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Report on six Dorset heathland sites for *Coenagrion Mercuriale* 1994

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Report on Six Dorset Heathland Sites for *Coenagrion Mercuriale*, 1994

1994

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ANNEXE A

Southern Damselfly (*Coenagrion mercuriale*) recovery programme in Dorset

Background

The Southern Damselfly (*Coenagrion mercuriale*) is the smallest and most delicate of the British blue damselflies. It is currently known in England from Dorset, Devon and Hampshire. It also occurs in Pembrokeshire, Gwynedd and Glamorgan in Wales. It was once more widely distributed and has declined considerably over the last century. Elsewhere, *C. mercuriale* occurs in central, southern and south-western Europe and northern Africa, with a different subspecies in Italy and N. Africa.

Coenagrion mercuriale is an internationally endangered species which is considered rare in Great Britain and is listed as Red Data Book category 3. The species is also included on Annexe II of the EC Habitats and Species Directive.

The biology and habitat requirements of *C. mercuriale* are now relatively well established so it is possible to formulate realistic management plans. This project aims to write a management plan for *C. mercuriale* on the Dorset Heaths, to establish the whereabouts of the larval sites which can be targetted for manangement, and to set up a system to monitor the effectiveness of management.

Aims for 1994

1 Survey the adults in June - July on the Dorset Heaths, providing details of the size of the colonies and the areas on which they depend.

2 Survey the larvae at these sites and measure key environmental variables.

3 Plan the route and timing of a walk to monitor the adults, using appropriately modified Butterfly Monitoring Scheme methodology, and provide results for 1994 for comparison with future monitoring.

4 Write a management plan for sites where *C. mercuriale* is found, and include a map showing where and what action is needed. The timing and cost of work will be given.

English Nature
Lowlands Team and Devon & Cornwall Team

Contents

INTRODUCTION

The present survey was carried out as close as possible to the guidelines set out by Moore and Corbet 1990. There were however several factors involved which made strict adherance impractical.

1. The timing of the contract made initial preparation difficult.

2. The nature of the sites would have required a full six weeks intensive work.

3. The relatively low densities of *C.mercuriale* which were, in some cases spread over considerable areas.

4. The non linear nature, terrain and vegetational structure of some of the sites.

The two visits to each site (six day visits), as originally planned, proved inadequate and in the end 11 day visits for adult monitoring purposes were needed. The weather proved adequate and it was only found necessary to abandon on one further occasion.

Counts of adults were carried out as per. and Brooks (1993) with due reference to Jenkins (1986). The pH meter was recalibrated to two points immediately prior to each field trip. For larval sampling two standard pond nets - 10 " sq. and 7" dia. - and a kitchen sieve were used dependant upon conditions. Only two of the sites exhibit a defined central water course and neither of these are comparable with those of the New Forest, Devon or (scant knowledge) Prescelli. Neither are there particularly well defined runnel systems, on the sites where they should be the runnels are overshadowed / closed by rank *Molinia/Juncus*. Bearing these factors in mind I do not feel that comparisons between different areas as being particularly helpful.

Subsequent monitoring, I would suggest is carried out in line with Jenkins (1985 - 1994) on an annual basis as this method is easily carried over from one volunteer to another. Individuals may well wish, in addition, to monitor an individual site as per Moore and Corbett (1990) to provide valuable additional information. The important issue is to obtain comparative annual counts.

Larval survey - After seeing the sites while surveying for adults in the summer I viewed the prospect of larval surveys with some trepidation. After completing the larval survey I was quite pleased with the results but only on a relative basis. ALL of the sites are particularly difficult for varying reasons. Disjointed and narrow channels (too narrow for a standard net), overgrown with rush and Molinia grass, deep soft silt for a base or hard clay, relatively few good vegetated areas, tree roots, diffuse habitats, little depth of water in many places, over dense vegetation in some cases, small populations; the list is never ending. Because of this I would consider it unwise to use this survey as a comparative study. All of the sites are disimilar to each other and to any other stream/mire system that I have sampled in the past and on this basis I would not have the confidence to predict that the results could be repeated in a meaningful manner.

CORFE COMMON (East) 967811

Site description -

A small section of the common lying to the east of the main Wareham to Swanage road immediately upon leaving the village of Corfe. A stream bisects the area flowing from the south towards the north in a small valley. With the exception of one short stretch it's whole length is completely covered by *Salix/Crataegus/Prunus* scrub with an understorey of *Urtica/Rubus*. It is of little value to Odonata due to the steep banks, total lack of aquatic vegetation and shade. To the east of the stream the land drops away from gorse dominated grassland to *Molinia* wet heath with *Salix* in the wetter areas and along the margins of ditches. Small clearings in the sallow beside the main stream have been taken over by umbellifers (*Oenanthe spp.*) and *Iris pseudacorus*. This coarse herbage, together with the sallow, has removed any value the few flushed areas may have had. A gravelled track running NE by E forms the northern boundary of the survey area, the stream running through a culvert beneath it. Twenty five metres to the east of this culvert is another culvert which would appear to have been blocked for a number of years. The purpose of this was to take water from a ditch / small stream draining an area of heath above, but separated by an area of raised ground, and paralel to the main stream. The depth of the culvert is 1.7 mtres +/- and is blocked to this depth by vegetation at the inlet for a distance of 10 metres. It is here that *C.mercuriale* is breeding (area shaded in red, map on page 2 c). The vegetation at this point is of such a nature that it is perfectly easy to walk along the centre of the ditch. There is no open water and in fact very little water is visible at all. With the exception of this area the ditch and it's subsequent herringbones is wholly overgrown with *Salix / Ulex* and, with the exception of one very small area well to the south - where *P.nymphula* was found - has no aquatic vegetation.

Aquatic vegetation -

The dominant plants are *Potamogeton polygonifolius* and *Equisetum palustris*. Others of note - *Carex demissa, C.echinata, Eleogiton fluitans, Anagallis tenella, Lychnis flos-cuculi* and *Veronica beccabunga.*

Coenagrion mercuriale -

22nd June 1994 - 6 male, 4 female including 2 pairs in tandem 1 of which subsequently oviposited; plus 2 teneral specimens. 5 exuvia were found.

16th July 1994 - 8 male, 4 female including 3 pairs ovipositing.

30th. July 1994 - 5 male, 2 female including 2 pairs ovipositing.

Other species present - *Pyrrhosoma nymphula* and *Sympetrum striolatum.*

Future monitoring -

Monitoring of this site is self evident, being a steady walk along the site - A - B as marked on map (page 1 c) or A - C should management proposals be carried out.

Management proposals -

This is a small and vulnerable colony. At present the site is too small and too densely vegetated. The presence of *V.beccabunga* and *L.flos-cuculi* indicate the extent to which this site is drying out.Prior to any major management involved in reclamation work above the main stream I propose that the Sallow and Gorse be cleared from a 50 metre stretch immediately to the south of the existing breeding site. (cross hatched in green map page 2 c). The area to be cleared to extend 5 metres to the west of the ditch and, in addition, any vegetation overhanging or shading the ditch from the east be removed. In addition I suggest that a shallow runnel be created within the existing site over it's whole length one spit wide and 6 centimetres deep. The turf from this being used to 'seed' the cleared area of ditch. Doing so would provide much needed open water and, at worst, any larvae displaced would be washed back to the original site. Costings in Appendix A.

Larval survey - 8/10/94

The 20 metre section adjacent to the culvert proved too densely vegetated to sample with a net. A turf was removed and closely examined but no larvae were found.

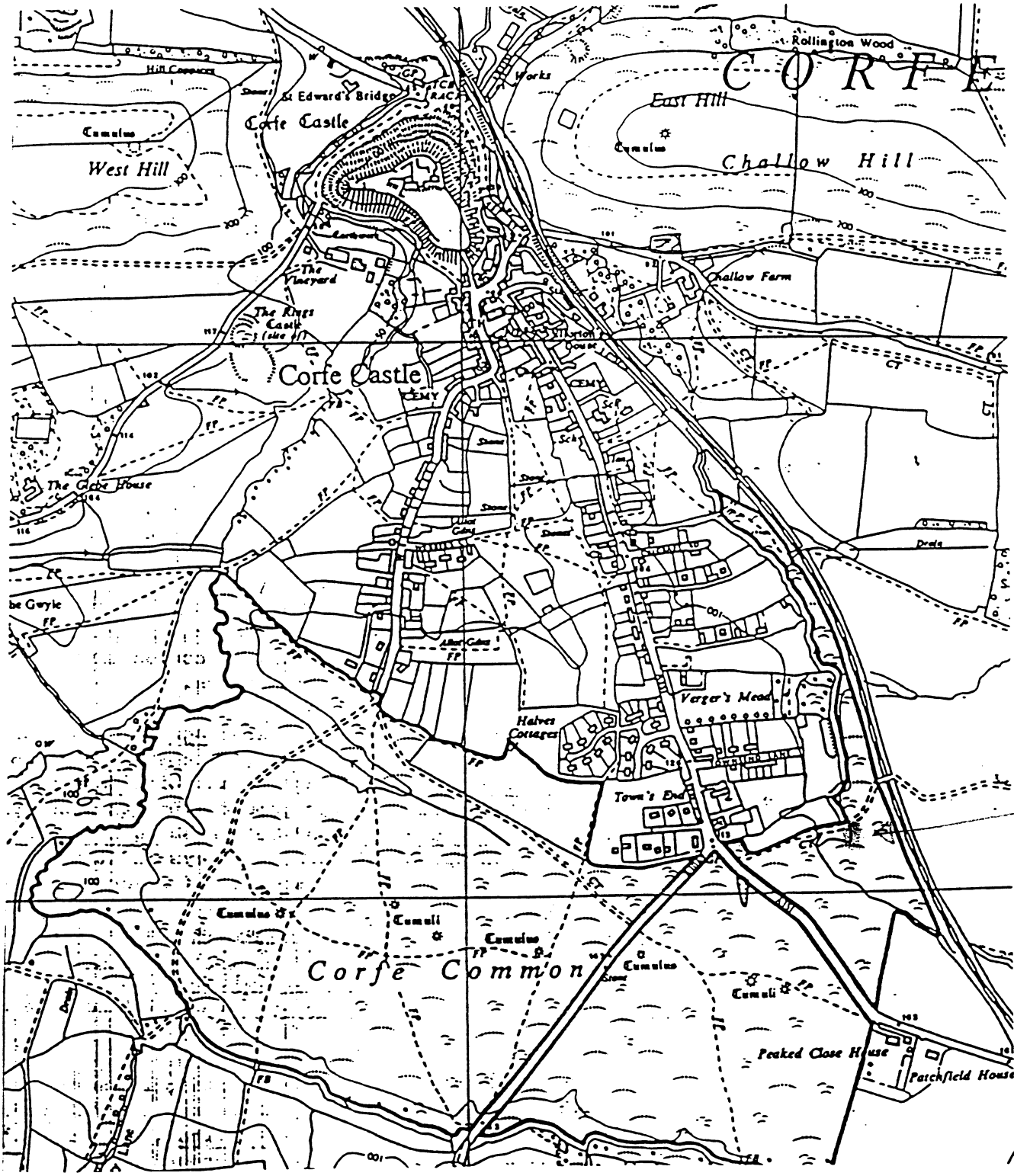
Immediately below this where the vegetation was not as rank and - with difficulty - four samples were taken which yielded 2 ***Pyrrhosomma nymphula***, 6 ***Coenagrion mercuriale*** and 3 ***Orthetrum coerulescens.*** This I considered very satisfactory bearing in mind the size of the population and the difficulty of sampling.

