

# **The distribution of crayfish populations in the River Thame in summer 1996**

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## **Executive summary**

1. Sixty sites on the River Thame and tributaries were test trapped between 15 and 19 August 1996 to determine the distribution and presence of the white clawed crayfish *Austropotamobius pallipes* (Lereboullet, 1858) and the signal crayfish *Pacifastacus leniusculus* (Dana, 1852).
2. No white clawed crayfish were captured and no signal crayfish were captured above Long Crendon, or below Brookhampton. Within their range the distribution of signal crayfish was discontinuous.
3. Although the results of this survey were similar to a previous survey completed in November 1995, there is evidence of a gradual migration upstream. This being 1.5km in 9 months.

## 1. Introduction

In November 1995 a distribution survey of the crayfish populations in the River Thame was completed (Ibbotson, Furse & Dewey, 1995). The primary objective of that survey system was to identify the most suitable reaches to be used for a detailed study into the impacts of signal crayfish *Pacifastacus leniusculus* (Dana, 1852) on the flora and fauna of the River Thame. A secondary objective was to ascertain whether native crayfish *Austropotamobius pallipes* (Lereboullet, 1858) were still present in the catchment or not.

During the study 36 sites were sampled. These were mostly on the main river channel but also in some of the major tributaries. No native crayfish were found. However, there was some doubt as to whether this was the result of the survey being completed during the cold winter months when crayfish activity is lowest and capture most difficult. For this reason and because some of the tributaries had not been sampled the survey was repeated during the summer of 1996 and over a more extensive range. This was felt to be important because native crayfish had been reported as present in the Thame catchment as recently as 1992 in the Milton Ditch and between 1988 and 1990 at Notley Abbey (NRA Biologists Reports).

## 2. Site description

The River Thame runs from just north of Aylesbury, through Thame to join the River Thames south of Oxford. It is approximately 60 km in length and for the greater part it drains improved pasture.

Its proximity to the two conurbations of Aylesbury and Thame and the use of the adjacent land for pasture, means there is pressure to manage the river for flood control purposes. The greater part of the river is embanked and dredged approximately every 5 years to reduce the risk and incidence of flooding.

This type of flood relief management will have had deleterious effects on the distribution of crayfish in the River Thame, as it makes the habitat less suitable for these animals (Hogger, 1988).

Once the river flows past Aylesbury it is used extensively for coarse fish angling. The anglers find the signal crayfish a nuisance because they remove bait from hooks. This is particularly a problem when the crayfish are numerous and angling organisations have been known to ask commercial crayfishermen to reduce the density of crayfish.

There is considerable exploitation of the signal crayfish population. Much of the river between Thame and Chippinghurst Manor is fished commercially. These activities are dominated by one commercial fisherman.

### **3. Methods**

Between 15 and 19 August 1996, 60 sites between the source of the River Thame and its confluence with the River Thames were test trapped for the presence of crayfish. The sites included the main river and most of its major tributaries (Figs 1-3; Annex A). Test trapping involved placing 4 disinfected baited traps in the river, leaving them overnight and recovering them the next day. There were two sizes of traps (mesh size 15mm and 30mm) and two of each size were used. Crayfish captured inside the traps were counted, identified and measured.

One of three categories of abundance were assigned to each site depending on the number of crayfish captured in each trap. These categories were absent, less than 5 per trap and between 5 and 9 per trap.

### **4. Results**

No white clawed crayfish were captured and no signal crayfish were captured above Long Crendon (NGR SP 707 078), or below Brookhampton (NGR SU 598 977). The distribution was discontinuous with crayfish being captured in small pockets but being apparently absent in adjacent sites (Fig 1-3).

There were a few tributaries with large crayfish populations, notably the Haseley Brook (Sites 30 & 32, Fig 2) and the Peppershill Brook (Site 56, Fig 2). Smaller populations were shown to be present in the Gainsbridge Brook (Site 31, Fig 2), Milton Ditch (Site 58, Fig 2), Worminghall Brook (Site 54, Fig 2), Tiddington Brook (Site 15, Fig 2), Cuttle Brook (Site 53, Fig 2) and the Scotsgrove Brook (Site 10, Fig 3).

