

THE EIDER POPULATION OF FORVIE NATIONAL NATURE RESERVE 2001

Report No. F01LF16

For further information on this report please contact:

Alison Matheson
Scottish Natural Heritage
Forvie National Nature Reserve
Stevenson Forvie Centre
Little Collieston Croft
Collieston, Ellon,
Aberdeenshire
AB41 8RU

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COMMISSIONED REPORT

Summary

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Report No: F01LF16

Contractor: University Of Aberdeen

BACKGROUND

Forvie NNR has a nationally important population of breeding eider duck. Research was commissioned to monitor the eider population as part of annual research. The monitoring enables SNH to judge whether the intensive management carried out for the protection of breeding eider is successful.

The counting methods remained the same as in previous years, namely a direct count of the birds while they were roosting at high tide, in six sections of the estuary, counting of males, females and yearling males. Counts of sea coast between Collieston and the estuary mouth were carried out (at any state of tide) between 28 April and 12 June, the period when the seasonal peak in numbers was expected to occur. The sex ratio, after the arrival of sufficient birds and before females began to incubate, was determined from counts on 9 April, 20 April and 25 April. The number of fledged juveniles was counted by walking down the east shore of the estuary just before a morning high tide on 3 August. Most birds were coming ashore to roost on the east bank and so were within 20-30 m in good light, so that large juveniles could readily be distinguished from adult females, even moulting ones.

MAIN FINDINGS

- The survey in 2001 continued the monitoring started in 1991 and used the same methods. The peak number of eiders counted in 2001 (3,862) was 4.9% higher than in 2000 (4,059), while the estimated total population (the sum of the separate peaks of males, females and yearling males) decreased by 9.5%, from 4,836 in 2000 to 4,375 in 2001. The estimated number of breeding pairs decreased by 15.7% to 1,271 in 2001 from 1,507 in 2000.
- The sex ratio of 1.30 was lower than that of 1.36 in 2000, while breeding output dropped from 212 in 2000 to 143 in 2001.
- When corrected for the estimated number of females which were incubating, the number of breeding pairs decreased by 26.8% from 1,831 in 2000 to 1,341 in 2001.

For further information on this project contact Alison Matheson, Area Officer, Forvie NNR, Little Collieston Croft, Collieston, Aberdeenshire, AB41 8RU Tel: 01358 751330

For further information on the SNH Research & Technical Support Programme contact The Co-ordination group; Advisory Services, 2 Anderson Place, Edinburgh. Tel: 0131 446 2400

**THE EIDER POPULATION OF
FORVIE NATIONAL
NATURE RESERVE 2001**

A report to S.N.H.

**I.J. Patterson and A.W. Thorpe
Culterty Field Station, Newburgh, Aberdeenshire**

The eider population of the Forvie National Nature Reserve, 2001

A report to SNH

I.J. Patterson and A.W. Thorpe

Aberdeen University, Zoology Department
Culterty Field Station, Newburgh, Aberdeenshire

SUMMARY

The survey in 2001 continued the monitoring started in 1991 and used the same methods. The peak number of eiders counted in 2001 (3,862) was 4.9% lower than in 2000 (4,059), while the estimated total population (the sum of the separate peaks of males, females and yearling males) decreased by 9.5%, from 4,836 in 2000 to 4,375 in 2001. The estimated number of breeding pairs decreased by 15.7% to 1,271 in 2001 from 1,507 in 2000. When corrected for the estimated number of females which were incubating, the number of breeding pairs decreased by 26.8 %, from 1,831 in 2000 to 1,341 in 2001.

The sex ratio of 1.30 was lower than that in 2000 (1.36), while breeding output dropped from 212 in 2000 to 143 in 2001.

METHODS

The counting methods remained the same as in previous years, namely a direct count of the birds while they were roosting at high tide, in six sections of the estuary (Figure 1), counting of males, females and yearling males (Patterson and Laing 1991). Counts of sea coast between Collieston and the estuary mouth were carried out (at any state of tide) between 28 April and 12 June, the period when the seasonal peak in numbers was expected to occur. The sex ratio, after the arrival of sufficient birds and

before females began to incubate, was determined from counts on 9 April, 20 April and 25 April. The number of fledged juveniles was counted by walking down the east shore of the estuary just before a morning high tide on 3 August. Most birds were coming ashore to roost on the east bank and so were within 20-30 m in good light, so that large juveniles could readily be distinguished from adult females, even moulting ones.

RESULTS

1. Population size

The total number of eiders on the Ythan, including the coast north to Collieston, reached a peak of 3,862 on 9 May (Table 1), three weeks earlier than in 2000 (29 May). However, laying started only one week later than in 2000 (Patterson *et al.* 2001). As in previous years, the different sex and age categories of the population reached their peak numbers on different dates; adult males (3,030) on 23 May, females (1,302) on 9 May and yearling males (43) on 9 April (Table 2). The sum of the separate peak values (the estimated total population) was 4,375. The breeding population, estimated from the peak number of females less the estimated number of yearling females (assumed to be the same as that of yearling males) on the same day (ie 31 on 9 May), was 1,271. The estimate of the number of females was probably underestimated because some were incubating (Patterson and Thorpe 2000): the corrected number was 1,341, only 39 more than the peak count of 1,302, presumably because only 2.9% of nests had sitting females at the time of the count.

2. Sex ratio

The mean ratio of adult males to all females was 1.30 (Table 2). If it is assumed that the number of yearling females was the same as that of yearling males, the ratio among older birds was 1.36.

3. Number of young reared

The number of fledged young counted on 3 August was 143, including 22 on the sea coast between Collieston and the estuary mouth. All but a few had reached the fully-feathered stage and were very likely to survive.

