and Redshank. The Eden also supports a nationally important population of wintering Black-tailed Godwits and a spring passage of Ringed Plovers, while the Sanderling flock which winters on the Outer Firth of Tay also qualifies for national importance. Neither estuary is of international importance to wader populations. Long-term population changes of the most important species on the Eden suggest that wintering numbers of Oystercatcher, Bar-tailed Godwit and Black-tailed Godwit are stable, while Grey Plover are increasing and Redshank are declining. These trends agree with the national population trends for these species.

INTRODUCTION

The Birds of Estuaries Enquiry (BoEE) has been organised by the British Trust for Ornithology since 1969, to provide information on the non-breeding populations of shorebirds present on estuaries around the British Isles. This information is of direct value to estuarine conservation. A synthesis of the results of the first five years of the Enquiry is given in Prater (1981), while more recent summaries are found in Marchant (1981) and Salmon (1980, 1981, 1982).

The present report, prepared at the request of the NCC Chief Scientist Team, summarises the information collected for BoEE between 1969 and 1983 concerning the Eden Estuary and Firth of Tay on the east coast of Scotland. The conservation importance of these estuaries to wader populations is assessed in a national and international context. Further information on the ornithological importance of these estuaries is given by Grierson (1962) and Summers and Bakx (1979).

METHODS

Data concerning the numbers of waders present on the estuaries were collected from mid-monthly counts made at high water on spring tides, when the waders concentrate into discrete, countable roosts. For the present analysis, the area has been divided into four subunits (Figure 1):

1. The Eden Estuary (upstream from Edenmouth - St. Andrews).
2. Inner Firth of Tay (upstream from the roadbridge).
3. Outer Firth of Tay, north shore (roadbridge - Buddon Ness).
4. Outer Firth of Tay, south shore (Abertay - Tentamuir Sands).

All wader counts made within these areas were examined, and incomplete counts, or counts ruined by bad weather were discarded. The remaining data are summarised for each area in two tables showing: a) the peak mid-winter counts (December-February inclusive) for each species in the five most recent years of counts available, and b) the frequency with which counts of each species qualified for the criteria of national or international importance. Qualifying levels and an explanation of the criteria are shown in Appendix. Additional information concerning passage populations, roosting sites, population trends etc., is given in the text.

RESULTS

1. Eden Estuary (upstream from Edenmouth - St. Andrews)

Between 8000 and 15000 waders regularly winter on this estuary (Table 1). Five species occur regularly in nationally important numbers: Oystercatcher, Grey Plover, Black-tailed Godwit, Bar-tailed Godwit, Redshank (Table 2). Ringed Plover also occur in nationally important numbers on spring passage. No species qualify at an international level. Long-term trends in the populations of these species (Figure 2) suggest stable populations for Oystercatcher, Black-tailed Godwit and Bar-tailed Godwit, while Grey Plovers have increased and Redshank have declined. These changes are in agreement with national population trends for these species (Salmon 1982).

There are two major roosts on the Eden Estuary, at Guardbridge (NO 452193) and Shelly Point (NO 483202) (Figure 1). When disturbed, birds from the latter roost use an alternative site at Eastshore (NO 497223). The roost at Guardbridge is used mainly by Dunlin, Redshank and Black-tailed Godwit, with smaller numbers of Curlew, Oystercatcher and Golden Plover. In contrast, the Shelley Point roost is used principally by Oystercatchers, Curlew and Bar-tailed Godwit.

2. Inner Tay Estuary (upstream from the roadbridge)

Up to 9000 waders roost in this area in winter, although 4000-5000 may be more usual (Table 3). Redshanks are the only species of regular national importance, although Bar-tailed Godwits and Dunlin occasionally reach this status (Table 4). The importance of the area for Bar-tailed Godwits will be underestimated by roost counts, as many depart at high water to roost at Tentsmuir Point (NO 503280). No species attains international levels of importance.

