Appendix E

Wetlands West Annual Report 2009/10

Berkeley Vale Water Vole Recovery Project (2007-2010)

The main reasons for the dramatic decline in our water voles are habitat loss, degradation and fragmentation, and predation by introduced American mink. Agricultural intensification, unsympathetic river management, drainage of wetland marshes/ponds and building development have all contributed to the loss of the water vole's wetland habitat. Water voles are now so rare that the remaining populations are increasingly isolated and particularly vulnerable to further habitat loss, mink predation, flooding and excessive disturbance.

The survival of a water vole population at any particular location is dependant on a number of factors:

i. the presence of suitable habitat (A Minimum Viable Population of approx. 100 individuals requires 1.5 – 2 km of good quality habitat).
ii. the absence of mink, particularly in linear riparian habitats.
iii. the proximity of other viable water vole colonies.

The main aim of the project was to reconnect the existing isolated water vole populations and ultimately to encourage re-population of other historic sites within the project area. