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ENVIRONMENT AGENCY



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THE UTILISATION OF STICK-PILE OTTER  
HOLTS IN SOUTH EAST WALES.

National Rivers Authority  
Welsh Region,  
South East Area,  
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THE UTILISATION OF STICK-PILE OTTER HOLTS  
IN SOUTH EAST WALES.

1. INTRODUCTION.

- 1.1 The construction of stick-pile (or log-pile) holts was pioneered in Wales by Otter Project Wales (formerly Otter Haven Project) in 1979. During the past 13 years Otter Project Wales has encouraged many organisations, including the NRA, to build stick-pile holts and over 150 have now been constructed in Wales. To date Otter Project Wales have not encouraged monitoring in order to avoid disturbance.
- 1.2 Since 1989 the S.E. Area of Welsh Region has undertaken the construction of a number of stick-pile otter holts on several rivers as part of an Otter Habitat Enhancement Programme. This report provides an initial assessment of the uptake of these structures by otters and attempts to establish why some have been used while others have not.
- 1.3 The aims of the Otter Habitat Enhancement Programme have been :-
- (a) to safeguard existing populations in vulnerable catchments.
  - (b) to encourage expansion into catchments where otters have been absent for many years.

These aims are based on a strategy proposed by Otter Project Wales, set up by R.S.N.C. in 1989, and on the results of the Otter Survey of Wales 1986, which identified the River Usk population as vulnerable and confirmed the virtual absence of otters from the industrial rivers of South East Wales.

- 1.4 The construction of stick-pile holts has formed part of this overall enhancement programme in South East Area (which also includes planting and fencing) and is itself incorporated into several capital enhancement projects.

For the purposes of this report 28 holts built between the winter of 1989/90 and the summer of 1991 are included and hence incorporate those forming part of the Usk Otter Project, the Rhymney Habitats Improvements Project and the Ely Habitats Improvements Project. Holts built as part of more recent projects and less formal structures built during routine river maintenance works are not included.

- 1.5 Since the Programme commenced there have been major changes in otter distribution in South East Wales. Between late 1989 and 1992 the population appears to have spread into the lower Usk, all the major industrial rivers and many tributaries. Against this background, it is difficult to evaluate the benefit of the Enhancement Programme. This report, therefore, restricts itself to assessing the degree of uptake of stick-pile holts and considers their design and location in order to maximise the likelihood of their utilisation in those sites where they are considered to be appropriate enhancement.

## 2. CONSTRUCTION PROGRAMME.

### 2.1 Stick-pile holt construction.

Two basic designs were used, based on the original Otter Project Wales design and adapted to fit the site (Fig. 1). 13 holts of design A were built by National Park staff while 15 holts of design B were built by a variety of groups ; National Park staff (1), National Park Volunteers (1), British Trust for Conservation Volunteers (4), National Trust staff (2), a local Wildlife Trust (1) and N.R.A. Flood Defence operatives (6).

With the exception of the National Park holts, all construction was supervised by NRA Fisheries & Conservation Officers.

### 2.2 Holt locations.

Sites were selected following consideration of the following factors:-

- (i) the availability of existing good cover in the vicinity
- (ii) potential strategic value of a site e.g. links with other watercourses.
- (iii) existing information on otter distributions
- (iv) reasonable access to river for otters
- (v) level of disturbance e.g. footpaths, farms
- (vi) practicality of undertaking work e.g. vehicle access, availability of material

The overall objective of the enhancement programme is to provide some cover or lying-up sites at reasonable intervals throughout a catchment or part of a catchment by a variety of means. In practical terms two constraints were important in determining the actual locations of stick-pile holts. First was the time available to search for suitable sites and secondly, the actual availability of suitable sites on the basis of the above criteria.

Obtaining the agreement of landowners did not prove to be a significant constraint as most were more than willing to co-operate.

The final locations of the stick-pile holts are given in Fig.2 and Appendix 1.