In general, the distribution of signal crayfish was very similar to that found in the survey of November 1995. However the upstream limit appears to have moved from Thame to Long Crendon (approx 1.5km) between the two surveys and crayfish were found in the Scotsgrove Brook above Thame.

Key

○ no crayfish

● <5 per trap

● 5-9 per trap

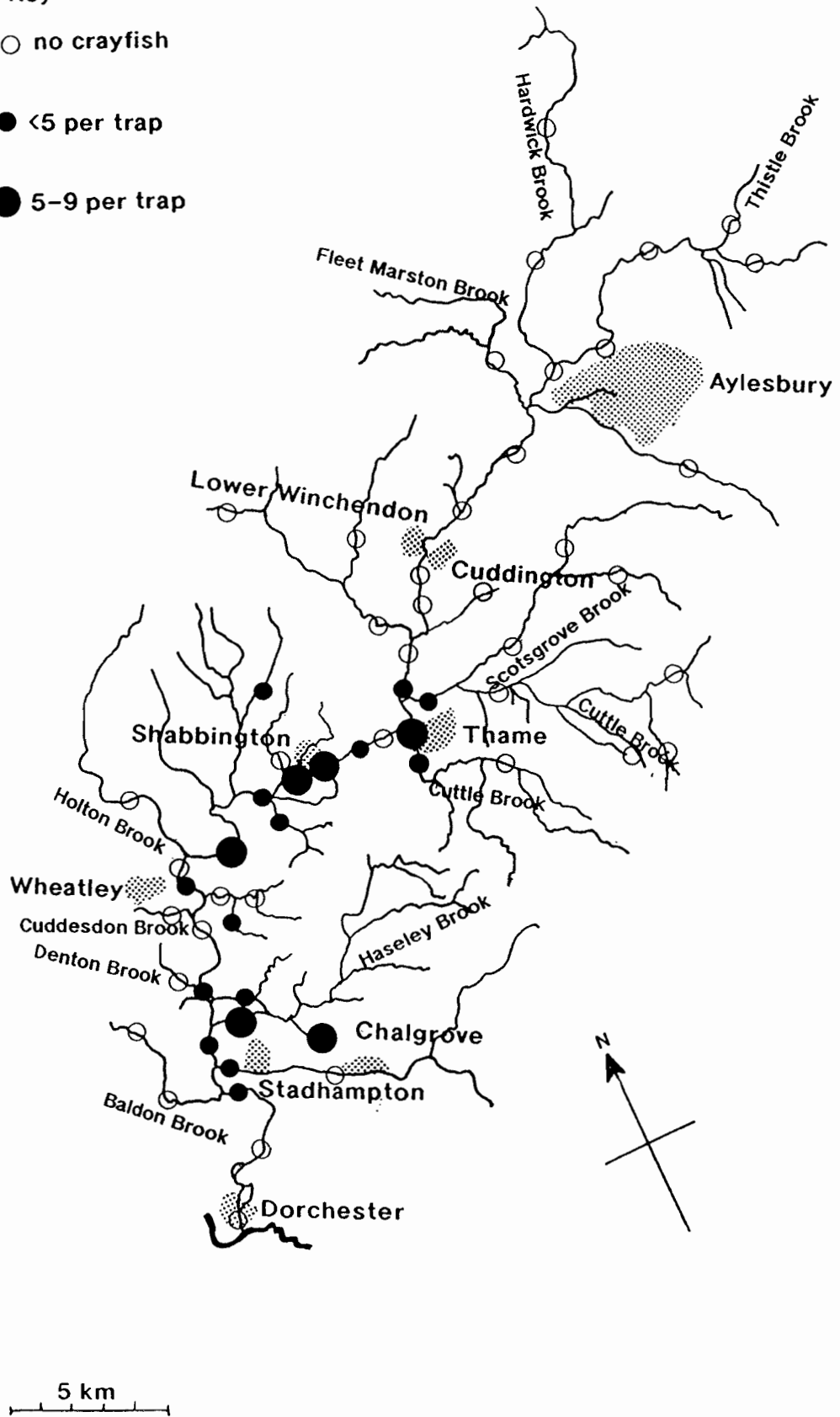


Figure 1. The distribution and relative abundance of signal crayfish in the River Thames, August 1996

