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THE USAGE OF THE INTERTIDAL MUDFLATS AT THE RHYMNEY, CARDIFF, BY WADERS AND WILDFOWL: 2 SUPPLEMENTARY DATA ON UPPER AREAS DECEMBER 1993 - FEBRUARY 1994

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CONTENTS

Page No.

LIST OF TABLES

Page No.

LIST OF FIGURES

1. EXECUTIVE SUMMARY

1.Proposals for the building of the Eastern Bay Link Road to the east of Cardiff have necessitated consideration of a route across the upper mudflats at the Rhymney.

2.The area around the Rhymney is of high ornithological importance, especially in winter.

3.A previous report by the BTO analysed counts from four winters between 1989 and 1993.

4.The previous report had necessitated estimates to be made of the proportions of birds which fed close to the road in some of the sectors which were very large.

5.This report analyses the data collected in the 1993/94 winter which splits these extensive count areas into sub units so that the predictions can be validated.

6.Analysis of the data collected showed that the assumptions made in the previous report were valid.

7.Numbers of Dunlin were exceptionally high during the 1993/94 winter which resulted in higher numbers of bird feeding hours in areas close to the road than was predicted from the previous report.

2. INTRODUCTION

Proposals for the building of the Eastern Bay Link Road around Cardiff have necessitated consideration of a route across the upper mudflats at the Rhymney, an area which is of prominent ornithological importance, especially in winter. A previous report (Henderson & Clark, 1993) analysed detailed counts carried out over a period from November 1989 to March 1993. These data had been collected as part of the BTO's studies for Cardiff Bay Development Corporation in relation to the effects of building the Cardiff Bay Barrage on bird populations. It was necessary to make some assumptions as to the proportion of birds counted in different parts of the mudflats that were close to the road as the data collection had not been designed in order to predict the impacts of a road development at the Rhymney,

This study reports on data collected during the 1993/94 winter which aimed to validate assumptions that were used for the previous report.

3.METHODS

The counting methodology was identical to that outlined in the previous report, however, count section numbers 10, 14, 15 and 16 were split into two or three subsections (Figure 3.1). This enabled precise determination of the number of birds that were using the areas close to the proposed road alignment. For each count unit the overall usage throughout the tidal cycle was calculated together with the average number of birds present at each hour of the tidal cycle. There were no periods of severe weather during the 1993/94 winter so obviating the need for a further analysis of the effects of temperature on bird distribution.

4. RESULTS

Tables 4.1 to 4.5 give the usage values (number of feeding hours per tidal cycle) for each of the key species studied in the previous report. It is immediately apparent that the overall usage values for all of these areas are higher than in the previous years that were analysed. This is a result of a general increase in the numbers of some of the key species, e.g. Dunlin, at the Rhymney during the 1993/94 winter. The previous report used 10% of those birds present on mudflat 10 as likely to be feeding in the area close the road alignment. For all species except Dunlin, the recorded levels were somewhat higher, ranging from 7.1% for Dunlin to 34% for Shelduck. It was anticipated that few birds from mudflat 14 would be feeding in the areas close to the proposed road. This was the case for all except Redshank for which 12% of the usage value was in the upper area close to the road and Curlew, although numbers were very low. Fifteen percent of the usage value of mudflats 15 and 16 had been predicted to be in the area close to the road. The results for the 1993/94 winter show that, in fact, this was an overestimate for all the species that occurred in any numbers. Only three of the key species used the area to the east of the Rhymney close to the proposed road in any numbers (Shelduck, Redshank and Dunlin) and for all of these the overall predicted value for the amount of feeding time that took place close to the road was close to that actually observed. From the 1993/94 data, the usage of the area close to the road for Redshank as a whole was 191 hours per tidal cycle whereas using the formula given in the previous report

the predicted value would be 141. Similar figures for Dunlin were 905 actual, 1,340 predicted and for Shelduck 48 actual, 76 predicted.

