A study of breeding Sedge Warblers in the Tay Reedbeds 1999-91.

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INTRODUCTION

Large areas of reeds (Phragmites communis) can be found along both banks of the River Tay, West of Invergowrie and as far north as Cairnie Pier (Fig. I.). The major areas of reeds are, however, located on the north bank. The total area is approximately 410 hectares (NCCS pers. com) - It is on the north bank that harvesting of the reeds takes place and some small areas are grazed by cattle in the summer months.

The true bank of the river, which divides the reedbed from the arable farmland beyond, comprises a tree belt of deciduous trees at various stages of maturity, giving way to large areas of scrub and rank undergrowth or open, grassy areas.

In 1974 after a gap of some 30 years, Reedways began harvesting operations in the reedbeds. At this time an assessment of these harvesting operations was made by McMillan (1978) and a subsequent study was carried out by Moyes (1990) to assess the impact of new management techniques on the breeding bird population within the Inner Tay estuary SSSI. The objective of this study is to further investigate the importance (to breeding Sedge Warblers) of the strip of uncut reeds, left standing adjacent to the bank.

BACKGROUND.

The 1989 study of the effects of reedbed management on the birds of the Tay reedbeds (Moyes 1990) emphasised the importance to breeding Sedge Warblers of the uncut strip of old reeds which remains uncut, adjacent to the bank in the harvested areas. This study indicated that approximately 50% of all singing, male Sedge Warblers found in the managed sections had established territories In this strip of old reeds.

It was intended to investigate further the importance of this strip of old reeds in 1990 and, in particular how varying the depth of the remaining strip of old reeds affected Sedge Warbler densities. Reedways agreed to assist in the project by cutting the reeds in the study areas in a predetermined pattern. Accordingly the strips were marked out to be cut in early April but adverse weather conditions during this period prevented Reedways cutting the required areas.

Despite this, the proposed study sections were surveyed to compare Sedge Warbler numbers and the effects of reedbed management over the two years. The survey could then be used as a control for the study, which was subsequently carried out in 1991.

STUDY SECTIONS

The sections chosen for the study over 1990 and 1991 were Powgavie West and the western half of the Seaside section. Powgavie West was chosen because of the high numbers of Sedge Warblers located there in 1989, and also because Reedways generally cut the reeds in a similar pattern there each year. Because of this, we planned to use this section as a control to compare with the new patterns of reed cutting at Seaside. The western end of the Seaside section had been almost entirely cleared by burning in 19895 and as a result only two singing, male Sedge Warblers were present. Since 90% of this area remained as standing reeds in 1990, this gave us

an opportunity to compare Sedge Warbler numbers over the two years. The remainder of this section was unsuitable for the project as there was little reed adjacent to the bank.

The bank in both study areas was surveyed to estimate the percentage *of* ground cover by shrubs and bushes, and the average height of any vegetation was also estimated. It was intended to assess the importance of such vegetation to breeding birds.

RESULTS.

The purpose of the study was to investigate the importance of the strip of old reeds left adjacent to the bank after harvesting. It was decided to concentrate on this area and ignore the outer areas of reeds.

a) Powgavie West.(Figs 2,3 & 4)

In 1990, 13 singing, male Sedge Warblers were identified as holding territories in the reeds immediately adjacent to the bank. This corresponded closely to the 15 birds located in the same area in 1989, despite a decline in numbers nationally (Peach in litt.) The "missing" territories matched with areas of reeds that had been thinned out and trampled down by cattle at the western end of the section. It seemed then, that Sedge Warbler numbers were the same over the two years, where the reed cover had not been affected.

In 1991 the thinning out of reeds at the western end continued despite the erection of a fence by Reedways to keep out the cattle. Only 10 singing Sedge Warblers were found holding territory in the study section in 1991. The loss of one territory corresponded with the thinning out and loss of standing reeds at the western end of the section. In addition the isolated area of reeds at the far western end (which was not included in the study) was affected in the same way. In 1989 there were three singing Sedge warblers holding territory; one in 1990 and none in 1991. The area had thinned out almost completely over the three years.

In April 1991, the landowner cleared out large areas of scrub from the bank to improve grazing for his cattle. This gave us an opportunity to compare any effects of this change in habitat on the numbers of Sedge Warblers holding territory next to the bank. (The pattern of reed cutting remained very similar over the three years.)

Comparing the diagrams and figures for scrub cover. and the position of singing Sedge Warblers in 1990 and 1991 (figs 8 & 9) it seems that the clearing of scrub cover has no effect on Sedge Warbler territories in relatively wide strips of reeds (over 15m wide), next to the bank. However, two Sedge Warbler territories were "lost" in 1991 and these territories seem to correspond with scrub clearance on the bank next to relatively thin strips of reeds (15m wide or less). One such territory had been established actually on the bank in 1999 and 1990 but was not held in 1991 when part of the scrub cover in the territory was reduced from 40% to 10%. The other territory was in this same area, but held in a stretch of reeds only 15m wide.

Three other territories at the eastern end of the section seem to have been established in quite different areas from 1989 and 1990. Here. the singing Sedge Warblers seemed to avoid taking up territories in areas of reed where the adjacent scrub cover had been cleared to 10% or less. The strip of reeds here is only 10m to 15m wide. The scrub clearance may also have led to a drop in the number of Whitethroat holding territories in this section, from three in 1990 to one in 1991.

b) Seaside.. (figs 5, 6 & 7)

In 1989, 95% of this area had been cleared by burning with only a fringe of old reeds left along the. outer edge and a few isolated patches elsewhere. Only two singing. male Sedge Warblers were located in the area, both in isolated clumps of standing reeds. In 1990, approximately 90% of the area remained as standing reeds and the remaining 10% had been harvested. A total of 23 singing male Sedge Warblers were located in the same area during the 1990 survey. Of these, 13 had established territories in reeds immediately adjacent to the bank.

In 1991, Reedways cut study areas of reeds at the western end of the Seaside section. The stand of reeds next to the bank was cut in strips, of 50m lengths to either 2m or 7m in depth (Figs. 7, 10 & 11). There were four singing male Sedge Warblers present in the three strips cut to 7m wide, whereas only one was present in the three strips cut to 2m wide. This suggests a preference for the wider strips of standing reeds next to the bank.