### 2.3 Site details.

Following construction, details of the sites were noted in order to determine whether any features could be associated with subsequent use or lack of use. The following features were recorded:

- (i) Horizontal distance to water's edge.
- (ii) Height above summer river level.
- (iii) Bank slope.
- (iv) Nature of bank, (bare earth, grass/herbs, scrubs/bramble, rocks).
- (v) Adjacent channel depth (deep or shallow).
- (vi) Adjacent land-use.
- (vii) Availability of other lying-up sites in the vicinity ; subjectively assessed on a scale of 1 (very few) to 3 (several).
- (viii) Level of disturbance ; subjectively assessed on a scale of 1 to 4 (1 - very little likelihood of disturbance, rural area, farms distant ; 2 - little disturbance, some evidence of bank use by anglers and farmers ; 3 - some disturbance possible, closer to urban areas or farms ; 4 - easy access to bank for public, closer to urban areas).

### 3. RESULTS.

#### 3.1 Criteria for determining utilisation.

An attempt was made to visit each holt at 6 monthly intervals for 18 months, in order to judge whether the holt had been used by otters. Once a holt was considered to have been used it was scored as positive irrespective of whether there were fresh signs on subsequent visits. While this process would tend to overestimate the benefit, it was considered that this was balanced by the long gaps between visits which would tend to underestimate utilisation.

The following criteria were used to determine usage :-

- 1. Spraint inside or immediately adjacent to an entrance.
- or
- 2. A well-defined track more or less direct from an entrance to the water's edge and spraint on or adjacent to this track.
- or
- 3. A well-defined track more or less direct to the water's edge and spraint on the obvious sprainting site within 5m.

### 3.2 Usage results.

Of the 28 stick-pile holts built, 12 (43%) showed evidence of use by otters within 18 months of construction. On the Usk 10 out of 22 (45%) were used, on the Rhymney 1 of the 2 (50%) and on the Ely 1 from 4 (25%).

Although a small numbers of holts appear to have been used quite soon after construction, uptake did increase with time (Table 1). For those holts in existence for longer than 18 months (24 months for Usk Phase I and Rhymney) there was no additional uptake. An equal proportion of the two basic holt designs were considered to have been used.

### 3.3 Site analysis.

The purpose of noting details of the holt sites was to determine whether some features were associated with a greater degree of success, in terms of take-up, than others. The information collected was not adequate for statistical analysis (though some simple tests were undertaken for some parameters) but the exercise was considered to be worthwhile as it might produce some benefit in future enhancement programmes. Full details are provided in Appendix 2.

#### (i) Distance from entrance to water's edge.

This ranged from 0.2m to 3.5m with the majority of sites (71%) being 1m or less. While there was no statistical significance between used and unused holts, it was noteworthy that the furthest holts, at 2.5m and 3.5m were negative.

#### (ii) Height above water.

Height ranged from 0.25m to 3m with the majority of sites being around 1 to 1.5m. There appeared to be no difference between used and unused sites. Most of the higher holts were on the main River Usk and reflected the size of the channel.

#### (iii) Bank slope.

Slope ranged between 20° and 80° with most being between 45° and 60°. There was no statistical difference between used and unused holts, although only 1 of the 6 holts at 80° was used while 3 of the 4 at 20° were used ; suggesting that very steep banks may have some negative influence.

Bank slope, distance and height will naturally be inter-related; one might expect that steeper slopes may be associated with shorter distances for example. However, there are so many outliers on the slope/distance scattergram due to the individual nature of the sites that no simple conclusions can be drawn.

(iv) Nature of bank.

The nature of the bank included bare earth, earth with grass and herbs, scrub and bramble, boulders and gravel with the first two categories accounting for 82% of sites. There was no association between level of use and bank material.

(v) Adjacent channel depth.

It was originally considered desirable to locate holts adjacent to pools of deep water rather than to shallow riffles but in fact only 12 of the 28 holts could actually be placed in such situations. The used holts were evenly split between the two categories, suggesting that this is not a significant consideration.

(vi) Adjacent Land-use.