The unvegetated and overgrown/ shaded ditch yielded nothing, not even the fresh water shrimp *(Gammarus pulex)* which abounded eslewhere.

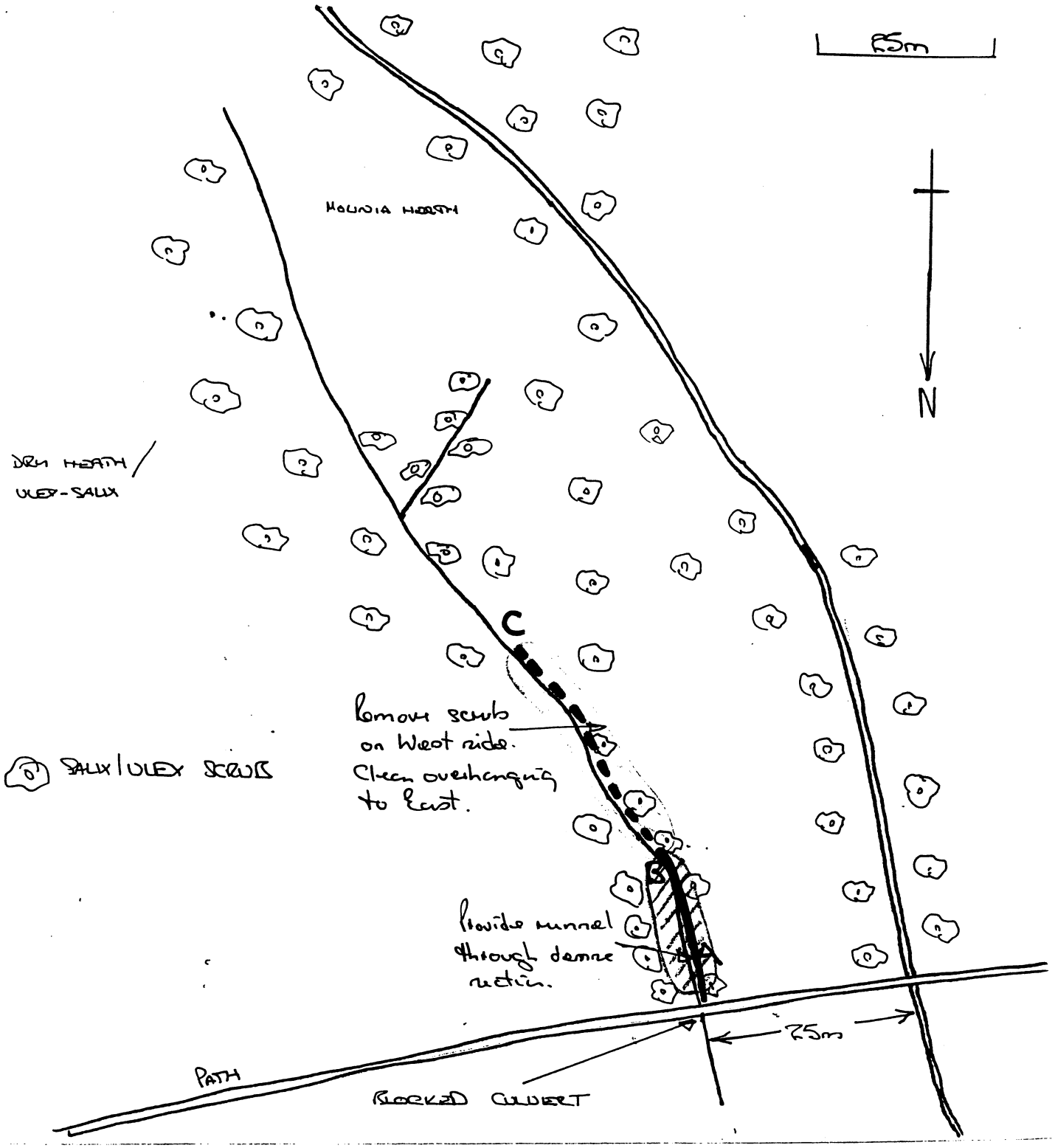
It is my experience that where large populations of *Gammarus* are found that conditions are not wholly to the liking of Odonata larvae. This confirms my original thoughts regarding possible future management.

which were what?

CORFE COMMON (East) General location map



CORFE COMMON EAST Site location map



CORFE COMMON (West) 956814

Site Description -

A grassy valley running from the Corfe to Blashenwell Farm road NW for 200 metres +/- until it reaches the main Corfe Stream which then flows in a northerly direction for another 150 metres +/-. An escarpment densely clad with *Rubus spp.* and *Pteridium aquilinum* to the E and NE rises steeply for about 25 metres to dry heath on the plateau. The grass area - which contains a good population of orchids including *Dactylorhiza fuchsii, D.incarnata* and *D.praetermissa* (possibly including the narrow leaved form) - is flanked to the NE, immediately below the base of the escarpment by wetter flushed areas but not sufficiently so for supporting populations of Odonata. Some *Iris pseudacorus* is present. Between the escarpment and the Corfe stream is dense and mature Alder carr with an understorey of coarse herbage including extensive *Carex paniculata.* This is now a valuable ecosystem in it's own right and any clearance for the improbable recolonisation by *C.mercuriale* would be unwarranted. There are two spring fed flushes running west form the escarpment towards the carr. The most northerly of these is completely covered by mature Alder - which appears to take the vast majority of the water - and therefore of little value. The other (shaded green, map page 3 c), although small is rather nice (and more reminiscent of an NF runnel) and well vegetated with *Potamogeton polygonifolius.* Never the less I see little future in expending money and energy on a site with improbable recolonisation prospects. As I understand from Prof. Norman Moore, *C.mercuriale* has not been recorded here since the 1960's.

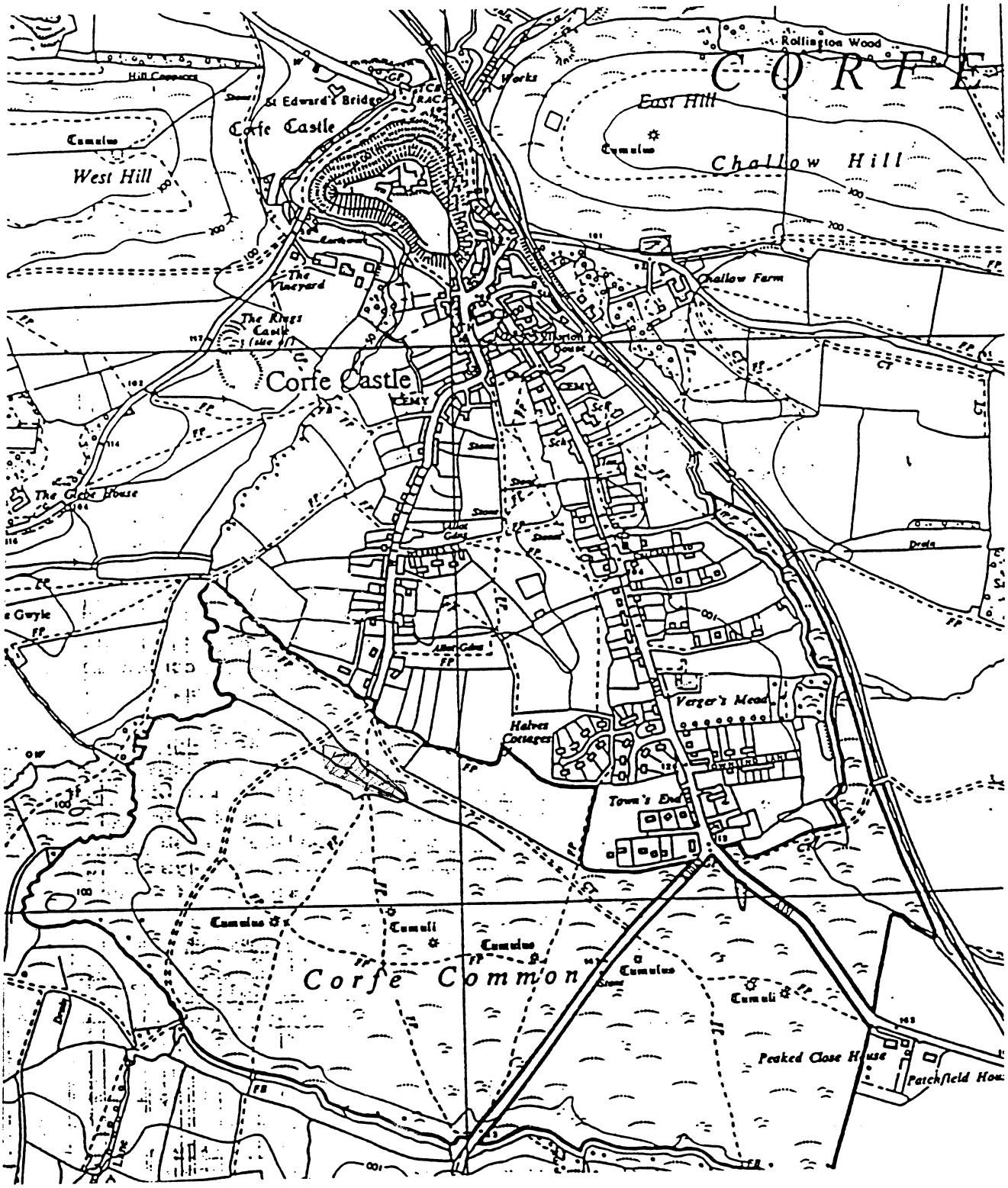
Coenagrion mercuriale -

Site visits were made on 22/6/94 and 16/7/94 but no Odonata were encountered.