The total number of singing male Sedge Warblers in the whole section in 1991 was 211 which compares closely to the 23 counted in 1990. As in 1990, 13 birds held territories in reeds immediately adjacent to the bank. The territories "lost" in 1991 were in the western end of the section and may have been affected by the swathe of reeds cleared to cut out the study areas. It seems that Sedge Warbler numbers were the same over the two years, where reed cover had been cut in roughly the same pattern.

In this section it appears that birds may favour territories adjacent to areas of bank where there is a high percentage *of* scrub cover. The highest density of Sedge Warblers holding territory next to the bank is in the six 50m. divisions at the eastern end of the section (Figs. 10 & 11). Here, where the average scrub cover overall is about 60%, there were six Sedge Warbler territories. In the nine other divisions, where the average shrub cover overall is only about 10%, there are only five sedge warbler territories.

CONCLUSIONS.

The purpose of this study was to examine the importance to breeding Sedge Warblers of the strip of old reeds which remain uncut next to the bank after harvesting, and the survey of the study section at Seaside appears to indicate that Sedge Warblers show a preference +or the wider areas of reed adjacent to the bank when establishing territories.

In addition, the clearing of scrub from the bank in the Powgavie West section allowed us to examine the importance of tree and scrub vegetation an the bank to breeding Sedge Warblers. Surveys of the Seaside section suggest that greater scrub cover on the bank increases the density of Sedge Warbler territories along the inland edge of the reedbed. The reasons for this are not immediately obvious but are believed to be linked to an increase in the food supply available to these birds. due to the presence of the scrub within their territories. The effects of scrub clearance at Powgavie West seem to corroborate this, with the apparent 'loss" of two Sedge Warbler territories and' a new distribution of territories in 1991 compared to the 1989 and 1990 surveys (although the pattern of reed cutting remained much

.the same). It was noted that large-scale scrub clearance had no effect on Sedge Warbler territories when the strip of standing reeds next to the bank was 15m wide or more. Where this strip of reeds was less than 15m wide, any significant scrub clearance (to 10% scrub cover or less seemed to result in a redistribution, or loss of territories with an apparent shift away from the most heavily cleared areas. Whitethroat numbers too dropped in this section +ram three singing males in 1990 to just one in 1991.

Counts in the study sections over the three years suggest that the Sedge Warbler population in these areas remained 'much the same,, at least in areas where the scrub cover and pattern of reed cutting were not altered. However the “loss." of territories in 1990 and 1991 might have been affected by a drop in Sedge Warbler numbers. If this was the case, then the "lost" territories still indicate that they were the least attractive (if not actually unsuitable) of those available in the study sections.

From the studies we carried out there would not appear to be any preference in relation to the average height of the vegetation, although Sedge Warblers often chose to sing and display from the highest vegetation in their territory.

RECOMMENDATIONS.

The exact correlation between shrub cover on the bank, the width of uncut reeds standing adjacent to it, and the effect these factors have on the densities of Sedge Warblers cannot be identified from this study but it is possible to make some recommendations for future management of the area.

Our surveys in 1999 and 1990 confirmed that large-scale burning of the reeds had severe repercussions for breeding birds and we recommend that only small areas are burnt in a properly controlled way as outlined in the 1999 report. Mr. G Craig of Reedways has implemented these recommendations over the past two years.

Although cattle caused damage to areas of standing reed at Powgavie West., this was a localised problem and now seems to have been controlled by the erection of a fence. However the effect of cattle grazing in the reedbed on any significant scale at a later date could well cause a decrease in the densities of some breeding birds. There Is some evidence to show that the areas grazed by cattle provide suitable breeding habitat for wading birds (Moyes 1990), and the exclusion of the cattle may have some small effect an their success.

1) Scrub Cover.

Scrub cover on the bank seems to increase the density of Sedge Warblers holding territory in the adjacent reeds. There is no evidence to suggest that scrub species type is the important factor. rather its presence. It also increases the breeding habitat +or other birds. including Whitethroat, as well as a number of Sedge Warblers that establish territories in the scrub vegetation itself. Wherever possible, the growth of scrub cover on the bank should be encouraged and its clearance should be restricted.

2) Standing Reeds

The stand of uncut reeds adjacent to the bank, which remains after harvesting, is vital to Sedge Warblers, and in order to maintain the population at its current level, it is advisable to ensure that as wide a strip as possible is left uncut. Our studies indicated that the 7m wide strips were more suitable than those only 2m wide however, the effects of scrub clearance at Powgavie West suggest that the optimum width may be 15m. We do not think that this width of reeds would be necessary where there is any shrub cover on the bank so we would suggest that a strip 10m wide would be adequate, unless there was no adjacent shrub cover. Here a strip 15m wide would be preferable.

Reedways should also be encouraged to leave small stands of old reed when the rest of the reed is cut in the harvested areas, especially in the landward half of the reedbed, to provide additional, suitable nesting sites for Sedge Warblers and other species.

ACKNOWLEDGEMENTS.

Our thanks go to Mr. Graham Craig of Reedways who provided much valuable information and who arranged for the cutting of the study strips at Seaside. Also to the adjacent landowners who granted access and to N Taylor of NCCS for his assistance and encouragement. The Nature Conservancy Council for Scotland assisted with travelling costs.