Land-uses on the bank where holts were constructed were considered as one of four categories : broad-leaved woodland, coniferous woodland, rough pasture/marsh or improved/semi-improved pasture (always with a line of riparian trees). The majority of sites were in broad-leaved woodland (50%) or improved/semi-improved pasture (25%). There was no relationship between usage and land-use.

(vii) Availability of other holts or cover.

It is self evident that artificial holts located in an area with adequate natural cover are less likely to be used than those built in an area of poor cover but known to be used by otters at least on occasions. The whole basis of the enhancement programme is to provide good habitat in locations where it is considered to be lacking or under threat, so that the majority of sites were built in such areas. However, three holts were built in areas subsequently assessed as being well-provided with natural cover ; none of these were used.

(viii) Disturbance.

While all holts were located where disturbance should not be a major problem, there were still considered to be significant differences in the likelihood of disturbance and an attempt was made to categorise this factor.

Of the 28 holts ; 8 were located in areas where the likelihood of disturbance by humans, dogs etc. was considered to be minimal ; 11 at sites where there were some signs of use, generally small paths used by anglers or farmers ; 8 were built at sites closer to habitation, either farms or urban areas and with more evidence of human use ; 1 was a site with considerable signs of passage of humans and dogs, being located close to a village.

In terms of take-up ; 5 of the 8 sites (63%) in category 1 were used, 5 from 11 (45%) in category 2, 2 from 8 (25%) in category 3 and 0 from 1 in category 4. These figures suggest that disturbance may be a factor in inhibiting use of some holts.



#### 4. DISCUSSION.

The construction of artificial otter holts has become popular in recent years. They have been used as mitigation for the loss of natural habitat in river engineering and highway schemes and by local conservation organisations as a means of enhancing the environment.

Whether a watercourse is utilised by otters or not will depend on many factors. Perhaps the most important with regard to the recolonisation of an area are the availability of a successfully reproducing population in an adjoining area, water quality adequate to sustain an otter population directly and to support an adequate food supply and a physical environment with adequate cover and shelter. The construction of artificial holts can only address the last of these and then only to a limited extent.

South East Wales has maintained a viable otter population on the upper Usk and it is likely that this is the source of animals for the remainder of the area. Although there have been occasional reports of otters in Glamorgan over the years the recent recolonisation process appears to have arisen by the Usk population expanding downstream and into the lower industrial catchments.

Although concerns have been expressed about the effect of persistent chemicals in the aquatic environment, most rivers in South East Wales are now considered to be of good water quality (the majority of reaches being in NWC Class 1) and support reasonable fish populations, both salmonid and coarse fish.

In terms of habitat, parts of all the catchments being considered were excellent. However, natural tree-root holts were comparatively rare, particularly on the industrial rivers, as the dominant riparian tree species were alder and willow. Due to the nature of their root systems these species do not often form cavities in the same way as oak, ash, beech and sycamore. In such areas bramble thickets, Japanese Knotweed and general river debris were important sources of cover. In parts of the catchments, however, cover was more limited and it was in such areas that enhancement work would be more worthwhile.

In the long term the greatest benefit to otters, and to other river wildlife, is likely to be due to the protection of and the better management of riparian vegetation. The planting of trees and shrubs, or perhaps more importantly the protection of banks from grazing animals, to allow natural regeneration, should be a major aim. However, this is not a straightforward exercise; fences are prone to flood damage, sheep are very difficult to keep out without regular maintenance and it is often necessary to fence both sides of the channel.

Stick-pile holts offer a simple and cheap means of providing lying-up sites (though few are likely to be secure enough for breeding). If a site has been selected in advance and there is adequate material in the vicinity for construction, then a group of three or four can complete a holt in a day. Groups of volunteers find it an interesting experience and it has value in raising the level of awareness of otters in landowners, flood defence engineers and in external specialists (e.g. highways engineers) involved in river works. In addition, stick-piles not utilised by otters provide excellent habitat for other mammals, birds and invertebrates.

If it can be demonstrated that artificial holts are likely to be used by otters then their construction can have a role to play in the conservation of the species. They should not be considered as an alternative to a natural, undisturbed riverbank but rather as a means of providing mitigation for unavoidable loss of natural holts or for the enhancement of areas where other options may not be available.