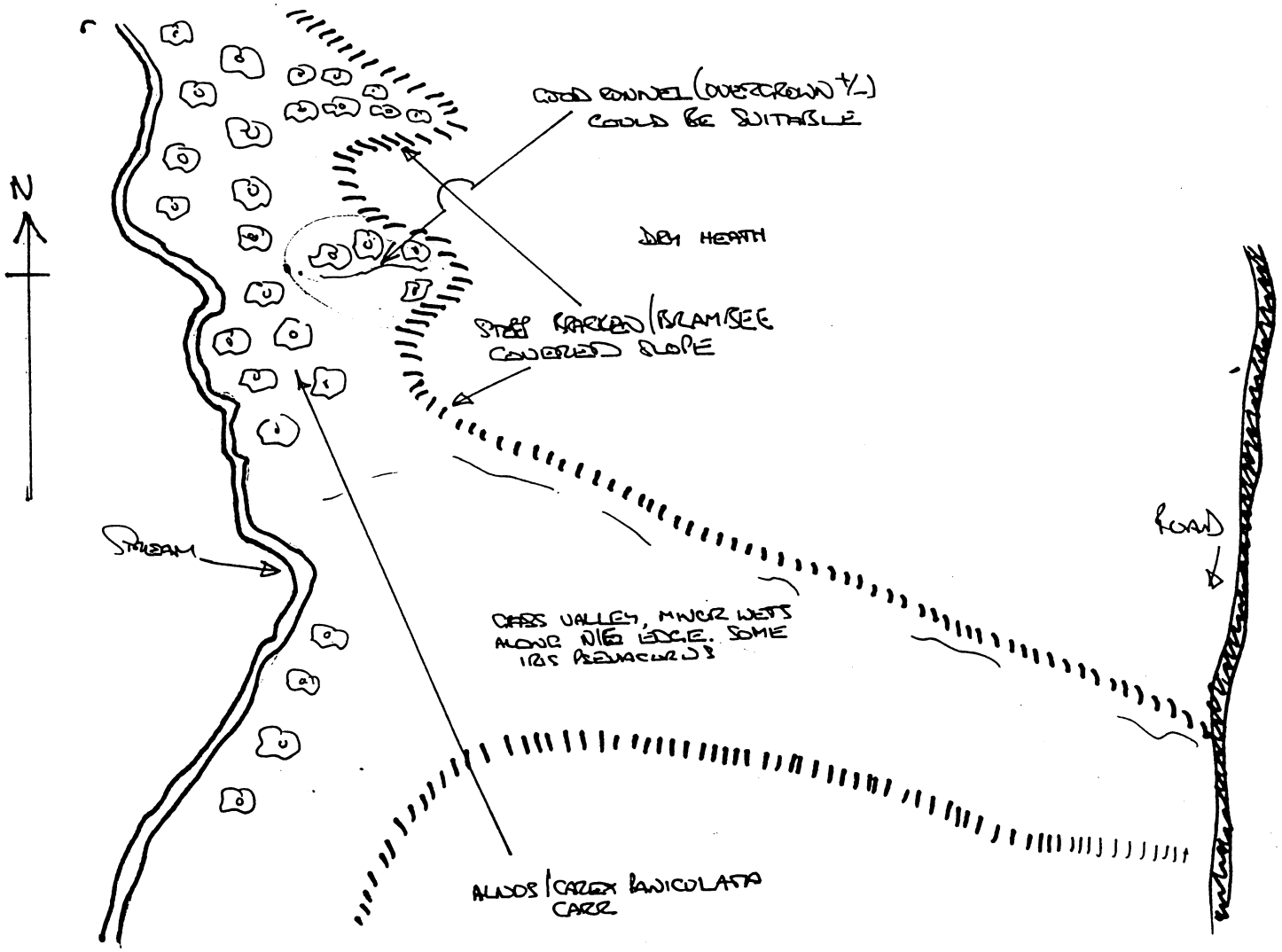
Larval Survey - 8/10/94

A cursory survey on the runnel - mentioned previously - was carried out with negative result

CORFE COMMON (West) General location map



CORFE COMMON (West) Site location map



MIDDLEBERE HEATH - 943842

Site description -

Situated at the extreme SW tip of Middlebere Heath this discrete area of wet Molinia heathland, measuring approximately 200 metres by 50 metres, is completely surrounded by Sallow / Birch carr. The land drains in an W - E direction from a very wet mire area across the clearing and along the southern edge where there occurs a complex of indistinct runnels. *Hydrocotle vulgaris* is fairly common throughout, *Schoenus nigricans* occurs in small densities throughout and there is a small ammount of *Erica ciliaris*. Generally the whole area is dominated by *Molinia caerulea* but in some of the wetter areas where drainage is particularly impeded *Juncus acutiflorus* and *J.effusus* have taken over greatly decreasing the value of the runnels in these areas. The open nature of the runnels improves towards the eastern end although the Molinia grass is over dense and open sections are small and disjunct. Here vegetation in the runnels is dominated by *Sphagnum* mosses, *S.fimbriatum* dom. *S.tenellum, S.recurvum & S.teres* rare; *Potamogeton polygonifolius* and (some) *Hypericum elodes*. In the south eastern corner the carr has encroached on to the heath. The birch and sallow scrub is well established and there is, at present, little sign of further encroachment. It is however a pity as this area has most open water and is potentially a good breeding area. The carrs to the north and south are predominantly dry but the one to the east has a small stream running through it. An old agricultural bank prevents the heath from draining directly into the stream except in the north west corner where the bank is breached and another separate small stream has formed. Both streams are heavily shaded and the only aquatic vegetation of note is *Apium nodiflorum*. The runnels forming the source of the stream to the NW are wholly indiscernable through excessive growth of Molinia. The pH in the runnels measured 6.6 and in both streams 6.8. The streams converge futher north in the carr and eventually emerge into an area cleared previously as a conservation project for *C.mercuriale*. The mineral substrate in this area is not conducive to plant growth, only *Apium spp.* being found in small quantities and unfortunately no *C.mercuriale*. Other invertebrates of note :- *Dolomedes fimbriatus* and *Metrioptera brachyptera*. Where there is scrub encroachment *S.papillosum* occurs and in the drier areas adjacent to the carrs both *S.palustre* and *S.squarrosum*.

Coenagrion mercuriale -

18th. June 1994 8 male, 2 female including 1 pair in cop.

9th. July 1994 16 male, 3 female including 2 pairs in cop. with 1 ovipositing.

31st. July 1994 4 male.

Other species present :- *Cordulegaster boltonii, Aeshna cyanea* (hawking) and *P.nymphula*

Future monitoring -

This is a weak colony and a non linear habitat. There can be no particular path to follow. The route indicated in red will be more self evident on site and will provide a reasonable indication of numbers present. In addition the open area to the north of the main carr should be scrutinised.

As this is another weak colony I am concerned lest it's future become further impaired. I suggest that the two areas cross hatched in green be cleared of scrub. The most northerly to open a short section of the stream to light and the other to remove incursive scrub and open back to and expose to light another section of stream. The latter would also expose a considerable area of runnels and open water. In neither case should the sheltered nature of the site be impaired. The following is mentioned assuming that there is no possibility for the indroduction of grazing which I understand ceased in 1979. I am concerned with the indistinct nature of the runnels available at present - they are somewhat less distinct than shown on the map - many are overshadowed and obstructed by *Molinia / Juncus spp.*. I am tempted to suggest that a section in the S/W corner be opened up by removal of some of the more intrusive *Molinia* tussocks. This, however, could be a futile exercise and I would bow to more theoretical ecologists. It may be better to wait to see if the intial reccomendations, if implemented, provide additional focal points for breeding. In the absence of grazing I believe a case could be made for burning the purple moor grass. This may well be difficult to control and I lack the expertise to advise on this matter.