Counts of waders for the Inner Tay have been made for the north bank only as there are no known major roosts on the south shore. The largest roost occurs to the west of Kingoodie (NO 331293), while there are smaller roosts at Dundee Airport (NO 375293) and Errol (NO 260223). Field roosting occurs frequently.

3. Outer Tay Estuary, north shore (roadbridge to Buddon Ness)

The peak midwinter counts for this area have not exceeded 5000 birds in the few years for which counts have been available (Table 5).

Disturbance by walkers is severe, and the numbers of roosting birds are highly erratic. The only species to regularly occur in nationally important numbers is Sanderling (Table 6). A review of the status and behaviour of Sanderlings in this area is given by Summers (1974).

Alternative roosting sites used by the birds from this area are:

Buddon Ness (NO 546304), Balmossie Fields (NO 475330), Lucky Scalp (NO 482 288), Tentsmuir Point (NO 503280).

4. Outer Tay Estuary, south shore (Abertay to Tentsmuir Sands)

The peak midwinter count of waders roosting in this area has been as high as 12600 birds, although it is more often less than 5000 (Table 7).

Four species occur regularly in nationally important numbers:

Oystercatcher, Grey Plover, Bar-tailed Godwit and Sanderling (Table 8).

Redshank occasionally roost here in large numbers. No species attains international status.

The erratic use of this site by waders is explained by two factors.

Firstly, there can be considerable movements into this area at high water from birds which feed outside the area (Inner Tay, Outer Tay, north shore).

These can be both natural movements, and movements induced by disturbance elsewhere. Secondly, on neap tides, a roost develops on the Lucky Scalp.

This lies well offshore and the roost cannot always be counted.

DISCUSSION

The area treated by the present report falls geographically into two relatively discrete intertidal areas: the Firth of Tay and the Eden Estuary. Few movements of waders occur on a single tidal cycle between these sites, though there may be much movement within the sites. The two areas must therefore be assessed separately.

Simultaneous roost counts have not been made over the entire Firth of Tay, but an estimate can be made of the total wintering population of each species from knowledge of the movements of birds within the area. This gives an estimate of 16000 waders (Table 9). Five species are of national importance: Oystercatcher, Grey Plover, Bar-tailed Godwit, Redshank, Sanderling. All five had already qualified at a national level from counts made in the three subareas. No species qualified for international importance.