On the basis of this investigation, the construction of stick-pile holts would appear to be a viable technique. However, their location must be related to the known distribution of otters. There can be no benefit to conservation if they are built in catchments, or parts of catchments, that are inaccessible to or remote from known otter populations.

In addition, it is evident that there are features of a holt and its precise location that will increase or decrease the likelihood of its utilisation and hence its potential benefit to the population. The analysis described in section 3.3 does not provide clear-cut answers to why some holts have been used while others have not, though some features emerge as being of significance while others do not. A subjective assessment of the good and bad features of each holt based on this analysis (Appendix 3) emphasises that an undisturbed location, sound construction and an obvious and direct link between the holt and the water are the principal details to be considered when undertaking construction.

In addition to the holts investigated in this report, a number of other holts have been constructed by the NRA and other organisations. It is intended that all holts in S.E. Area for which the NRA has information will be monitored in order to produce firmer conclusions on their utilisation. In collaboration with Otter Project Wales, it is also intended to dismantle a small number of stick-pile holts to provide stronger evidence of use.

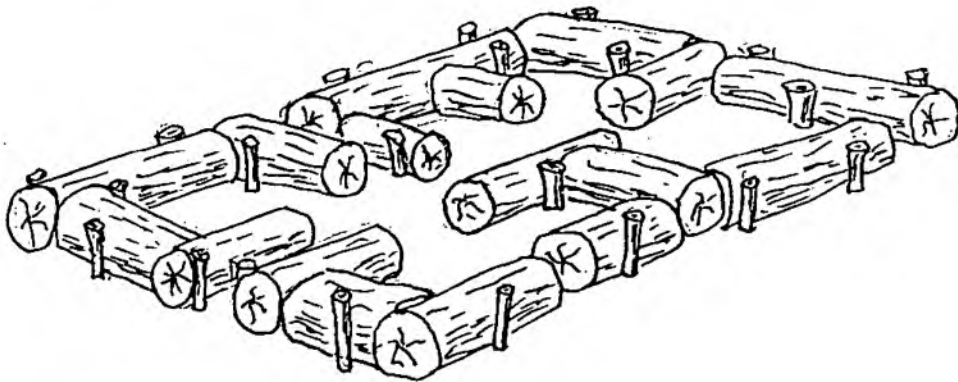
## 5. CONCLUSIONS.

1. Of the 28 stick-pile holts monitored, 12 (43%) showed some evidence of utilisation by otters.
2. The construction of stick-pile holts is a useful technique which can, in appropriate circumstances, benefit the conservation of otters.
3. An assessment of the utilisation of stick-pile holts suggests that they are more likely to be used by otters if :-
  - a) there is a shortage of natural holts in the vicinity,
  - b) the site is relatively undisturbed,
  - c) the holts are well constructed,
  - d) there is a good and obvious access from the water to enable an otter to find the holts.

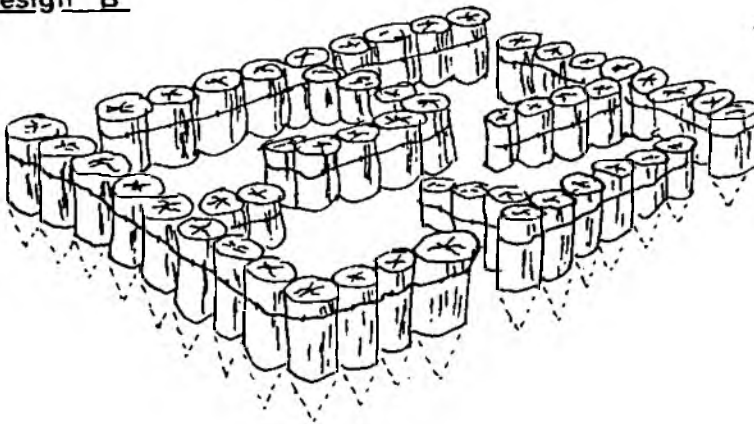
Fig 1

Stick-pile holt construction

Design A



Design B



Both designs are completed in the same manner i.e. poles are laid across to form a flat roof with a thick layer of brushings on top. In design A a strip of sheep-netting is usually laid over the first layer of brushing and pegged to the ground to provide additional stability.