Larval Survey - 8/6/94

The stream to the north was found to have 0.5m + soft semi-decomposed detritus as a base, no larvae were found here in spite of the occurence of a small ammount of *Potamogeton natans.*

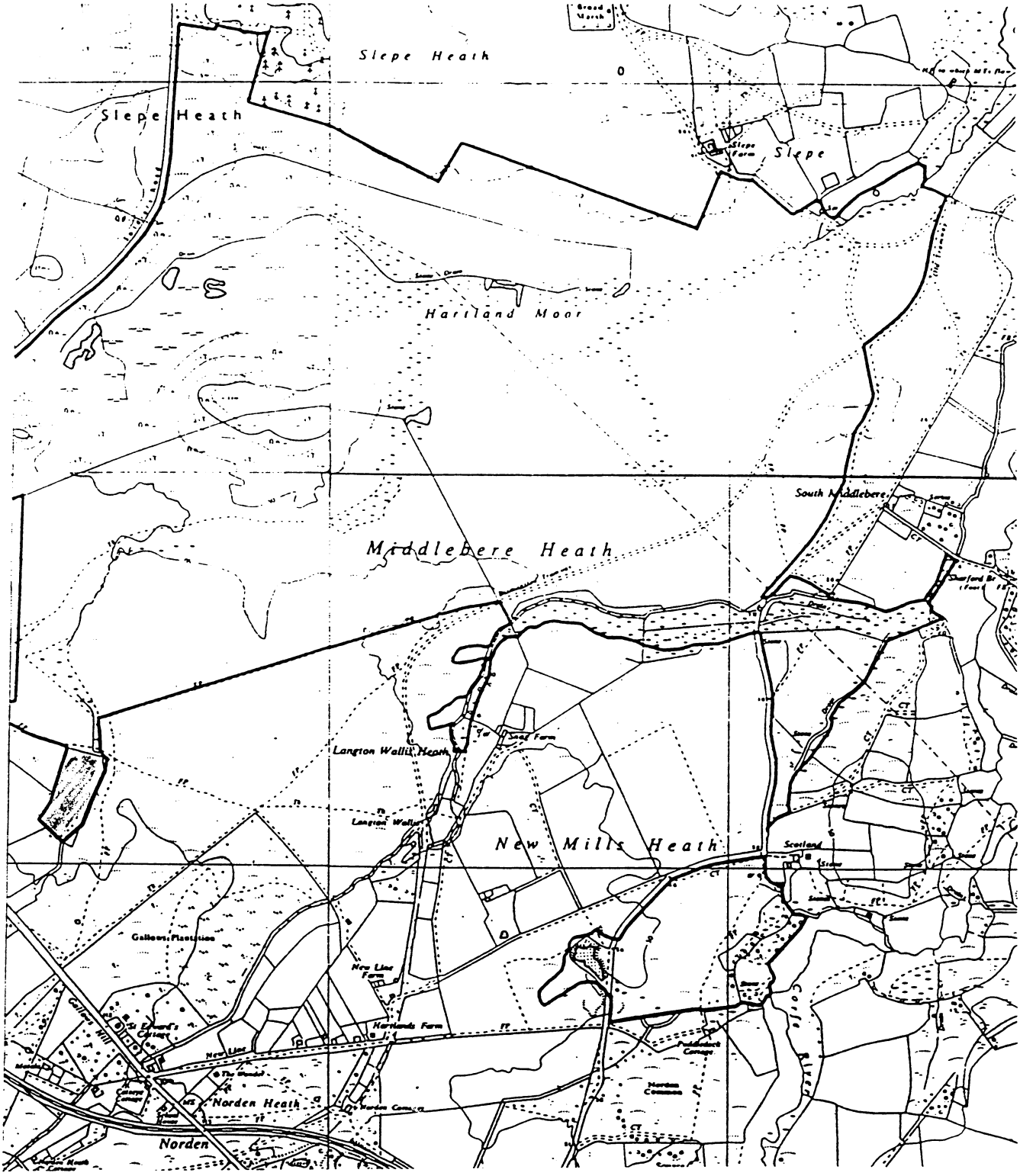
The runnels providing the source of the water for this were wholly choked with Juncus acutiflorus which had 'gone down' in the rain and wind. Four sampling attempts were made here with negative results

Again four samples were taken from the stream to the east which has a hard base with some semi-decomposed leaves and twigs. These samples yielded 4 ***Cordulegaster boltonii*** and 10 ***Orthetrum coerulescens***; an unusually high number of the former species. Samples of *Apium nodiflorum* were checked by hand for the prescence of damselfly larvae to no avail.

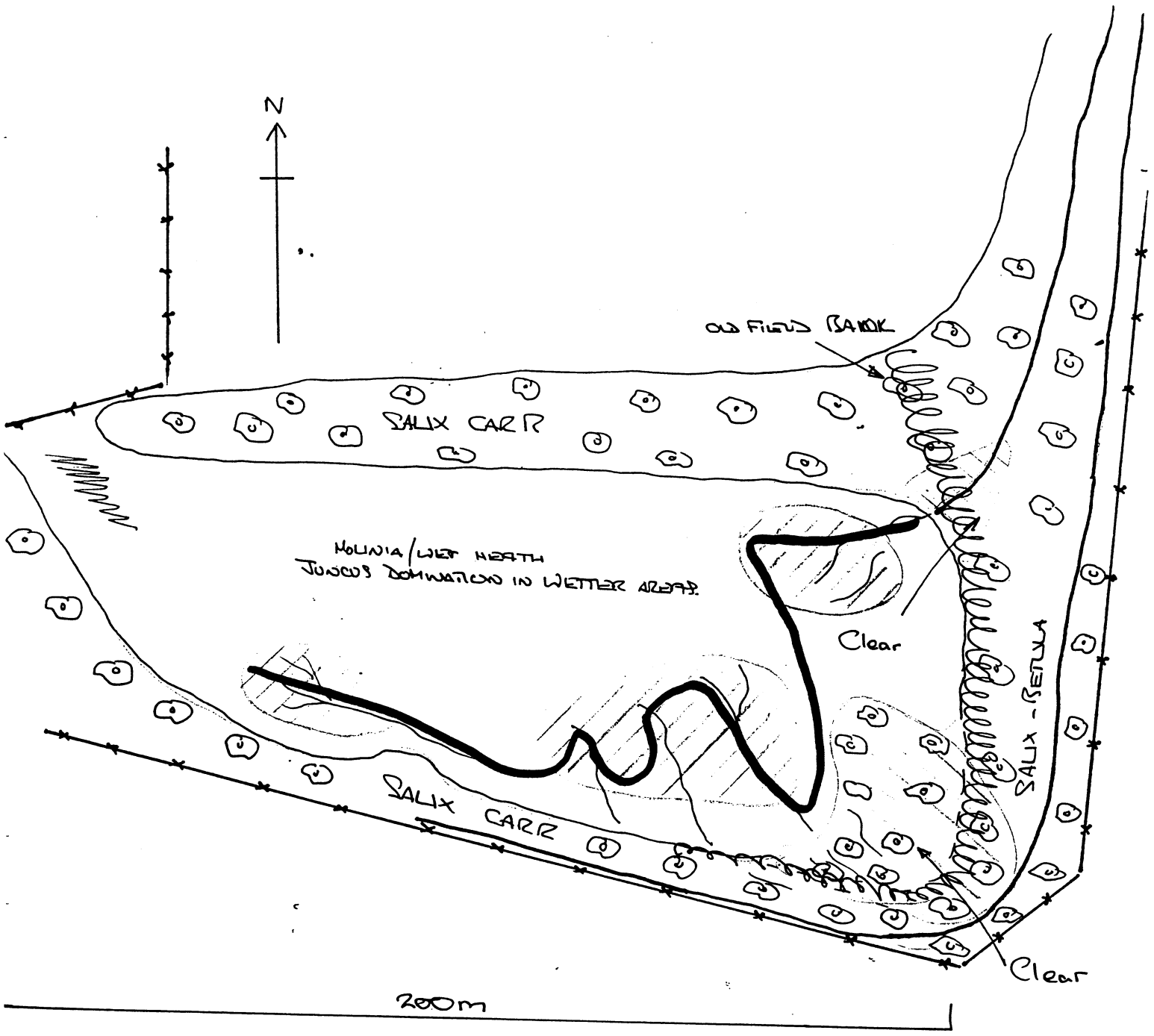
Four open areas in the discontinuous runnel systems were each sampled twice. ***10 C.mercuriale,*** ***4 P.nymphula*** and ***7 Orthetrum coerulescens*** larvae were collected.

The two latter results I considered quite satisfactory bearing in mind the size of the adult population compared with the area. A pH of 6.6 - 6.7 throughout was found.

MIDDLEBERE HEATH General location map



MIDDLEBERE HEATH Site location map



NORDEN HEATH 940830

Site Description -

A narrow valley mire running from west to east for 200 metres before joining another mire aligned SSW - NNE. The valley sides are steep and heavily wooded with mature Birch and Sallow to the mire margins. From the source for about 100 metres all open water is heavily affected by bacteria (pH 4.7). After this the water has good clarity and the flowing water has a pH of 6.5 - 6.8. The aquatic vegetation comprises of *Sphagnum* mosses including *S.papillosum, S.recurvum* and *S.fimbriatum*; *Molinia caerulia, Equisetum palustris, E.fluviatile, Juncus acutiflorus, Hypericum elodes, Carex echinata, menyathes trifoliata* and *Potamogeton polygonifolius.* A makeshift 'stick' bridge situated about 30 metres above the mire junction serves as a ford for the public footpath to continue. It is immediately below this that the central water course becomes deeper and well defined and continues, increasing in depth, until turning to the NNE where the stream flows though a deep, narrow and densely vegetated (Birch / Sallow) valley. Sallow and Birch scrub has encroaced into a 'bay' on the north bank so creating shade over a potentially beneficial network of runnels. Below the ford scrub has encroached from both banks detracting from the habitat in the major breeding area. The bog-bush cricket *Metrioptera brachyptera* was found in good numbers.

Coenagrion mercuriale -

This is a major Dorset colony only exceeded in numbers by Povindon Heath. The area occupied by *C.mercuriale* is between points A and D (map page 5 c) with breeding being restricted to between points B and C. Because of the size of the colony some it was to be expected that odd individuals were to be found at other places in the area. The area in the region of D is used extensively by non breeding individuals.

18th. June 1994 35 male, 9 female 8 of which were in cop. or ovipositing.

9th. July 1994 41 male, 12 female all of which were in cop. or ovipositing.

Other species present - *Anax imperator, Cordulegaster boltonii,Orthetrum coerulescens, Sympetrum striolatum, Ceriagrion tenellum, Pyrrhosoma nymphula, Ennalagma cyathigerum (1)* and *Coenagrion puella* (to south of junction).