ACKNOWLEDGEMENTS

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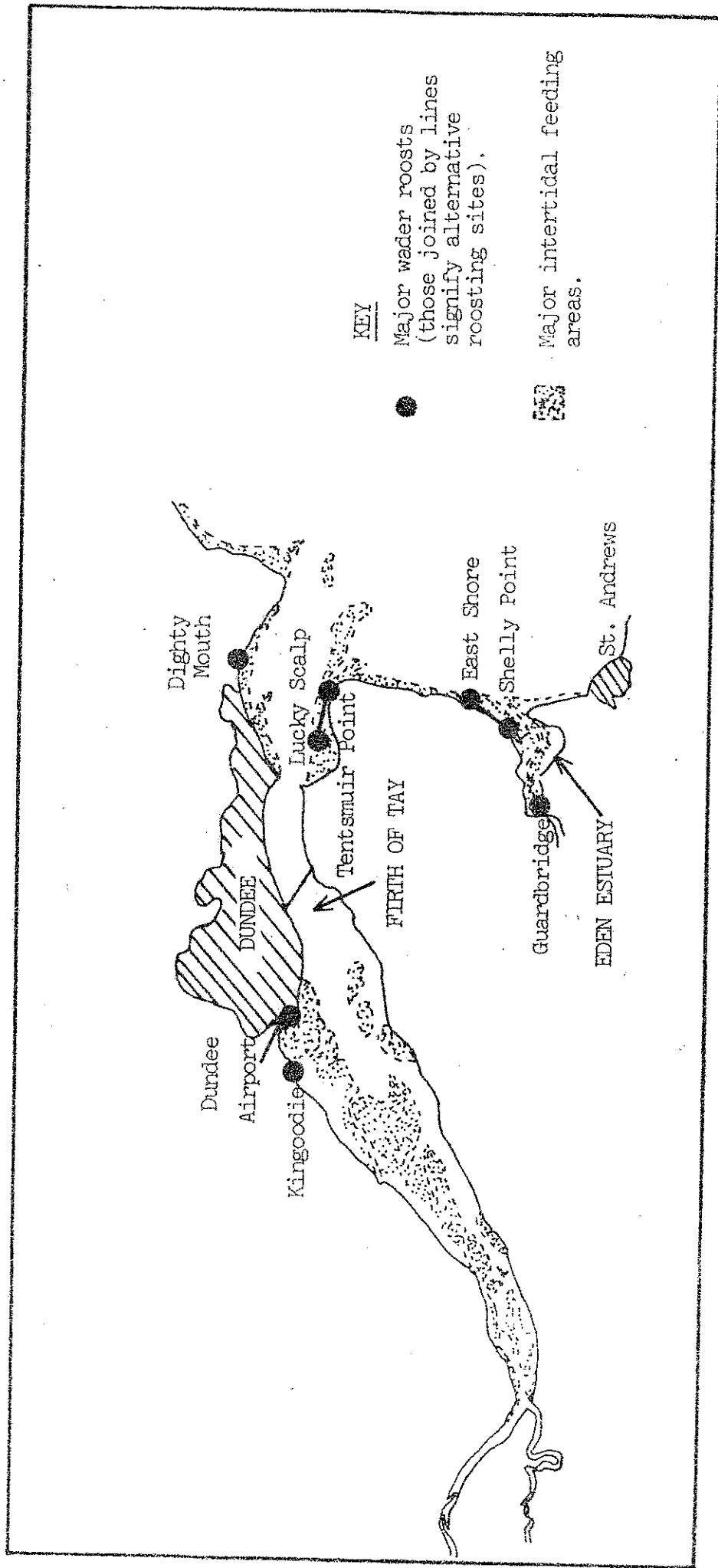


FIGURE 1 The area covered by the present report

Table 1. Peak midwinter counts of waders on the Eden Estuary (Fife) for the five most recent winters for which BoEE counts are available

| | 1976-77 | 1978-79 | 1979-80 | 1980-81 | 1982-83 |
|---------------------|---------|---------|---------|---------|---------|
| Oystercatcher | 3000 | 3134 | 3126 | 3780 | 2780 |
| Lapwing | 270 | 202 | 1150 | 125 | 393 |
| Ringed Plover | 80 | 0 | 0 | 0 | 13 |
| Grey Plover | 430 | 387 | 734 | 616 | 458 |
| Golden Plover | 170 | 64 | 257 | 29 | 246 |
| Common Snipe | 0 | 0 | 1 | 0 | 0 |
| Curlew | 450 | 564 | 253 | 125 | 198 |
| Black-tailed Godwit | 70 | 69 | 86 | 60 | 57 |
| Bar-tailed Godwit | 1000 | 2350 | 2500 | 1512 | 1603 |
| Redshank | 700 | 612 | 765 | 320 | 426 |
| Greenshank | 2 | 4 | 1 | 2 | 2 |
| Knot | 3500 | 876 | 500 | 2000 | 130 |
| Dunlin | 5500 | 3300 | 3277 | 1875 | 1566 |
| Sanderling | 0 | 0 | 30 | 0 | 0 |
| Ruff | 9 | 0 | 1 | 6 | 4 |
| TOTAL | 15181 | 11562 | 12681 | 10450 | 7876 |

Table 2 Frequency of occurrence of nationally important populations of waders on the Eden Estuary 1970-1983. Each figure represents the number of years in which the count exceeded 1% of the British population of that species.

| | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Oystercatcher | - | 2 | 3 | 4 | 5 | 3 | 3 | 2 | - | - | - | - |
| Lapwing | - | - | - | - | - | - | - | - | - | - | - | - |
| Ringed Plover | - | - | - | - | 1 | - | - | - | - | - | 2 | - |
| Grey Plover | 1 | 2 | 2 | 4 | 3 | 5 | 5 | 5 | 4 | 2 | 2 | 1 |
| Golden Plover | - | - | - | - | - | - | - | - | - | - | - | - |
| Common Snipe | - | - | - | - | - | - | - | - | - | - | - | - |
| Curlew | - | - | - | - | - | - | - | - | - | - | - | - |
| Black-tailed Godwit | - | 2 | 2 | 2 | 4 | 5 | 5 | 5 | 4 | 5 | - | - |
| Bar-tailed Godwit | - | 2 | 2 | 5 | 5 | 6 | 7 | 8 | 2 | 1 | - | - |
| Redshank | 1 | - | 2 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | - | - |
| Greenshank | - | - | - | - | - | - | - | - | - | - | - | - |
| Knot | - | - | - | - | - | - | - | - | - | - | - | - |
| Dunlin | - | - | - | - | 1 | - | - | - | - | - | - | - |
| Sanderling | - | - | - | - | - | - | - | - | - | - | - | - |
| Ruff | - | - | - | - | - | - | - | - | - | - | - | - |
| Number of years in which counts were made | 4 | 5 | 4 | 5 | 6 | 7 | 8 | 8 | 6 | 6 | 5 | 5 |

Table 3 Peak midwinter counts of waders on the Firth of Tay, upstream from the roadbridge, for the five most recent winters for which BOEE counts are available

| | 1972-73 | 1973-74 | 1974-75 | 1975-76 | 1982-83 |
|---------------------|---------|---------|---------|---------|---------|
| Oystercatcher | 160 | 160 | 165 | 463 | 700 |
| Lapwing | 1000 | 0 | 800 | 1370 | 2000 |
| Ringed Plover | 22 | 25 | 0 | 0 | 22 |
| Grey Plover | 4 | 0 | 0 | 0 | 0 |
| Golden Plover | 433 | 0 | 500 | 460 | 215 |
| Common Snipe | 27 | 0 | 15 | 2 | 3 |
| Curlew | 544 | 0 | 185 | 392 | 370 |
| Black-tailed Godwit | 1 | 0 | 0 | 0 | 0 |
| Bar-tailed Godwit | 327 | 559 | 322 | - | 720 |
| Redshank | 1045 | 900 | 1500 | 1410 | 1000 |
| Greenshank | 1 | 0 | 0 | 0 | 0 |
| Knot | 4 | 0 | 0 | 0 | 0 |
| Dunlin | 3000 | 2800 | 1740 | 1560 | 4000 |
| TOTAL | 6568 | 4444 | 5227 | 5655 | 9030 |

Table 4 Frequency of occurrence of nationally important numbers of waders on the Firth of Tay (upstream from the roadbridge). Each figure represents the number of years in which the count exceeded 1% of the British population of that species.

| | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Oystercatcher | - | - | - | - | - | - | - | - | - | - | - | - |
| Lapwing | - | - | - | - | - | - | - | - | - | - | - | - |
| Ringed Plover | - | - | - | - | - | - | - | - | - | - | - | - |
| Grey Plover | - | - | - | - | - | - | - | - | - | - | - | - |
| Golden Plover | - | - | - | - | - | - | - | - | - | - | - | - |
| Common Snipe | - | - | - | - | - | - | - | - | - | - | - | - |
| Curlew | - | - | - | - | - | - | - | - | - | - | - | - |
| Black-tailed Godwit | - | - | - | - | - | - | - | - | - | - | - | - |
| Bar-tailed Godwit | - | - | - | - | - | 2 | - | 1 | - | - | - | - |
| Redshank | 1 | 2 | 3 | 3 | 3 | 1 | 1 | 2 | 1 | 1 | - | - |
| Greenshank | - | - | - | - | - | - | - | - | - | - | - | - |
| Knot | - | - | - | - | - | - | - | - | - | - | - | - |
| Dunlin | - | - | - | 1 | - | - | - | - | - | - | - | - |
| Number of years in which counts were made | 3 | 5 | 4 | 3 | 5 | 6 | 4 | 3 | 3 | 1 | 1 | 1 |