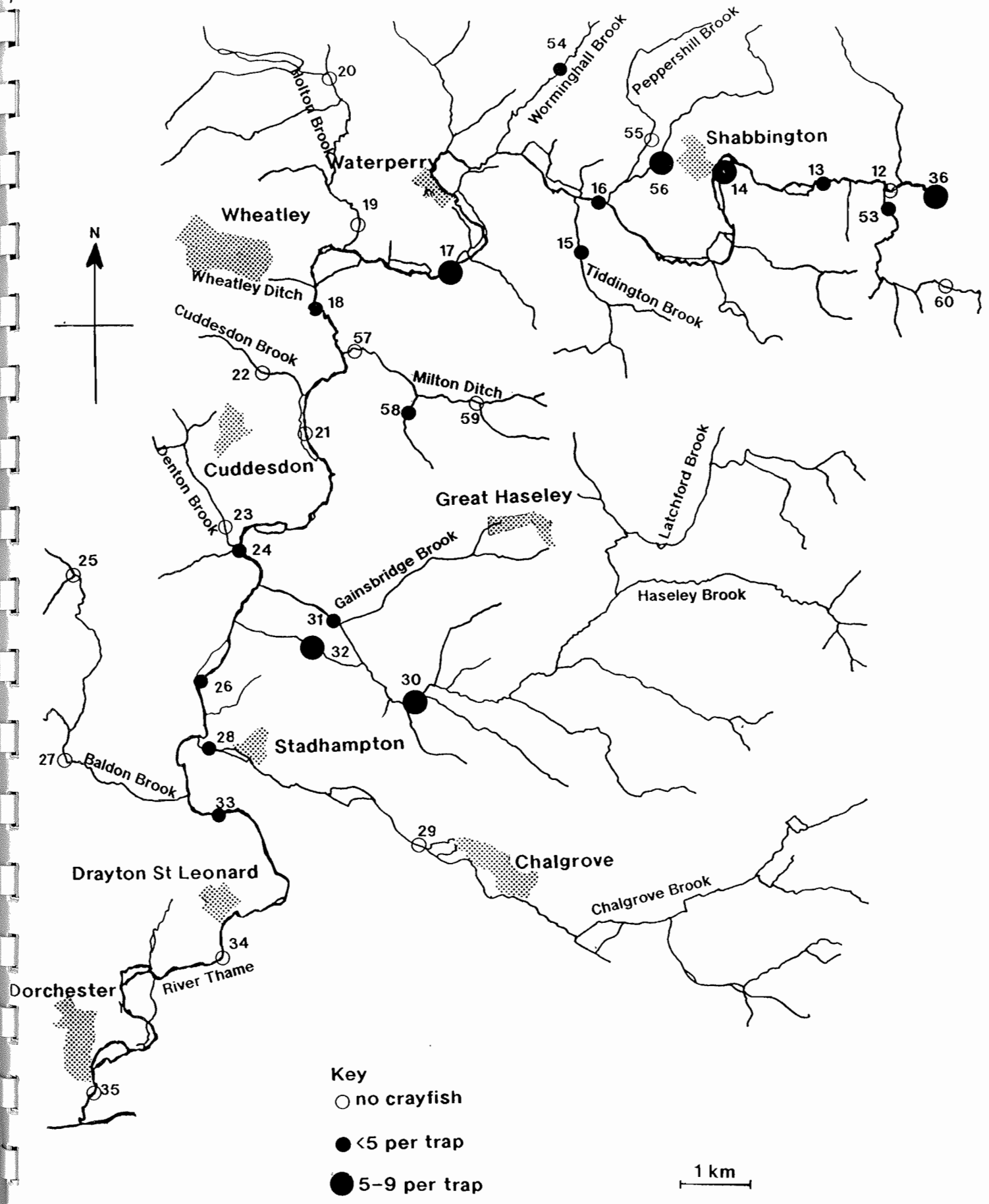


Figure 2. The distribution and relative abundance of signal crayfish in the River Thames below Thames, August 1996.