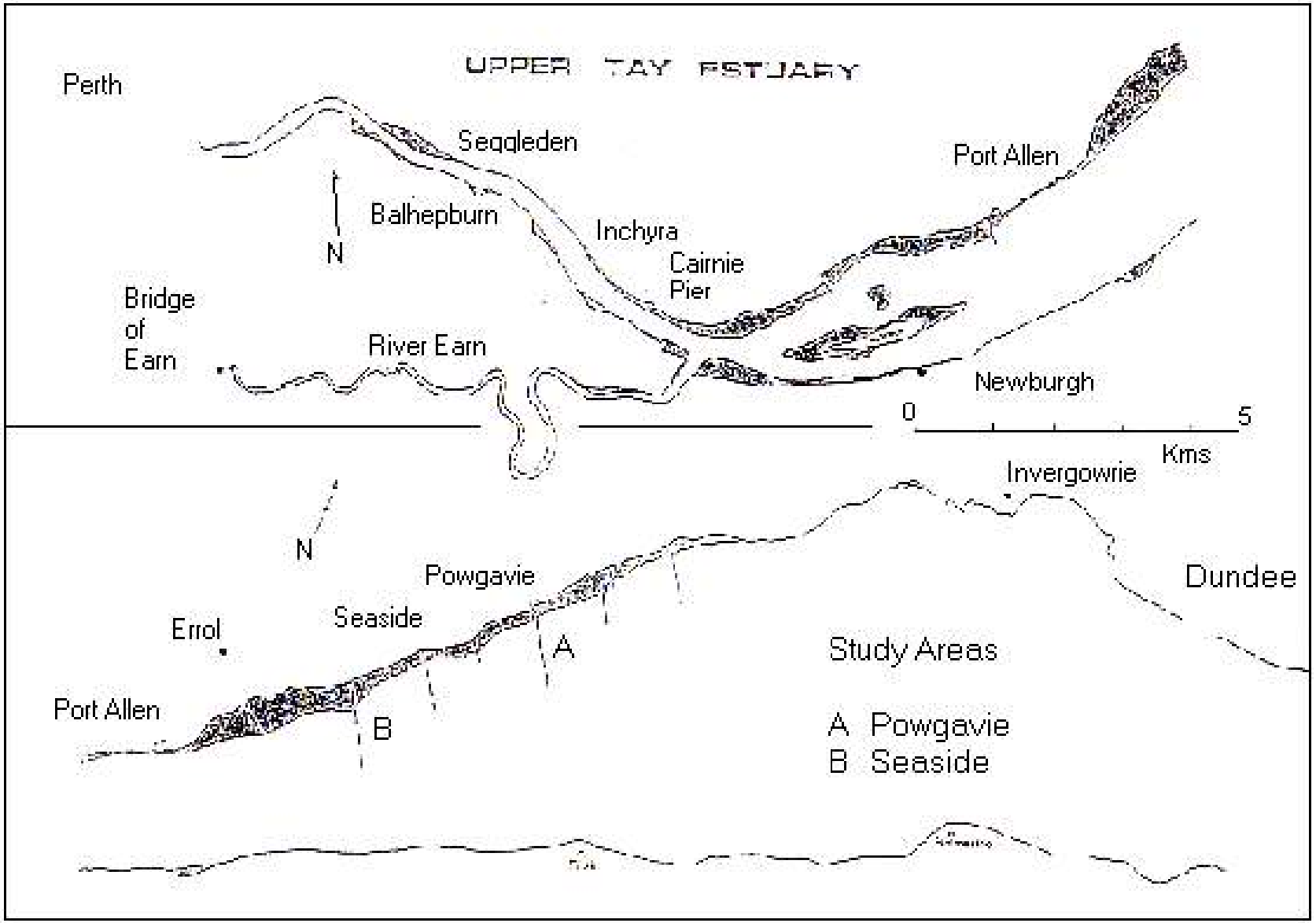


Fig 1 Upper Tay Estuary locational map with distribution of Phragmites communis shown in stipple