Table 5 Peak midwinter counts of waders on the outer north shore of the Firth of Tay for the four winters for which BOEE counts are available

| | 1971-72 | 1972-73 | 1973-74 | 1982-83 |
|-------------------|---------|---------|---------|---------|
| Oystercatcher | 1062 | 0 | 30 | 1580 |
| Lapwing | 0 | 0 | 0 | 200 |
| Ringed Plover | 39 | 27 | 20 | 70 |
| Grey Plover | 0 | 0 | 0 | 15 |
| Golden Plover | 1 | 0 | 0 | 200 |
| Turnstone | 89 | 47 | 30 | 30 |
| Curlew | 35 | 0 | 0 | 65 |
| Bar-tailed Godwit | 125 | 0 | 20 | 350 |
| Redshank | 300 | 0 | 50 | 70 |
| Greenshank | 1 | 0 | 0 | 0 |
| Knot | 506 | 0 | 20 | 1500 |
| Dunlin | 80 | 40 | 250 | 300 |
| Sanderling | 212 | 40 | 125 | 350 |
| TOTAL | 2450 | 154 | 545 | 4730 |

Table 6 Frequency of occurrence of nationally important numbers of waders on the outer north shore of the Firth of Tay. Each figure represents the number of years in which the count exceeded 1% of the British population of that species.

| | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Oystercatcher | - | - | - | - | - | - | - | - | - | - | - | - |
| Lapwing | - | - | - | - | - | - | - | - | - | - | - | - |
| Ringed Plover | - | - | - | - | - | - | - | - | - | - | - | - |
| Grey Plover | - | - | - | - | - | - | - | - | - | - | - | - |
| Golden Plover | - | - | - | - | - | - | - | - | - | - | - | - |
| Turnstone | - | - | - | - | - | - | - | - | - | - | - | - |
| Curlew | - | - | - | - | - | - | - | - | - | - | - | - |
| Bar-tailed Godwit | - | - | - | - | - | - | - | - | - | - | - | - |
| Redshank | - | - | - | - | - | - | - | - | - | - | - | - |
| Greenshank | - | - | - | - | - | - | - | - | - | - | - | - |
| Knot | - | - | - | - | - | - | - | - | - | - | - | - |
| Dunlin | - | - | - | - | - | - | - | - | - | - | - | - |
| Sanderling | - | - | - | 1 | 2 | 2 | 3 | 1 | 1 | - | - | - |
| Number of years in which counts were made | 1 | 1 | 1 | 2 | 3 | 2 | 4 | 2 | 2 | 0 | 0 | 0 |