**Fig 2**    Locations of stick-pile otter holts

Note : Other enhancement works and holts not included in this report are not shown

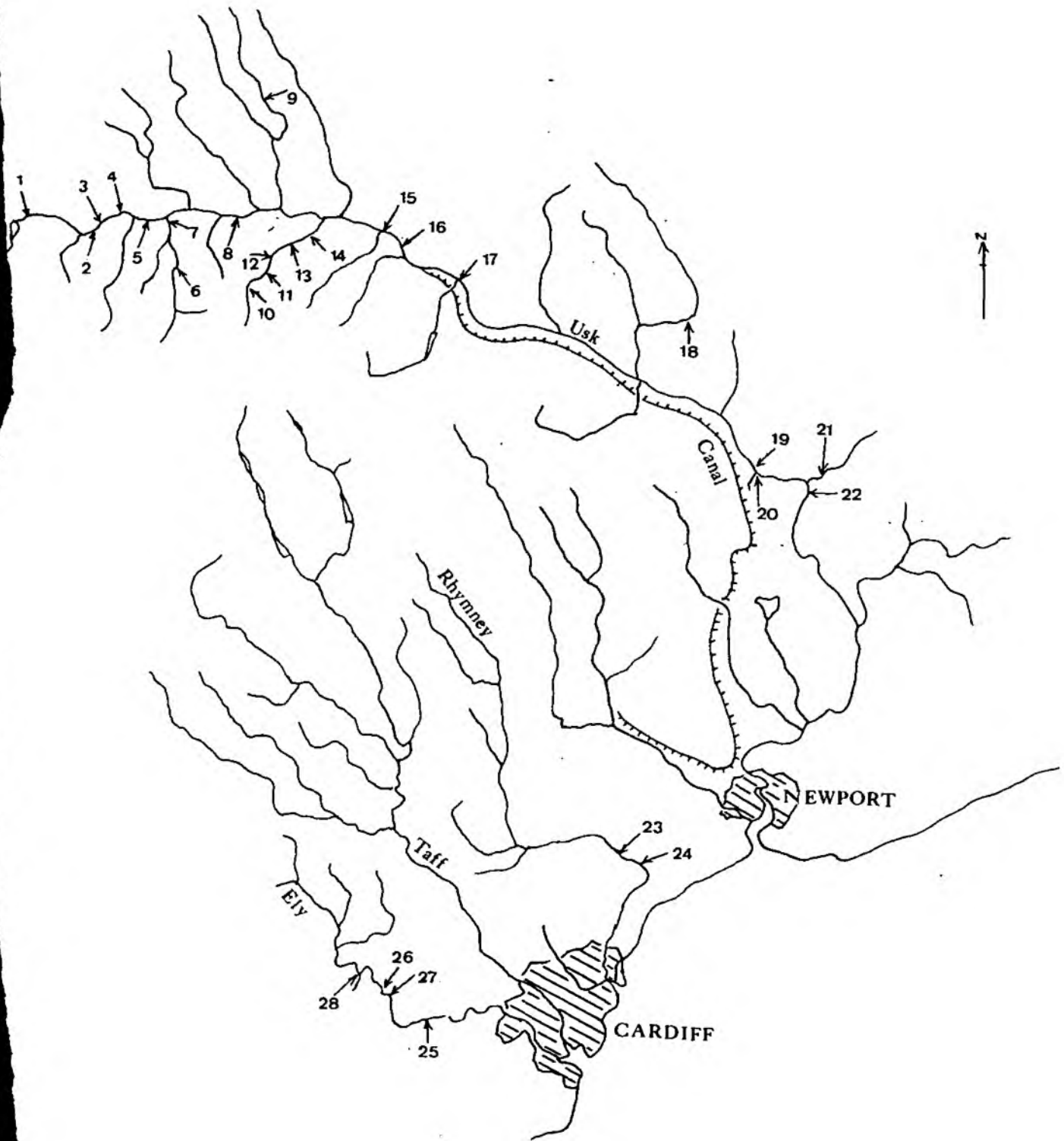


Table 1 HOLT CONSTRUCTION PROGRAMME AND UTILISATION.