Future monitoring -

Monitoring may well prove difficult for volunteers. Sallow and Birch overhang make visibility difficult from the margins and in any case the distance is too great. Wellinton boots suffice above the ford (with care) but the only method which I found effective below the ford was to wade barefoot along the central channel, sometimes to thigh depth. romoval of scrub as in dicated in the next paragraph would improve matters to some extent. A route is indicated on map, page 4 c. in strong red.

Management proposals -

The most important task would be to remove the encroaching scrub on both sides below the ford, this would not only allow better visibility but also remove shading from an important breeding area. Above the ford there is a substantial 'bay' with a nice runnel system (amongst Molinia) that is wholly overgrown with mature Birch and Sallow. Removal of this would enhance the habitat. These areas are cross hatched in green on map page 5 c. Costings in Appendix A.

Larval Survey - 9/10/94 PD.

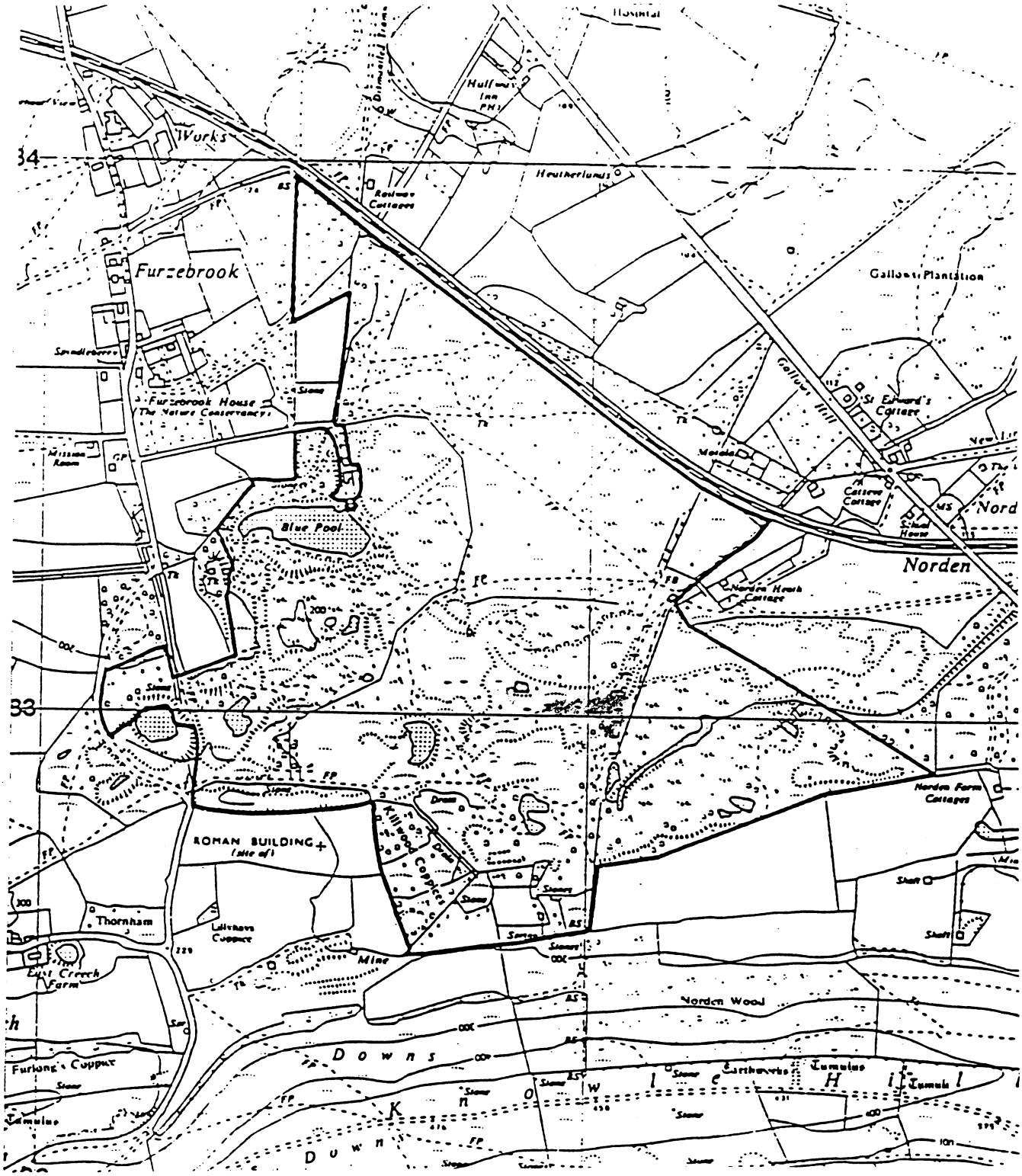
Three habitats were surveyed here, the flowing water was 10 deg. C and 6.8 pH whereas where there was no visible flow it was a degree cooler at 9 deg. C. and 6.6pH. Small numbers of Gammarus were encountered and numerous *S.striolatum* were mating and egg laying (09/10/94).

Four samples in the vegetated main flow: ***7 C.mercuriale, 5 P.nymphula*** and ***39 O.coerulescens*** 23 2nd.year 16 1st. year)

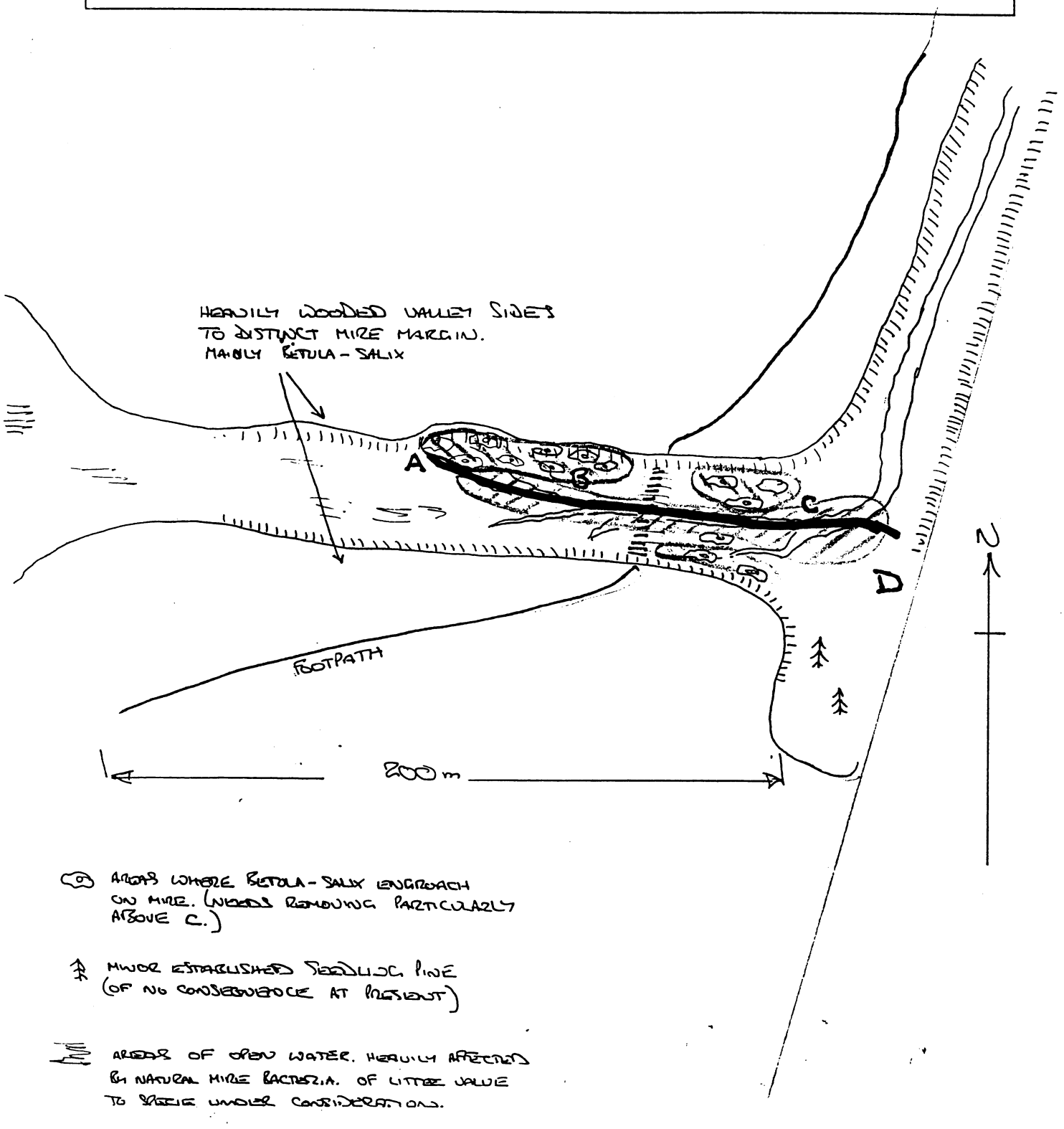
Four samples in the vegetated slacks : ***2 P.nymphula*** and ***7 O.coerulescens*** (2 2nd. year, 5 1st. year - possibly due to the very soft silt base).