Table 1 Numbers and mean size of crayfish captured at each site on the River Thame, August 1996

Site Number	Grid Reference	Average Number per Trap	Average Carapace Length (mm)
1	SP 782 161	0	-
2	SP 797 154	0	-
3	SP 815 153	0	-
4	SP 771 135	0	-
5	SP 751 123	0	-
6	SP 729 111	0	-
7	SP 723 101	0	-
8	SP 709 100	0	-
9	SP 714 088	0	-
10	SP 711 070	0.5	5.4
11	SP 707 078	1	5.8
12	SP 693 066	0	-
13	SP 685 067	1	5.45
14	SP 669 070	6	6.0
15	SP 649 058	4.5	4.1
16	SP 652 065	1.5	4.3
17	SP 632 055	7	5.2
18	SP 612 048	0.5	3.7
19	SP 618 051	0	-
20	SP 614 082	0	-
21	SP 611 031	0	-
22	SP 605 039	0	-
23	SP 599 017	0	-
24	SP 602 014	2	3.5
25	SP 578 011	0	-
26	SU 596 996	3.5	6.0
27	SU 576 984	0	-
28	SU 598 985	0.5	3.4
29	SU 627 977	0	-
30	SU 627 993	6	4.9
31	SP 615 005	1.5	4.1
32	SP 612 001	8.5	4.3
33	SU 598 977	1	5.95
34	SU 599 955	0	-
35	SU 580 936	0	-
36	SP 700 065	6	4.25
37	SP 846 176	0	-
38	SP 879 176	Dry	-
39	SP 884 168	0	-
40	SP 828 209	0	-

Site Number	Grid Reference	Average Number per Trap	Average Carapace Length (mm)
41	SP 806 187	0	-
42	SP 830 103	0	-
43	SP 776 096	0	-
44	SP 785 083	Dry	-
45	SP 792 042	0	-
46	SP 779 029	0	-
47	SP 769 023	Dry	-
48	SP 735 064	0	-
49	SP 751 077	0	-
50	SP 739 105	Dry	-
51	SP 712 130	Dry	-
52	SP 679 141	Dry	-
53	SP 702 060	1	5.75
54	SP 647 083	0.5	5.1
55	SP 659 074	Dry	-
56	SP 661 071	5	4.3
57	SP 618 043	0	-
58	SP 625 034	0.5	4.9
59	SP 635 036	Dry	-
60	SP 712 046	0	-

## 5. Discussion

The absence of any native crayfish at any of the sites would suggest that native crayfish are now extinct from the River Thame and its tributaries. It is not certain what the causes of this extinction are, particularly in the upper reaches because the distribution of signal crayfish extends to no further upstream than Long Crendon. In the absence of disease the native species ought to be able to survive in upstream reaches where signals are absent. It is however possible that the disease has been transported upstream by other vectors which could include angling equipment, crayfish traps, dredging equipment, birds, fish or other animals.

The distribution of signal crayfish is not very different from the distribution described in the survey completed in November 1995. It remains discontinuous throughout the main river channel. This is probably the result of two major influences; these being the sites of original successful introduction where crayfish have spread from and the regular dredging activities which reduce the populations locally.

There is evidence of a gradual process of upstream migration and colonisation, with the upstream limit of their distribution moving from Thame Bridge to Long Crendon about 1.5 km upstream. If this migration and colonisation continues, and there is no reason to suppose that it will not, then there are likely to be increased pressures for the commercial fishery to be extended to other areas.

## 6. References

Hogger, J. B. (1988) Ecology, population biology and behaviour. In *Freshwater crayfish: biology, management and exploitation*, edited by D.M. Holdich and R. S. Lowery, 114-144. London: Croom Helm.