Catchment.		1989		1990		1991		1992		TOTAL USED
		D	J	June	D	J	June	D	J	
USK (Phase I)	Construction Period and No.		<b>10</b> ↔							5 from 10
	Cumulative No. used.				①	④	⑤			
USK (Phase II)	Construction Period and No.				<b>12</b> ↔					5 from 12
	Cumulative No. used.						③	⑤		
RHYMNEY	Construction Period and No.		<b>2</b> ↔							1 from 2
	Cumulative No. used.			①		①	①			
ELY	Construction period and No.				<b>4</b> ↔					1 from 4
	Cumulative No. used.					①	①	①		

APPENDIX 1.

Location of stickpile holts.

Ref. No.	Location name.	Watercourse.
1	Gelligam Gauging St.	Usk
2	Ynysmarchog	Usk
3	Trecastle	Nant Logyn
4	Graig-goch	Usk
5	Pantscalllog	Usk
6	Cefn Fedw Ganol	Senni
7	Sennybridge School	Senni
8	Aber Rheon	Nant Rheon
9	Bron Sais	Ysgir Fawr
10	Blaen Glyn A	Tarrell
11	Blaen Glyn B	Tarrell
12	Libanus Mill	Tarrell
13	Waterfall	Tarrell
14	Rhyd-y-wernau	Tarrell
15	Brynich	Brynich Brook
16	Abercyning	Usk
17	Llansantffraed	Usk
18	Fforest Coal Pit	Grwyne Fawr
19	Pant-y-goitre Wood	Usk
20	Rhyd-y-meirch	Nant Rhyd-y-meirch
21	Llanarth	Llanarth Brook
22	Clytha	Usk
23	Plas Machen	Rhymney
24	Park Wood	Rhymney
25	St. Georges	Ely
26	Gwern-y-Gedrych	Nant Gwern-y-gedrych
27	Pont Sarn	Ely
28	Dyffryn Bach	Hensol Brook

Holt Ref. No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
Design	A	A	A	A	A	A	A	A	A	B	B	B	B*	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	
Built-by (1)	NP	NP	NP	NP	NP	NP	NP	NP	NP	NT	NT	NPV	NP	NP	NP	NP	NP	GWT	FD	FD	FD	FD	FD	BTCV	BTCV	BTCV	BTCV	FD	
Distance from water (m)	1.5	0.3	1.0	1.5	0.5	0.3	2.0	2.5	0.25	0.5	0.2	0.5	0.2	1.5	1.0	3.5	1.2	1.0	2.0	0.75	1.0	1.0	0.5	0.8	1.0	1.0	1.0	1.0	
Height above summer river level (m)	1.0	0.75	1.0	3.0	1.5	1.0	1.0	1.5	0.25	1.0	1.0	1.5	0.1	1.5	1.0	2.5	2.0	1.0	3.0	2.0	1.5	0.5	2.0	1.0	2.0	1.0	3.0	1.5	
Bank gradient (°)	20	80	80	60	70	70	20	30	45	70	80	80	20	45	45	45	60	45	60	75	60	20	60	45	80	45	80	45	
Bank material	Grass	Grass	Earth	Grass	Grass	Grass	Earth	Grass	Earth	Stone	Earth roots	Earth roots	Grav.	Earth	Grass	Scrub	Earth	Earth/Stone	Scrub	Earth/Ivy	Earth	Sand	Earth	Earth	Earth	Earth	Earth	Earth	
Channel width (m)	6	15	4	15	20	8	12	1.5	5	10	3	10	12	12	6	30	30	9	30	2.5	3.0	30	15	1.5	15	2.0	15	3.0	
Adjacent depths	Shal.	Shal.	Shal.	Pool	Shal.	Shal.	Shal.	Shal.	Pool	Shal.	Pool	Pool	Pool	Shal.	Shal.	Shal.	Pool	Shal.	Pool	Shal.	Shal.	Pool	Pool	Shal.	Shal.	Shal.	Shal.	Pool	Pool
Land-use	Dec wood.	Rough grass	Conif wood	Rough grass	Dec. wood	Dec. wood	Dec. wood	Dec. wood	Imp. past	Imp. past	Dec. wood	Rough past.	Imp. past.	Conif wood	Dec. wood	Dec. wood	Conif wood	Dec. wood	Dec. wood	Imp. past	Dec. wood	Dec. wood	Imp. past.	Conif wood	Dec. wood	Imp. past.	Dec. wood	Imp. past.	
Availability of other holts (2)	2	1-2	1-2	1-2	2	1-2	2	2	1	1	1	2	2	3	1	1	2	3	1	3	2	2	1	1	1	1	1	1	
Level of disturbance(3)	1	1	3	2	3	1	4	2	1	2	2	2	1	3	3	2	1	1	2	2	3	2	3	3	3	2	2	1	
Main river or side-stream	Main	Main	Side	Main	Main	Main	Main	Side	Main	Main	Main	Main	Main	Main	Side	Main	Main	Main	Main	Main	Side	Side	Main	Main	Side	Main	Side	Main	Side
Used ? (+ or -)	+	+	-	+	-	+	-	-	-	+	-	-	+	-	+	-	+	-	+	-	-	+	-	+	-	-	-	+	