Four samples in the unvegetated runnels amongst the moor grass: ***3 C.mercuriale.***

NORDEN HEATH General location map



NORDEN HEATH Site location map



CREECH HEATH 927835

Site description -

Situated on the southern part of Creech Heath and immediately to the west of old clay workings, this site comprises of two distinct but not separate habitats. The southern section being a small stream and runnel system draining an area of raised heathland. The other, lower area consists of an area of seepages emanating from the lower end of a flooded and disused claypit together with the continuation of the stream which has no direct connection with the pit. The heathland section has had the scrub removed as a conservation project (1993?) and the value of the lower section diminishes as the stream disappears into Sallow scrub. In both sections all the water courses have a mineral base which is not conducive to good plant growth although the seepages from the clay pit are somewhat better. The pH of the water on the heath measured pH 7.4 and on the lower section pH 7.3

Noteable plant species in the heathland area - *Molinia caerulia* (dominant),*Mentha aquatica, Juncus effusus, J.acutiflorus, J.articulatus, Carex panicea, C.demissa, C.flacca, C.echinata, Sparganium erectum, Apium nodiflorum, Hypericum elodes, H.tetrapterum* and *Potamogeton polygonifolius.* The latter plant was only found at the drier ends of a few seepages slightly away from the areas used by *C.mercuriale* and *Hypericum elodes* was in very small quantities. *Sparganium erectum* only occured at the far end and was not represented by particularly large plants at present.

Noteable plant species in the lower area - *Salix cinerea, Juncus effusus, J.acutiflorus, J.articulatus, J.inflexus, Baldellia ranunculoides, Pilularia globulifera, Hypericum elodes* and *Potamogeton poygonifolius.*

Coenagrion mercuriale -

18th. June 1994 - BELOW 13 male, 4 female including 3 in cop. and one pair ovipositing. HEATH 14 male, 4 female 3 of which were in cop.

9th. July 1994 - BELOW 13 male, 4 female including 3 in cop. and one pair ovipositing. HEATH 12 male, 2 female including 1 in cop and one ovipositing.

30th July 1994 - BELOW 5 male, 1 female including 1 in cop. HEATH 6 male, 1 female including 1 in cop.

Management Proposals -

This is a small but stable colony with good potential to grow now that the upper area has been cleared. The ultimate size of the colony will depend upon the available larval food supply which in turn is dependent upon the characteristics of the water and substrate. Care should be exercised that the *Molinia - Sparganium* does not cover the runnels too much. Other than that I can see no necessity for additional management at present. In the futere it may pay to clear a channel through the rushes which obscure the stream from the upper heath for 15 metres or so after reaching the lower area. (green on map)

Future Monitoring -

This would be the ideal site for an intensive monitoring programme in line with Moore and Corbett (1990). The upper area is linear and therefore quite straightforward. The 'going' is very rough mainly due to the *Molinia* tussocks - I found that I fell over an average of twice and stumbled many times on each visit while concentrating on the damselflies. The lower area is very wet near to the pit but can successfully be accomplished in Wellintons. The route is lied in strong red on map Page 5 c.

Larval Survey -

Upper heathland - Four distinct habitats could be determined but due to low water levels one of them, the still and shallow 'backwaters', were nearly dry. The water temperature and pH readings were steady throughout the area at 10 deg. C. and 7.2 pH respectively. Some *Gammarus* were found but not in any quantity..

Four samples from the unvegetated stretches of channel and the runnels amongst the Molinia tussocks revealed 5 ***Orthetrum coerulescens*** and no damselfly larvae.

Four samples from the 20 metre stretch with *P.polygonifolius* :- ***15 C.mercuriale, 7 P.nymphula, 2 I.elegans*** and ***31 O.coerulescens*** (varying age range).

The areas where tree roots festooned the channels were sampled by hand and four sample trays were taken of the detritus - semi decomposed vegetable matter. ***7 O.coerulescens, 2 P.nymphula.***

Lower marshy area - The water temperature again was 10 deg. C. and the pH 7.3.

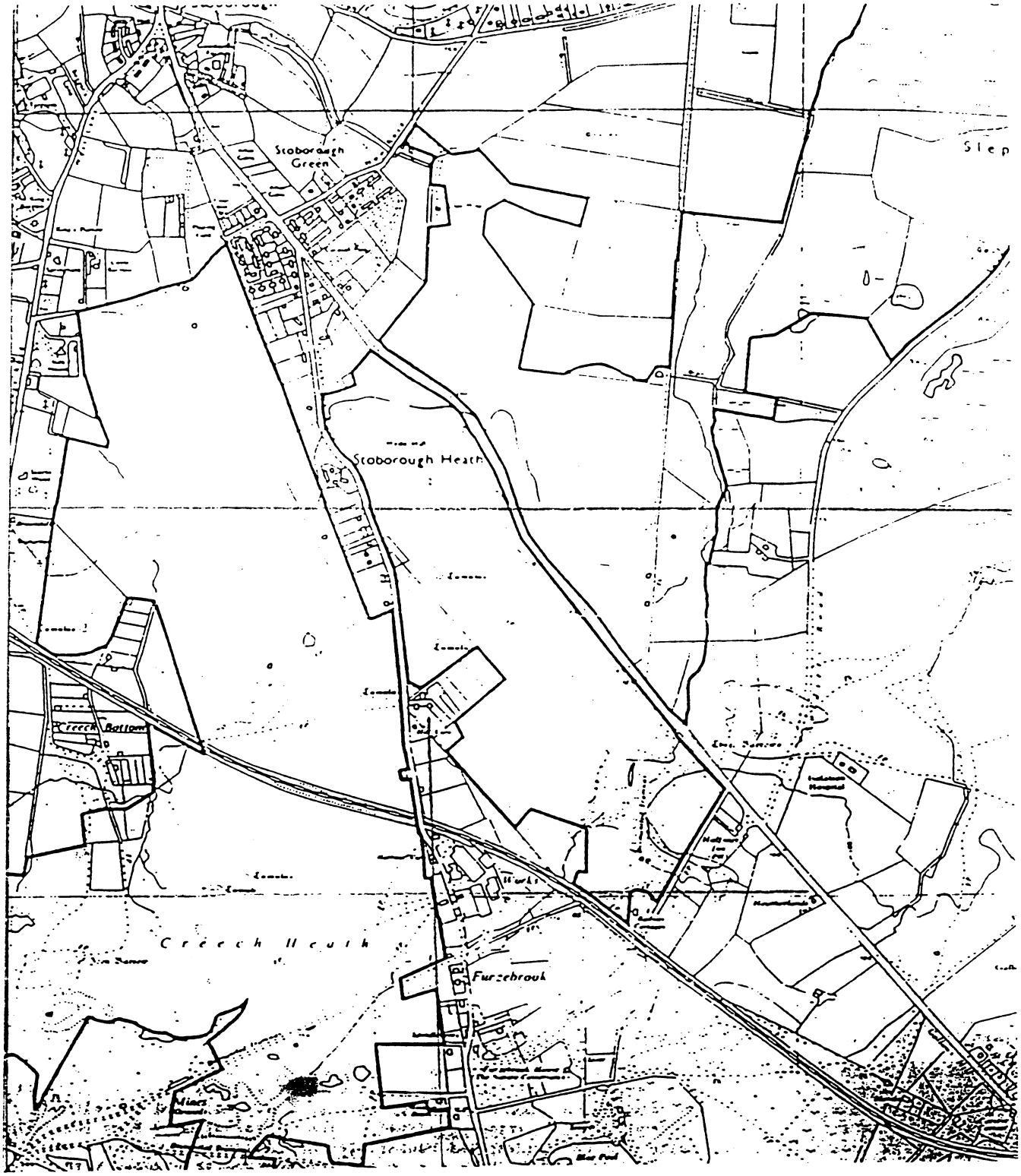
The unvegetated areas amongst the rush yielded no larvae.

Four samples of the shallow *H.elodes* area adjacent to the pond yielded ***4 P.nymphula, 2 Coenagrion puella*** and 7 ***O.coerulescens.***

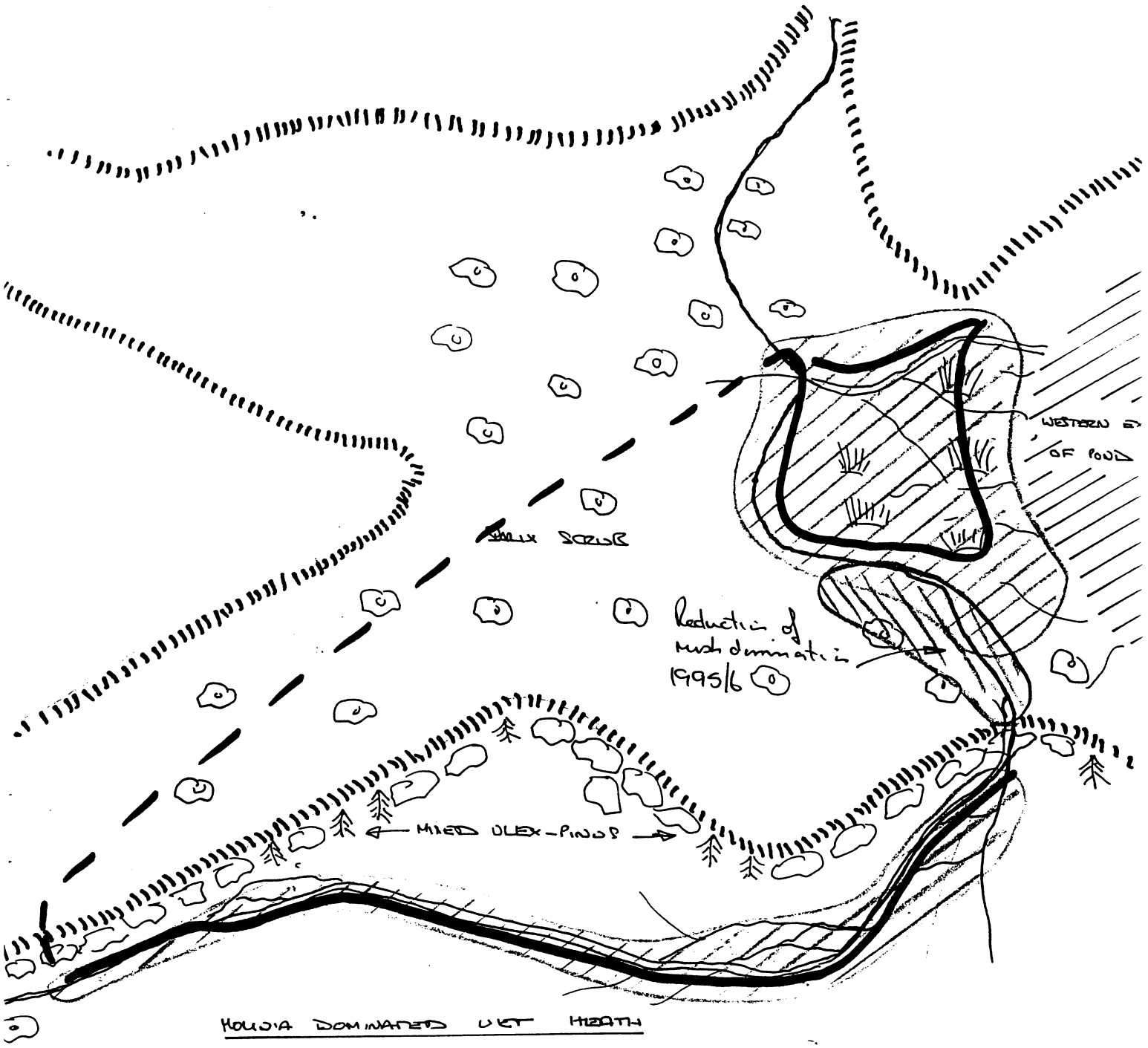
Four samples from the vegetated and running water did yield ***4 C.mercuriale, 5 P.nymphula*** and ***15 O.coerulescens.***

Note - The lower area is much more diffuse in character and in many places difficult to sample due to coarse herbage.

