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R0613

COASTAL LAGOON SURVEY 1984

by

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Report to Nature Conservancy Council

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Summary

1. The fauna and flora of several Eastern Scottish coastal lagoons were investigated during September 1984.
2. The ponds investigated were:
Island Farm Pond, and adjacent flooded field - within Skinflats SSSI,
Central Region
Three ponds - within Proposed Local Nature Reserve, Skinflats, Central Region.
Ponds - within Elliot Links SSSI, Arbroath, Tayside Region.
3. This report describes sampling procedures, results of benthic sampling, pond-net sampling, habitat description, and physico-chemical conditions within the ponds.
4. The results are discussed in relation to known previous surveys, or to information on adjacent habitats. Full data sheets are provided.
5. Recording sheets have been completed for each pond.
6. A set of reference transparencies has been supplied to Dr. R. Mitchell, NCC, Huntingdon, to accompany this report.

SAMPLING PROCEDURES

Benthos: Samples of the bottom of the ponds were collected with a 5 x 5 x 5 cm sampler. The sample was retained in a polythene bag, and sieved through a 0.25 mm sieve in the laboratory. Ludox T.M. was utilised as a floatation medium, to assist the removal of animals. The animals were separated from the sediment, identified to species (where possible), and counted.

Pond-net: A pond-net, fitted with a fine mesh (0.150mm), was swept through each pond, at each locality sampled. The material collected was identified to species, and relative abundance noted.

Sediment: Sediment samples from the pond were collected, and subjected to routine particle-size analysis.

Water sample: A water sample was collected from each locality sampled, and the salinity determined in the laboratory, with a Fiske osmometer.

Oxygen content and temperature: were recorded with a Yellow Springs Instrument oxygen meter.

Topography: The dimensions of each pond visited was checked. Comparison was made with large scale (6" to 1 mile) ordnance survey maps, and the dimensions of the pond remeasured using a 30m tape measure. The maps drawn are the dimensions observed in this survey, and may differ substantially from the O.S. maps available.

Photography: A photographic record of each pond visited was made. A set of transparencies has been supplied to Dr. R. Mitchell, NCC, Huntingdon. A duplicate set has been retained at Stirling.

Flora: A general collection of the plants adjacent to each pond was made. It should be noted that these plants are only the species within 1 - 2 m of the pond margin. As complete an identification of plants as possible was made, but several were not at the flowering stage, and full confirmation was not therefore possible.

Sampling dates:

3 Sept 1984: Island Farm Pond and adjacent flooded field. Skinflats SSSI

6 Sept 1984: Three ponds in Skinflats PLNR

28 Sept 1984: Elliot Links SSSI

SKINFLATS AREA

Central Region

Skinflats

Results and Discussion

The results are presented as data tables (1-9) for each pond, and figures showing stations sampled, and animal abundance and distribution (Fig. 1-11). Plant records are shown separately (Fig. 17). Records from Falkirk museum, taken by a M.S.C. team in 1981 are appended. A copy of an earlier study by a Stirling B.Sc. student, Maureen McLeod, has been supplied already to N.C.C. (see also Fig. 12-16).

The results of the present survey show substantial populations of benthic animals inhabiting the 5 ponds. The ragworm Nereis diversicolor was present in all ponds. The Island Farm Pond, and Flooded Field pond, which are within the existing SSSI, also had substantial populations of Hydrobia, Tubificoides, Manayunkia, Spiophanes, and Corophium. These species are all typical estuarine species, and clearly indicate the sustained brackish-water nature of these 2 ponds. The other 3 ponds (Ponds 1 - 3) had a poorer fauna, with only Nereis and Tubifex pseudogaster found. These are both estuarine species, but able to withstand lower salinities than the species in the former ponds. All ponds had a variety of planktonic life, most conspicuously the mysid Neomysii integer.

The Falkirk museum records indicate a wide variety of terrestrial/freshwater insects within Ponds 1-3, on a different sampling date, with different equipment.

Examination of the faunal records shows that Island Farm Pond, and the Flooded Field pond, are clearly brackish-water habitats throughout the year, and their uniqueness in Scotland justify the SSSI status. The brackish-water is maintained by regular inflows of water through a broken valve on a drainage ditch. We recommend that any remedial attention to this valve should be avoided, otherwise the unique nature of these ponds will be drastically altered. The three ponds (1-3) are essentially on the borderline between freshwater and brackish, and are not at present

within the SSSI. They are very interesting habitats in a local context, but do not have the uniqueness of the former ponds. The proposed LNR status would seem highly appropriate.

It is understood that RSPB may shortly purchase these 5 ponds. This move is to be greatly encouraged.

The Birds of Skinflats Coastal Lagoons

Coastal lagoons are often attractive to migrant birds. Wading birds tend to be most prominent in autumn, and to a lesser extent in spring, while ducks are more important in winter. Migrant waders and ducks use lagoons for feeding and favour them as high-tide roosts.

The Skinflats lagoons have attracted birdwatchers because birds normally inaccessible on distant mudflats can be observed at moderate range. Perhaps more crucially, the lagoons have attracted a number of rare wading birds between the 1960's and the present. There is no comprehensive account yet published of the birds of the area. Records of note have been recorded in the Annual Bird Reports of the Scottish Ornithologists Club and more recently in the Bird Report covering the Central Region, published in the Forth Naturalist and Historian. A detailed account of wader migration is given by Taylor (1978). (Reference : Taylor, I.R. Wader migration in the Upper Forth Estuary. Wader Study Group Bull., 22: 11-16). It describes the timing and scale of passage movements between 1964 and 1970. There is a widely held view that the lagoons have become less attractive to migrants since the early 1970s. Disturbance by walkers, birdwatchers, dogs, farming operations, shooters and model aircraft flying are possible adverse factors. Equally, the ponds may themselves be less attractive as feeding sites. In my view, coastal lagoons of low salinity tend to be more attractive to migrant waders than those of high salinity. Any changes in salinity levels may therefore be a contributory factor to the decline in migrant waders using the site.

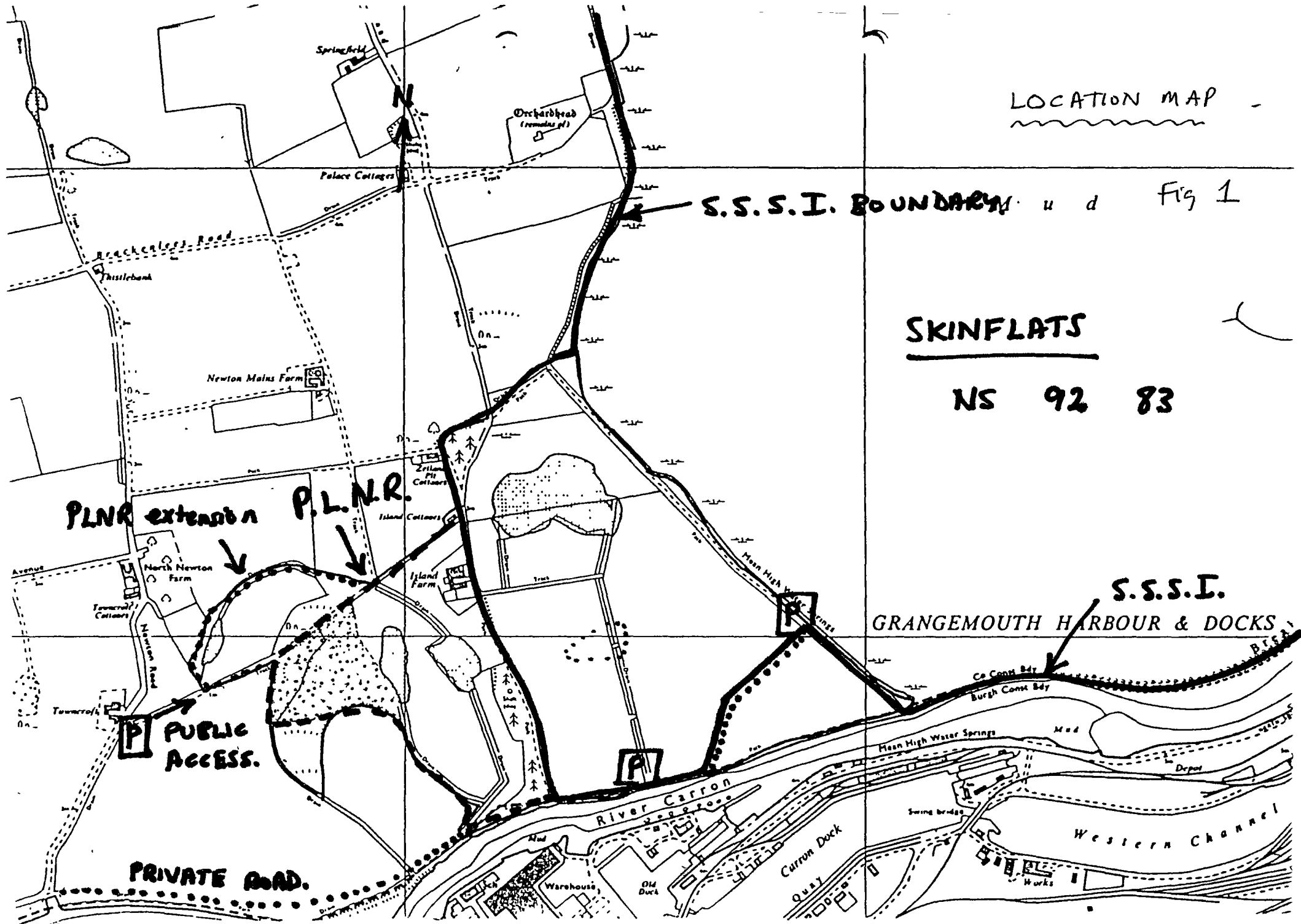
Skinflats lagoons are visited by Herons, a wide range of duck species and occasionally by a few roosting geese. Ducks include both dabbling and diving species, which feed, loaf and roost in the lagoons area. Swans occur in small parties (Whooper and Mute). Visiting birds of prey are an interesting feature, including regular Peregrine, Merlin, Sparrowhawk, Kestrel and Short-eared Owl, with some records of rarer species. Wading birds include all those species widespread on the estuary, as well as species more normally associated with

freshwater margins. Gulls and terns are frequent visitors. Common Terns might be encouraged to breed with appropriate management. In autumn and winter, storm-weakened seabirds may use the lagoons as a refuge. The lagoons area holds a wide range of "farmland" species, exploiting the cover of hedges and copses. Finch flocks are notable in winter. Passerine migrants use the area in autumn in small numbers. The attached table gives a list of species recorded between the Carron River mouth and Kincardine Bridge (based on data submitted to the British Trust for Ornithology Site Register, including unpublished records and recent sightings). Most of these have also been recorded in the immediate vicinity of Skinflats lagoons, although in smaller numbers. The species list given is the most extensive available for any site in the Central Region, in large part demonstrating the potential of the lagoons site for attracting migrant birds.

D.M. Bryant

Nov. 1984.

		P B S W				P B S W			
Bl thr Diver	0020								
Gr Nor Diver	0030								
Rd thr Diver	0010								
Gr Cr Grebe	0080								
Rd nkd Grebe	0090								
Slavn Grebe	0060								
Bl nkd Grebe	0070								
Little Grebe	0050								
Fulmar	0180								
Manx Shwtr	0200								
Storm Petrl	0290								
Leachs Petrl	0310								
Gannet	0340								
Cormorant	0350								
Shag	0360								
Grey Heron	0390								
Purple Heron	0400								
Lt Bittern	0470								
Bittern	0480								
Spoonbill	0520								
Mallard	0720								
Teal	0750								
Garganey	0740								
Gadwall	0820								
Wigeon	0800								
Pintail	0780								
Shoveler	0830								
Mandarin	0840								
Rd cr Pochard	0850								
Scaup	0890								
Tufted Duck	0870								
Pochard	0860								
Goldeneye	0900								
Long td Duck	0930								
Velvet Sco	0990								
Com Scoter	0980								
Eider	0950								
Ruddy Duck	0910								
Rd br Merg	1060								
FOLD									
Goosander	1050								
Smew	1040								
Shelduck	0710								
Egyptian Gse	0920								
Greylag	0590								
Whitefront	0601								
Grind Whitefr	0602								
Bean Gse	0621								
Pinkfoot	0622								
Dk b Brent G	0661								
Pl b Brent G	0662								
Barnacle Gse	0670								
Canada Gse	0680								
Mute Swan	0570								
Whooper Swan	0560								
Bewicks Swan	0560								
Golden Eagle	1200								
Buzzard	1150								
R leg Buzz	1170								
Sparrowhawk	1130								
Goshawk	1110								
Red Kite	1090								
Honey Buzz	1080								
Msh Harrier	1360								
Hen Harrier	1330								
Mont Harrier	1350								
Osprey	1380								
Hobby	1430								
Peregrine	1420								
Merlin	1450								
Kestrel	1480								
Red Grouse	1520								
Ptarmigan	1540								
Black Grouse	1510								
Capercaillie	1500								
Rd lg Pridge	1570								
Parridge	1600								
Quail	1610								
Pheasant	1620								
Gldn Pheas	9530								
Ly Amh Pheas	9540								
Water Rail	1670								
Spot Crane	1710								
Corncrake	1680								
Moorhen	1730								
Coot	1770								
Oystercrchr	1820								
Lapwing	1850								
Ringed Plov	1910								
L R Plover	1920								
Kentish Plov	1930								
Grey Plov	1870								
Golden Plov	1880								
Ootteral	1970								
Turnstone	2180								
Snipe	2210								
Jack Snipe	2220								
Woodcock	2230								
Curlew	2020								
Whimbrel	2000								
Bl td Gdwit	2030								
Bar td Gdwit	2040								
Green Sand	2110								
Wood Sand	2130								
Common Sand	2140								
Redshank	2060								
Spot Rdshank	2050								
Greenshank	2090								
Knot	2250								
Purple Sand	2340								
Little Stint	2270								
Temm Stint	2280								
Pec Sand	2320								
Dunlin	2350								
Curlew Sand	2360								
Sanderling	2240								
Ruff	2390								
Avocet	2410								
Rd nkd Phal	2430								
Stone Curlew	2440								
Great Skua	2490								
Arctic Skua	2510								
Gt Bl b Gull	2580								
Lr Bl b Gull	2570								
Herring Gull	2560								
Common Gull	2550								
Glauc Gull	2590								
Iceland Gull	2600								
Med Gull	2620								
Little Gull	2660								
Bl hd Gull	2630								
Kittiwake	2680								
Black Tern	2720								
Common Tern	2750								
Arctic Tern	2760								
Rosette T	2770								
Little Tern	2800								
Sandwich T	2820								
Razorbill	2860								
Gulliemot	2880								
Bl Gullie	2890								
Puffin	2920								
Stock Dove	2980								
Rock Dove	2970								
Woodpigeon	2990								
Turtle Dove	3000								
Collid Dove	3020								
Cuckoo	3040								
Barn Owl	3070								
Snowy Owl	3100								
Little Owl	3130								
Tawny Owl	3140								
Lng e Owl	3170								
Sht e Owl	3180								
Nightjar	3230								
Swift	3270								
Kingfisher	3320								
Hoopoe	3360								
Green Wdpkr	3380								
Gt S Wdpkr	3410								
Lr S Wdpkr	3450								
Wryneck	3370								
Woodlark	3560								
Skylark	3570								
Shorelark	3600								
Swallow	3610								
Hse Martin	3640								
Sand Martin	3650								
Gldn Oriole	3660								
Raven	3670								
Carlon Cr	3681								
Hooded Crow	3682								
Hybrid Crow	3683								
Rook	3700								
Jackdaw	3710								
Magpie	3720								
Jay	3750								
Chough	3770								
Great Tit	3790								
Blue Tit	3800								
Coal Tit	3820								
Crested Tit	3830								
Marsh Tit	3860								
Willow Tit	3870								
Long td Tit	3880								
Nuthatch	3910								
Treecreeper	3940								
Sht t Treecr	3950								
Wren	3980								
Dipper	3970								
Bearded Tit	3900								
Little Thr	4320								
Fieldfare	4290								
Song Thrush	4310								
Redwing	4300								
Ring Ouzel	4230								
Blackbird	4240								
Wheatear	4120								
Stonechat	4100								
Whinchat	4090								
Redstart	4070								
Black Redst	4060								
Ntngale	4020								
Bluetht	4040								
Robin	4000								
Cettis Wblr	4370								
Grassh Wblr	4390								
Savis Wblr	4430								
Reed Wblr	4460								
Marsh Wblr	4470								
Sedge Wblr	4500								
Blackcap	4570								
Garden Wblr	4600								
Whitethroat	4610								
Lr Whiteth	4620								
Dartfd Wblr	4680								
Willow Wblr	4720								
Chiffchaff	4730								
Wood Wblr	4750								
Goldcrest	4820								
Firecrest	4830								
Spot Flyc	4840								
Pied Flyc	4860								
Dunnock	4900								
Meadow Pip	4930								
Tree Pipit	4970								
Rock Pipit	5002								
Water Pipit	5001								
Pied Wag	5032								

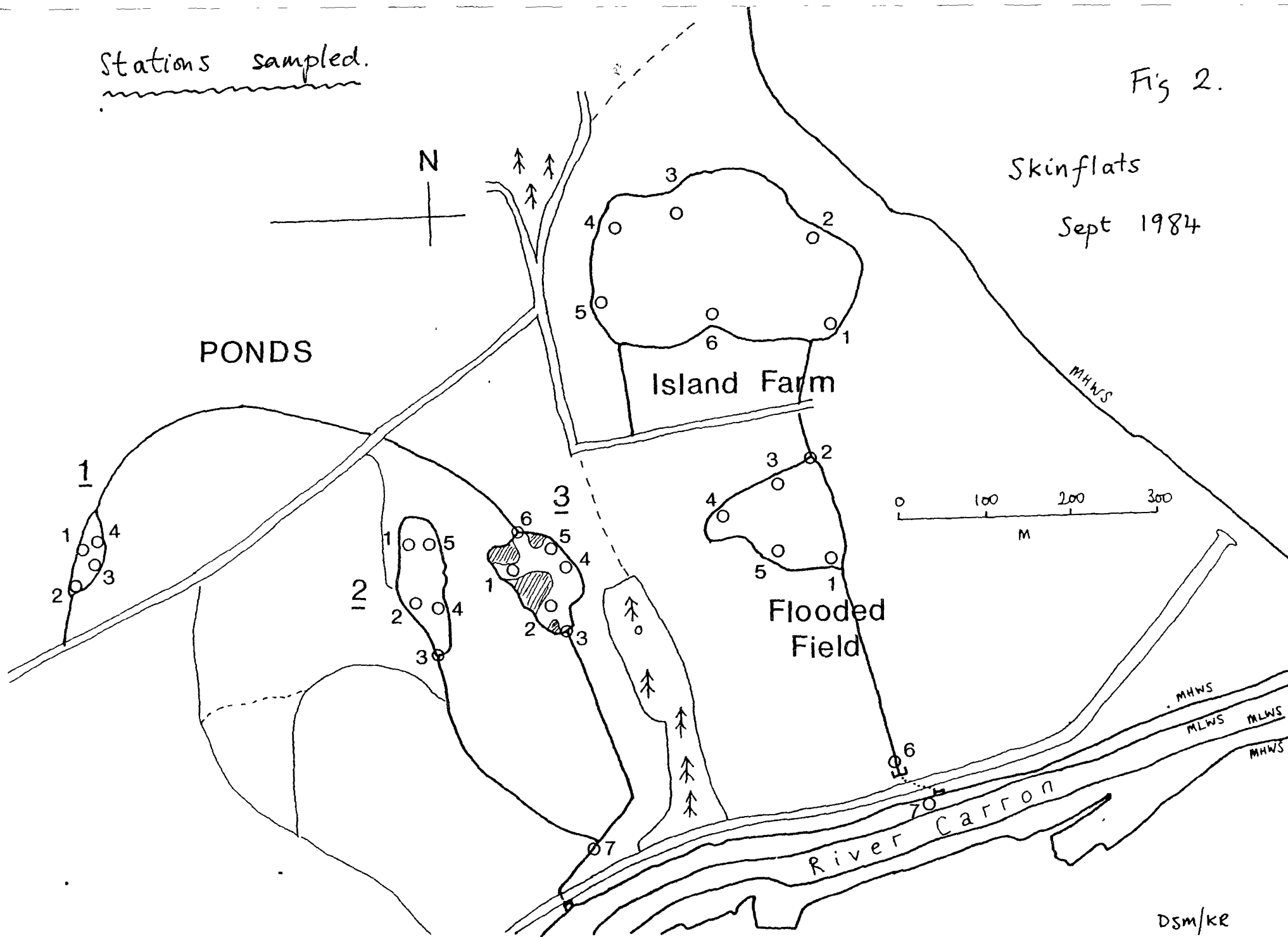


Stations sampled.

Fig 2.