Powgavie 1989

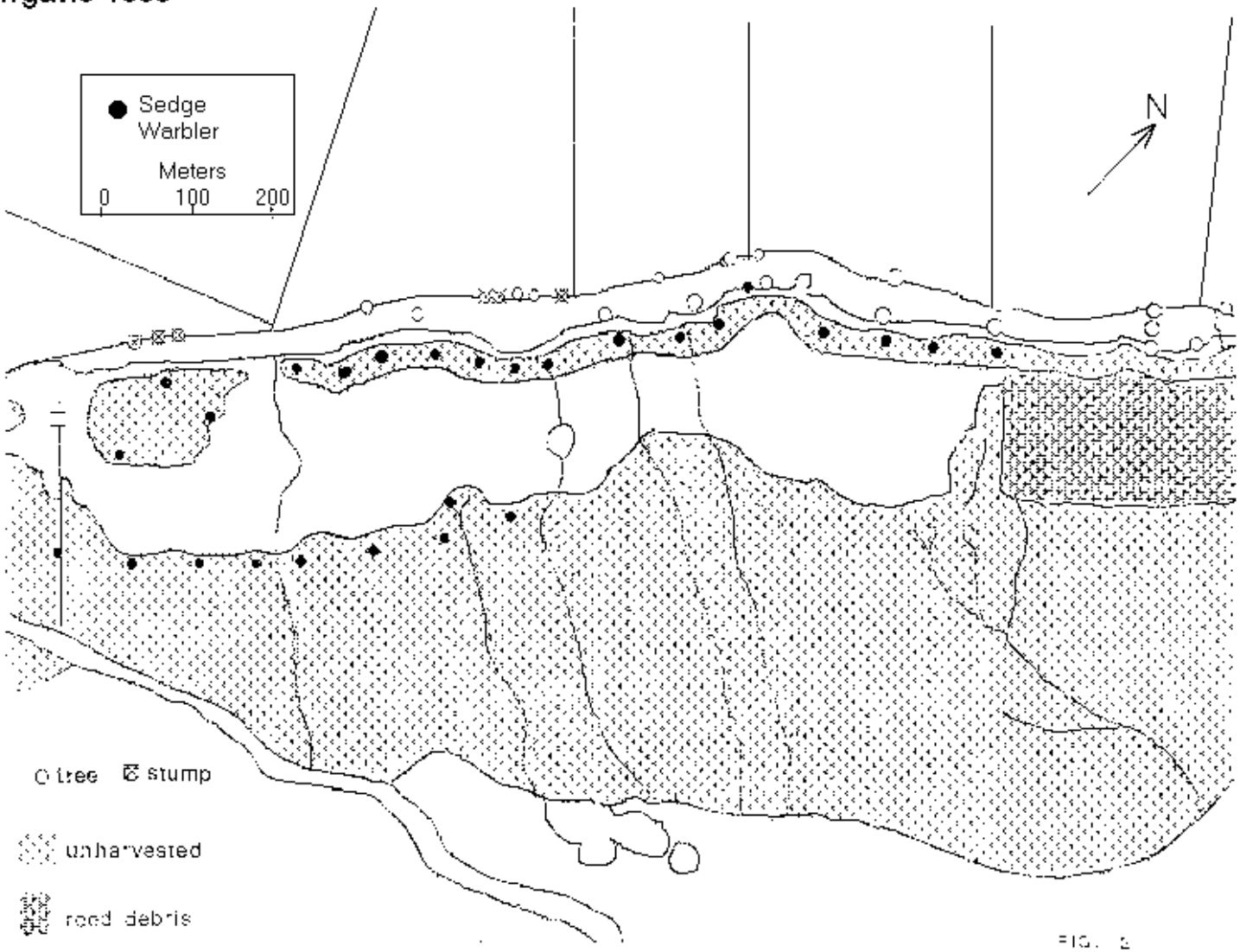


FIG. 2

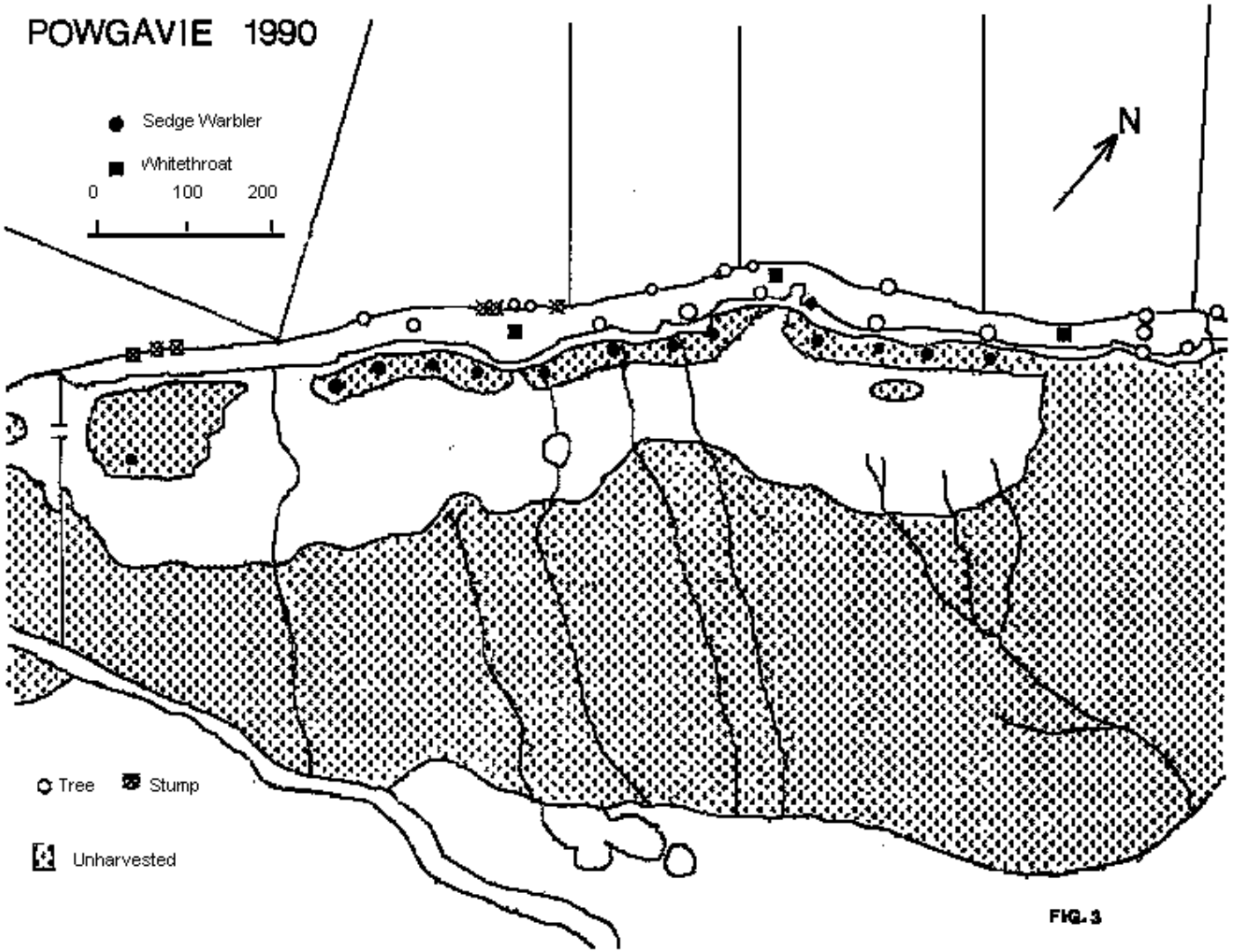

POWGAVIE 1990
Sedge Warbler
Whitethroat
0
100
200
N
Tree
Stump
Unharvested

FIG. 3

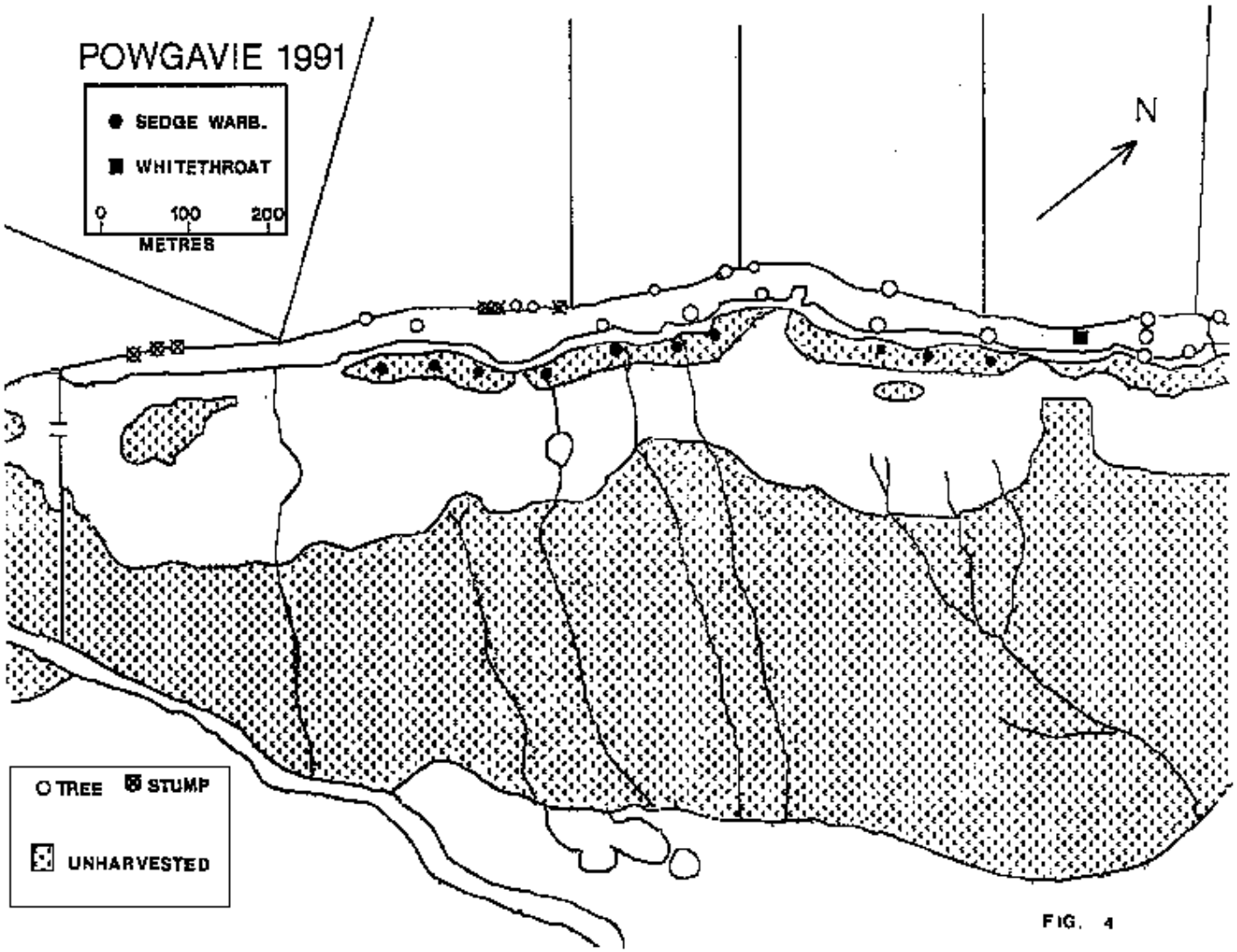