CREECH HEATH General location map



CREECH HEATH Site location map



POVINGDON HEATH 887830

Site description -

A small stream emanating from an Oak, Sallow and Hazel carr above the main gravel road and running down a small valley for about 500 metres before disappearing into the ground following a change of substrate and coincident with the occurence of *Phragmites australis*. To the east the stream is flanked by a steep bank vegetated densely with gorse and some birch. To the west there is gently sloping heathland, mainly dry but at one point a mire of numerous pools augments the stream with a series of runnels. The first 150 metres of the stream below the road has a bed of large gravel and is flanked by dense gorse. Below this the substrate changes to sand and has a shallower gradient. Shortly below the intersection with the mire runnels a clump of mature gorse covers the stream. Both immediately above and immediately below this odd specimens of *C.mercuriale* were found but only 2 males in each instance, no females. The stream has very little aquatic vegetation, what there is is mainly *Juncus effusus* and *Equisetum palustris*. In the mire runnels and in the stream where the damselfly was located *Potamogeton polygonifolius* occured in small quantities.

Coenagrion mercuriale -

28th. June 1994 - 4 male.

12th. July 1994 - 3 male.

Other species - *Cordulegaster boltonii, Ischnura elegans, Coenagrion puella* and *Orthetrum coerulescens.*

Comments -

Subsequent to the last visit it was discovered from Prof Norman Moore that the specimens on this site were probably migrants from a larger site to the east. Having now visited this other site with Col. Prendergast I would tend to agree but do not believe it beyond the bounds of possibility that breeding could occur here. See next page.

POVINDON HEATH 892832

Site description -

An area of ungrazed poor fen situated commencing approximately 250 metres to the north-west of Orchard Cottage bounded to the east by unimproved grazing land - and separated from it by an electric fence - and to the west by sallow carr with some birch and gorse which generally follows one of the outfalls from the clay workings. This stream is quick flowing and for much of the time carries an appeciable ammount of suspended solids, has little to no aquatic vegetation and is therefore of no value as a habitat in it's own right. it does however augment the natural water of supply of the mire which would appear to be spring fed. There is evidence of past drainage ditches which have now fallen into decay, this may well account for the dominance of *Juncus spp.* at the lower end of the mire and to it's immediate south-east. There is little evidence of recent scrub encroachment. The site measures approximately 240 metres by 50. For the most part the vegetation is tall and dense being dominated by *Molinia caerulia, Juncus effusus* and *J.acutiflorus*-(dom) with *Phragmites australis* in one are towards the carr. Towards the top of the site the vegetation is dominated by *Carex Spp.* and tends to be more open with some very shallow pooled areas. There are very few 'open' areas in general although there is some quaking mire particularly in the vicinity adjacent to the 'dog leg' in the electric fence. Other less dominant plants include *Iris pseudacorus, Mentha aqatica, Galium palustre, Cirsium palustre* and some - little - *Potamogeton polygonifolius* (particularly in the pooled areas). Another outfall from the clay workings runs about 70 metres to the south-east of the main site and the unimproved gazing, this is generally shaded by sallow but where it is not there is abundant *Apium nodiflorum*. The substrate to this stream is sand but in some of the deeper parts there is some silt. The ph of the water in the mire measures pH 6.5, the stream to the west pH 7.5 and stream to the east pH 7.2.

Coenagrion mercuriale -

6th. August 1994 - 1 male in mire, 10 males on stream to east.

Information supplied by Col. Prendergast -

1992 29/05 - 112 adults. 27/06 - 20 male 3 female.

1993 04/06 - 405 adults. 13/06 - 122 adults, 8 pairs in cop. 26/06 - Abundant.

1994 17/06 - 242 adults, 42 in cop. 28/06 - 241 adults, 22 in cop. 23/07 - 15 male, 1 female.

Future monitoring -

I have indicated on the map (page 7 d) the route used by Col. Prendergast in his past monitoring. Being a non linear site I am confident that this is perfectly adequate and I believe that he is prepared to continue his work at least in the near future. I would, however, suggest that more attention is given to the stream to the east.

I am indebted to Col. E.D.V.Prendergast both for his help and the information provided.

Management Proposals -

Col. Prendergast is currently liasing closely with both the Army and the management of the clay workings to ensure that the present hydrological regime is not dramatically changed. As there is no recent incursion of scrub from the western side I would agree with Col. Prendergast that there is litlle need for any clearance there. If subsequent monitoring of the stream provides proof of breeding then I would suggest clearance of it's western flank for a further 50 metres or so. I would also tentatively suggest that the electric fence be moved a few metres into the mire as an experiment. I suggest this because, in spite of it's population, the site looks so unpromising and I am concerned that the further growth of vegetation may increase it's density beyond that acceptable to the species in question. In addition I suggest that the vegetation fringing the ditch remnant be removed and that it be reclaimed for a further 20 metres to the south-east.

Larval Survey - 13/6/94

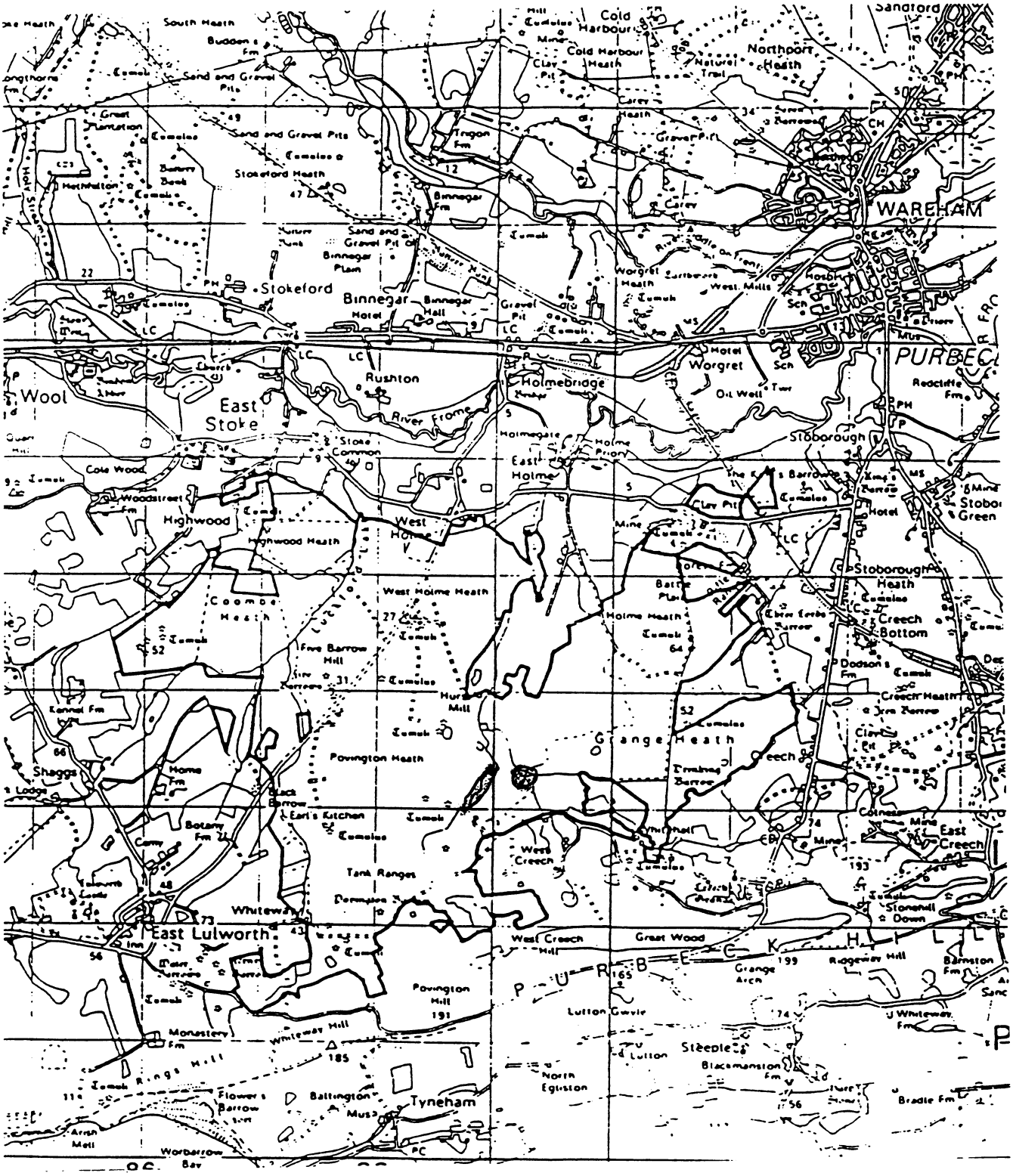
As expected the stream to the west yielded no aquatic invertebrates or larvae. Temp. 10 deg. C.