Skinflats

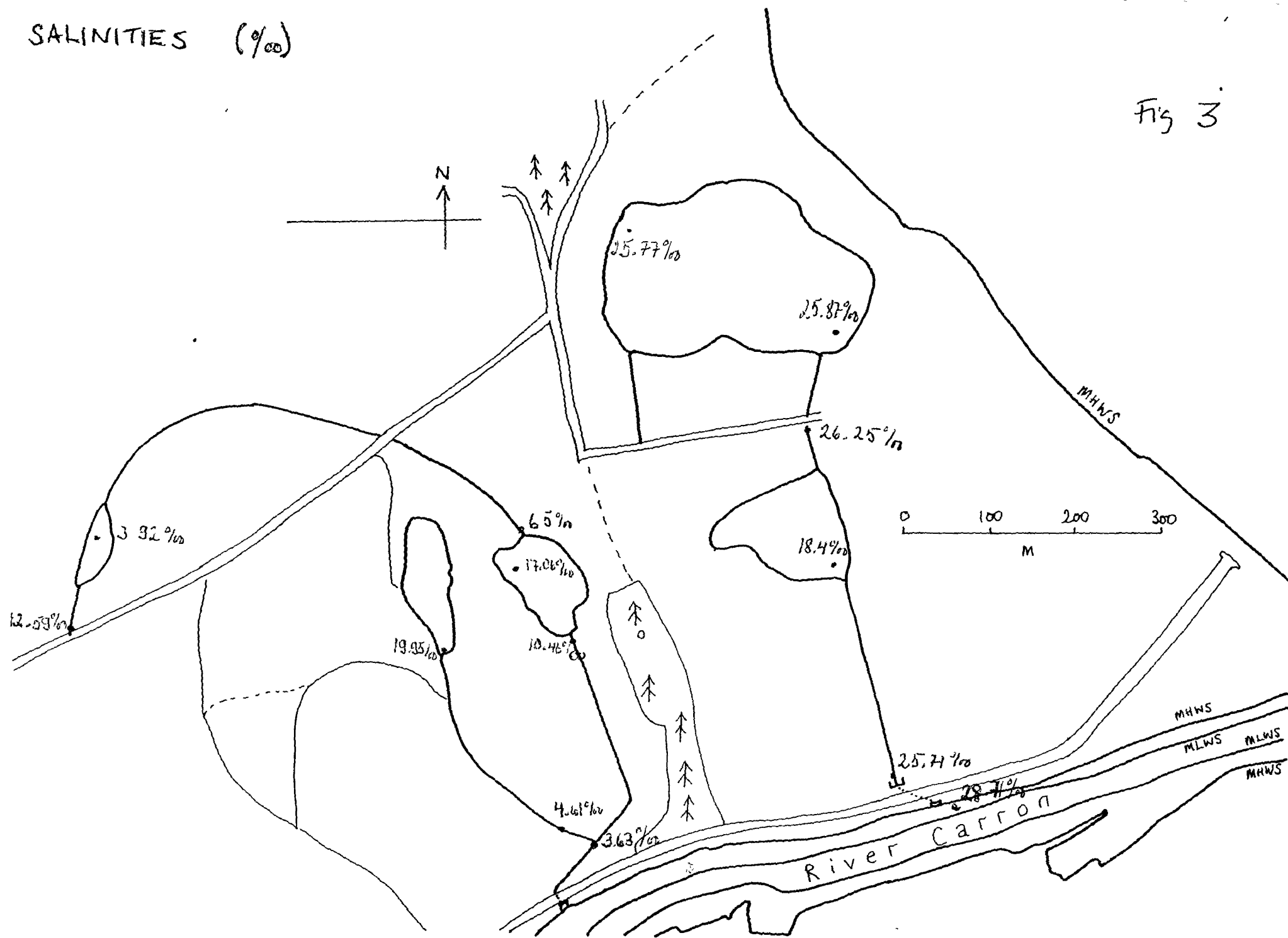
Sept 1984



DSM/KR

SALINITIES (‰)

Fig 3



Nereis diversicolor - Ragworm

Fig 4

○ N.R.

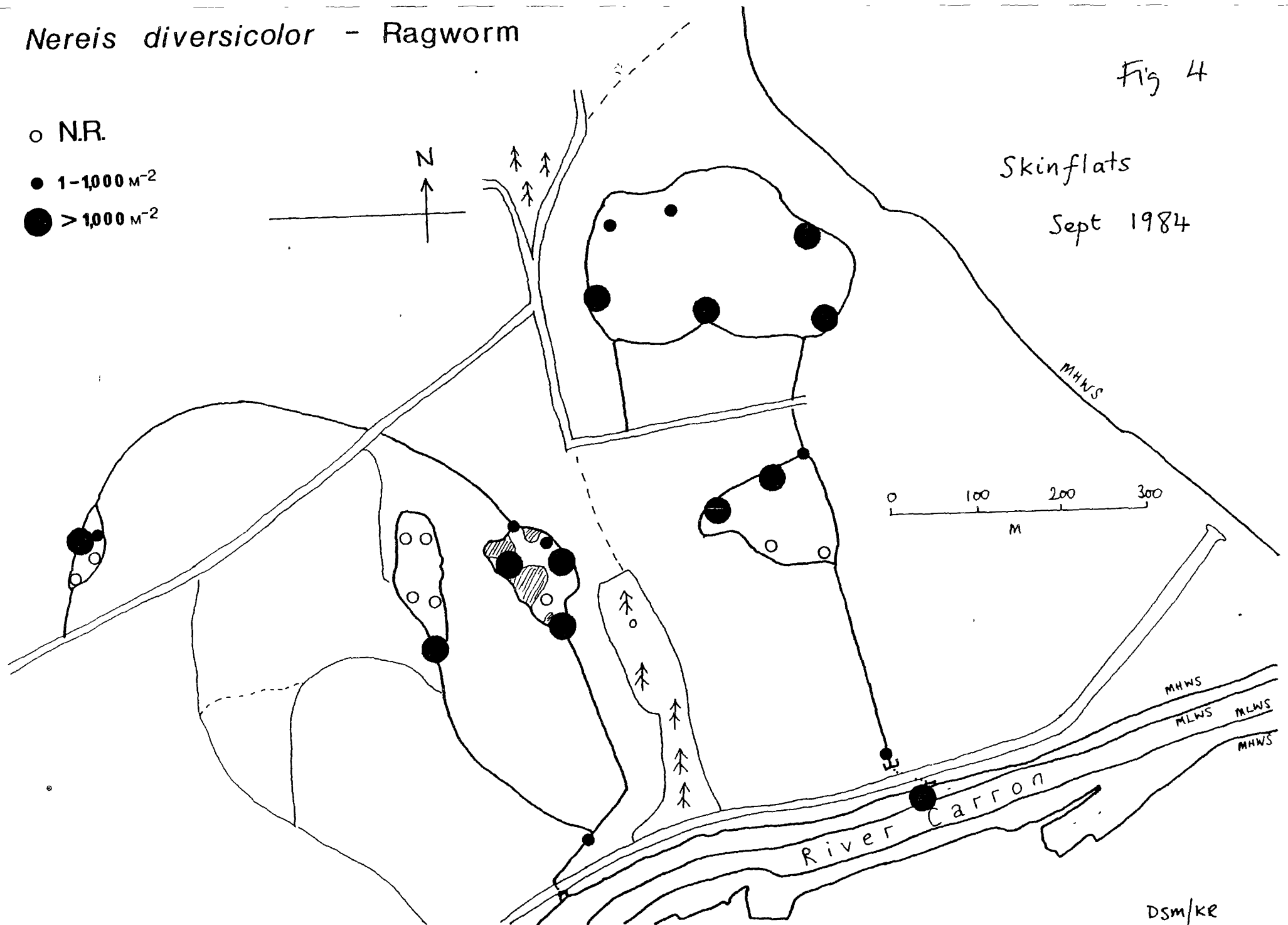
● 1-1,000 M⁻²

● >1,000 M⁻²

N

Skinflats

Sept 1984



Hydrobia ulvae - Laver spire shell

○ N.R.

● 1-1,000 M^{-2}

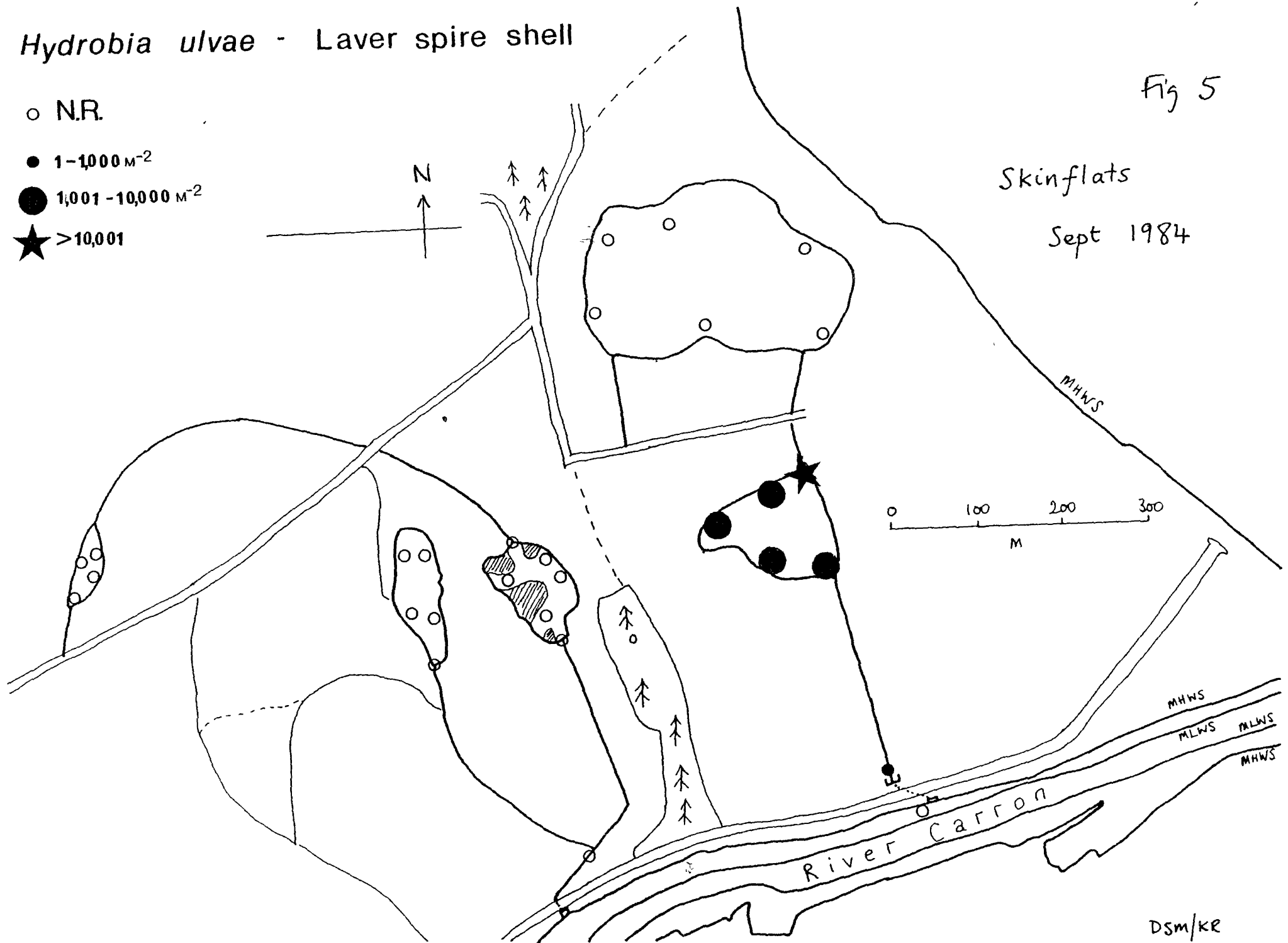
● 1,001 - 10,000 M^{-2}

★ >10,001

Fig 5

Skinflats

Sept 1984



Tubificoides Denedeni
(= *Pelosciolex*)

Fig 6

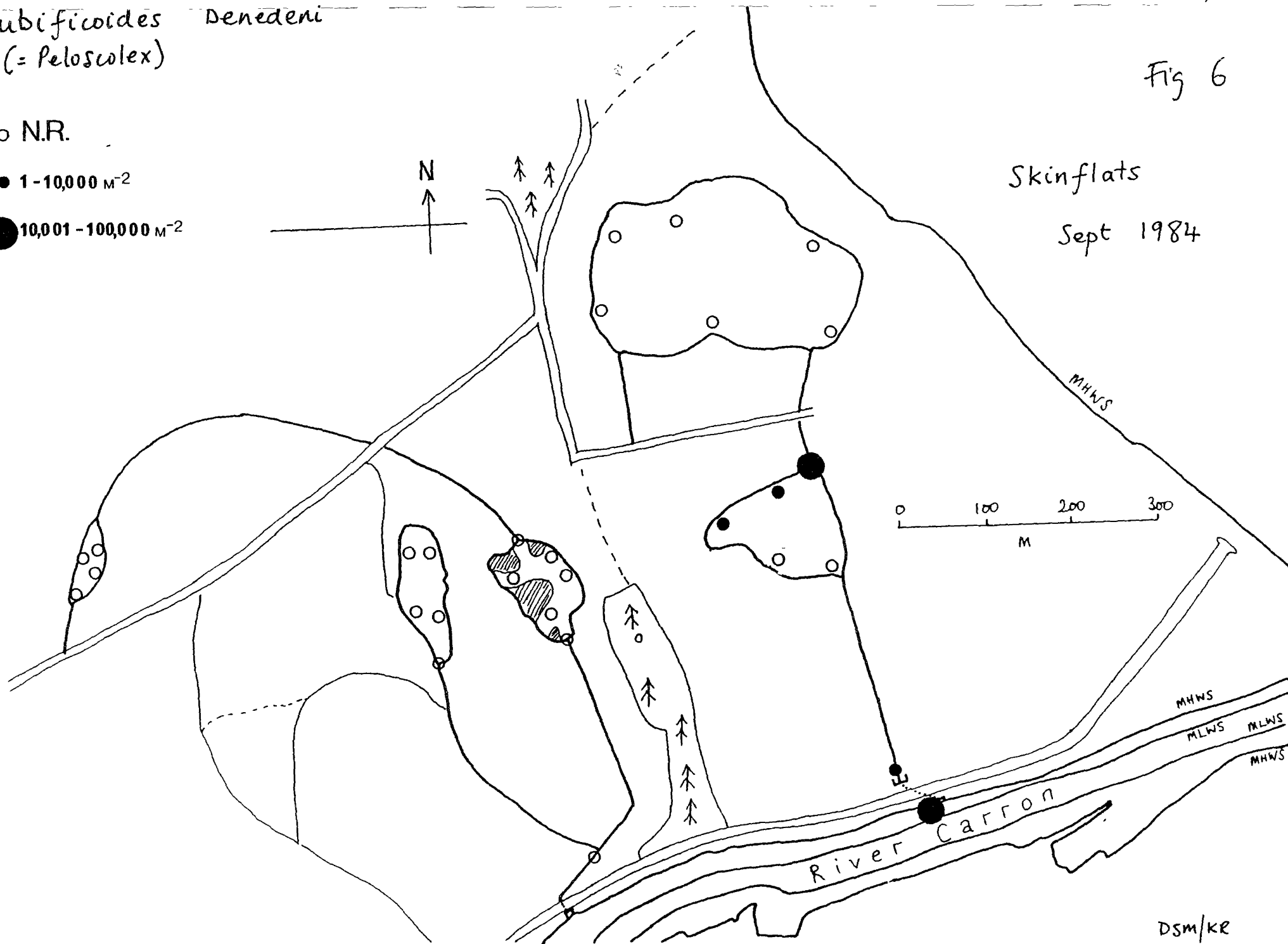
○ N.R.

● 1-10,000 M⁻²

● 10,001-100,000 M⁻²

Skinflats

Sept 1984



Manayunkia aestuarina - Worm

Fig 7

○ N.R.

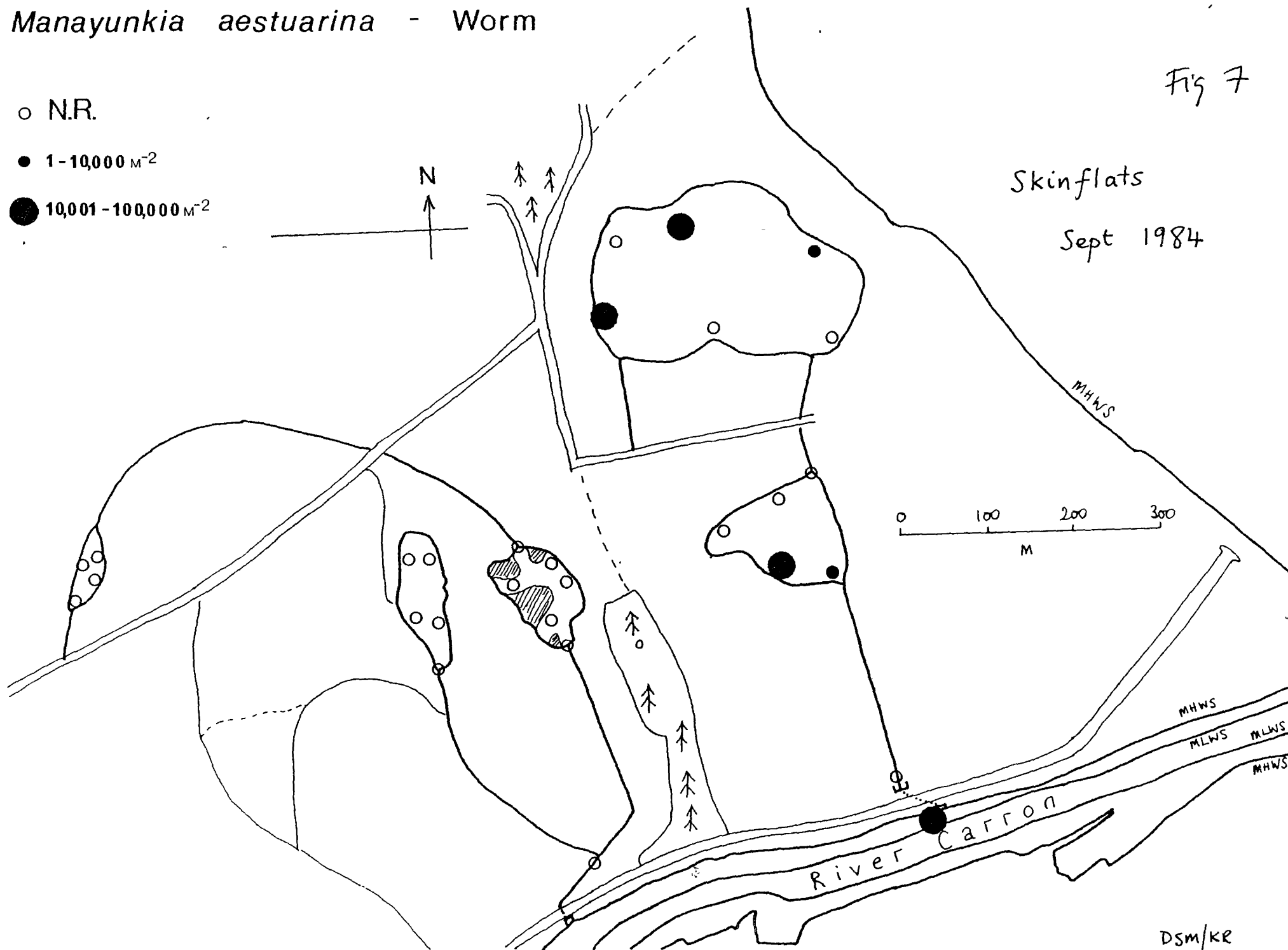
● 1-10,000 M⁻²

● 10,001-100,000 M⁻²

N

Skinflats

Sept 1984



Spiophanes kroyeri

○ N.R.