4. Distribution

As in previous years, most of the eiders (counted at high tide while roosting) were found near the mouth of the estuary (Table 3). The birds on the sea coast between Collieston and the estuary mouth made up 6.1-13.5% of the total (mean 8.0%).

DISCUSSION

The peak count of eiders in 2001 (3,862) was 4.9% lower than the peak in 2000 (4,059; Patterson and Thorpe 2000), while the estimated total population decreased by 9.5% from 4,836 to 4,375. The estimated breeding population (the peak count of females less the estimated number of yearling females) also decreased, from 1,507 to 1,271 (15.7%). These decreases may have been associated with the low clutch sizes in 2001,

perhaps suggesting that the birds were in poor condition (Patterson, Aubry and Thorpe 2001).

The mean sex ratio (1.30) was lower than those in previous years (1.34 to 1.36 in 1996-2000), as was the ratio among adult birds (1.36), compared to the same ratio in 2000 (1.43; Patterson and Thorpe 1999). This change in the sex ratio was unexpected, given the large number of females killed in the nesting area in 2000 (Patterson *et al.* 2000), which should have increased the ratio of males to females. Most of the change, however, was due to the low ratio on 9 April (Table 2), before most of the birds had arrived.

Breeding output in 2001 (143 ducklings) was lower than in the two preceding years (212 in 2000 and 614 in 1999). The mean output over the last three years (323 ducklings) is still close to that required for the population to be self-sustaining (Patterson and Laing 1993).

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Table 1. Counts of eiders on the Ythan Estuary and the coastline between Collieston and the estuary mouth in 2001.

Date	Adult		Yearling	Total
	Males	Females	Males	
25 April	1004	739	23	1766
2 May	1789	1187	42	3018
9 May	2529	1302	31	3862
14 May	2405	794	34	3233
23 May	3030	650	26	3706
30 May	2074	403	27	2504
7 June	1817	590	29	2436
13 June	1633	600	--	2233

Table 2. Sex ratio (adult males: females) among Forvie eiders in 2001.

Date	Adult		Yearling	Sex Ratio
	Males	Females	Males	
9 April	589	502	43	1.17
20 April	1047	795	33	1.32
25 April	1004	739	23	1.36
Mean ratio				1.30

Table 3. Distribution of eiders on the Ythan Estuary and the coastline between Collieston and the estuary mouth, in 2001.

Date	Mouth	Inches	Quay	Tarty	Sleek	Haddo	Coast	Total
25 April	854	613	35	1	24	0	239	1766
2 May	852	1722	175	56	27	0	186	3018
9 May	1325	1847	318	40	55	0	277	3862
14 May	941	1657	312	40	49	0	234	3233
23 May	1027	2360	21	67	0	0	231	3706
30 May	806	1241	196	46	9	0	206	2504
7 June	1447	604	138	20	32	2	190	2436
13 June	907	498	65	10	0	0	255	2233

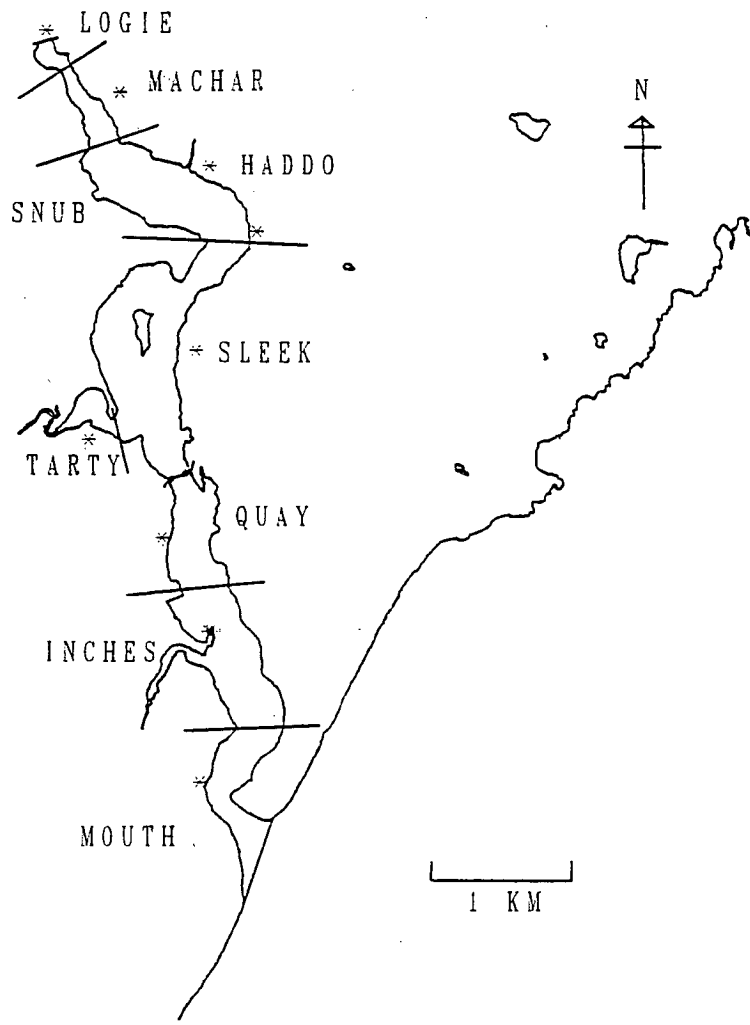


Figure 1. The Ythan estuary, showing the counting sections and count points (asterisks). The division between the Snub and Haddo areas is the centre of the low-tide river channel.