POWGAVIE 1991
SEDGE WARB.
WHITETHROAT
0
100
200
METRES
N
TREE
STUMP
UNHARVESTED

FIG. 4

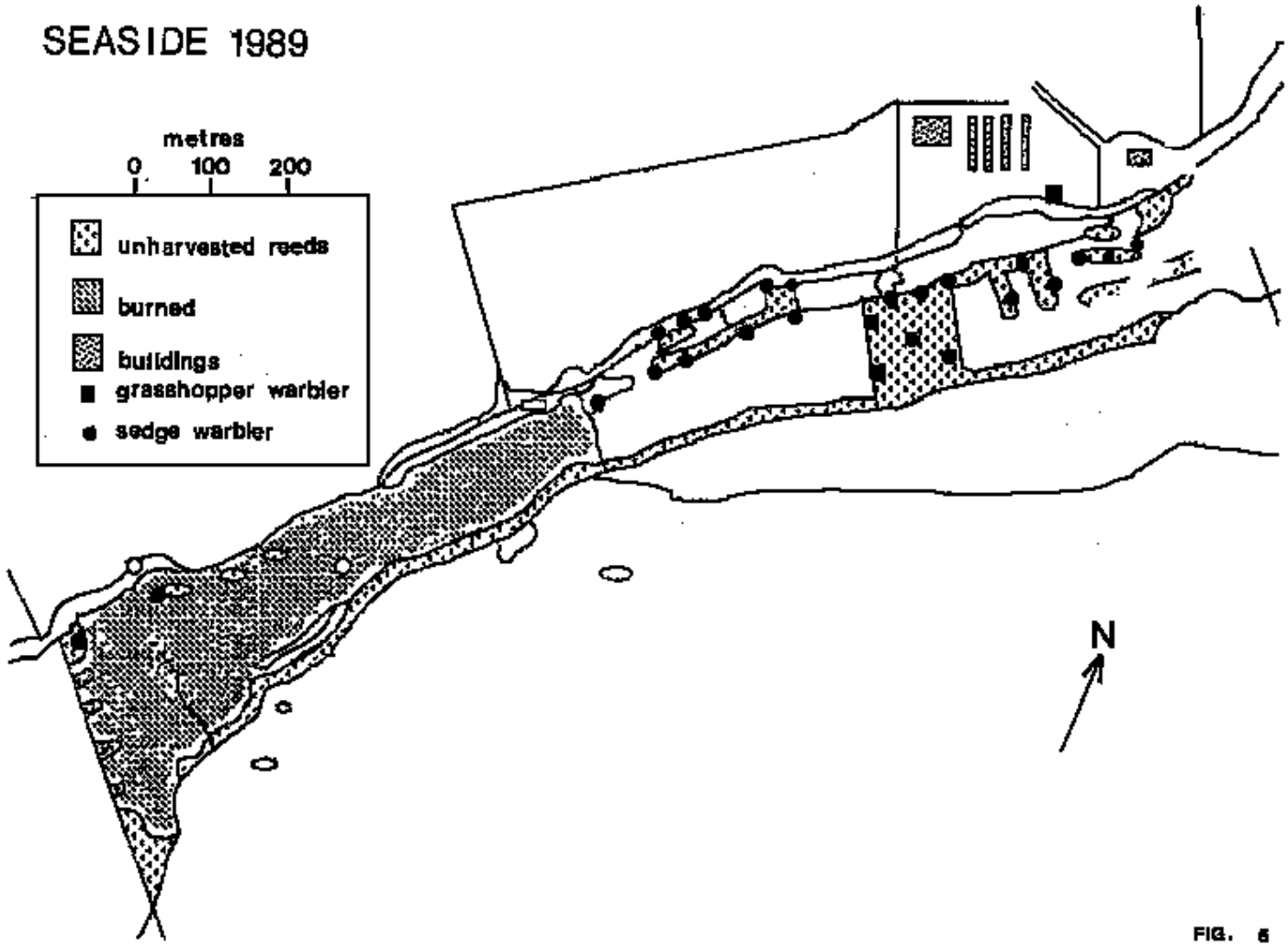

SEASIDE 1989
metres
0
100
200
unharvested reeds
burned
buildings
grasshopper warbler
sedge warbler
N