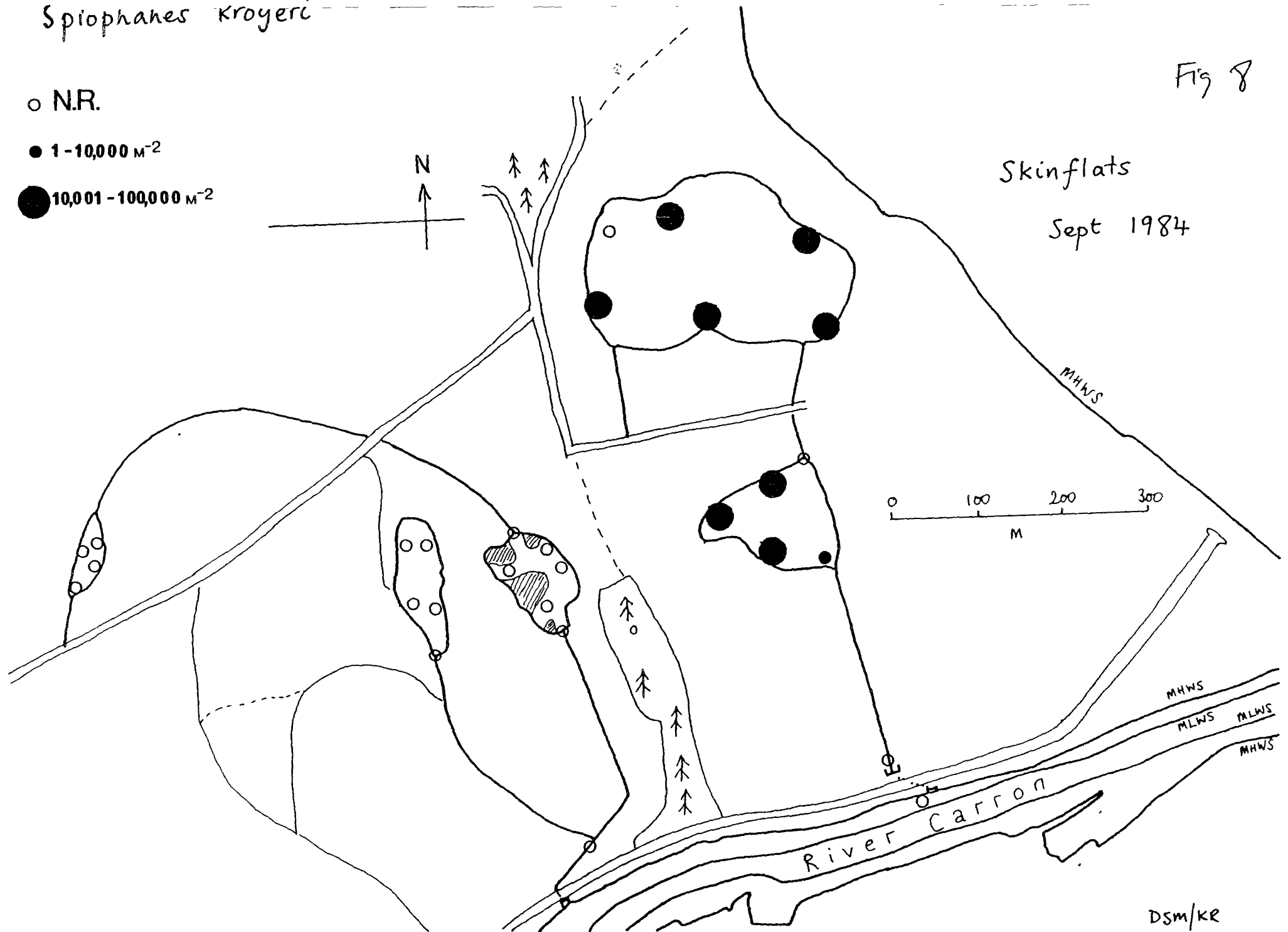
● 1-10,000 M^{-2}

● 10,001-100,000 M^{-2}

Fig 8

Skinflats

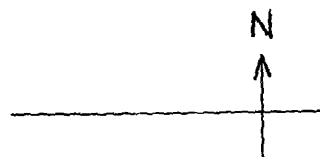
Sept 1984



Corophium volutator - Amphipod shrimp

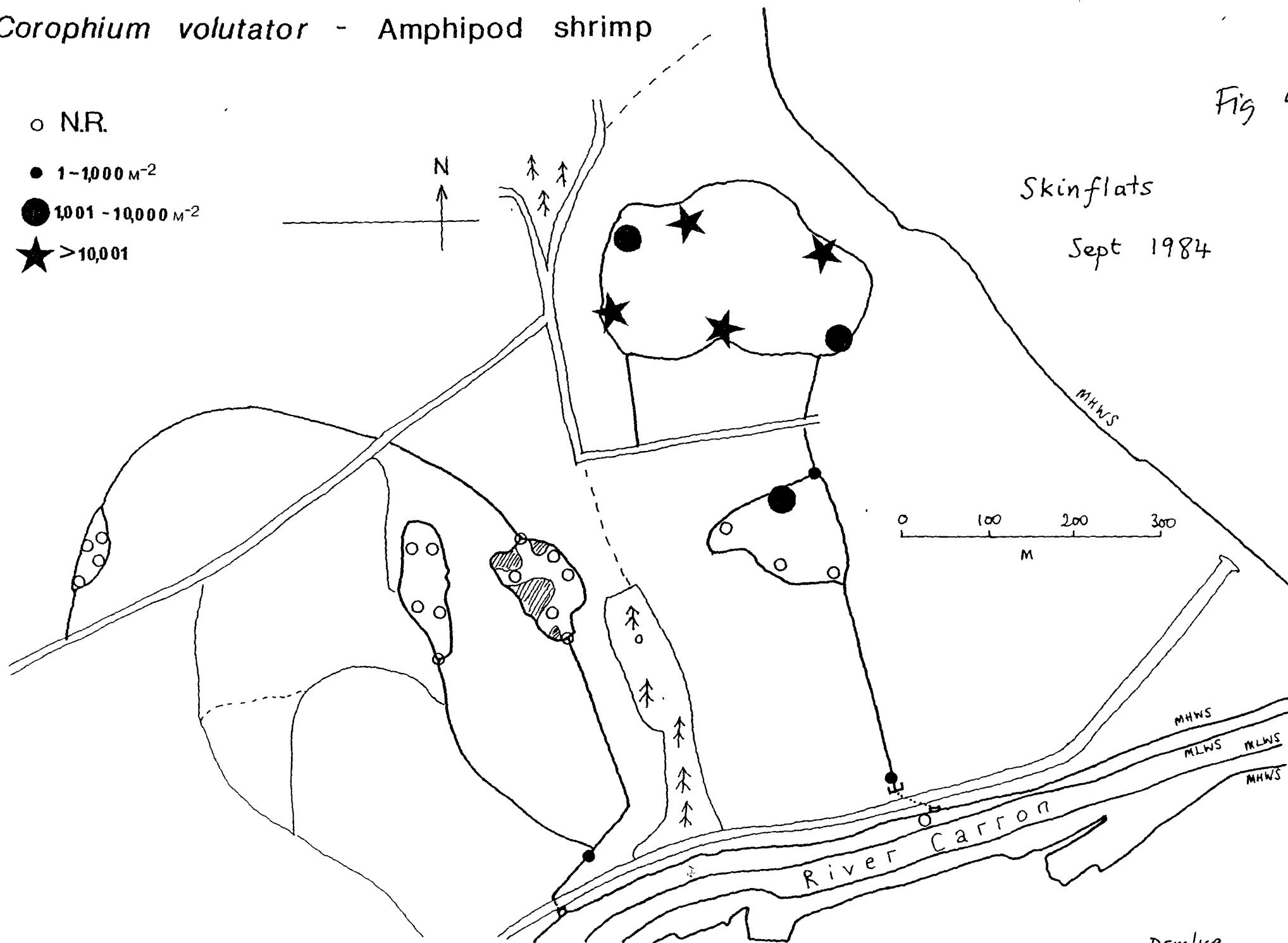
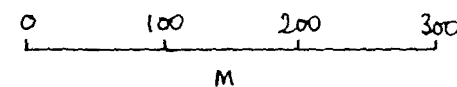
Fig 9

- N.R.
- 1-1,000 M⁻²
- 1,001 - 10,000 M⁻²
- ★ >10,001



Skinflats

Sept 1984



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P *Polydora* sp.
 C *Capitella capitata*
 M *Macoma balthica*
 Os *Ostracoda* sp.

○ N.R.

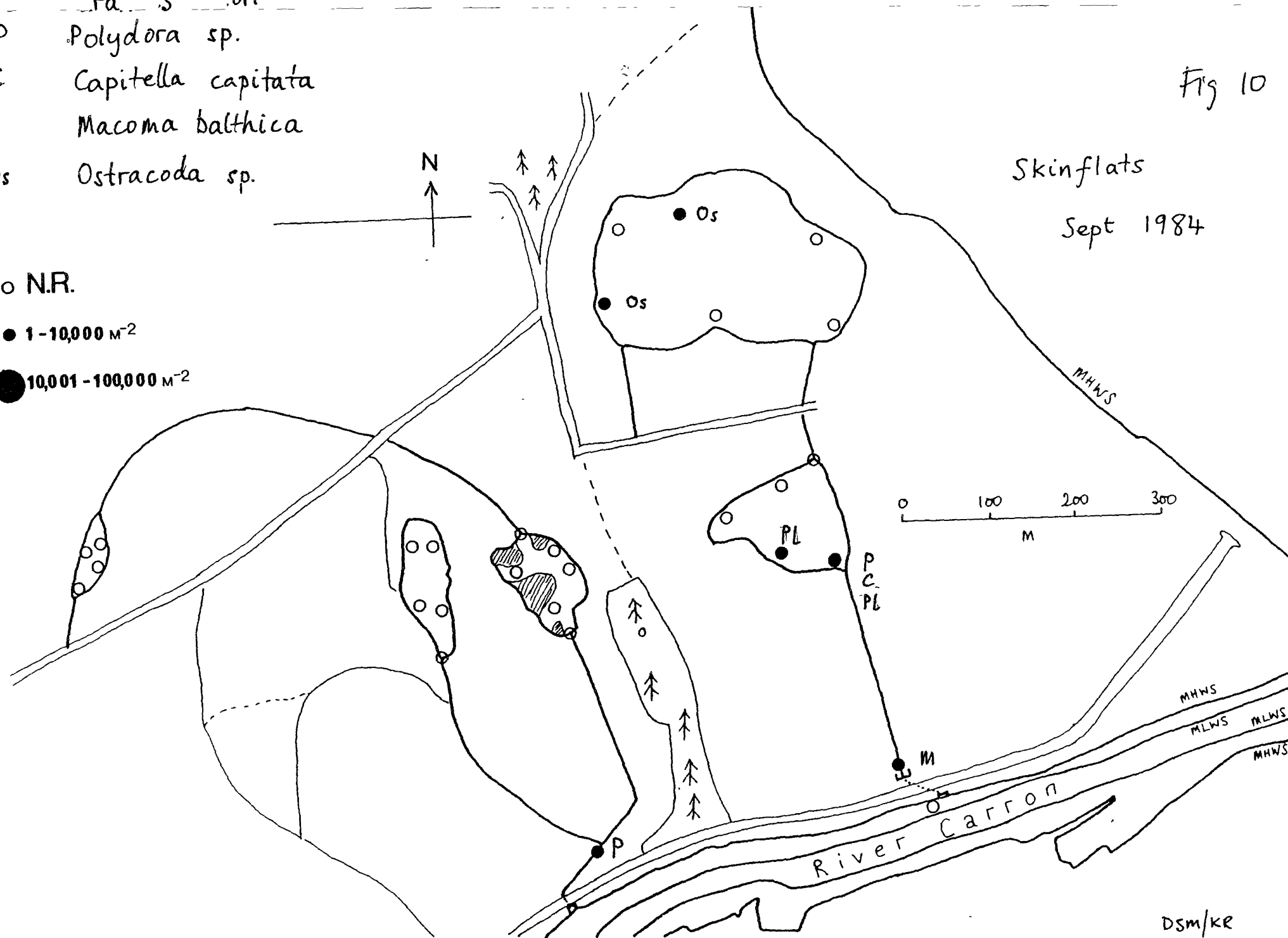
● 1-10,000 M⁻²

● 10,001-100,000 M⁻²

Fig 10

Skinflats

Sept 1984



DSM/KR

Tubifex pseudogaster

○ N.R.

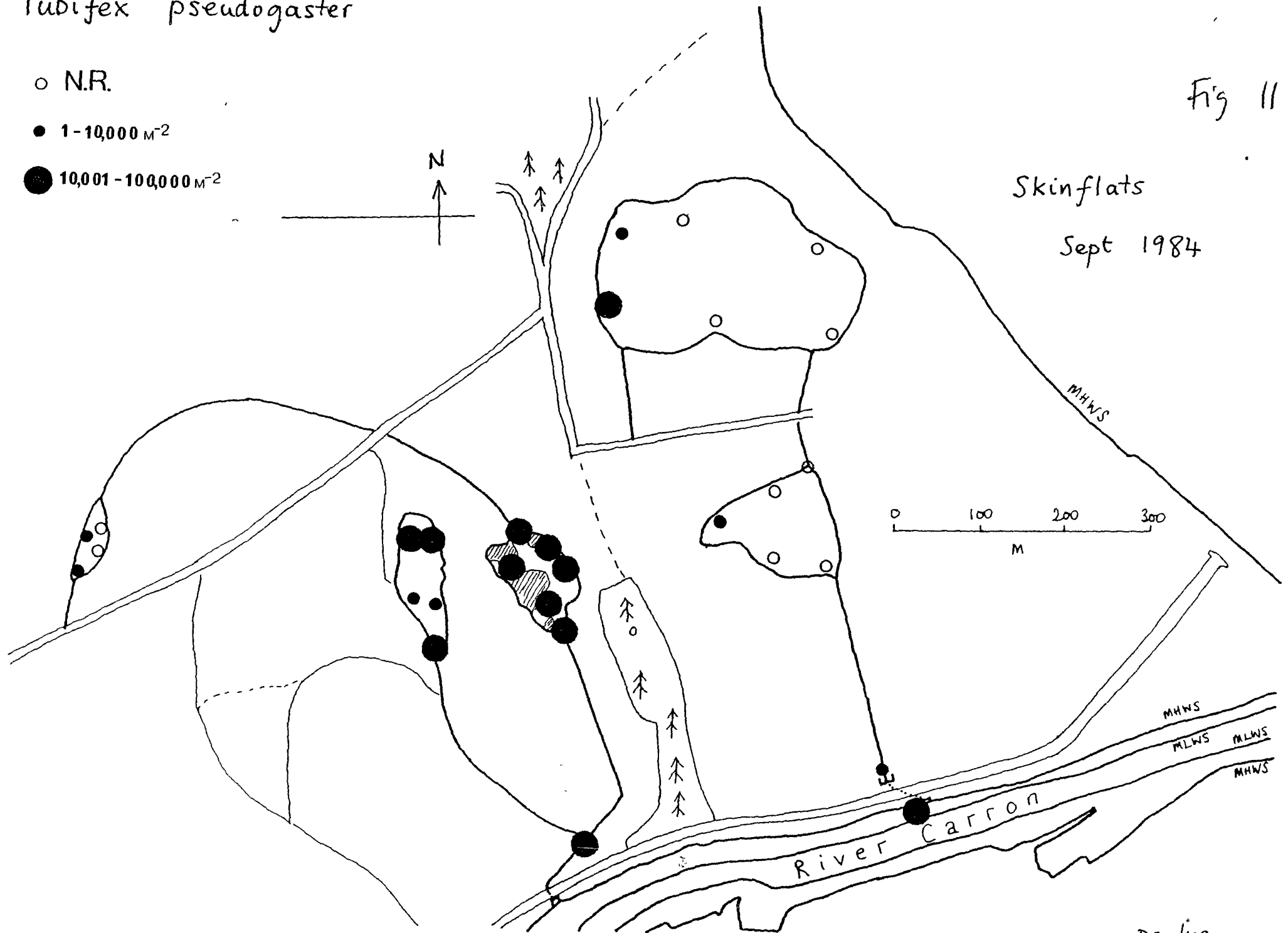
● 1-10,000 M^{-2}

● 10,001-100,000 M^{-2}

Fig 11

Skinflats

Sept 1984



Dsm/kr

SKIN FLATS
POND 1.

STATION NUMBER

Data 1

[illegible]

SKINFLATS
POND 2.

STATION NUMBER

Data 2

[illegible]

Water 5'

[illegible]

SKIN FLATS
ISLAND FARM POND

SKINFLATS
INTERTIDAL AREA 3.82 km^2

[illegible]

Data 5

SKINFLATS
FLOODED FIELD

STATION NUMBER

DITCH

RIVER
CARRON

SPECIES

SAMP.
SIZE

1

2

3

4

5

MEAN

6

7

n

 $\bar{n} M^{-1}$

n

 $\bar{n} M^{-1}$

n

 $\bar{n} M^{-1}$

n

 $\bar{n} M^{-1}$

n

 $\bar{n} M^{-1}$ $\bar{n} M^{-1}$

n

 $\bar{n} M^{-1}$

n

 $\bar{n} M^{-1}$

n

 $\bar{n} M^{-1}$ *Nereis diversicolor*5cm³

1

400

3

1200

5

2000

720

2

800

5

2000

*Tubifex pseudogaster*5cm³

10

4000

800

3

1200

96

3840

*Tubificoides benedicti*5cm³

54

2160

9

360

2

800

5200

3

1200

48

1920

*Corophium volutator*5cm³

1

400

5

2000

480

2

800

*Sphiothanes kroyeri*5cm³

2

800

86

36400

33

13200

40

16000

12880

*Monagunkia aestuarina*5cm³

2

800

34

13600

2880

486

9720

*Hydrobia ulva*5cm³

4

1600

26

10400

7

2800

7

2800

5

2000

3920

1

400

Polydora sp.5cm³

1

400

80

*Paranais litorealis*5cm³

36

1440

72

28800

8640

*Capitella capitata*5cm³

12

4800

960

*Macoma balthica*5cm³

1

400

Hydrobia ulva

POND

✓

✓

Corophium volutator

POND

✓

✓

Ostracod sp.

POND

✓

Oikopleura dioica

POND

✓

✓

Pleurobrachia sp.

POND

✓

✓

Acartia tonsa

POND

✓

✓

Acartia discaudata

POND

✓

✓

Acartia bifilosa inermis

POND

✓

Neomysis integer

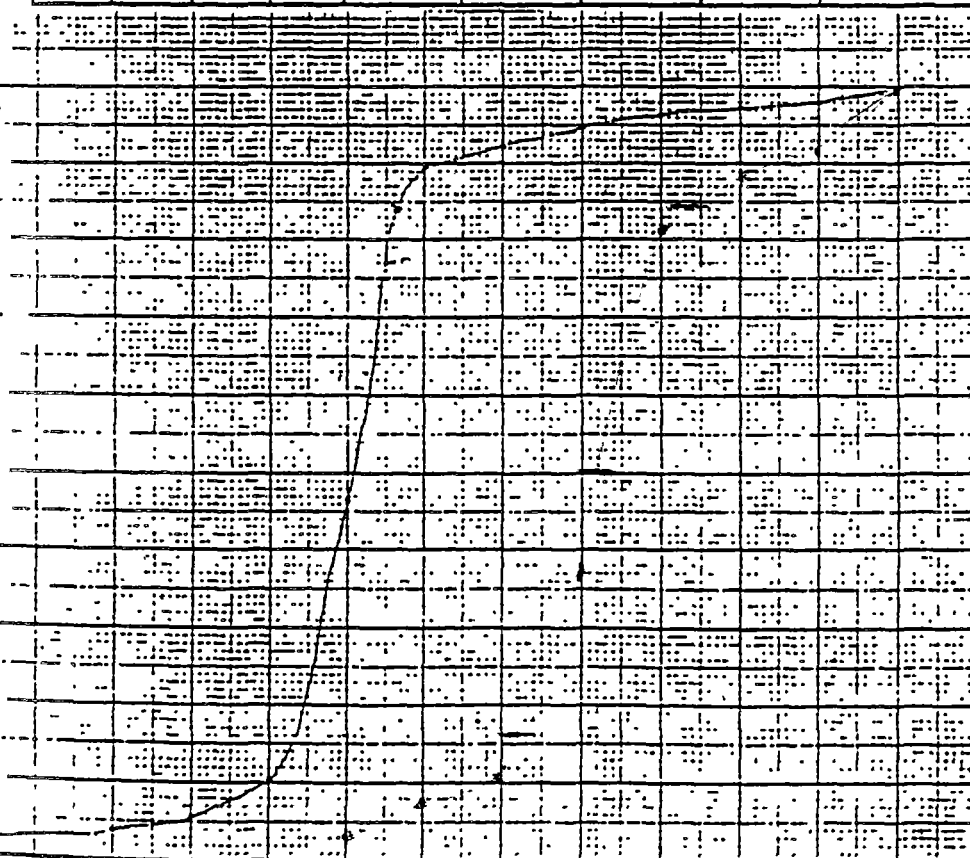
POND

✓

SURVEY SEDIMENT ANALYSIS.

Data 6

DATA							SURVEY:		CUMULATIVE	CUMULATIVE
	(mm)	Ø	DISH No.	DISH WT.	DISH + SEP. WT.	SEP. WT.			WT.	%
ANALYSIS	4.0	-1.0					SAMPLE: FLOODED FIELD STATION 1.			
	2.0	-1.0								
	1.0	0								
	0.5	1					DATE OF COLLECTION:			
DRY-SIEVE	0.25	2		28.82g	30.01	1.19	DATE OF ANALYSIS:		1.19	2.45
	0.125	3		32.25	34.15	1.90			3.04	7.65
	0.063	4		32.93	32.31	1.01			4.1	10.15
							WE. %			
	(µm)						WE. / FRACTION			
ANALYSIS	<63	5	1	28.83g	29.55	0.726	30.3	10.5	14.9	30.55
	<31	6	2	32.27g	32.78	0.51	25.8	17.35	32.85	81.31
	<15.6	7	3	27.333	28.48	0.151	7.55	2.9	35.75	85.47
	<7.8	8	4	29.07g	29.16g	0.093	4.65	1.2	36.95	91.42
PIPETTE	<3.9	9	5	28.62	28.257	0.061	3.45	3.45	40.4	100
			6							



PARAMETERS:

MEAN:-

5.3

MEDIAN:-

5.2 φ

SORTING:-

11

SKEWNESS:-

0.09

2s.c.

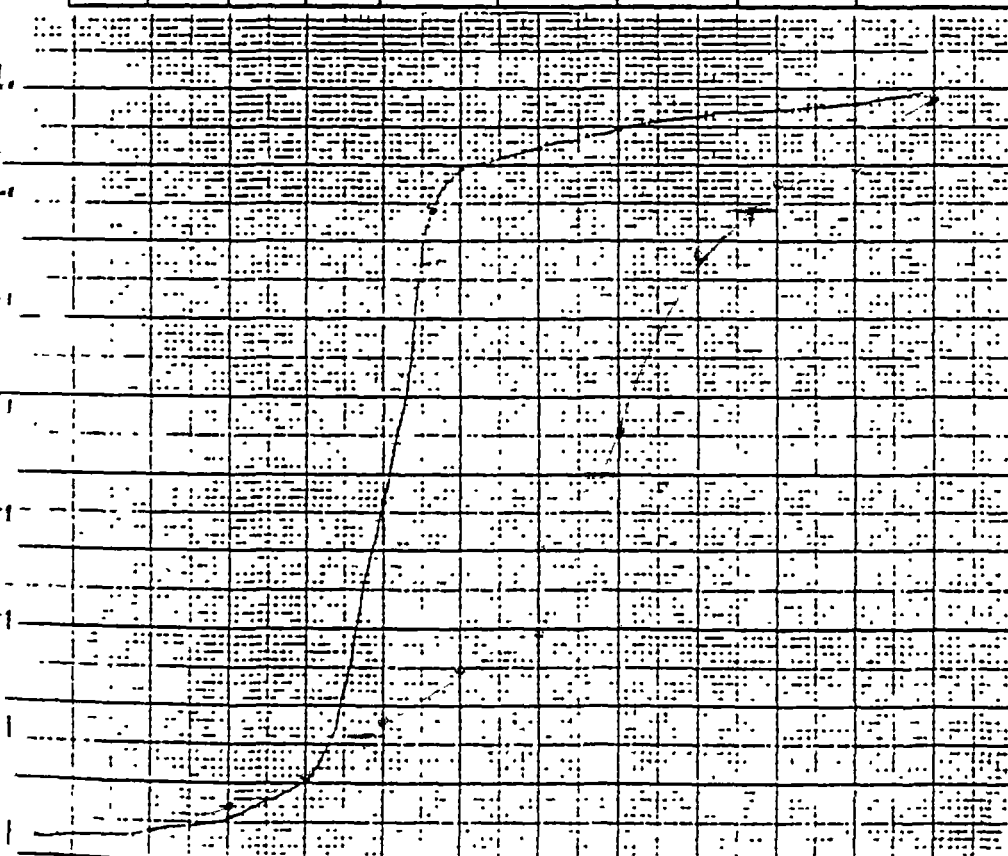
89.55

-2 -1 0 1 2 3 4 5 6 7 8 9

SURVEY SEDIMENT ANALYSIS.

7
Data

	(mm)	Ø	DISH No.	DISH Wt.	DISH + SED. Wt.	SED. Wt.	SURVEY:	CUMULATIVE Wt.	CUMULATIVE %
	2.0	-1.0					SAMPLE: FLOODED FIELD STATION 2		
ANALYSIS	1.0	0		31.95	34.52	2.57		2.52	6.99
	0.5	1		32.86	34.21	1.35	DATE OF COLLECTION:	3.92	10.87
DRY-SIEVE	0.25	2		29.22	32.04	2.82		6.74	18.71
	0.125	3		32.53	34.73	2.20	DATE OF ANALYSIS:	8.94	24.81
	0.063	4		32.14	33.78	1.64		10.58	29.30
							WE. / g	WE. / FRACTION	55.45
	(µm)								
	<63	5	6	24.821	30.330	5.509	25.45	9.4	19.45
	<31	6	7	32.016	32.357	0.341	16.05	8.35	28.33
	<15.6	7	8	32.702	32.556	0.154	7.7	5.3	31.63
	<7.8	8	9	24.249	27.337	3.088	4.4	0.75	32.35
	<3.9	9	10	32.571	32.444	0.127	3.65	3.65	36.03
PIPETTE ANALYSIS									100



PARAMETERS:

MEAN:-

4.254

MEDIAN:-

4.84

SORTING:-

2.45

SKEWNESS:-

-0.22

Qs.c.