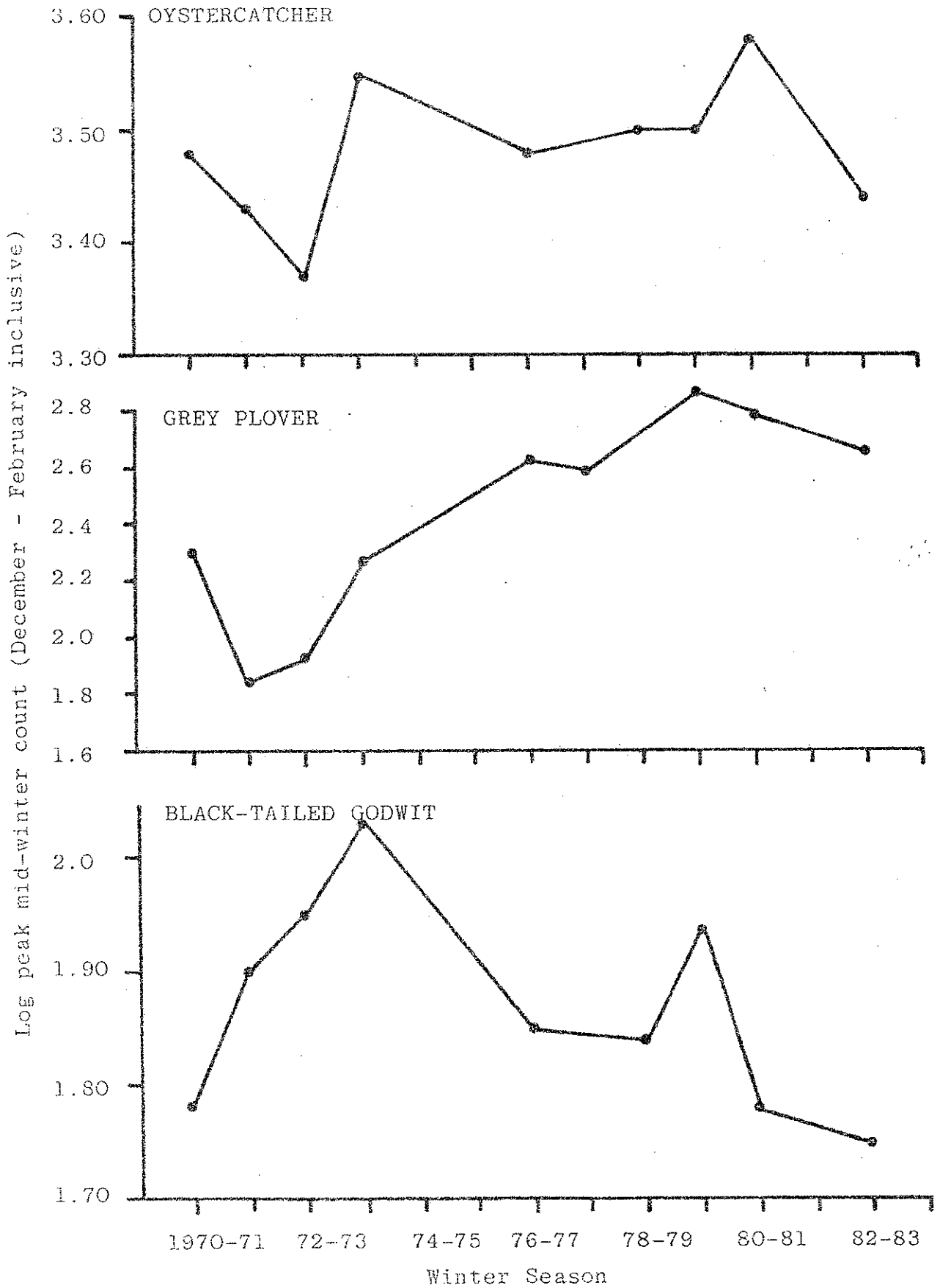
Table 7 Peak midwinter counts of waders on the outer south shore of the Firth of Tay, for the five most recent winters for which BOEE counts are available

| | 1977-78 | 1978-79 | 1980-81 | 1981-82 | 1982-83 |
|-------------------|---------|---------|---------|---------|---------|
| Oystercatcher | 20 | 3000 | 800 | 2230 | 130 |
| Lapwing | 0 | 0 | 0 | 2000 | 0 |
| Ringed Plover | 95 | 0 | 0 | 35 | 0 |
| Grey Plover | 200 | 113 | 80 | 15 | 85 |
| Golden Plover | 0 | 0 | 0 | 200 | 0 |
| Turnstone | 50 | 40 | 35 | 0 | 4 |
| Common Snipe | 0 | 0 | 0 | 3 | 0 |
| Curlew | 0 | 300 | 20 | 365 | 1 |
| Bar-tailed Godwit | 1500 | 1000 | 1400 | 875 | 45 |
| Redshank | 200 | 50 | 45 | 1070 | 65 |
| Knot | 200 | 122 | 100 | 1500 | 0 |
| Dunlin | 2200 | 1000 | 300 | 4050 | 140 |
| Sanderling | 54 | 20 | 152 | 300 | 125 |
| TOTAL | 4519 | 5645 | 2932 | 12643 | 595 |