Ibbotson, A. T., Furse, M. T. & Dewey, K. 1995. The distribution and baseline survey of the crayfish populations in the River Thames. Report to the National Rivers Authority, Thames Region, 9pp.

## Annex A. Grid references and site names of sites test trapped in August 1996.

1	SP 782 161	Berryfields Farm	Putlowes Tributary
2	SP 797 154	Quarrendon House Farm	River Thame
3	SP 815 153	Elmhurst	Thistle Brook
4	SP 771 135	Eythrope Park	River Thame
5	SP 751 123	Mainshill Farm	River Thame
6	SP 729 111	Cuddington Mill Farm	River Thame
7	SP 723 101	Chearsley	River Thame
8	SP 709 100	Railway Embankment	Notley Abbey Tributary
9	SP 714 088	Notley Abbey	River Thame
10	SP 711 070	Scotsgrove House	Cuttle Brook
11	SP 707 078	Works	River Thame
12	SP 693 066	Thame Bridge	River Thame
13	SP 685 067	North Weston	River Thame
14	SP 669 070	Shabbington	River Thame
15	SP 649 058	Tiddington	Tiddington Tributary
16	SP 652 065	Draycot	River Thame
17	SP 632 055	Waterstock	River Thame
18	SP 612 048	A40 Crossing	River Thame
19	SP 618 051	Helton Mill	Holton Brook
20	SP 614 082	Parsons Farm	Holton Brook
21	SP 611 031	Cuddesdon Mill	River Thame
22	SP 605 039	Castle Hill	Cuddesdon Brook
23	SP 599 017	Chippinghurst Manor	Denton Brook
24	SP 602 014	Chippinghurst Manor	River Thame
25	SP 578 011	Toot Baldon	Baldon Brook
26	SU 596 996	Chiselhampton	River Thame
27	SU 576 984	Marylands Farm	Baldon Brook
28	SU 598 985	Stadhampton	Chalgrove Brook
29	SU 627 977	Nr Langley Hall	Chalgrove Brook
30	SU 627 993	Cowlease Copse	Haseley Brook
31	SP 615 005	Little Milton	Gainsbridge Brook
32	SP 612 001	Coldharbour	Haseley Brook
33	SU 598 977	Brookhampton	River Thame
34	SU 599 955	Lower Grange	River Thame
35	SU 580 936	Bridge End	River Thame
36	SP 700 065	Thame Island	River Thame
37	SP 846 176	Rowsham Bridge	Rowsham Brook
38	SP 879 176	Nr. Thistle Brook Farm	Thistle Brook
39	SP 884 168	Whitwell Farm	Unnamed
40	SP 828 209	Hardwick Bridge	Hardwick Brook
41	SP 806 187	Hardwick Brook	Hardwick Brook
42	SP 830 103	Nr. Stoke Mandeville	Wendover Brook
43	SP 776 096	Nr. Ford	Scotsgrove Brook
44	SP 785 083	Nr. Lower Waldrige Farm	Scotsgrove Brook
45	SP 792 042	Nr. The Mill	Cuttle Brook
46	SP 779 029	Nr. Pitch Green	Cuttle Brook
47	SP 769 023	Nr. Henton	Cuttle Brook
48	SP 735 064	Nr. Tythrop House	Unnamed
49	SP 751 077	Nr. The Manor	Unnamed
50	SP 739 105	Nr. Dad Brook House	Dad Brook
51	SP 712 130	Musk Hill Farm	Unnamed
52	SP 679 141	Dorton	Unnamed
53	SP 702 060	Thame	Cuttle Brook
54	SP 647 083	Worming Hall	Worminghall Brook
55	SP 659 074	Little Ickford	Peppers Hill Brook
56	SP 661 071	Little Ickford	Peppers Hill Brook
57	SP 618 043	Unknown	Milton Ditch
58	SP 625 034	Nr. Great Milton	Milton Ditch
59	SP 635 036	NNE Great Milton	Milton Ditch
60	SP 712 046	Thame	Cuttle Brook

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