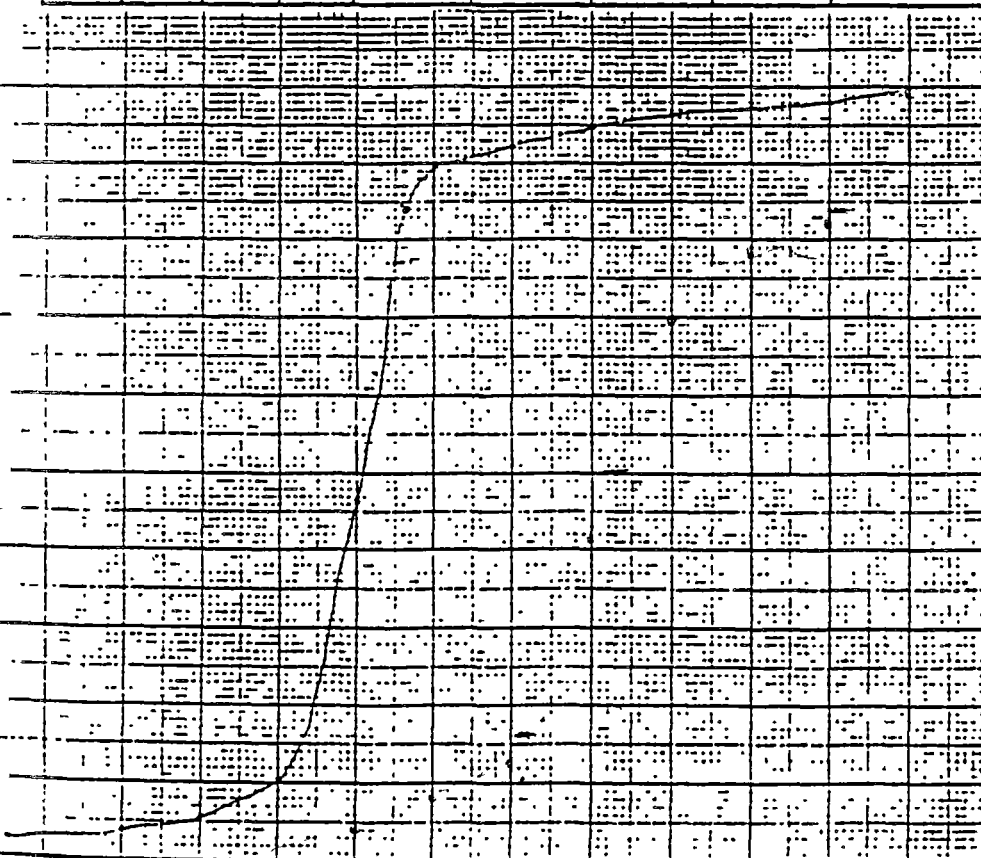
20.34

-2 -1 0 1 2 3 4 5 6 7 8 9

SURVEY SEDIMENT ANALYSIS.

DATA 0

	Ø	DISH NO.	DISH WT.	DISH + SEP. WT.	SEP. WT.	SURVEY:	CUMULATIVE WT.	CUMULATIVE %
ANALYSIS	2.0	-1.0				SAMPLE:		
	1.0	0				ISLAND FARM POND STATION 1.		
ANALYSIS	0.5	1				DATE OF COLLECTION:		
DRY-SIEVE	0.25	2	29.06	31.29	2.23		2.23	4.25
	0.125	3	28.67	30.45	1.78	DATE OF ANALYSIS:	4.01	7.71
	0.063	4	29.50	30.43	2.63		6.64	12.20
						WE. / FRACTION		
	(µm)							
	<63	5	30.45	33.56	0.908	45.4	14.95	21.59
	<31	6	32.03	33.22	0.60	32.45	14.5	30.69
	<15.6	7	29.51	29.75	0.315	15.75	4.85	40.94
	<7.8	8	30.45	32.64	0.22	11.1	2.25	42.99
	<3.9	9	32.37	32.15	0.181	9.05	4.05	52.04
								100



PARAMETERS:

MEAN:- $G_{64} = 8.2$
 $G_{16} = 4.2$
 $G_{50} = 4.2$

MEDIAN:-

6.35

SORTING:-

2.0

SKEWNESS:-

0.425

25.0

57.24

Data 9

SURVEY SEDIMENT ANALYSIS.

	(mm)	ϕ	Dish No.	Dish Wt.	Dish + Sed. Wt.	Sed. Wt.	SURVEY:	CUMULATIVE Wt.	CUMULATIVE %
DRY-SIEVE ANALYSIS	2.0	-1.0					SAMPLE: ISLAND FARM POND STATION 3.		
	1.0	0							
	0.5	1		32.46	32.93	0.07	DATE OF COLLECTION:	0.07	1.3
	0.25	2		32.19	31.88	2.69		2.76	5.1
DRY-SIEVE	0.125	3		29.15	32.01	2.89	DATE OF ANALYSIS:	5.65	10.55
	0.063	4		28.20	30.42	1.57		7.22	13.49
							Wt. %	Wt. / Fraction	
PIPETTE ANALYSIS	(μ m)								
	<63	5		32.172	33.038	0.926	46.35	15.35	25.57
	<31	6		31.430	32.649	0.559	27.95	8.55	34.42
	<15.6	7		31.715	32.097	0.382	17.1	7.75	42.17
	<7.8	8		32.475	32.762	0.227	11.35	3.05	45.22
	<3.9	9		32.254	32.420	0.166	8.3	5.3	53.52
									100

PARAMETERS:

MEAN:-

MEDIAN:-

SORTING:-

SKEWNESS:-

2s.c.

-2 -1 0 1 2 3 4 5 6 7 8 9

Fig 12

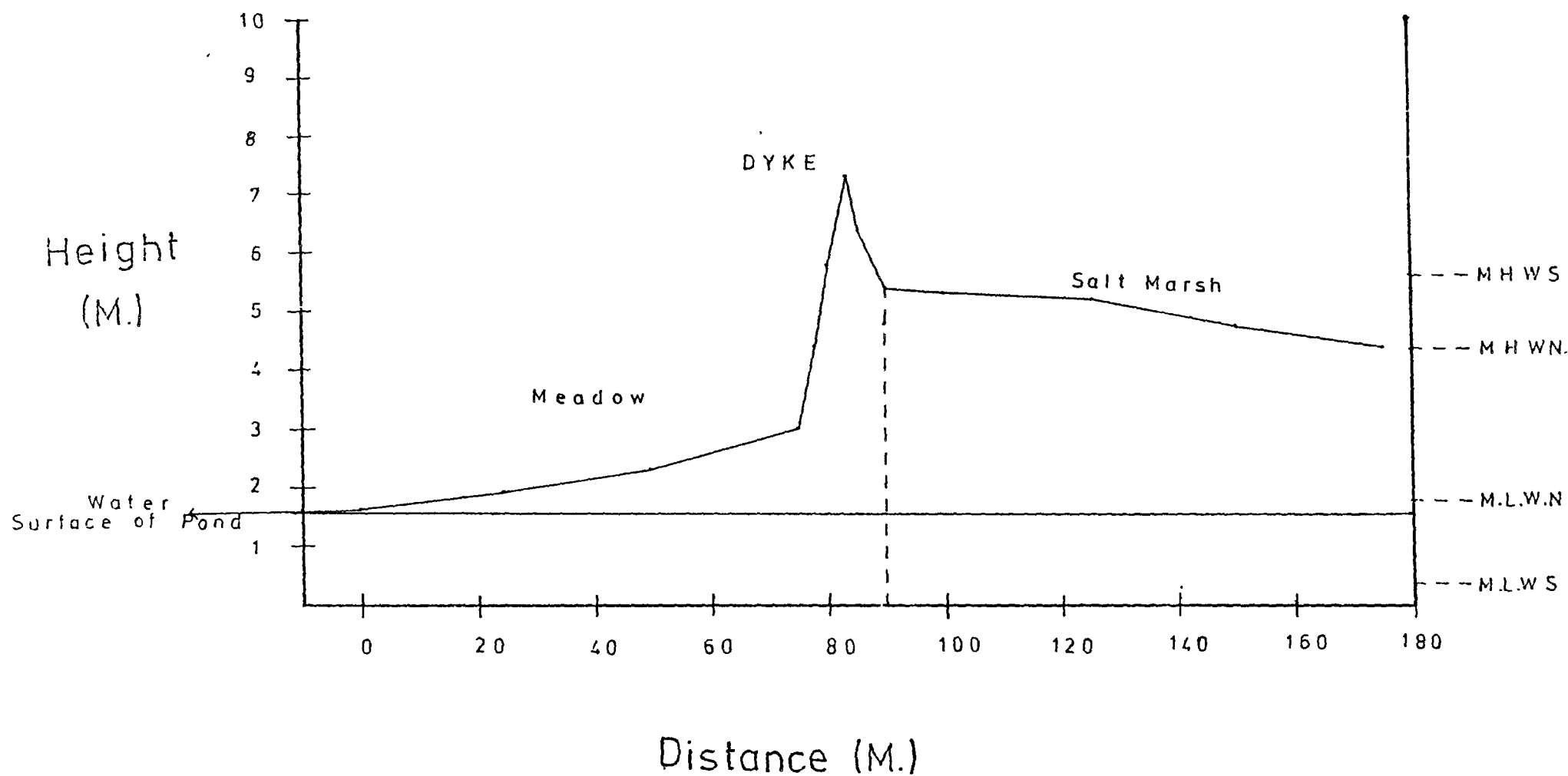


Figure: 3.13

Profile of Pond across to Mud flats. (See Fig. 2.2).

Reference: (Admiralty Tide Tables for Rosyth).

ISLAND FARM Pond
From McLEOD (1975)

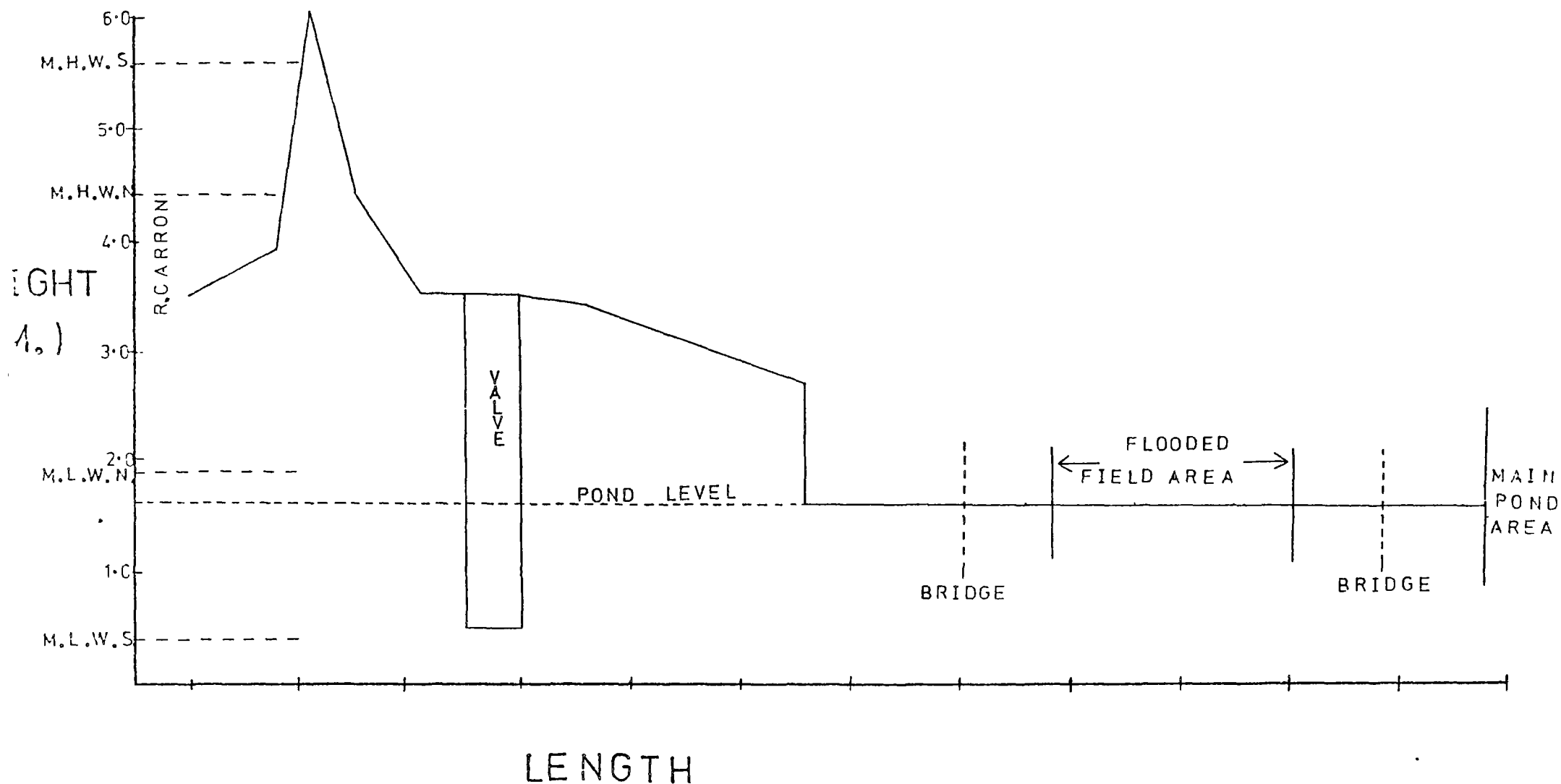


Figure: 3.12

Profile of Drainage Channel down to River Carron. (See Fig. 2.2).

Reference: (Admiralty Tide Tables for Rosyth).

ISLAND FARM
& FLOODED FIELDS
(McLeod, 1975)

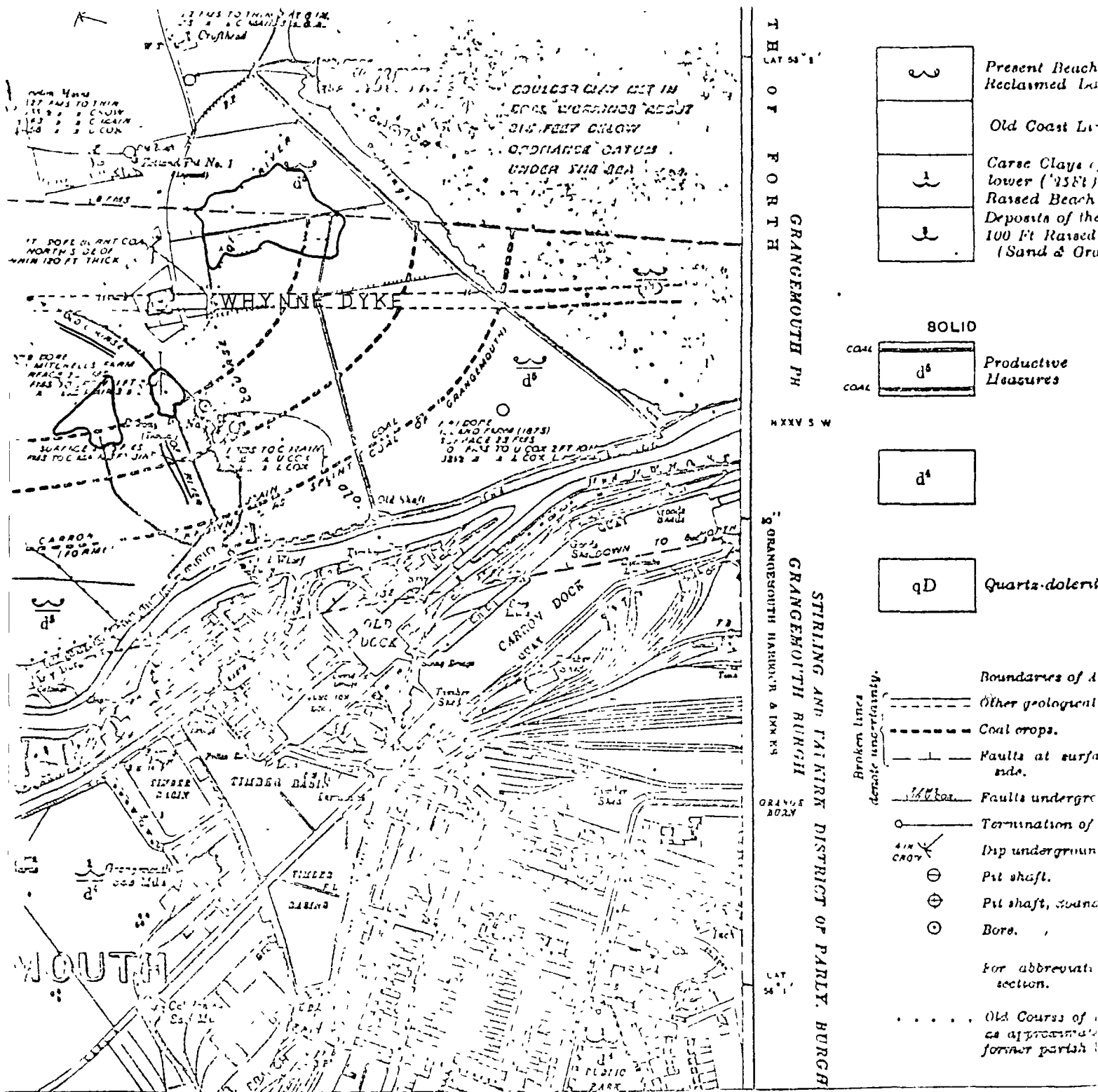


Figure: 2.4

Section of an 1859 Geological Map of Home Farm, Bothkennar. The site of Home Farm Pond and other neighbouring ponds in the vicinity are indicated.

Fig 15

Island Farm Pond

Figure 3

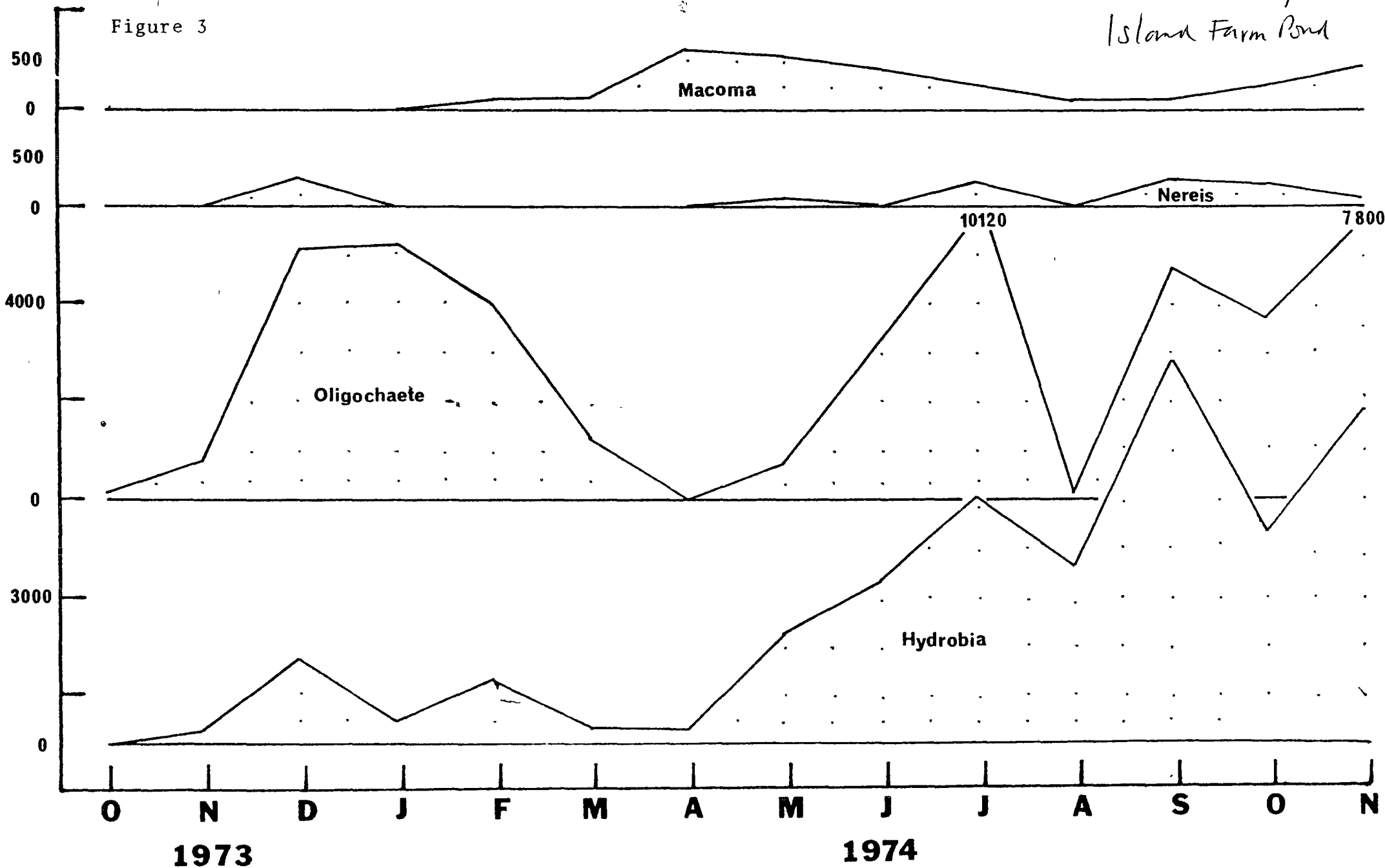
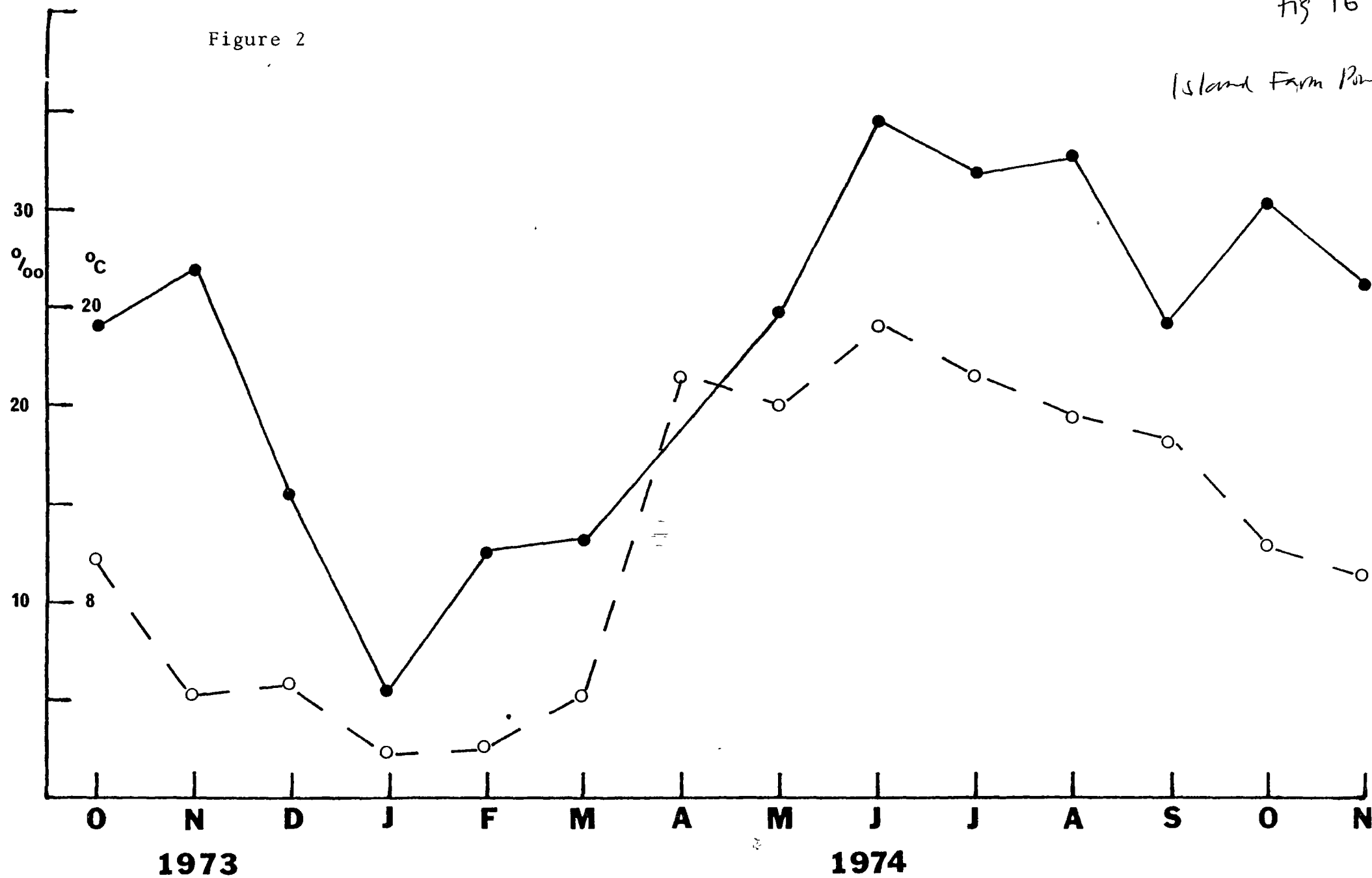


Fig 16

Island Farm Pond.