Table 8 Frequency of occurrence of nationally important numbers of waders on the outer south shore of the Firth of Tay. Each figure represents the number of years in which the count exceeded 1% of the British population of that species.

| | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Oystercatcher | - | 1 | 3 | 1 | 1 | - | - | 1 | - | - | - | - |
| Lepwing | - | - | - | - | - | - | - | - | - | - | - | - |
| Ringed Plover | - | - | - | - | - | - | - | - | - | - | - | - |
| Grey Plover | - | 1 | - | 1 | - | 1 | 2 | - | - | - | - | - |
| Golden Plover | - | - | - | - | - | - | - | - | - | - | - | - |
| Turnstone | - | - | - | - | - | - | - | - | - | - | - | - |
| Common Snipe | - | - | - | - | - | - | - | - | - | - | - | - |
| Curlew | - | - | - | - | - | - | - | - | - | - | - | - |
| Bar-tailed Godwit | 2 | 5 | 5 | 3 | 5 | 6 | 5 | 3 | 1 | - | - | - |
| Redshank | - | - | - | - | 1 | - | - | 1 | - | - | - | - |
| Knot | - | - | - | - | - | - | - | - | - | - | - | - |
| Dunlin | - | - | - | - | - | - | - | - | - | - | - | - |
| Sanderling | - | - | - | - | - | 2 | 2 | 1 | - | - | - | - |
| Number of years in which counts were made | 4 | 5 | 5 | 3 | 8 | 8 | 6 | 5 | 3 | 5 | 3 | 1 |

FIGURE 2



(Cont'd)

FIGURE 2 (Cont'd)