FIG. 6

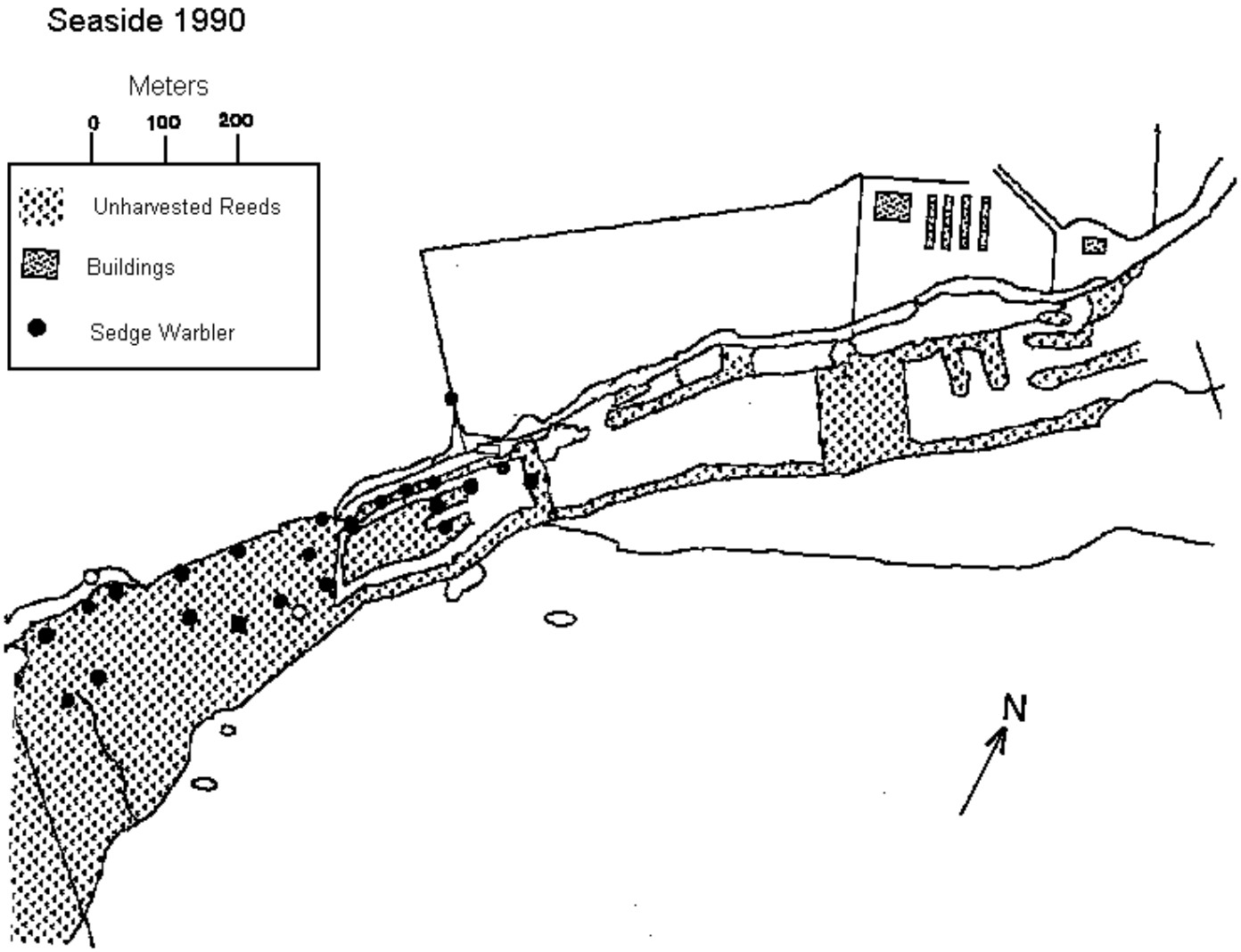

Seaside 1990
Meters
0
100
200
Unharvested Reeds
Buildings
Sedge Warbler
N

FIG. 6

SEASIDE 1991

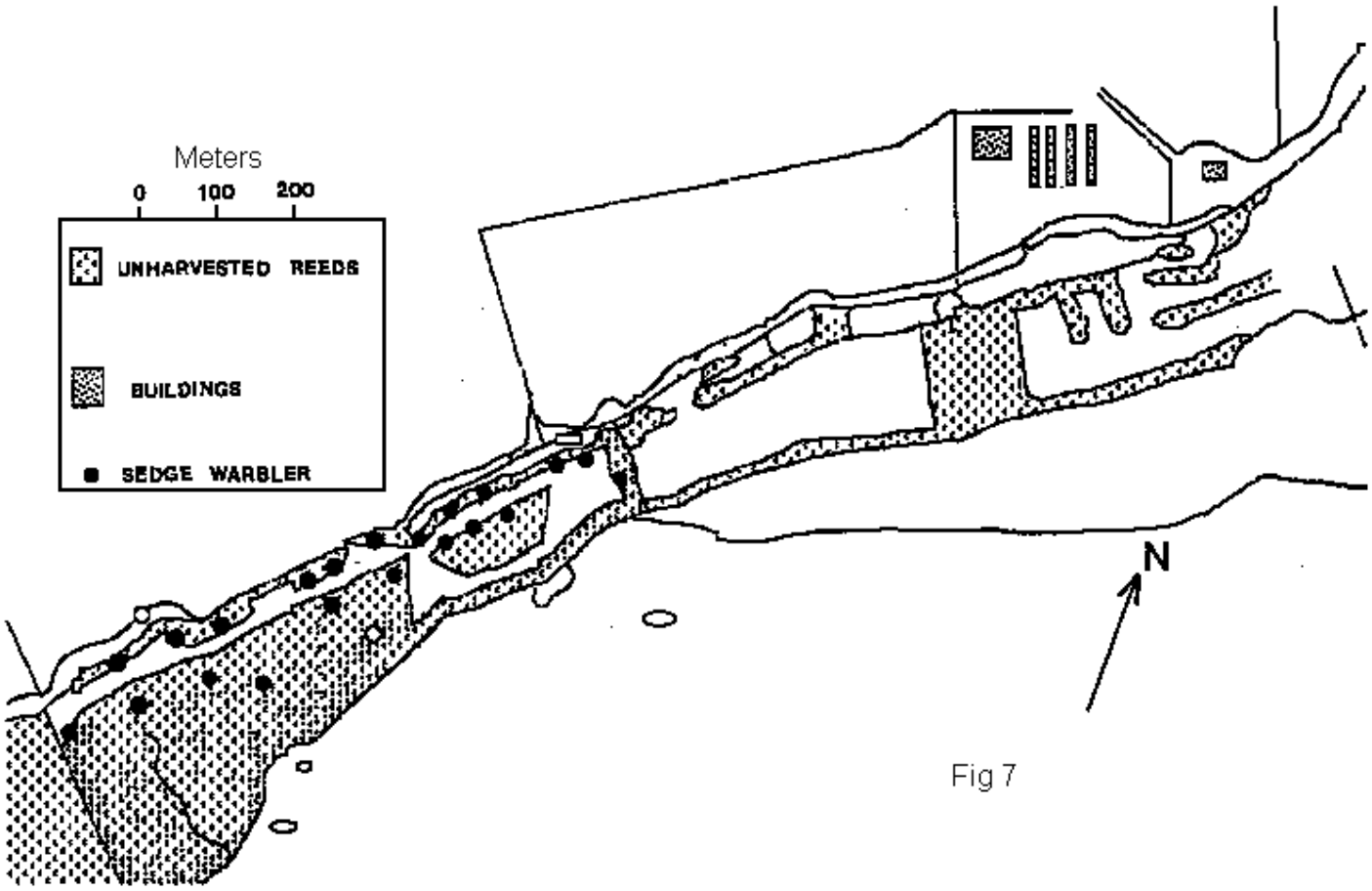
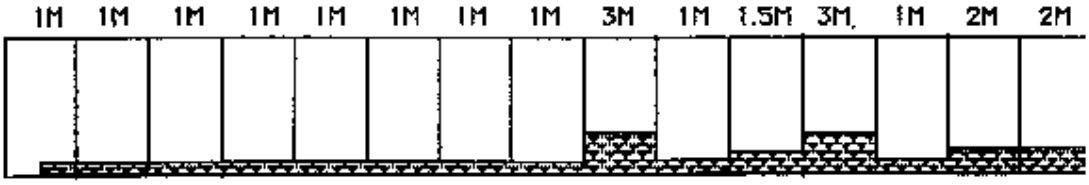