Figure 2



FALKIRK MUSEUM

RECORDS

<u>Riaflats area</u>	See FALKM: 1981-41-,	1981-78,
	1981-42-,	1981-79,
	1981-43-,	1981-80,
	1981-77-,	+ observations

This is considered to be the area delimited by the A905 on the N. side, the A76 (T) on the N. and the River Carron on the S. The Forth provides the eastern boundary.

In general the region is dominated by grassland with a few small areas of mainly coniferous woodland.

The large, shallow, brackish pools occurring in the southern half of the area provide, however, a complex of habitats unique in the District.

The flora and invertebrate fauna of the pools and associated streams are characteristic of brackish water. Such habitats are usually shallow, seasonal and highly variable in terms of such environmental factors as temperature and salinity. They are therefore fragile and easily damaged by human activities e.g. pollution, drainage and the use of fertilizers and pesticides.

The large pond marked at GR. NS/913-841 has already been drained and reverted to arable land.

In view of the scarcity of such areas in the U.K. as a whole, the region defined above merits S.S.S.I. status.

ceratopogonidae	biting midge	FALEX:1981-41-15
chironomidae	non-biting midge	" 1981-41-16
diptera	fly	" 1981-41-17
diptera	fly	" 1981-41-18
diptera	fly	" 1981-41-19
diptera	fly	" 1981-41-20
coleoptera	beetle	" 1981-41-21
<u>Gammarus sp.</u>	sandhopper	" 1981-41-22
arachnida	spider	" 1981-41-23
spionidae	bristle worm	" 1981-41-24
<u>Gasterosteus aculeatus</u>	three-spined stickleback	" 1981-41-25
<u>Ochthebius auriculatus</u>	water beetle	" 1981-41-45
ceratopogonidae	biting midge	" 1981-41-46
carabidae	ground beetle	" 1981-41-47
coleoptera	beetle	" 1981-41-48
aphidoideae	aphid	" 1981-41-49
helodidae	insect	" 1981-41-50
<u>Coccinella 11-punctata</u>	11-spot ladybird	" 1981-41-51
diptera	fly	FALEX:1981-41-52
ostracoda	ostracod	" 1981-41-53
tipulidae	crane fly	" 1981-41-54
ceratopogonidae	biting midge	" 1981-41-55
ephydridae	shorefly	" 1981-41-56
dolichopodidae	long-legged fly	" 1981-41-57
lepidoptera	caterpillar	" 1981-41-76
lepidoptera	caterpillar	" 1981-41-77
lepidoptera	caterpillar	" 1981-41-78
syrphidae	hover fly	" 1981-41-79
tipulidae	crane fly	" 1981-41-80
calliphoridae	fly	" 1981-41-81
dolichopodidae	fly	" 1981-41-82
tenthredinidae	sawfly	" 1981-41-83

miridae	biting midge	"	1981-41-85
ceratopogonidae	non-biting midge	"	1981-41-86
chironomidae	aphid/green-fly	"	1981-41-87
aphidoidea	black-fly/plant louse	"	1981-41-88
ephydriidae	shore fly	"	1981-41-89
ichneumonidae	ichneumon fly	"	1981-41-90
nabidae	damsel bug	"	1981-41-91
hemiptera	plant bug; capsid bug	"	1981-41-92
miridae	plant, bug; capsid bug	"	1981-41-93
cercopidae	spittle bug; frog hopper	"	1981-41-94
cicadellidae	leaf hopper	"	1981-41-95
limnephilidae	caddis fly	"	1981-41-96
<u>Tetragnatha sp.</u>	spider, orb weaver	"	1981-41-97
thomisidae	spider	"	1981-41-98
clubionidae	spider	"	1981-41-99
carabidae	ground beetle	"	1981-41-101

Skinflats

pond 2

MS-98-12-99

On

10.9.81

<u>Scientific Name</u>	<u>Common Name</u>	<u>Specimen No.</u>
<u>Sigara lateralis</u>	water boatman	FALKM:1981-41-28
chironomidae	non-biting midge	" 1981-41-29
chironomidae	non-biting midge	" 1981-41-30
chironomidae	non-biting midge	" 1981-41-31
oligochaeta	worm	" 1981-41-39
<u>Gammarus zaddachi</u>	sand hopper	" 1981-41-40
<u>Forficula auricularia</u>	earwig	" 1981-41-41
<u>Coccinella 7-punctata</u>	seven spot ladybird	" 1981-41-42
<u>Agabus bipustulatus</u>	diving beetle	" 1981-41-43
miridae	mirid/capsid bug	" 1981-41-58
cercopidae	spittle bug	" 1981-41-59
aphidoidea	aphid/greenfly blackfly/plant-louse	" 1981-41-60
cicadellidae	leaf hopper/jassid	" 1981-41-61

dolichopodidae	fly	"	1981-41-63
chironomidae	non-biting midge	"	1981-41-64
syrphidae	hover fly	"	1981-41-65
psycodidae	owl midge	"	1981-41-66
calliphoridae	fly	"	1981-41-67
chironomidae	non-biting midge	"	1981-41-68
lanchopteridae	pointed-wing fly	"	1981-41-69
sciomyzidae	marsh fly	"	1981-41-70
ceratopogonidae	biting midge	"	1981-41-71
ephrydidae	shore fly	"	1981-41-72
lepidoptera	caterpillar	"	1981-41-73
limnephilidae	caddis fly	"	1981-41-74
acarina	mite	"	1981-41-75
<u>Neta merinae</u>	spider	"	1981-41-100
arachnida	spider	"	1981-41-110
arachnida	spider	"	1981-41-111

Skinflats

pond 3

NS-98-22-19

On

10.9.81

chironomidae	non-biting midge	FALEK:1981-41-32
tipulidae	crane fly	" 1981-41-33
<u>Tipula sp</u>	crane fly	" 1981-41-34
ceratopogonidae	biting midge	" 1981-41-35
<u>Ephydra sp.</u>	shore fly	" 1981-41-36
<u>Ephydra sp.</u>	shore fly	" 1981-41-37
diptera	fly	" 1981-41-38
<u>Tubiflex pseudogaster</u>	worm	" 1981-41-44

Skinflats/ ditch, from pond 3

NS-98-22-8

On

10.9.81

<u>Nereis sp.</u>	ragworm	FALEK:1981-41-26
<u>Hydrobia ulvae</u>	laver spire snail	" 1981-41-27

NS-98-23-33

Cm

15.9.81

<u>Corophium volutator</u>	sandhopper	FALKM:1981-42-20
<u>Hydrobia ulvae</u>	laver spire snail	" 1981-42-21
<u>Nereis sp.</u>	ragworm	" 1981-42-22
<u>Neomysis integer</u>	opossum shrimp	" 1981-42-23
<u>Paranais litoralis</u>	worm	" 1981-42-31
<u>Pygospio sp.</u>	bristle worm	" 1981-42-32
oligochaeta	worm	" 1981-42-33
<u>Pelosclex benedicti</u>	worm	" 1981-42-34
cicadellidae	leaf hopper	" 1981-42-46
collembola	springtail	" 1981-42-50
aphidoidea	aphid	" 1981-42-51
phoridae	fly	" 1981-42-52
ceratopogonidae	biting midge	" 1981-42-53
dolichopodidae	fly	" 1981-42-54
braconidae	ichneumon fly	" 1981-42-55
hymenoptera	hymenoptera	" 1981-42-56
chalcidoidea	chalcid wasp	" 1981-42-57
<u>Lathridius lardarius</u>	beetle	FALKM:1981-42-58
<u>Nargus sp.</u>	beetle	" 1981-42-59
coleoptera	beetle	" 1981-42-60
<u>Gammarus zaddachi</u>	sandhopper	" 1981-42-61
ostracoda	ostracod	" 1981-42-64
dolichopodidae	fly	" 1981-42-65
nematoda	round worm	" 1981-42-66
lepidoptera	caterpillar	" 1981-42-75
staphylinidae	rove beetle	" 1981-42-76
miridae	mirid bug, capsid bug	" 1981-42-77
muscidae	stable fly	" 1981-42-79
muscidae	fly	" 1981-42-80
tipulidae	crane fly	" 1981-42-81

<u>Nereis sp.</u>	ragworm	"	1981-42-11
chironomidae	non-biting midge	"	1981-42-12
<u>Paranais litoralis</u>	worm	"	1981-42-24
chironomidae	non-biting midge	"	1981-42-25
chironomidae	non-biting midge	"	1981-42-26
diptera	fly	"	1981-42-27
<u>Ephydra sp.</u>	fly	"	1981-42-28
<u>Tubifex costatus</u>	worm	"	1981-42-29
<u>Capitella capitata</u>	bristle worm	"	1981-42-30
lepidoptera	caterpillar	"	1981-42-35
cercopidae	spittle bug	"	1981-42-36
<u>Alderia modesta</u>	sea slug	"	1981-42-62
<u>Sphaerium sp.</u>	orb-shell cockle	"	1981-42-67
polychaeta	bristle worm	"	1981-42-68
<u>Oniscus asellus</u>	woodlouse	"	1981-42-69
<u>Meta merianae</u>	spider	"	1981-42-70
<u>Pachygnatha clercki</u>	spider	"	1981-42-71
<u>Opilio parientinus</u>	harvestman	"	1981-42-72
carabidae	beetle	"	1981-42-73

Skinflats/

in a flooded field

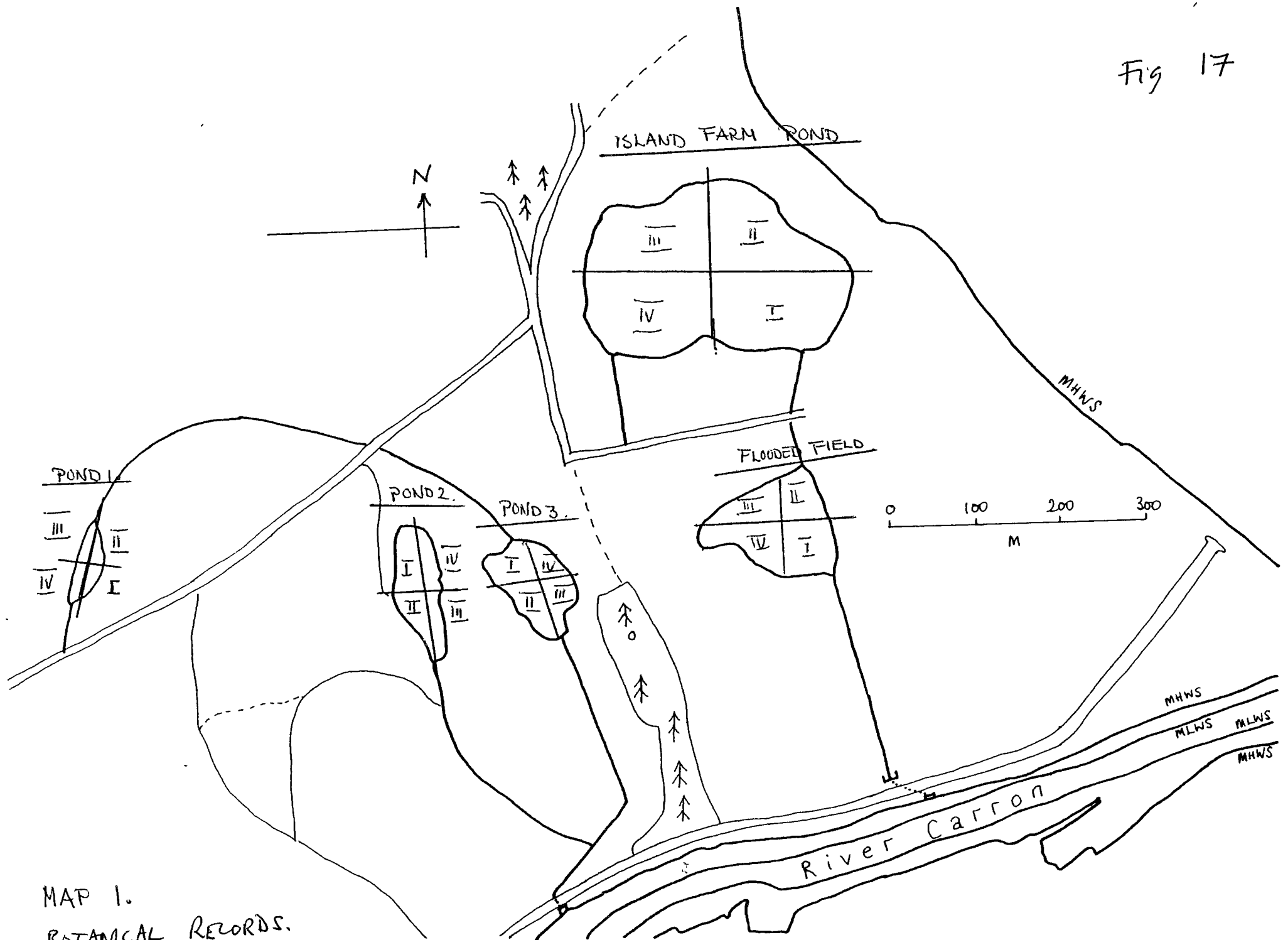
MS-98-23-40

On

17.10.81

<u>Capitella capitata</u>	bristle worm	FALCON:1981-78-3
<u>Paranais litoralis</u>	worm	" 1981-78-4
<u>Hydrobia ulvae</u>	laver spire snail	" 1981-78-9
<u>Capitella capitata</u>	bristle worm	" 1981-78-10
polychaeta	bristle worm	" 1981-78-11
oligochaeta		" 1981-78-12

Fig 17



MAP 1.
BOTANICAL RECORDS.

SKINFLATS, BOTANICAL

DURING THE PRESENT SURVEY OBSERVATIONS OF PLANTS WERE LIMITED TO 1-2 m RADIUS AROUND EACH POND BECAUSE VERY COMPREHENSIVE SPECIES LISTS OF THE AREA HAVE BEEN PRODUCED ON PREVIOUS OCCASIONS

FOR THE PURPOSE OF REPORTING PLANT SPECIES PRESENT THE AREA AROUND EACH POND WAS DIVIDED INTO QUADRATS (MAP 1.), AND THE OCCURRENCE OF SPECIES IN EACH QUADRAT WAS NOTED.

POND 1.

DATE SURVEYED: 6.9.1984

SURROUNDING AREA: WASTE LAND

SPECIES PRESENT : Phragmites australis, AT I, II
Rumex sp. I, II
Aster tripolium II, III, IV
Cuncus gerardii I, II
Spergularia marina I, III, IV
Phleum bertolonii II, III, IV
Lolium perenne III, IV
Triglochin maritima II

POND 2.

DATE SURVEYED: 6.9.1984

SURROUNDING AREA: WASTE LAND, ADJOINING RUBBISH TIP ON WEST SIDE

SPECIES PRESENT Aster tripolium I, II, III, IV
Spergularia marina I, II, III, IV
Rumex sp. I, II, III, IV
Epilobium hirsutum II
Ranunculus sceleratus II
Puccinellia distans IV

POND 3.

DATE SURVEYED : 6.9.1984

SURROUNDING AREA : WASTE LAND ON WEST SIDE ;
AGRICULTURAL, SUBJECT TO GRAZING
BY HORSES, ON EAST SIDE

SPECIES PRESENT : Phragmites australis I, II, IV
Aster tripolium I, II
Rumex sp. I, II
Spergularia marina II, III
Lolium perenne I, II
Puccinellia distans III, IV

FLOODED FIELD

DATE SURVEYED 3.9.1984

SURROUNDING AREA : AGRICULTURAL, SUBJECT TO
GRAZING BY COWS

SPECIES PRESENT : Spergularia marina I, II, III, I
Salicornia sp. I, II
Aster tripolium I, II, III, I
Lolium perenne III, I

ISLAND FARM POND

DATE SURVEYED : 3.9.1984

SURROUNDING AREA : AGRICULTURAL, SUBJECT TO
GRAZING BY COWS

SPECIES PRESENT : Spergularia marina I, II, III, IV
Salicornia sp I
Aster tripolium I, II, IV
Lolium perenne I, II, III, IV
Lemna triscula III, IV
Ranunculus sceleratus III
Puccinellia distans III, IV
Festuca rubra III, I
Plantago. maritima I, II
Trifolium repens III, I

FALKIRK MUSEUM

Appendix 8

site

Skinflats

RECORDS. 1981.

Skinflats is an area of land north of the River Carron which extends to the Kincardine Bridge. Much of the area designated as a site of Special Scientific Interest is a narrow strip of land consisting mostly of saltmarsh from the River Carron to the Kincardine Bridge, but it is hoped that several freshwater and brackish ponds just north of the River Carron will be included.

This area has been surveyed several times and a fairly comprehensive species list has been produced. There is a high diversity of plant species due to the presence of several different habitat types. The main habitat is the estuarine saltmarsh which displays a distinct succession of plants from the tidal mudflats where the only higher plant is the glasswort (Salicornia europaea) to the established saltmarsh with sea-spurry (Spergularia marina), sea campion (Silene maritima), thrift (Armeria maritima) sea plantain (Plantago maritima) sea milkwort (Glaux maritima), the common salt-marsh grass (Puccinellia maritima) and sea-arrow grass (Triglochin maritima). Further inland there are several freshwater and brackish ponds north of the River Carron. Island Farm pond is surrounded by pasture land but it is connected by a tidal ditch to the River Carron and is quite brackish. The glasswort (Salicornia maritima) can be found growing around the edges of the tidal ditch and the sea aster (Aster tripolium) grows around the east bank of the pond.

Annual thymelaea (Thymelaea passerina) a plant not native to Britain was found growing on the mud at the edge of Island Farm Pond. BRACKISH

Inland from Island Farm Pond is a relatively large freshwater pond bounded on two sides by a large stand of common reed-grass (Phragmites communis) and on the other two sides by pastureland and a freshwater marsh. There is a large diversity of plant species growing in and around this pond. The freshwater marsh supports a large stand of falso-fox sedge (Carex otrubae) and several species of rushes as well as a superb stand of great reed-mace (Typha latifolia). Several species of damselfly and dragon flies have been observed in this area.

West of this freshwater pond is a second pond which is bounded on its north side by a piece of wasteland where household rubbish has been tipped. This strip of wasteland was surveyed in 1978 by P.M. Holmes. During this survey Miss Holmes discovered the opium poppy (Papaver somniferum) as well as the two more common species of poppy (Papaver rhoeas and Papaver dubium).

The last pond in the Skinflats area is a small brackish pond near some farm buildings. This pond shows a low diversity of plant species.

It is hoped that if Skinflats is declared a nature reserve then the freshwater pond inland from Island Farm pond may be included because the large stands of reed-grass and reed-mace provide nesting sites for several species of birds and harbour both damselflies and dragon flies.

Site: Skinflats

Dates surveyed:	19 July 1978	NGR:	NS/918-829	Surveyor:	P.M. Holmes
	11 September 1981		NS/916-830		K. Black
			NS/919-829		
	15 September 1981		NS/923-833		K. Black
			NS/921-829		
	17 September 1981		NS/926-833		K. Black
	14 October 1981		NS/921-829		K. Black & K. Bayes
	1970		NS/925-845		M. Hutcheson

Species List.