- Notes:
- (1) NP - National Park Estate staff; NT - National Trust ; NPV- National Park Volunteers; FD - Flood Defence NRA  
BTC- British Trust for Conservation Volunteer.  
GWT- Gwent Wildlife Trust
  - (2) 1 - few; 2 - some; 3 - several.

- (3) 1 - very little likelihood of disturbance, rural, farms distant;
- 2 - little disturbance, some local bank use e.g. anglers, farmers;
- 3 - some disturbance possible, closer to urban areas or farms
- 4 - easy access to bank for public, close to urban areas, farms.

Appendix 2

Details of stick-pile holts

APPENDIX 3

Subjective assessment of good and bad features  
of individual stick-pile holts.

<u>Ref. No.</u>	<u>Used ?</u>	<u>Good Features.</u>	<u>Bad Features.</u>
1	+	<ul style="list-style-type: none"> <li>o Little disturbance</li> <li>o Good access to river</li> <li>o Good construction</li> </ul>	
2	+	<ul style="list-style-type: none"> <li>o Little disturbance</li> <li>o Good access to river</li> <li>o Good construction</li> </ul>	
3	-	<ul style="list-style-type: none"> <li>o Good construction</li> <li>o Good general location</li> </ul>	<ul style="list-style-type: none"> <li>o No obvious link to river</li> <li>o Conspicuous so may invite disturbance</li> </ul>
4	+	<ul style="list-style-type: none"> <li>o Little disturbance</li> <li>o Good general location</li> <li>o Good construction</li> </ul>	<ul style="list-style-type: none"> <li>o Rather high above channel</li> </ul>
5	-	<ul style="list-style-type: none"> <li>o Good construction</li> </ul>	<ul style="list-style-type: none"> <li>o Poor link to water</li> <li>o Possible disturbance by anglers</li> </ul>
6	+	<ul style="list-style-type: none"> <li>o Little disturbance</li> <li>o Good construction</li> </ul>	<ul style="list-style-type: none"> <li>o Quite far up tributary</li> </ul>
7	-	<ul style="list-style-type: none"> <li>o Good construction</li> </ul>	<ul style="list-style-type: none"> <li>o Too far from river with no obvious link</li> <li>o Human and dog disturbance</li> </ul>
8	-	<ul style="list-style-type: none"> <li>o Good general location</li> <li>o Good construction</li> </ul>	<ul style="list-style-type: none"> <li>o Too far from river with no obvious link</li> </ul>
9	-	<ul style="list-style-type: none"> <li>o Good access to river</li> <li>o Good construction</li> <li>o Little disturbance except possibly farm dogs</li> </ul>	
10	+	<ul style="list-style-type: none"> <li>o Reasonable access to river</li> </ul>	<ul style="list-style-type: none"> <li>o Quite far up trib. with possibly poor food supply</li> <li>o Close to farm</li> </ul>
11	-	<ul style="list-style-type: none"> <li>o Little disturbance</li> <li>o Good access to river</li> </ul>	<ul style="list-style-type: none"> <li>o Quite far up trib. with possibly poor food supply</li> <li>o Not light or water-proof enough</li> </ul>