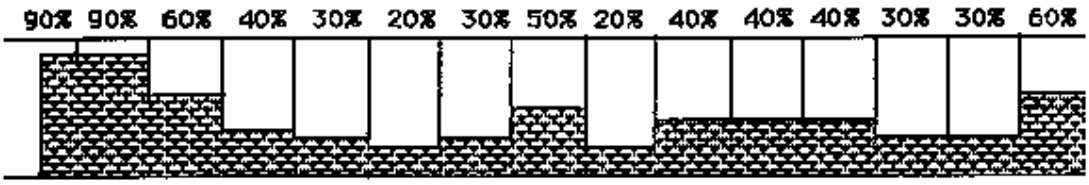
Fig 7

DIVISIONS OF 50M.

POWGAVIE 1990



AVERAGE HEIGHT OF SHRUB COVER ON THE BANK



AVERAGE PERCENTAGE OF SHRUB COVER ON BANK.

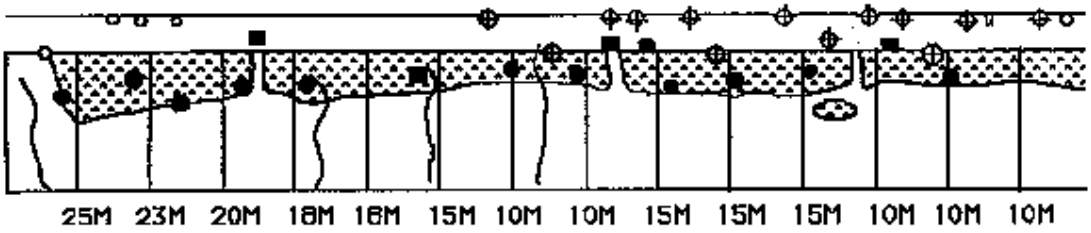


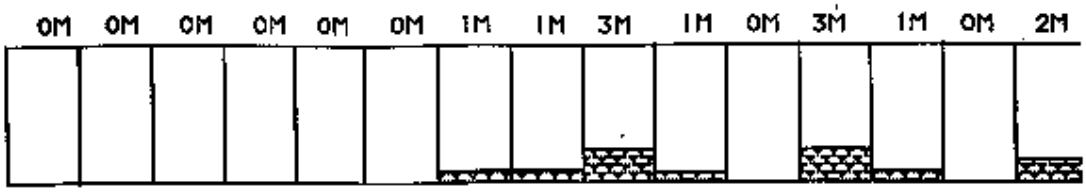
DIAGRAM OF BANK AND REEDBED. WIDTH OF REED COVER SHOWN IN METRES.

- SHRUB COVER
- REEDS
- WHITETHROAT
- SEDGE WARBLER
- MATURE TREES
- TREE STUMPS / DEAD TREES.

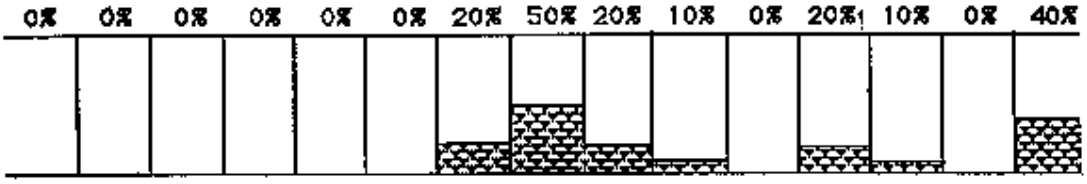
FIG. 8

DIVISIONS OF 50M.