BOTANICAL NAME	COMMON NAME	BATCH/OBSERVATION NO.
<u>DICOTYLEDONES</u>		
<u>boraginaceae</u>		
Echium vulgare	viper's bugloss	n4234
Myosotis arvensis	common forget-me-not	n4235
<u>caprifoliaceae</u>		
Sambucus nigra	elder, bourtree	n3860
<u>caryophyllaceae</u>		
Cerastium fontanum	common mouse-ear chickweed	n4177
Lychnis flos-cuculi	ragged robin	n4178
Silene dioica	red campion	n4179
Silene maritima	sea campion	n4180
Silene vulgaris	bladder campion	n4181
Spergula arvensis	corn spurrey	n4181
Spergularia marina	lesser sea-spurrey	n4183, 1981-41-5
Spergularia media	greater sea-spurrey	n4184
Stellaria holostea	greater stitchwort	n4185
Stellaria media	chickweed	n3882
Vaccaria pyramidata	cow basil	n3889, 1978-219-3
<u>chenopodiaceae</u>		
Atriplex glabriuscula	babington's orache	n4250
Atriplex prostrata	hastate orache	n3881, n4249, n4411, 1981-41-9
Atriplex littoralis	shore orache	n4251
Atriplex patula	common orache	n3880
Salicornia europaea	glasswort, marsh samphire	n4425, n4434, n4252
<u>compositae</u>		
Achillea millefolium	yarrow	n3887, n4216
Artemisia absinthium	wormwood	n3902
Artemisia vulgaris	mugwort	n4217
Aster tripolium	sea aster	n3894, n4218, n4426 n4433, 1981-41-3
Bellis perennis	daisy	n4219
Centaurea nigra	lesser knapweed	n4220
Chrysanthemum leucanthemum	ox-eye daisy	n4224
Chrysanthemum vulgare	tansy	n4225, n3875
Cirsium arvense	creeping thistle	n4221, n3874
Cirsium palustre	marsh thistle	n4222, n3873
Cirsium vulgare	spear thistle	n3872, n4223
Hieracium sp.	hawkweed	1981-42-3
Matricaria recutita	wild chamomile	n4281
Senecio jacobaea	ragwort	n3891, n4226
Senecio viscosus	stinking groundsel	n4227
Senecio vulgaris	groundsel	n3892, n4228
Sonchus arvensis	field sowthistle	n4229
Sonchus asper	spiny sowthistle	n3871

BOTANICAL NAME	COMMON NAME	BATCH/OBSERVATION NO.
<i>Taraxacum officinale</i>	dandelion	n3897, n4230
<i>Tripleurospermum inodurum</i>	scentless mayweed	1981-41-73
<i>Tripleurospermum maritima</i> ssp. inodurum	scentless mayweed	n3876
<i>Tussilago farfara</i>	coltsfoot	n3870, n4231
<u>convolvulaceae</u>		
<i>Calystegia sepium</i>	larger bindweed	n4236
<u>crassulaceae</u>		
<i>Sedum acre</i>	wall pepper	n4203
<u>cruciferae</u>		
<i>Brassica nigra</i>	black mustard	n3896
<i>Capsella bursa-pastoris</i>	shepherd's purse	n3869, n4171
<i>Cardamine hirsuta</i>	hairy bittercress	n4172
<i>Cardamine pratensis</i>	cuckoo flower, Lady's-smock	n4173
<i>Cochlearia danica</i>	danish scurvy-grass	n4174
<i>Cochlearia officinalis</i>	common scurvy-grass	n4175
<i>Sinapis arvensis</i>	charlock	n3893
<i>Sisymbrium officinale</i>	hedge mustard	n3890
<u>labiatae</u>		
<i>Galeopsis speciosa</i>	large-flowered hemp nettle	n4248
<i>Galeopsis tetrahit</i>	hemp nettle	n4247
<i>Mentha aquatica</i>	water mint	n4406
<u>leguminosae</u>		
<i>Lathyrus pratensis</i>	meadow vetchling	n4189
<i>Lotus corniculatus</i>	birds-foot trefoil	n4187
<i>Lotus uliginosus</i>	large bird's-foot trefoil	n4188
<i>Trifolium campestre</i>	hop trefoil	n4190
<i>Trifolium dubium</i>	lesser yellow trefoil	n3886, n4191
<i>Trifolium pratense</i>	red clover	n3885, n4192
<i>Trifolium repens</i>	white clover, dutch clover	n4430, n4414, n3884, n4193
<i>Ulex europaeus</i>	gorse, furze	n4194
<i>Vicia cracca</i>	tufted vetch	n4196
<i>Vicia sativa</i> ssp. <i>angustifolia</i>	narrow-leaved vetch	n4195
<u>onagraceae</u>		
<i>Chamerion angustifolium</i>	rose-bay willow-herb	n4415
<i>Epilobium angustifolium</i>	rose bay willow-herb	n4207, n3367
<i>Epilobium hirsutum</i>	great hairy willow-herb	n3866, 1978-219-2 n4204, 1981-42-1
<i>Epilobium palustre</i>	bog willow-herb	n4205
<i>Epilobium parviflorum</i>	lesser hairy willow-herb	n4206
<i>Epilobium roseum</i>	small-flowered willow-herb	n3868
<u>papaveraceae</u>		
<i>Papaver dubium</i>	long-headed poppy	n3878
<i>Papaver rhoeas</i>	field poppy	n3877
<i>Papaver somniferum</i>	opium poppy	n3879, 1978-219-1
<u>plantaginaceae</u>		
<i>Plantago lanceolata</i>	ribwort	n4253
<i>Plantago major</i>	rat-tail plantain	n3883, n4254
<i>Plantago maritima</i>	sea plantain	n4432, n4255
<u>plumbaginaceae</u>		
<i>Armeria maritima</i>	thrift	n4232
<u>polygonaceae</u>		
<i>Polygonum amphibium</i>	amphibious bistort	n4256
<i>Polygonum aviculare</i>	common knotgrass	1978-219-6, n3899
<i>Polygonum convolvulus</i>	black bindweed	n4257
<i>Polygonum persicaria</i>	common persicaria	n4258

BOTANICAL NAME	COMMON NAME	BATCH/OBSERVATION NO.
<u>polygonaceae</u> cont		
Rumex acetosa	sorrel	n4259
Rumex acetosella	sheep's sorrel	n4413, n4260
Rumex crispus	curled dock	n4261, n3865
Rumex obtusifolius	broad-leaved dock	n3864
<u>portulacaceae</u>		
Montia sibirica	pink purslane	n4186
<u>primulaceae</u>		
Glaux maritima	sea milkwort	n4233
<u>ranunculaceae</u>		
Caltha palustris	marsh marigold, king cup	n4436
Ranunculus acris	meadow buttercup	n4429, n4167
Ranunculus ficaria	lesser celandine	n4170
Ranunculus hederaceus	ivy-leaved water crowfoot	n4423
Ranunculus repens	creeping buttercup	n3900, n4168
Ranunculus sardous	pale hairy buttercup	1978-219-7, n3901
Ranunculus sceleratus	celery-leaved crowfoot	1981-78-1, 1981-41-12
<u>resedaceae</u>		
Reseda luteola	Dyer's rocket, weld	n4176
<u>rosaceae</u>		
Crataegus monogyna	hawthorn	n4424, n4197
Fragaria vesca	wild strawberry	n4198
Filipendula ulmaria	meadow sweet	n4199
Potentilla anserina	silverweed	1978-219-4, n4409
		1981-41-14, n3895, n4200
Rosa canina	dog rose	n4201
Rubus fruticosus	bramble, blackberry	n4202
<u>rubiaceae</u>		
Galium aparine	goosegrass, cleavers	n3863, n4213
Galium odoratum	sweet woodruff	n4214
Galium vernum	lady's bedstraw	n4215
<u>salicaceae</u>		
Salix caprea	great willow	n3861
<u>scrophulariaceae</u>		
Digitalis purpurea	foxglove	
Euphrasia nemorosa	common eyebright	n4238
Linaria vulgaris	common toad flax	n4239
Odontites tutea	yellow odontites	1978-219-5
Odontites verna	red bartsia	n4240
Scrophularia nodosa	figwort	n4241
Verbascum thapsus	common mullein	n4242
Veronica agrestis	green field speedwell	n4243
Veronica beccabunga	brooklime	n4246
Veronica chamaedrys	germander speedwell	n4244
Veronica persica	common field speedwell	n4245
<u>thymelaeaceae</u>		
Thymelaea passerina	annual thymelaea	1981-42-7
<u>umbelliferae</u>		
Aegopodium podagraria	ground elder	n4212
Anthriscus sylvestris	cow parsley	n3888
Conium maculatum	hemlock	n4208
Conopodium majus	pignut	n4209
Heracleum sphondylium	hogweed	n3898, n4210
Pimpinella major	burnet saxifrage	n4211
Torilis japonica	upright hedge-parsley	1981-42-2
<u>urticaceae</u>		
Urtica dioica	stinging nettle	n4262, n3862

BOTANICAL NAME	COMMON NAME	BATCH/OBSERVATION NO.
MONOCOTYLEDONES		
<u>cyperaceae</u>		
Carex otrubae	false-fox sedge	n4412, 1981-41-1, n4272
Eleocharis palustris	common spike-rush	n4421, n4273
<u>gramineae</u>		
Agropyron caninum	bearded couch	1981-41-2
Agropyron repens	twitch	n3913
Agropyron repens var aristatum	couch, twitch	1981-42-9
Agrostis stolonifera	creeping bent	n4275
Agrostis tenuis	common bent	n3911
Alopercus geniculatus	marsh foxtail	n3903, n4274
Bromus sterilis	barren brome	n3908
Cynosurus cristatus	crested dog's tail	n4427
Dactylis glomerata	cocksfoot	n3909, n4276
Deschampsia caespitosa	tufted hair-grass	n3906
Deschampsia flexuosa	wavy hair-grass	n3905
Festuca rubra	red fescue	n4277
Glyceria maxima	reed, sweet-grass	n4278
Holcus lanatus	Yorkshire fog	n4428, n3913
Lolium perenne	perennial rye-grass	1981-42-6, n3907
Phalaris arundinaceae	reed canary-grass	n3904
Phleum bertolonii	smaller cat's-tail	1981-42-4, 1981-41-8
Phleum pratense	cat's-tail grass	n4410, n4407
Phragmites communis	common reed-grass	n4405, n4408, n4280
Poa annua	annual meadow-grass	n3910
Poa pratensis	smooth meadow-grass	1981-42-5
Puccinellia maritima	common salt-marsh grass	1981-42-8, n4435, n4279
<u>juncaceae</u>		
Juncus articulatus	jointed rush	n4418, n4267, 1981-41-11
Juncus bufonius	toad rush	1981-41-6
Juncus conglomeratus	conglomerate rush	n4268
Juncus effusus	soft rush	n4422
Juncus gerardii	mud rush	n4269, 1981-41-7, 1981-41-10
Juncus inflexus	hard rush	n4419, 1981-43-1, n4270
<u>juncaginaceae</u>		
Triglochin maritima	sea-arrow grass	n4416, n4431, 1981-41-4 n4263
Triglochin palustris	marsh arrow grass	n4264
<u>orchidaceae</u>		
Dactylorhiza fuchsii	common spotted orchid	n4265
Dactylorhiza purpurella	northern fen orchid	n4266
<u>typhaceae</u>		
Typha latifolia	great reed-mace	n4271, n4420
PTERIDOPHYTA		
<u>equisetaceae</u>		
Equisetum arvense	common horsetail	1981-42-10
ALGAE		
<u>chlorophyceae</u>		
Genus & species unknown	green alga	1981-42-42, 1981-78-8
Enteromorpha intestinalis	green seaweed	1981-42-38, 1981-43-25
Enteromorpha sp.	green seaweed	1981-42-39, 1981-77-1
Spirogyra sp.	green alga	1981-78-17, 1981-43-24
Ulva lactuca	sea lettuce	1981-42-41, 1981-42-63
Prasiola stipitata	green seaweed	1981-77-2
<u>xanthophyceae</u>		
Vaucheria sp. (subsimpler)	yellow-green alga	1981-42-37

NCC SALINE COASTAL LAGOON RECORDING SHEET

Locality (site name, nearest town, county):

ISLAND FARM POND, SKINFLATS, CENTRAL
REGION

Grid ref: INS 924 833

Date of visit: 3 SEPT. 1984

Recorder's Name: DSMcLUSKY / K. RODDIE

Date of previous records made by same recorder: 1973-1974 DSM
1981 KR

Ownership: CENTRAL REGIONAL COUNCIL

Ease of access: 500 m FROM ROAD

Permissions required: NIL

Conservation status of site (MNR, NNR, LNR, SSSI, NT, RSPB,
RSNC etc):

Use of site (use attached check list):

AGRICULTURAL

LAGOON ISOLATED FROM SEA - seawater enters by DITCH
percolation: springs: source unknown:

LAGOON OPEN TO SEA - channel to ~~sea~~ RIVER CARRON
natural: artificial: sluiced: ✓

Height of channel bed relative to O.D: 1.5 m (MLWN)

Depth of shallowest point of channel: 1 m.

Max. current speed in channel (m/s): NOT KNOWN

FRESHWATER SOURCE

Channel to lagoon: —

Spring: —

Source not obvious: —

Catchment area: SURFACE RUN-OFF / FIELD DRAINAGE

WHOLE BASIN AREA: 60,000 m² WET AREA: 60,000 m² (300 x 200 m)

WATER LEVEL CHANGES - ± 20 cm

Diurnal: Seasonal: ✓ Coastal spring tide range:

PHYSIOGRAPHIC TYPE:

Rock: Shingle bar: Sand bar:
Saltmarsh: Dune slack:

AGRICULTURAL FIELD SUBJECT TO MINING
SUBSIDENCE

•ARTIFICIAL ORIGIN

Behind seawall: ✓ Old drainage fleet:
Old estuary: Boating lake:
Ditch: Disused dock:
Disused gravel pit: Disused quarry:
Tide mill pond: Fish pond:
Old salt works: Other: MINING SUBSIDENCE.

COASTAL SITUATION OF LAGOON

Estuary: Harbour: Open coast:

LAGOON BED SUBSTRATUM (Indicate primary and secondary -ies)

Clay: Mud: + Fine sand: Coarse sand: Shingle:
Cobbles: Boulders: Rock: Peat: Plant debris:
Artificial (state which):
Depth of reducing layer: 5 cm

TRANSPARENCY OF WATER

Clear: Turbid(phytoplankton): Turbid(silt): ✓

Secchi disc: < 10 cm. Weather at time of record: FAIR

SALINITY (‰) (5-30‰ DURING 1973/74)

Bottom max: 27.5 min: 25.7 Surface max: 27.5 min: 25.7 m 3/9/84

Halocline depth: N/A.

OXYGEN CONCENTRATION (mg/l): —

TEMPERATURE

(2-20° in 1973/74)

Lagoon max: min: Sea temp: Air temp(shade): —

OTHER CHEMICAL MEASUREMENTS TAKEN: NIL

PHOTOGRAPHS TAKEN (include whole site, edge detail, channel and bar details): ✓

SKETCH MAP OF SITE - On separate sheet prepare sketch map of site indicating prominent landmarks, north, access, position of channel, position of sea, lines of profile.) SEE ATTACHMENTS.

SECTION OF SITE - Drawing of profile(s) to indicate depth, water level relative to basin size etc. Indicate position of profiles on sketch map/plan of site. ✓ SEE ATTACHMENTS

CHECK LIST OF VEGETATION AND ANIMALS

As far as possible all species should be recorded noting abundance.

NOTE PRESENCE OF -

Adjacent marginal vegetation freshmarsh:
 saltmarsh: ✓
 dune:
 shingle:

Emergent vegetation: Salicornia sp

Strandline detritus: NIL

Submerged macroflora brown algae:
 red algae:
 green algae: ✓
 Zostera:
 Ruppia:

Macrofauna on vegetation: NIL

Weed sample taken: NIL Sediment sample taken: ✓

INDICATOR ORGANISMS

Emergents Scirpus maritimus
 Scirpus tabernaemontani
 Phragmites australis:

Submerged Vaucheria spp
 Chaetomorpha spp
 Ulva spp ✓
 Enteromorpha spp ✓
 Cladophora spp
 Sargassum muticum

Ruppia maritima
Ruppia cirrhosa
Zostera marina
Zostera angustifolia
Zostera noltii

Potamogeton pectinatus
Potamogeton filiformis
Zanichellia palustris
Myriophyllum spicatum
Ranunculus baudotii
Lamprothamnion papulosum

Animals Nematostella vectensis
 Edwardsia ivelli

Procerodes littoralis

Nereis diversicolor ✓

Idotea chelipes
Spaeroma hookeri

Gammarus insensibilis
Gammarus duebeni
Gammarus zaddachi
Neomysis integer
Palaemonetes varians

Hydobia ventrosa
Hydobia neglecta
Littorina saxatilis tenebrosa

Cerastoderma glaucum

Pomatoschistus microps

Sigara stagnalis
Sigara selecta
Corixa affinis
Notonecta viridis

SHORT DESCRIPTION OF SITE

See ATTACHMENT

ANY OTHER NOTES

NCC SALINE COASTAL LAGOON RECORDING SHEET

Locality (site name, nearest town, county):

FLOODED FIELD, SKINFLATS, CENTRAL REGION

Grid ref: NS 924 830

Date of visit: 3RD SEPTEMBER 1984

Recorder's Name: D.S. Mc LUSKY / K. RIDDIE

Date of previous records made by same recorder: 1973-1974 DSM
1981 KR.

Ownership: CENTRAL REGIONAL COUNCIL

Ease of access: 300 m FROM ROAD

Permissions required: NIL

Conservation status of site (MNR, NNR, LNR, SSSI, NT, RSPB,
RSNC etc):

Use of site (use attached check list): AGRICULTURAL

LAGOON ISOLATED FROM SEA - seawater enters by DITCH
percolation: springs: source unknown:

LAGOON OPEN TO SEA - channel to ~~sea~~ RIVER CARRON
natural: artificial: sluiced: ✓

Height of channel bed relative to O.D: 1.5 m (MLWN)

Depth of shallowest point of channel: 1 m

Max. current speed in channel (m/s): NOT KNOWN

FRESHWATER SOURCE

Channel to lagoon: —

Spring: —

Source not obvious: —

Catchment area: SURFACE RUN-OFF / FIELD DRAINAGE

WHOLE BASIN AREA: 13,500 m² WET AREA: 13,500 m²

WATER LEVEL CHANGES - ± 50 cm

Diurnal: ✓

Seasonal:

Coastal spring tide range:

PHYSIOGRAPHIC TYPE:

Rock: Shingle bar: Sand bar:
Saltmarsh: Dune slack:

AGRICULTURAL FIELD SUBJECT TO MINING SUBSIDENCE

ARTIFICIAL ORIGIN

<u>Behind seawall:</u> ✓	Old drainage fleet:
Old estuary:	Boating lake:
Ditch:	Disused dock:
Disused gravel pit:	Disused quarry:
Tide mill pond:	Fish pond:
Old salt works:	Other:

COASTAL SITUATION OF LAGOON

Estuary: ✓ Harbour: Open coast:

LAGOON BED SUBSTRATUM (Indicate primary and secondary -ies)

Clay: Mud: + Fine sand: Coarse sand: Shingle:
Cobbles: Boulders: Rock: Peat: Plant debris:
Artificial (state which): -
Depth of reducing layer: 5 cm

TRANSPARENCY OF WATER

Clear: Turbid(phytoplankton): Turbid(silt): ✓
Secchi disc: c 10 cm Weather at time of record: FAIR

SALINITY (‰)

26 — 18.4 ‰
Bottom max: min: Surface max: min:
Halocline depth: —

OXYGEN CONCENTRATION (mg/l): —

TEMPERATURE — (2-20° in 1973/74)

Lagoon max: min: Sea temp: Air temp(shade):

OTHER CHEMICAL MEASUREMENTS TAKEN: NIL

PHOTOGRAPHS TAKEN (include whole site, edge detail, channel and bar details): ✓

SKETCH MAP OF SITE - On separate sheet prepare sketch map of site indicating prominent landmarks, north, access, position of channel, position of sea, lines of profile.) ✓

SECTION OF SITE - Drawing of profile(s) to indicate depth, water level relative to basin size etc. Indicate position of profiles on sketch map/plan of site.

see attachments.

CHECK LIST OF VEGETATION AND ANIMALS

As far as possible all species should be recorded noting abundance.

NOTE PRESENCE OF -

Adjacent marginal vegetation freshmarsh:
 saltmarsh: ✓
 dune:
 shingle:
Emergent vegetation: Salicornia sp
Strandline detritus: NIL
Submerged macroflora brown algae:
 red algae:
 green algae: ✓
 Zostera:
 Ruppia:

Macrofauna on vegetation: NIL

Weed sample taken: NIL Sediment sample taken: ✓

INDICATOR ORGANISMS

Emergents Scirpus maritimus
 Scirpus tabernaemontani
 Phragmites australis:

Submerged Vaucheria spp
 Chaetomorpha spp
 Ulva spp ✓
 Enteromorpha spp ✓
 Cladophora spp
 Sargassum muticum

 Ruppia maritima
 Ruppia cirrhosa
 Zostera marina
 Zostera angustifolia
 Zostera noltii

 Potamogeton pectinatus
 Potamogeton filiformis
 ZanicHELLia palustris
 Myriophyllum spicatum
 Ranunculus baudotii
 Lamprothamnion papulosum

Animals Nematostella vectensis
 Edwardsia ivelli

 Procerodes littoralis

 Nereis diversicolor ✓

 Idotea chelipes
 Spaeroma hookeri

Gammarus insensibilis
Gammarus duebeni
Gammarus zaddachi
Neomysis integer
Palaemonetes varians

Hydobia ventrosa
Hydobia neglecta
Littorina saxatilis tenebrosa

Cerastoderma glaucum

Pomatoschistus microps

Sigara stagnalis
Sigara selecta
Corixa affinis
Notonecta viridis

SHORT DESCRIPTION OF SITE

See attachments.

ANY OTHER NOTES

NCC SALINE COASTAL LAGOON RECORDING SHEET

• Locality (site name, nearest town, county):

POND 3, SKINFLATS, CENTRAL REGION

Grid ref: NS 922 829

Date of visit: 6TH SEPTEMBER

Recorder's Name: D S. McLUSKY / K. RODDIE

Date of previous records made by same recorder: 1981 KR.

Ownership: CENTRAL REGION

Ease of access: 90m FROM PATH

Permissions required: NIL

Conservation status of site (MNR, NNR, LNR, SSSI, NT, RSPB,

RSNC etc): PLNR ← planned.