The smaller stream to the south-east: *2* ***Cordulegaster boltonii*** and abundant *Gammarus pulex.*

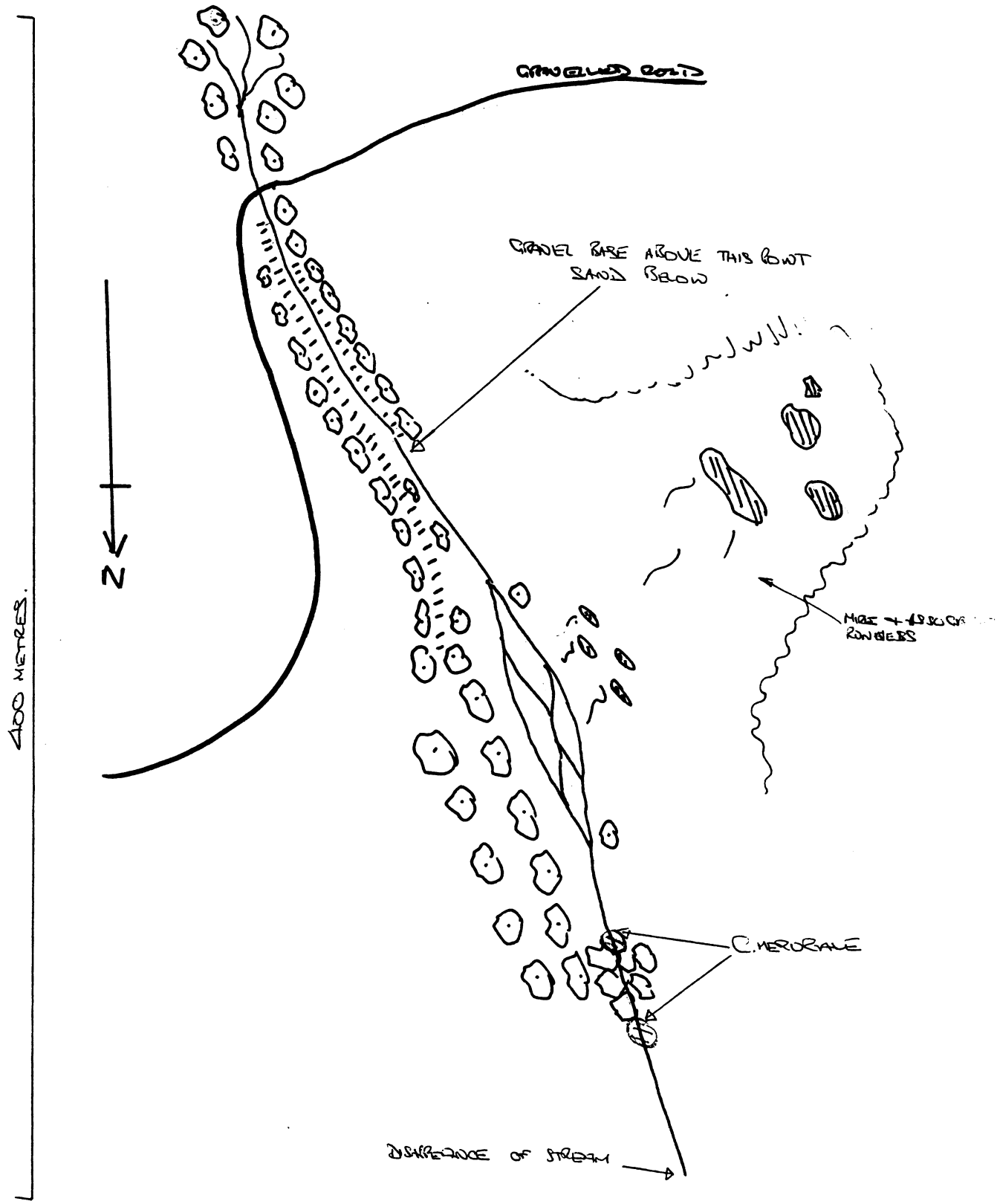
The wet boggy area outside of the electric fence has bacterial and algal contamination so yielded nothing.

Both the Juncus and Carex dominated areas were extensively sampled both with standard pond nets and a kitchen sieve. It was soon realised that the damage to the habitat and potential damage to larvae made the exercise unrealistic because of the extremely shallow water and high vegetation density. Only *2* ***Orthetrum coerulescens*** larvae were recorded. Col. Prendergast suggests that the population of *C.mercuriale* is evenly distributed throughout the mire. His total population estimate of 1000 adult I am sure is an underestimate if he has physically counted 400+. Even this being the case larval density may well be low having no breeding focal points.

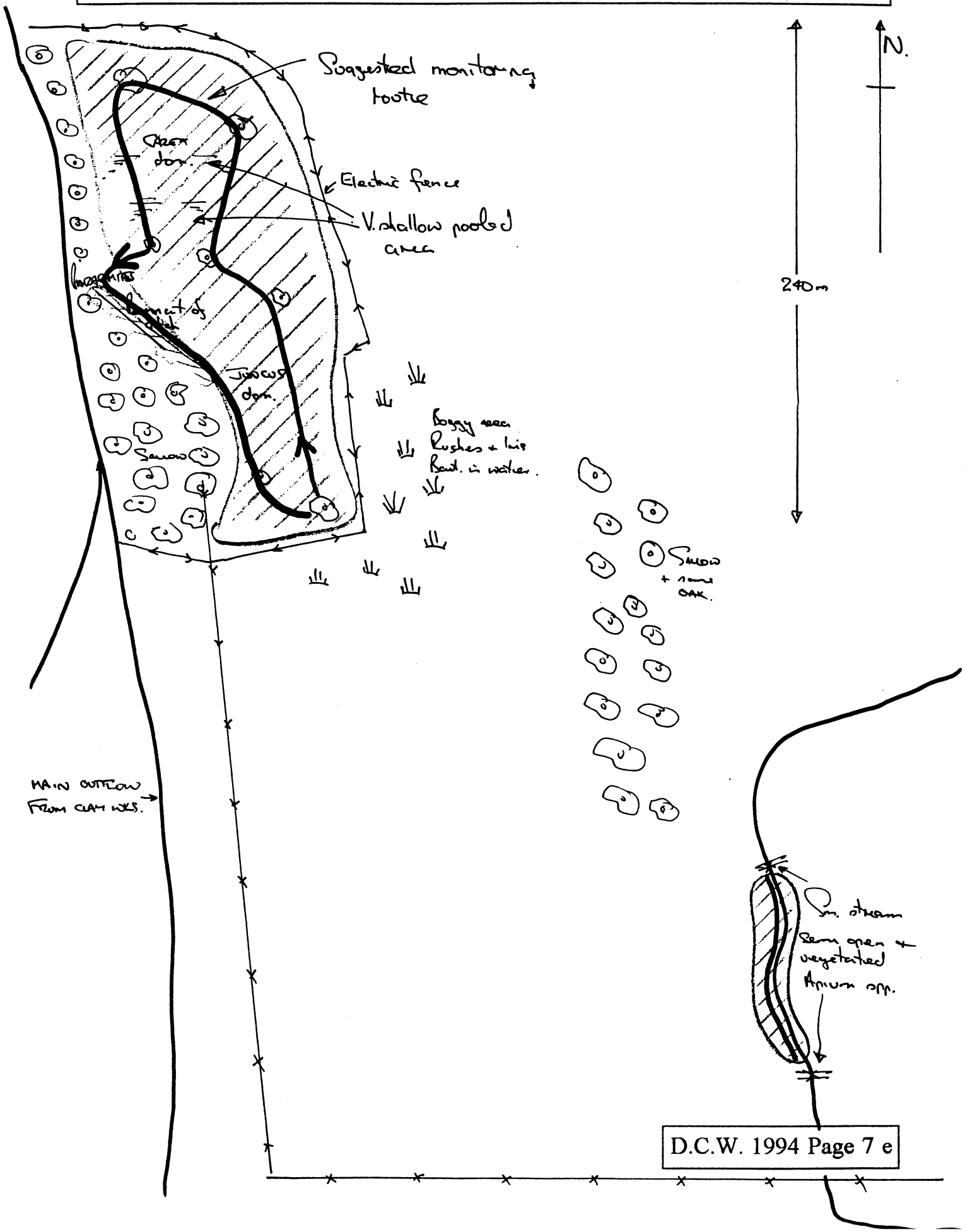
POVINGDON HEATH General location map



POVINGDON HEATH Site location map 887830



POVINGDON HEATH Site location map 892832



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Prendergast, Col. E.D.V. Personal Comment.

Appendix A

Costings for management work on various heathland sites in Doset as outlined in survey document. All work to be completed by March 31st. 1994. Waste materials to be burnt on site except woody material over two inches in diameter which is all to be stacked neatly. Sites to be left clean, tidy and all fires out before leaving site.. Chainsaw operatives to be certificated.

Corfe Common East -

Labour	£360.00	
Hire of tools and equipment	£ 40.00	
Mileage (150 @ 33p)	£ 49.50	
	£449.50	£ 449.50

Middlebere Heath -

Labour	£550.00	
Hire of tools and equipment	£ 60.00	
Mileage (225 @ 33p)	£ 74.25	
	£684.25	£ 684.25

Norden Heath -

Labour	£360.00	
Hire of tools and equipment	£ 40.00	
Mileage (150 @ 33p)	£ 49.50	
	£449.50	£ 449.50
TOTAL		£1583.25

Povingdon Heath -

I would expect that the Army would wish to carry out the minor adjustments there.

Should you wish it, I am able to undertake all of this work on your behalf.
If so then the contract would need to be awarded prior to mid December.