Figures 4.1 to 4.3 show the use made by birds, through the tidal cycle, of the upper areas to the east of the Cardiff Eastern Sewer. Redshank occurred on this area throughout the tidal cycle as predicted in the previous report. Higher numbers of Dunlin were found than was shown in the previous report, although their pattern of presence was similar. Figures 4.4 to 4.6 show the numbers of birds present in areas 15b and 16b. Areas that are further away from the road could be affected if there are significant changes to the river channel. The general pattern of use through the tidal cycle for Shelduck, Pintail, Oystercatcher and Dunlin was for a high usage in the hours closest to high tide with very large numbers of Dunlin present on the rising tide. Numbers of Redshank were erratic although present throughout the tidal cycle and almost insignificant numbers of Curlew were present.

5. CONCLUSION

The results from this study validate the predictions made in the previous report (Henderson & Clark, 1993) which predicted that most of the birds feeding to the east of the Cardiff Central Sewer used areas that were not close to the proposed route alignment. A substantial increase in the numbers of Dunlin feeding close to the proposed road alignment was a result of a general increase in their numbers at the Rhymney with over 50% more Dunlin than in any of the previous four years of study.

References

Henderson, I.G & Clark, N.A. 1993. A study of the effects of roads near estuaries and embankment design on shorebirds. *BTO Research Report No. 132.*

Species	Total Usage	a	b	a as % of total	b as % of total
Redshank	210	46.6	163.40	22.19	77.81
Dunlin	1819	129.2	1,689.80	7.10	92.90
Shelduck	34	11.5	22.50	33.82	66.18
Curlew	12	2.6	9.40	21.67	78.33
Oystercatcher	30	3.8	26.20	12.67	87.33
Pintail	102	16.3	85.70	15.98	84.02

Table 4.1The usage (feeding hours per tidal cycle) of each part of mudflat 10 at Rhymney, Cardiff, by waders, during winter 1993/94.

Species	Total Usage	a	b	a as % of total	b as % of total
Redshank	542	65.3	476.70	12.05	87.95
Dunlin	3032	118.1	2,913.90	3.90	96.10
Shelduck	914	22.7	891.30	2.48	97.52
Curlew	7	1.4	5.60	20.00	80.00
Oystercatcher	98	6.4	91.60	6.53	93.47
Pintail	160	2.2	157.80	1.38	98.63

Table 4.2The usage (feeding hours per tidal cycle) of each part of mudflat 14 at Rhymney, Cardiff, by waders, during winter 1993/94.

Species	Total Usage	a	b	c	a as % of total	b as % of total	c as % of total
Redshank	260	37.8	203.25	18.95	14.54	78.17	7.29
Dunlin	3351	462	2635	254.00	13.79	78.63	7.58
Shelduck	258	5.7	83.2	169.10	2.21	32.25	65.54
Curlew	5	1	4	0.00	20.00	80.00	0.00
Pintail	79	0	5.9	73.10	0.00	7.47	92.53
Oystercatcher	9	5	1.7	2.30	55.56	18.89	25.56

Table 4.3The usage (feeding hours per tidal cycle) of each part of mudflat 15 at Rhymney, Cardiff, by waders, during winter 1993/94.

Species	Total Usage	a	b	c	a as % of total	b as % of total	c as % of total
Redshank	540	42.1	255.4	242.50	7.80	47.30	44.91
Dunlin	4375	196	1824	2,355.00	4.48	41.69	53.83
Shelduck	225	8.2	50.1	166.70	3.64	22.27	74.09
Curlew	8	0.2	0.3	7.50	2.50	3.75	93.75
Pintail	58	0	27.8	30.20	0.00	47.93	52.07

Table 4.4The usage (feeding hours per tidal cycle) of each part of mudflat 16 at Rhymney, Cardiff, by waders, during winter 1993/94.

Species	Total Usage
Redshank	0
Curlew	0
Oystercatcher	2
Dunlin	0
Shelduck	1
Pintail	0

Table 4.5The usage (feeding hours per tidal cycle) of each part of mudflat 17 at Rhymney, Cardiff, by waders, during winter 1993/94.