Use of site (use attached check list):

AGRICULTURAL

LAGOON ISOLATED FROM SEA - seawater enters by DITCH.
percolation: springs: source unknown:

LAGOON OPEN TO SEA - channel to ~~sea~~ RIVER CARRON
natural: artificial: sluiced: ✓

Height of channel bed relative to O.D:

Depth of shallowest point of channel:

Max. current speed in channel (m/s): NOT KNOWN

FRESHWATER SOURCE

Channel to lagoon:

Spring:

Source not obvious:

Catchment area: SURFACE RUN-OFF / FIELD DRAINAGE

WHOLE BASIN AREA: 8000m² (100x80m) WET AREA: 8000m²

WATER LEVEL CHANGES -

Diurnal:

Seasonal: ✓

Coastal spring tide range:

PHYSIOGRAPHIC TYPE:

Rock: Shingle bar: Sand bar:
Saltmarsh: Dune slack:

Agricultural field subject to subsidence

ARTIFICIAL ORIGIN

<u>Behind seawall:</u> ✓	Old drainage fleet:
Old estuary:	Boating lake:
<u>Ditch:</u> ✓	Disused dock:
Disused gravel pit:	Disused quarry:
Tide mill pond:	Fish pond:
Old salt works:	Other: MINING SUBSIDENCE

COASTAL SITUATION OF LAGOON

<u>Estuary:</u> ✓	Harbour:	Open coast:
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LAGOON BED SUBSTRATUM (Indicate primary and secondary -ies)

Clay:	<u>Mud:</u> ✓	<u>Fine sand:</u> ✓	Coarse sand:	Shingle:
Cobbles:	Boulders:	Rock:	Peat:	Plant debris:
Artificial (state which):				
Depth of reducing layer:				

TRANSPARENCY OF WATER

Clear:	Turbid(phytoplankton):	<u>Turbid(silt):</u> ✓
Secchi disc: c. 10 cm	Weather at time of record: FAIR	

SALINITY (‰) 6.5‰ - 17.06‰

Bottom max:	min:	Surface max:	min:
Halocline depth:			

OXYGEN CONCENTRATION (mg/l): —

TEMPERATURE —

Lagoon max:	min:	Sea temp:	Air temp(shade):
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OTHER CHEMICAL MEASUREMENTS TAKEN: NIL

PHOTOGRAPHS TAKEN (include whole site, edge detail, channel and bar details): ✓

SKETCH MAP OF SITE - On separate sheet prepare sketch map of site indicating prominent landmarks, north, access, position of channel, position of sea, lines of profile.) ✓

SECTION OF SITE - Drawing of profile(s) to indicate depth, water level relative to basin size etc. Indicate position of profiles on sketch map/plan of site.

See attachments

CHECK LIST OF VEGETATION AND ANIMALS

As far as possible all species should be recorded noting abundance.

NOTE PRESENCE OF -

Adjacent marginal vegetation freshmarsh: ✓
 saltmarsh: ✓
 dune:

Emergent vegetation: Phragmites australis shingle:

Strandline detritus: NIL

Submerged macroflora brown algae:
 red algae:
 green algae:
 Zostera:
 Ruppia:

Macrofauna on vegetation: NIL

Weed sample taken: NIL Sediment sample taken: NIL

INDICATOR ORGANISMS

Emergents Scirpus maritimus
 Scirpus tabernaemontani
 Phragmites australis: ✓

Submerged Vaucheria spp
 Chaetomorpha spp
 Ulva spp
 Enteromorpha spp
 Cladophora spp
 Sargassum muticum

Ruppia maritima
Ruppia cirrhosa
Zostera marina
Zostera angustifolia
Zostera noltii

Potamogeton pectinatus
Potamogeton filiformis
Zanichellia palustris
Myriophyllum spicatum
Ranunculus baudotii
Lamprothamnion papulosum

Animals Nematostella vectensis
 Edwardsia ivelli

Procerodes littoralis

Nereis diversicolor ✓

Idotea chelipes
Spaeroma hookeri

Gammarus insensibilis
Gammarus duebeni
Gammarus zaddachi
Neomysis integer
Palaemonetes varians

Hydobia ventrosa
Hydobia neglecta
Littorina saxatilis tenebrosa

Cerastoderma glaucum

Pomatoschistus microps

Sigara stagnalis
Sigara selecta
Corixa affinis
Notonecta viridis

SHORT DESCRIPTION OF SITE

see attachment.

ANY OTHER NOTES EVIDENCE OF BIRDFEEDING ON SITE

NCC SALINE COASTAL LAGOON RECORDING SHEET

Locality (site name, nearest town, county):

POND 2, SKINFLATS, CENTRAL REGION

Grid ref: NS 920 829

Date of visit: 6TH SEPTEMBER 1984

Recorder's Name: D.S. McLUSKY / K. RODDIE

Date of previous records made by same recorder: 1981 K.R.

Ownership: CENTRAL REGIONAL COUNCIL

Ease of access: 70m FROM PATH

Permissions required: NIL

Conservation status of site (MNR, NNR, LNR, SSSI, NT, RSPB, RSNC etc): PLNR

Use of site (use attached check list):

RUBISH DUMP / AGRICULTURAL

LAGOON ISOLATED FROM SEA - seawater enters by DITCH.
percolation: springs: source unknown:

LAGOON OPEN TO SEA - channel to ~~sea~~ RIVER CARRON
natural: artificial: sluiced: ☒

Height of channel bed relative to O.D:

Depth of shallowest point of channel:

Max. current speed in channel (m/s): NOT KNOWN

FRESHWATER SOURCE

Channel to lagoon:

Spring:

Source not obvious:

Catchment area: SURFACE RUN-OFF / FIELD DRAINAGE

WHOLE BASIN AREA: 3600 m² (120x30m) WET AREA: DRIED UP AT TIME OF SAMPLING

WATER LEVEL CHANGES -

Diurnal:

Seasonal: ☒

Coastal spring tide range:

PHYSIOGRAPHIC TYPE:

Rock: Shingle bar: Sand bar:
Saltmarsh: Dune slack:

Agricultural field.

ARTIFICIAL ORIGIN

Behind seawall: ☒ Old drainage fleet:
Old estuary: Boating lake:
Ditch: ☒ Disused dock:
Disused gravel pit: Disused quarry:
Tide mill pond: Fish pond:
Old salt works: Other: MINING SUBSIDENCE

COASTAL SITUATION OF LAGOON

Estuary: ☒ Harbour: Open coast:

LAGOON BED SUBSTRATUM (Indicate primary and secondary -ies)

Clay: Mud: ☒ Fine sand: ☒ Coarse sand: Shingle:
Cobbles: Boulders: Rock: Peat: Plant debris:
Artificial (state which):
Depth of reducing layer:

TRANSPARENCY OF WATER DRIED OUT

Clear: Turbid(phytoplankton): Turbid(silt):
Secchi disc: Weather at time of record:

SALINITY (‰) 19.95‰ (DITCH LEADING TO POND)

Bottom max: min: Surface max: min:
Halocline depth:

OXYGEN CONCENTRATION (mg/l):

TEMPERATURE

Lagoon max: min: Sea temp: Air temp(shade):

OTHER CHEMICAL MEASUREMENTS TAKEN: NIL

PHOTOGRAPHS TAKEN (include whole site, edge detail, channel and bar details): ☒

SKETCH MAP OF SITE - On separate sheet prepare sketch map of site indicating prominent landmarks, north, access, position of channel, position of sea, lines of profile.) ☒

SECTION OF SITE - Drawing of profile(s) to indicate depth, water level relative to basin size etc. Indicate position of profiles on sketch map/plan of site.

see attachments

CHECK LIST OF VEGETATION AND ANIMALS

As far as possible all species should be recorded noting abundance.

NOTE PRESENCE OF -

Adjacent marginal vegetation freshmarsh: ✓
 saltmarsh: ✓
 dune:
 shingle:

Emergent vegetation: NIL

Strandline detritus: NIL

Submerged macroflora brown algae:
 red algae:
 green algae:
 Zostera:
 Ruppia:

Macrofauna on vegetation: NIL

Weed sample taken: NIL Sediment sample taken: NIL

INDICATOR ORGANISMS

Emergents Scirpus maritimus
 Scirpus tabernaemontani
 Phragmites australis:

Submerged Vaucheria spp
 Chaetomorpha spp
 Ulva spp
 Enteromorpha spp
 Cladophora spp
 Sargassum muticum

Ruppia maritima
Ruppia cirrhosa
Zostera marina
Zostera angustifolia
Zostera noltii

Potamogeton pectinatus
Potamogeton filiformis
Zanichellia palustris
Myriophyllum spicatum
Ranunculus baudotii
Lamprothamnion papulosum

Animals Nematostella vectensis
 Edwardsia ivelli

Procerodes littoralis

Nereis diversicolor ✓

Idotea chelipes
Spaeroma hookeri

Gammarus insensibilis
Gammarus duebeni
Gammarus zaidachi
Neomysis integer V
Palaemonetes varians

Hydobia ventrosa
Hydobia neglecta
Littorina saxatilis tenebrosa

Cerastoderma glaucum

Pomatoschistus microps

Sigara stagnalis
Sigara selecta
Corixa affinis
Notonecta viridis

SHORT DESCRIPTION OF SITE

See attachments.

ANY OTHER NOTES

NCC SALINE COASTAL LAGOON RECORDING SHEET

Locality (site name, nearest town, county):

POND 1, SKINFLATS, CENTRAL REGION

Grid ref: NS 915 830

Date of visit: 6TH SEPTEMBER 1984

Recorder's Name: D.S. MC LUSKY / K. RODDIE

Date of previous records made by same recorder: 1981 K.R.

Ownership: CENTRAL REGIONAL COUNCIL

Ease of access: 30 m FROM ROAD

Permissions required: NIL

Conservation status of site (MNR, NNR, LNR, SSSI, NT, RSPB, RSNC etc): PLNR

Use of site (use attached check list):

AGRICULTURAL

LAGOON ISOLATED FROM SEA - seawater enters by DITCH.
percolation: springs: source unknown:

LAGOON OPEN TO SEA - channel to ~~sea~~ RIVER CARRON VIA POND 3
natural: artificial: sluiced: ☒

Height of channel bed relative to O.D:

Depth of shallowest point of channel:

Max. current speed in channel (m/s): NOT KNOWN

FRESHWATER SOURCE

Channel to lagoon:

Spring:

Source not obvious:

Catchment area: SURFACE RUN-OFF

WHOLE BASIN AREA: 1200m² (60m x 20m) WET AREA: DRIED UP AT TIME OF SAMPLING

WATER LEVEL CHANGES -

Diurnal: Seasonal: ☒

Coastal spring tide range:

PHYSIOGRAPHIC TYPE:

Rock: Shingle bar: Sand bar:
Saltmarsh: Dune slack:

AGRICULTURAL FIELD

~~202~~

ARTIFICIAL ORIGIN

Behind seawall: ✓ Old drainage fleet:
Old estuary: Boating lake:
Ditch: ✓ Disused dock:
Disused gravel pit: Disused quarry:
Tide mill pond: Fish pond:
Old salt works: Other: MINING SUBSIDENCE

COASTAL SITUATION OF LAGOON

Estuary: ✓ Harbour: Open coast:

LAGOON BED SUBSTRATUM (Indicate primary and secondary -ies)

Clay: Mud: ✓ Fine sand: ✓ Coarse sand: Shingle:
Cobbles: Boulders: Rock: Peat: Plant debris:
Artificial (state which):
Depth of reducing layer:

TRANSPARENCY OF WATER

DRIED OUT AT SAMPLING TIME

Clear: Turbid(phytoplankton): Turbid(silt):
Secchi disc: Weather at time of record:

SALINITY (‰) 3.92‰ — 12.59‰

Bottom max: min: Surface max: min:

Halocline depth:

OXYGEN CONCENTRATION (mg/l):

TEMPERATURE

Lagoon max: min: Sea temp: Air temp(shade):

OTHER CHEMICAL MEASUREMENTS TAKEN: NIL

PHOTOGRAPHS TAKEN (include whole site, edge detail, channel and bar details): ✓

SKETCH MAP OF SITE - On separate sheet prepare sketch map of site indicating prominent landmarks, north, access, position of channel, position of sea, lines of profile.) ✓

SECTION OF SITE - Drawing of profile(s) to indicate depth, water level relative to basin size etc. Indicate position of profiles on sketch map/plan of site.

See attachments

CHECK LIST OF VEGETATION AND ANIMALS

As far as possible all species should be recorded noting abundance.

NOTE PRESENCE OF -

Adjacent marginal vegetation freshmarsh: ✓
 saltmarsh: ✓
 dune:
 shingle:
Emergent vegetation: Phragmites australis
Strandline detritus: NIL
Submerged macroflora brown algae:
 red algae:
 green algae:
 Zostera:
 Ruppia:

Macrofauna on vegetation: NIL

Weed sample taken: NIL Sediment sample taken: NIL

INDICATOR ORGANISMS

Emergents Scirpus maritimus
 Scirpus tabernaemontani
 Phragmites australis: ✓

Submerged Vaucheria spp
 Chaetomorpha spp
 Ulva spp
 Enteromorpha spp
 Cladophora spp
 Sargassum muticum

 Ruppia maritima
 Ruppia cirrhosa
 Zostera marina
 Zostera angustifolia
 Zostera noltii

 Potamogeton pectinatus
 Potamogeton filiformis
 ZanicHELLia palustris
 Myriophyllum spicatum
 Ranunculus baudotii
 Lamprothamnion papulosum

Animals Nematostella vectensis
 Edwardsia ivelli

 Procerodes littoralis

 Nereis diversicolor ✓

 Idotea chelipes
 Spieroma hookeri

Gammarus insensibilis
Gammarus duebeni
Gammarus zaddachi
Neomysis integer
Palaemonetes varians

Hydobia ventrosa
Hydobia neglecta
Littorina saxatilis tenebrosa

Cerastoderma glaucum

Pomatoschistus microps

Sigara stagnalis
Sigara selecta
Corixa affinis
Notonecta viridis

SHORT DESCRIPTION OF SITE

ANY OTHER NOTES

see attachments.

ELLIOTT LINKS PONDS

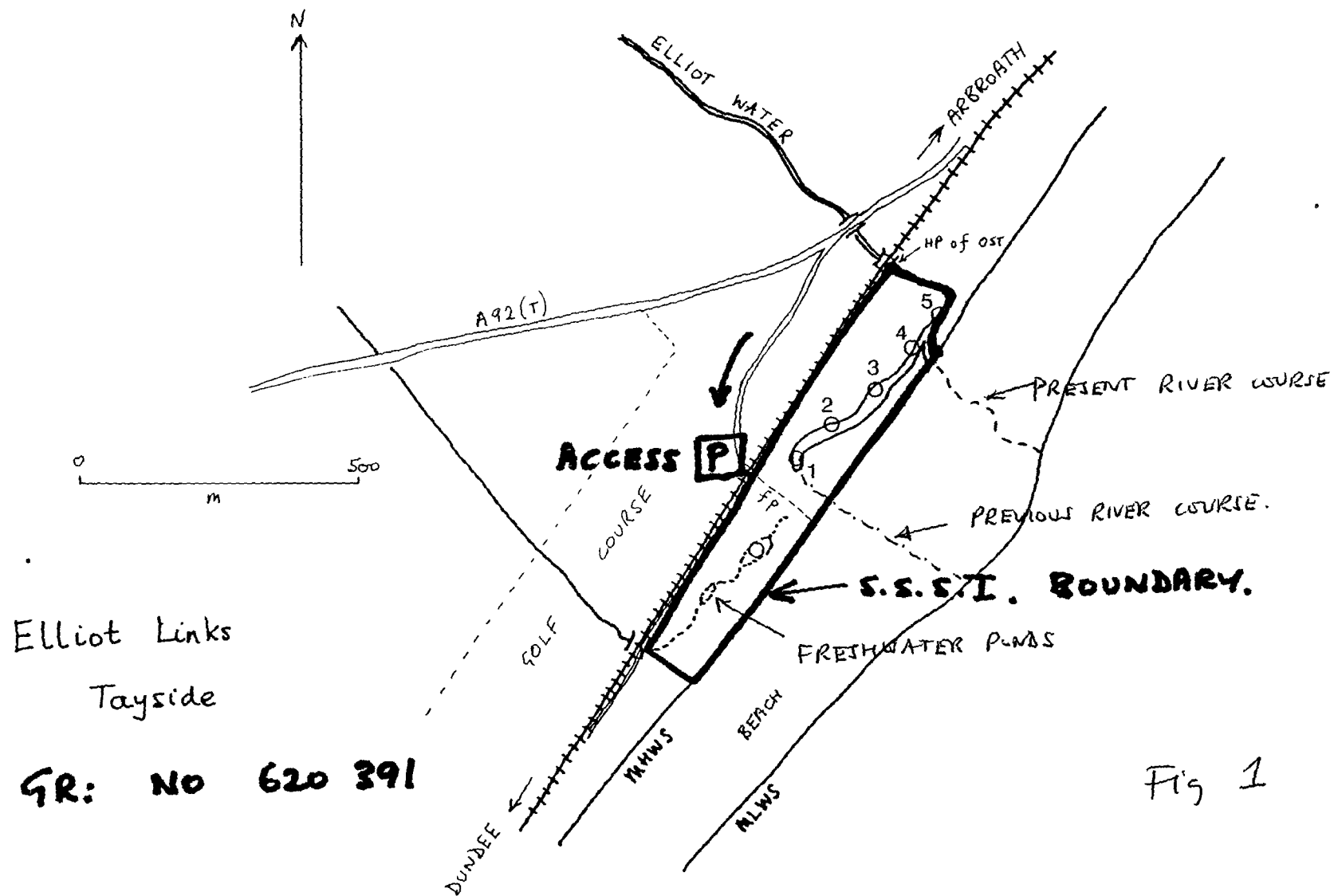
Tayside Region

Elliott Links Pond

Results and Discussion

This pond is formed in the channel of the old estuary of the Elliott Water. The river has breached the dunes in a more direct line than previously, and the old river path is now the pond. No previous sampling of the pond is known.

The pond is at 3.6m above datum (between MTL and MHWN) and receives sea water at high tide. The benthic fauna was found to be rather limited (Table 1, Figs. 4-7), due perhaps to the sandy substrate with low organic content, with a mixture of freshwater and brackish-water species. There was a rich planktonic fauna, dominated by Neomysis integer; and according to local sources the pond is a good place for catching sea trout. The Elliott Links site was selected as an SSSI on the basis of its rich and diverse flora. The present pond is an interesting feature, but does not have an especially diverse or abundant fauna to justify specific protection. There are also freshwater ponds in the dune slack area, which like the brackish-water pond, are of importance due to their emergent and adjacent vegetation.



Elliot Links
Tayside

GR: No 620 391

Fig 1

SALINITIES (‰)

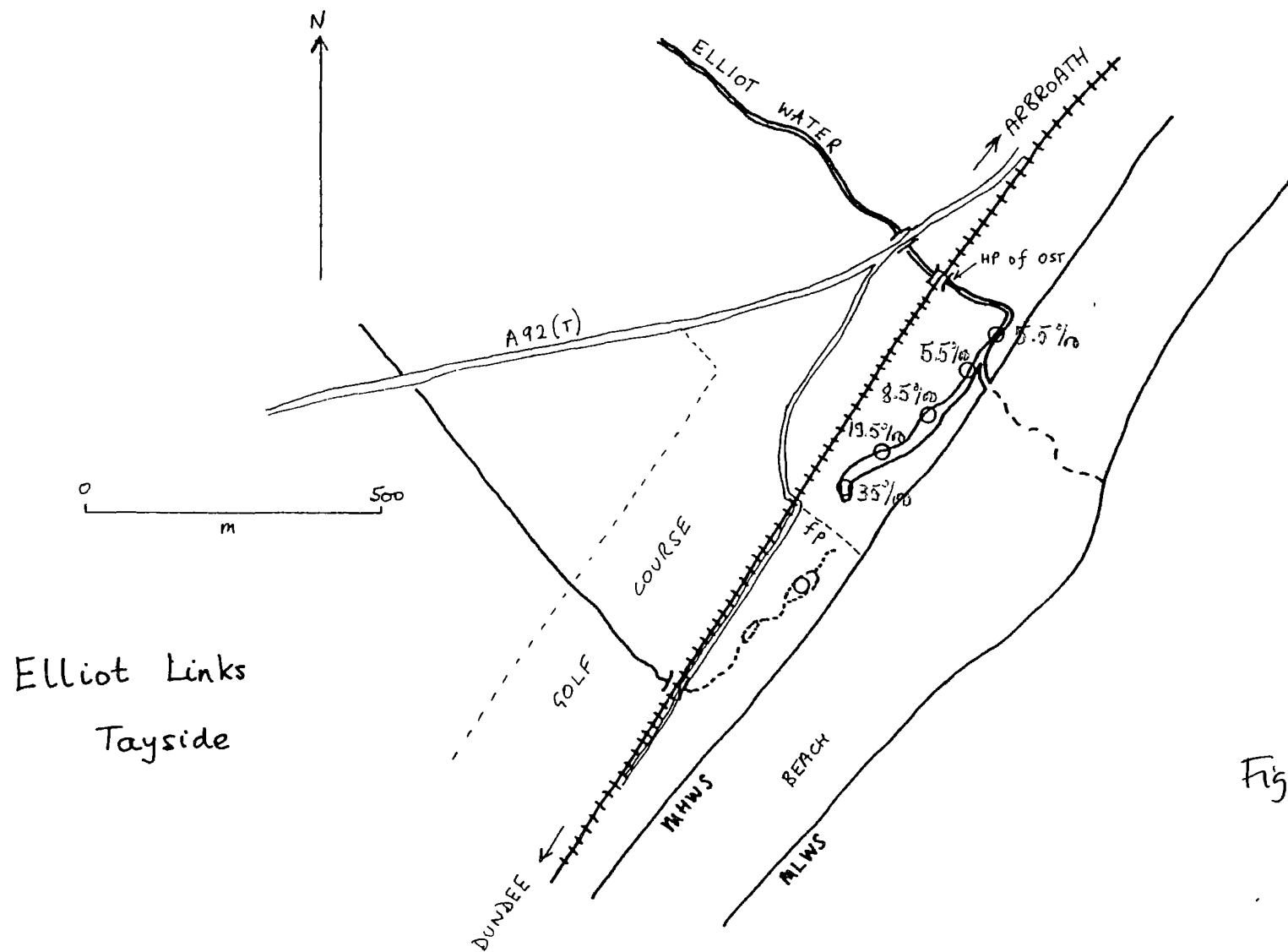
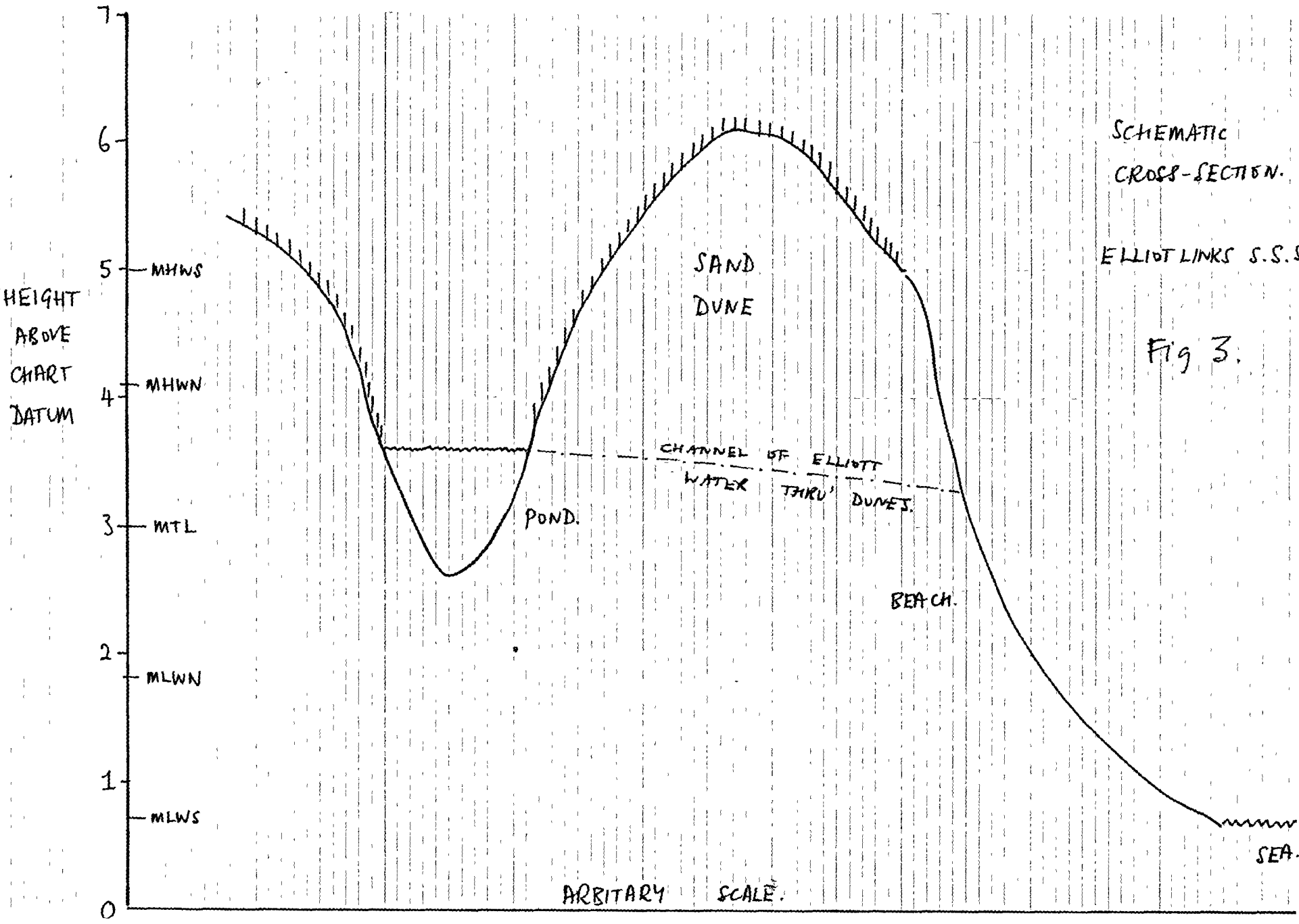


Fig 2.