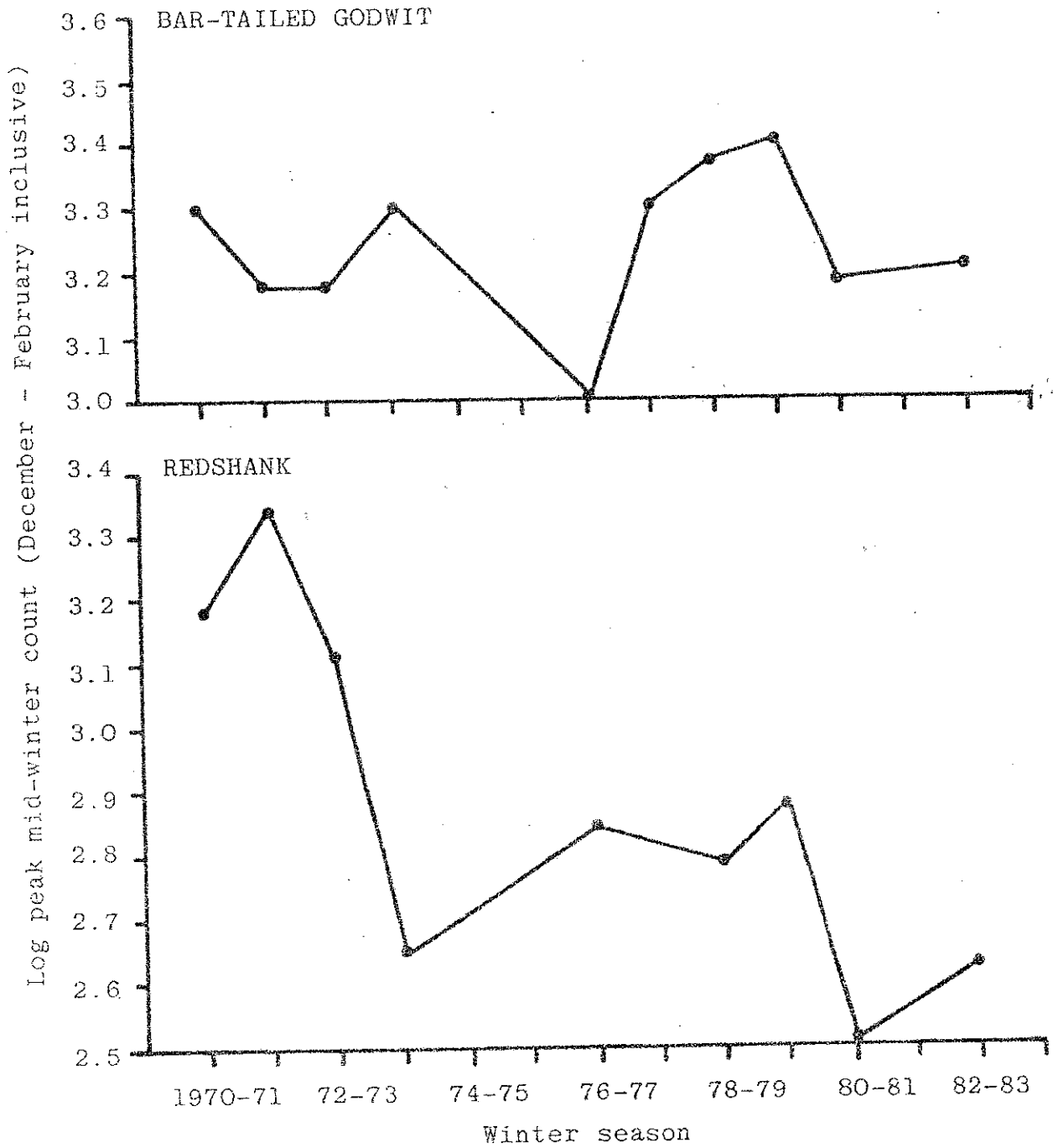


FIGURE 2 Long-term population trends in some wader species in the Eden Estuary 1970-1983.

APPENDIX

Criteria and Qualifying Levels for National and International Importance

A wetland is considered Internationally Important for waders if it:

- (a) regularly supports 20,000 waders.
- (b) regularly supports 1% of the individuals in a population of one species or subspecies of wader.
- (c) regularly supports 1% of the breeding pairs in a population of one species or subspecies of wader. This aspect was not treated in the present report.

(IWRB 1980)

A wetland in Britain is considered Nationally Important if it regularly holds at least 1% of the estimated British wintering population of one species or subspecies (Prater 1981a; Salmon 1981).

The table below gives qualifying levels among waders for both categories of importance.

| | National (Great Britain only) | International (Northwest/west European pop.) |
|---------------------|----------------------------------|--|
| Oystercatcher | 3,000 | 7,500 |
| Avocet | - | 260 |
| Ringed Plover | 120 (Passage:300) | 1,000 |
| Golden Plover | 2,000 | 10,000 |
| Grey Plover | 100 | 800 |
| Lapwing | 5,000 | +20,000 |
| Knot | 2,500 | 3,500 |
| Sanderling: Passage | 300 | 500 |
| Winter | 100 | 150 |
| Purple Sandpiper | 180 | ? |
| Dunlin | 5,500 (Passage:2,000) | +20,000 |
| Ruff | - | 10,000 |
| Common Snipe | ? | 10,000 |
| Black-tailed Godwit | 50 | 400 |
| Bar-tailed Godwit | 450 | 5,500 |
| Whimbrel | 100 | 500 |
| Curlew | 1,000 | 3,000 |
| Spotted Redshank | 50 | 500 |
| Redshank | 1,000 (Passage:1,200) | 2,000 |
| Greenshank | 50 | 500 |
| Turnstone | 250 | 500 |

+ maximum permissible; represents under 1%

- British population too small for meaningful figure to be obtained