POWGAVIE 1991



AVERAGE HEIGHT OF SHRUB COVER ON THE BANK



AVERAGE PERCENTAGE OF SHRUB COVER ON BANK

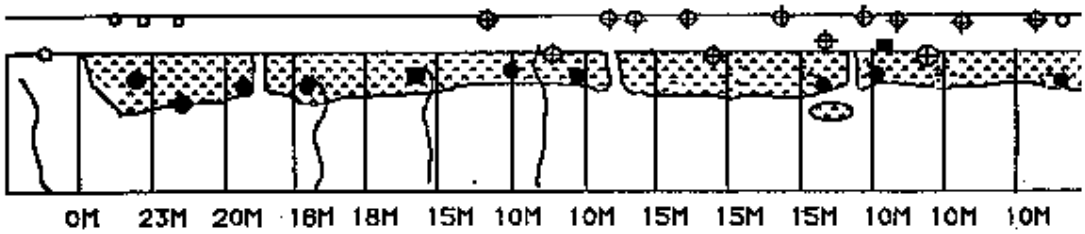
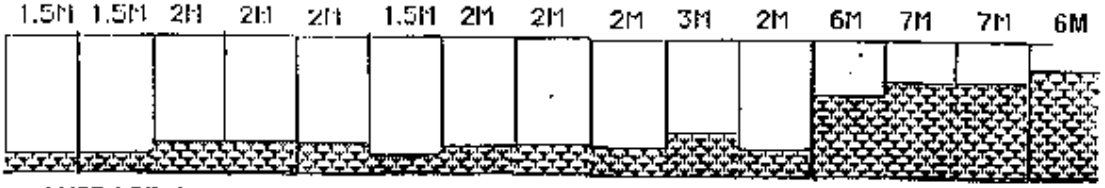


DIAGRAM OF BANK AND REEDBED. WIDTH OF REED COVER SHOWN IN METRES.

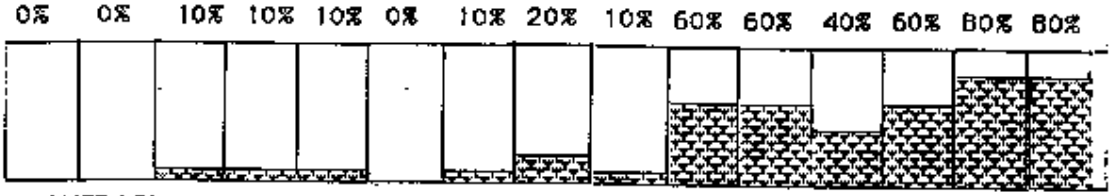
- SHRUB COVER
- REEDS
- WHITETHROAT
- SEDGE WARBLER
- MATURE TREES
- TREE STUMPS / DEAD TREES.

FIG. 9

Divisions of 50mtr **Seaside Farm** 1990



AVERAGE HEIGHT OF SHRUB COVER ON BANK.



AVERAGE PERCENTAGE OF SHRUB COVER ON BANK.

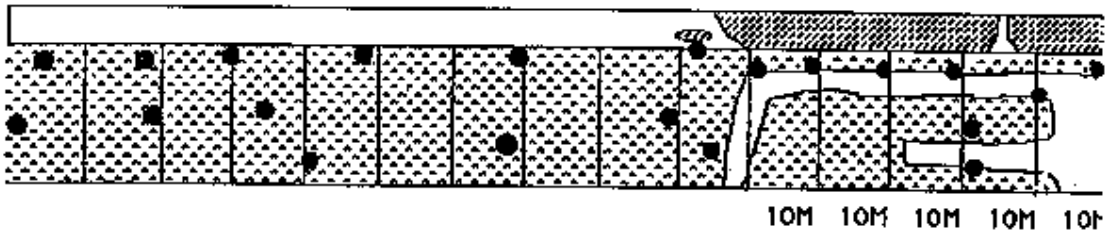


DIAGRAM OF BANK AND REEDBED. WIDTH OF REED COVER SHOWN IN METRES.

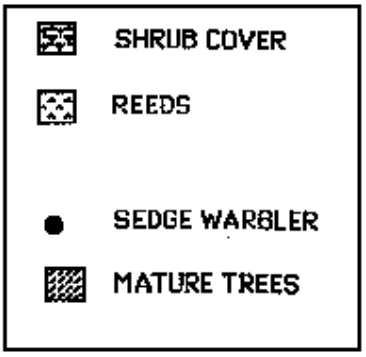
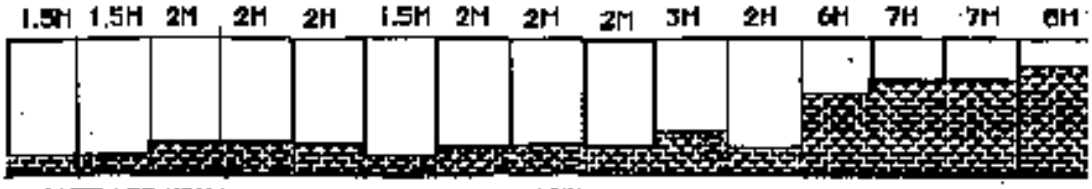


FIG. 10

Divisions of 50mtr **Seaside Farm** 1991



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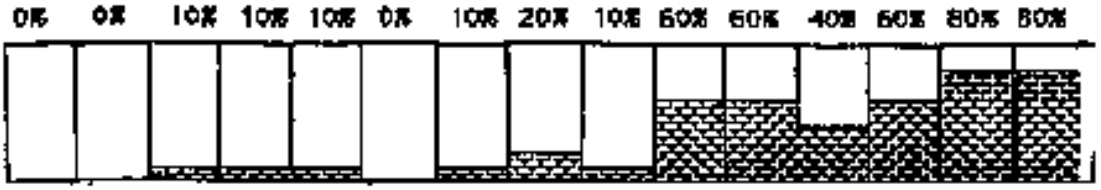

AVERAGE PERCENTAGE OF SHRUB COVER ON BANK.

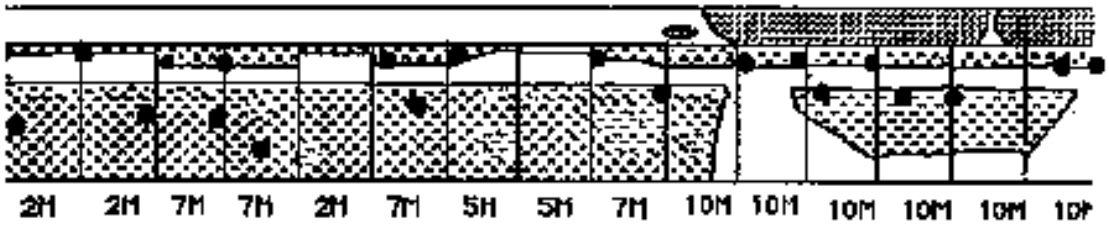

DIAGRAM OF BANK AND REEDBED. WIDTH OF REED COVER SHOWN IN METRES.

FIG. 11