SCHEMATIC
CROSS-SECTION.

ELLIOT LINKS S.S.S.I.

Fig 3.

Chironomid larvae

○ N.R.

● 1-10,000 M⁻²

● 10,001-100,000 M⁻²

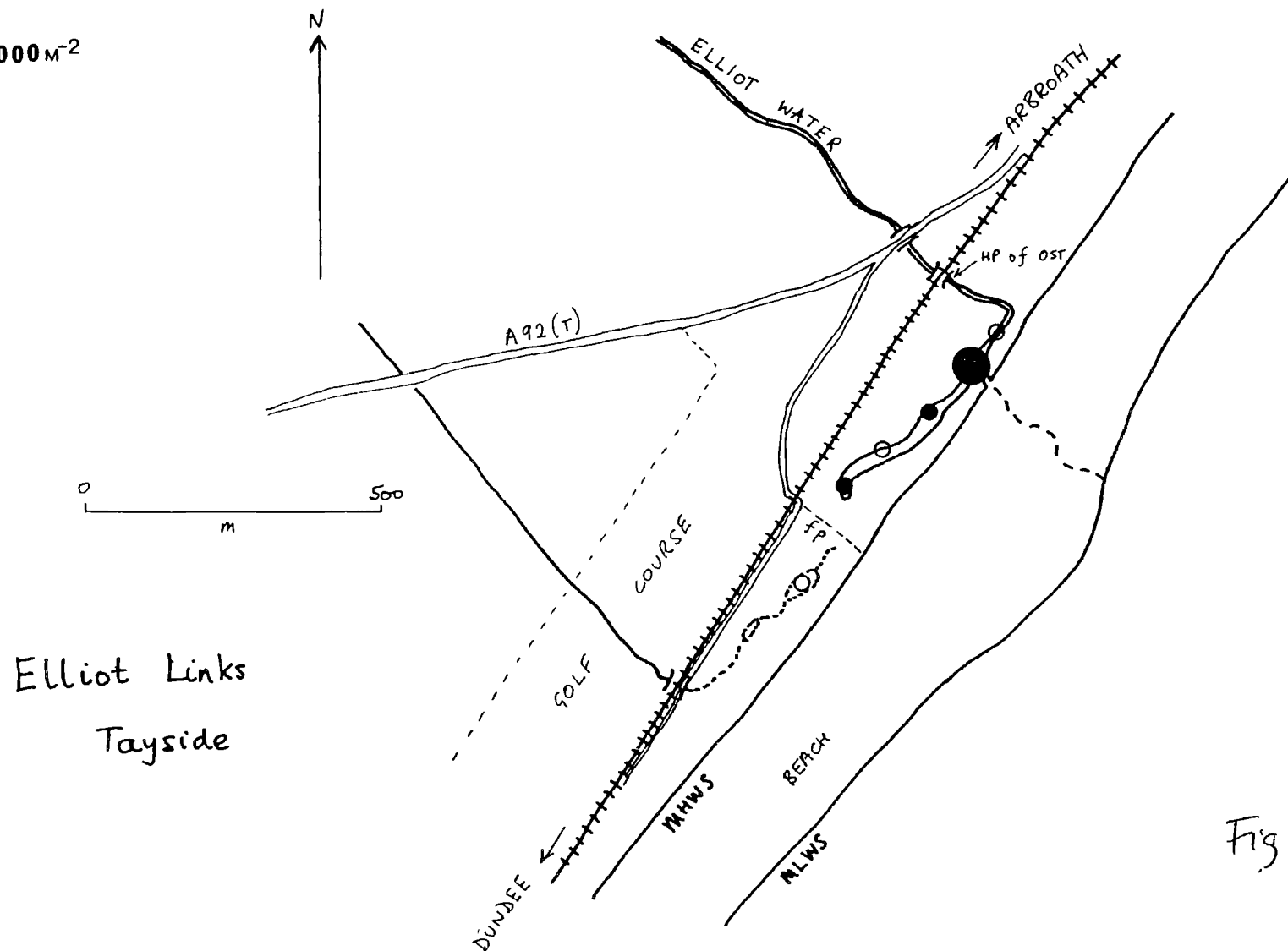


Fig 4

Ostracod sp.

○ N.R.

● 1-1,000 M⁻²

● > 1,000 M⁻²

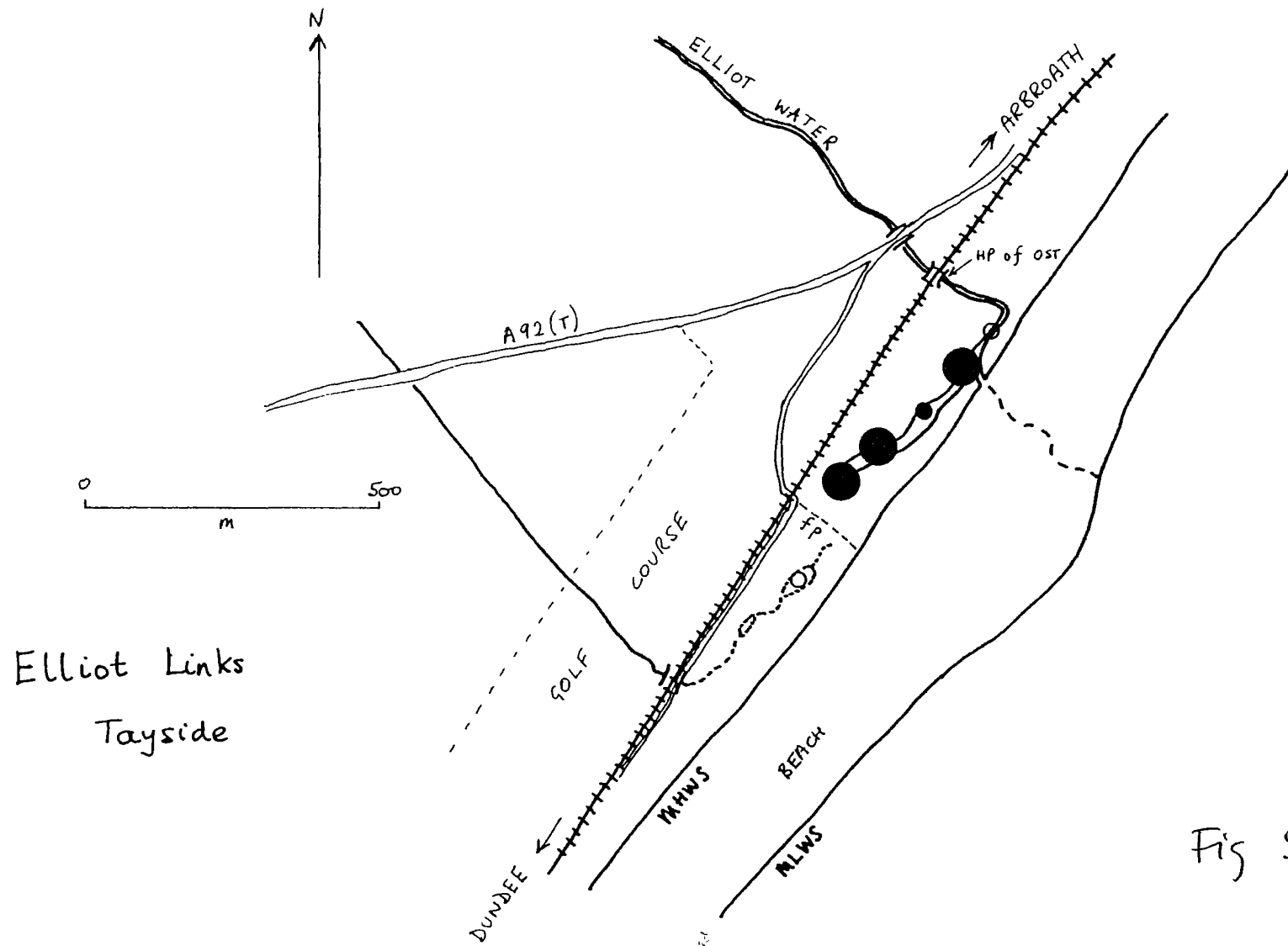


Fig 5

Paranais litoralis

○ N.R.

● 1-10,000 M⁻²

● 10,001-100,000 M⁻²

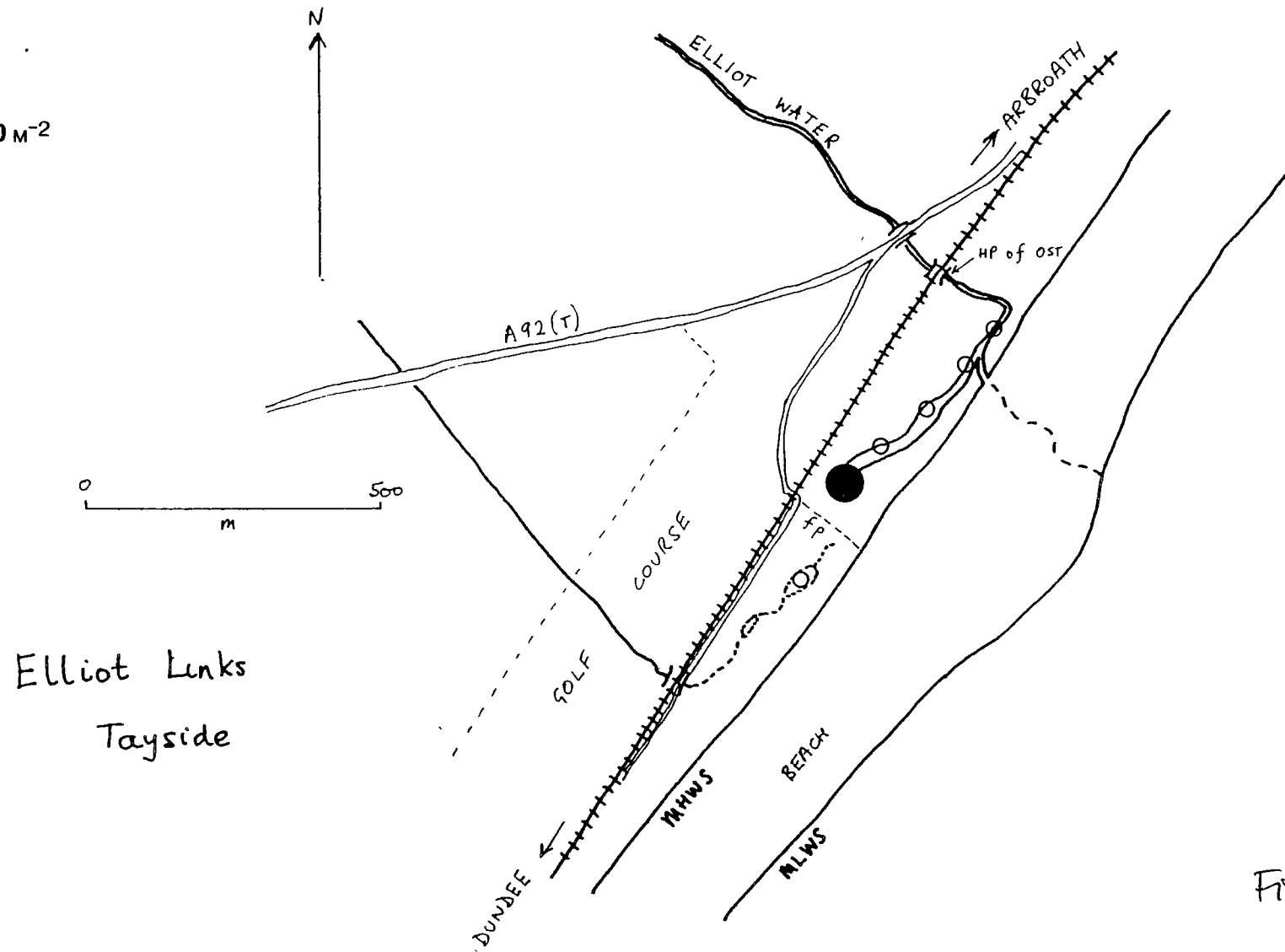


Fig 6

Hydrobia ulvae - Laver spire shell

○ N.R.

● 1-1000 M⁻²

● > 1000 M⁻²

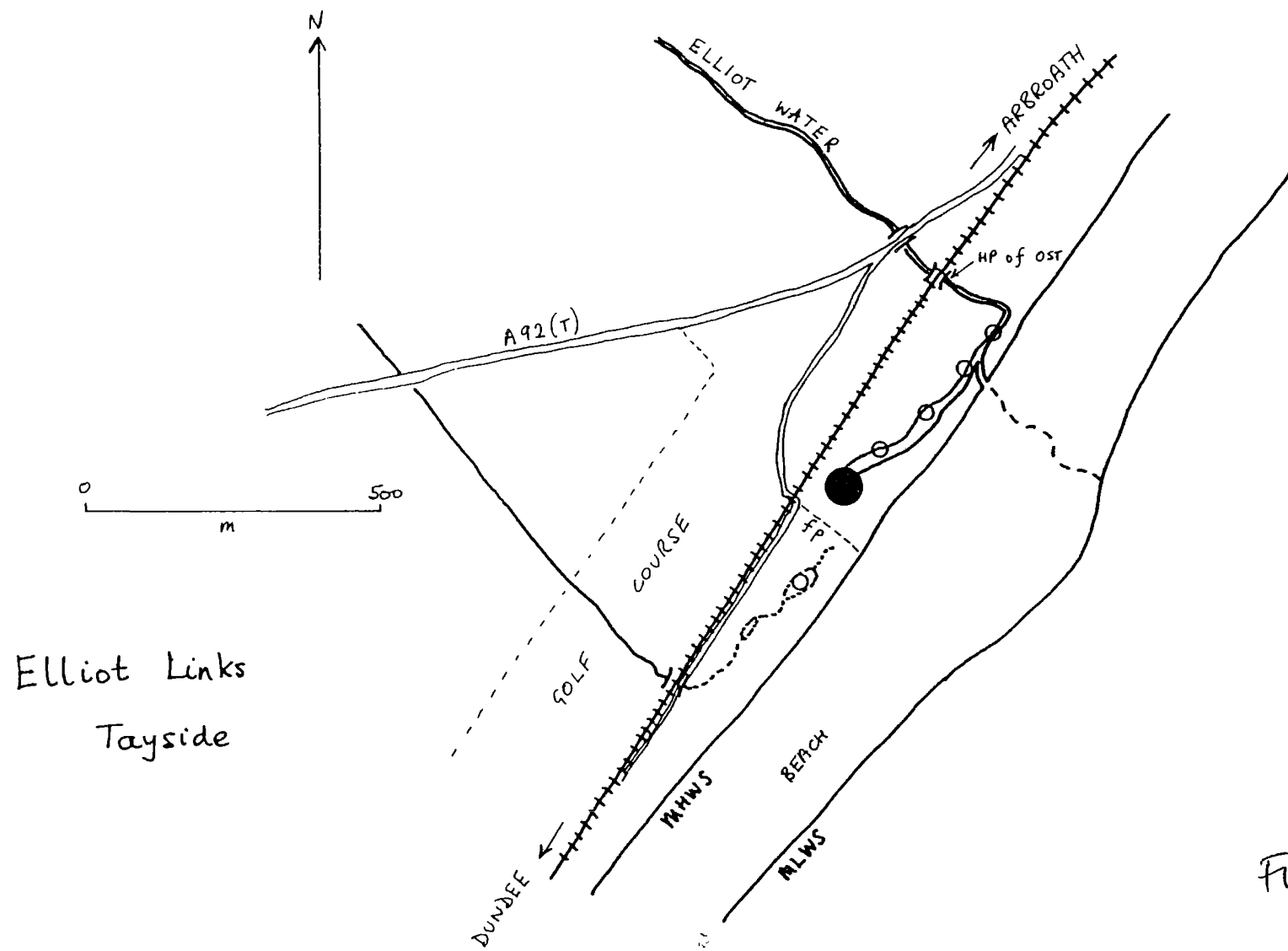


Fig 7.

ELLIOT LINKS

STATION NUMBER Table 1

Table 1.

[illegible]

NCC SALINE COASTAL LAGOON RECORDING SHEET

Locality (site name, nearest town, county):

ELLIOT LINKS, ARBROATH, ANGUS

Grid ref: NO 620 391

Date of visit: 28TH SEPTEMBER 1984

Recorder's Name: DS. MC LUSKY / K RODDIE

Date of previous records made by same recorder: NIL

Ownership: NOT KNOWN

Ease of access: 100m FROM ROAD

Permissions required: NIL

Conservation status of site (MNR, NNR, LNR, (SSSI), NT, RSPB, RSNC etc):

Use of site (use attached check list):

RECREATIONAL

LAGOON ISOLATED FROM SEA - seawater enters by
percolation: springs: source unknown:

LAGOON OPEN TO SEA - channel to sea
natural: ✓ artificial: sluiced:

Height of channel bed relative to O.D:

Depth of shallowest point of channel: 1 m

Max. current speed in channel (m/s): NOT KNOWN

FRESHWATER SOURCE

Channel to lagoon: ELLIOT WATER

Spring:

Source not obvious:

Catchment area: SURFACE RUN-OFF

WHOLE BASIN AREA: 8000 m² (400 m x 20 m) WET AREA: 8000 m²

WATER LEVEL CHANGES -

Diurnal: ✓ Seasonal: Coastal spring tide range:

PHYSIOGRAPHIC TYPE:

Rock: Shingle bar: Sand bar:
Saltmarsh: Dune slack: ✓

ARTIFICIAL ORIGIN

Behind seawall: Old drainage fleet:
Old estuary: ✓ Boating lake:
Ditch: Disused dock:
Disused gravel pit: Disused quarry:
Tide mill pond: Fish pond:
Old salt works: Other:

COASTAL SITUATION OF LAGOON

Estuary: Harbour: Open coast: ✓

LAGOON BED SUBSTRATUM (Indicate primary and secondary -ies)

Clay: Mud: Fine sand: Coarse sand: Shingle:
Cobbles: Boulders: Rock: Peat: Plant debris:
Artificial (state which):
Depth of reducing layer:

TRANSPARENCY OF WATER

Clear: ✓ Turbid(phytoplankton): Turbid(silt):

Secchi disc: c 60cm Weather at time of record: FAIR

SALINITY (‰) 5.5‰ - 35‰ (3 - 8‰ October 1984)

Bottom max: min: Surface max: min:

Halocline depth:

OXYGEN CONCENTRATION (mg/l): 9.00 - 10.00

TEMPERATURE

Lagoon max: 13.5°C min: 12.5°C Sea temp: Air temp(shade):

OTHER CHEMICAL MEASUREMENTS TAKEN: NIL

PHOTOGRAPHS TAKEN (include whole site, edge detail, channel and bar details): ✓

SKETCH MAP OF SITE - On separate sheet prepare sketch map of site indicating prominent landmarks, north, access, position of channel, position of sea, lines of profile.) ✓

SECTION OF SITE - Drawing of profile(s) to indicate depth, water level relative to basin size etc. Indicate position of profiles on sketch map/plan of site.

See attachments.

CHECK LIST OF VEGETATION AND ANIMALS

As far as possible all species should be recorded noting abundance.

NOTE PRESENCE OF -

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 saltmarsh:
 dune: ✓
 shingle:

Emergent vegetation: NIL

Strandline detritus: NIL

Submerged macroflora brown algae: Fucus sp
 red algae:
 green algae: Eteromorpha sp
 Zostera:
 Ruppia:

Macrofauna on vegetation: NIL

Weed sample taken: NIL Sediment sample taken: ✓

INDICATOR ORGANISMS

Emergents Scirpus maritimus
 Scirpus tabernaemontani
 Phragmites australis:

Submerged Vaucheria spp
 Chaetomorpha spp
 Ulva spp
 Enteromorpha spp ✓
 Cladophora spp
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Zostera noltii

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Hydobia neglecta
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Cerastoderma glaucum

Pomatoschistus microps

Sigara stagnalis
Sigara selecta
Corixa affinis
Notonecta viridis

SHORT DESCRIPTION OF SITE

see attachment.

ANY OTHER NOTES