<u>Ref. No.</u>	<u>Used ?</u>	<u>Good Features.</u>	<u>Bad Features.</u>
12	-	<ul style="list-style-type: none"> <li>o Good general location</li> <li>o Little disturbance</li> <li>o Reasonable access to river</li> </ul>	<ul style="list-style-type: none"> <li>o Not light or water-proof enough</li> </ul>
13	+	<ul style="list-style-type: none"> <li>o Good location, formed partly from natural feature</li> <li>o Good access to river</li> <li>o Little disturbance</li> </ul>	<ul style="list-style-type: none"> <li>o Prone to flooding</li> </ul>
14	-	<ul style="list-style-type: none"> <li>o Good access to river</li> <li>o Good construction</li> </ul>	<ul style="list-style-type: none"> <li>o Other good holts available</li> <li>o Too close to farm</li> </ul>
15	+	<ul style="list-style-type: none"> <li>o Good general location</li> <li>o Good access to river</li> <li>o Good construction</li> </ul>	<ul style="list-style-type: none"> <li>o Close to footpath though fenced off</li> </ul>
16	-	<ul style="list-style-type: none"> <li>o Little disturbance</li> <li>o Good construction</li> </ul>	<ul style="list-style-type: none"> <li>o Too far from river with no obvious link</li> </ul>
17	+	<ul style="list-style-type: none"> <li>o Little disturbance</li> <li>o Good access to river</li> <li>o Good construction</li> </ul>	
18	-	<ul style="list-style-type: none"> <li>o Good access to river</li> <li>o Little disturbance</li> </ul>	<ul style="list-style-type: none"> <li>o Good natural cover available</li> <li>o Not light or water-proof enough</li> </ul>
19	+	<ul style="list-style-type: none"> <li>o Little disturbance</li> <li>o Good construction</li> <li>o Shortage of holts on main river</li> </ul>	<ul style="list-style-type: none"> <li>o Quite high above river</li> </ul>
20	-	<ul style="list-style-type: none"> <li>o Good general location</li> <li>o Good construction</li> </ul>	<ul style="list-style-type: none"> <li>o Some good cover available already</li> <li>o No obvious link to river</li> </ul>
21	-	<ul style="list-style-type: none"> <li>o Good general location</li> <li>o Undisturbed except for noise disturbance from dog</li> </ul>	<ul style="list-style-type: none"> <li>o No obvious link to river</li> <li>o Some good cover available</li> <li>o Too close to house with dog</li> </ul>
22	+	<ul style="list-style-type: none"> <li>o Good access to river</li> <li>o Little disturbance</li> </ul>	<ul style="list-style-type: none"> <li>o Prone to flooding</li> </ul>
23	-	<ul style="list-style-type: none"> <li>o Good access to river</li> <li>o Relatively undisturbed</li> <li>o Good construction</li> </ul>	
24	+	<ul style="list-style-type: none"> <li>o Good location on side-stream known to be used</li> </ul>	<ul style="list-style-type: none"> <li>o Some disturbance</li> </ul>

<u>Ref. No.</u>	<u>Used ?</u>	<u>Good Features.</u>	<u>Bad Features.</u>
25	-	o Good construction	o Too close to house
26	-	o Good general location o Little disturbance o Good construction	
27	-	o Good construction	o Some disturbance o Poor access to river due to bank height
28	+	o Good location of well- used sidestream o Good access to water o Good construction o Little disturbance	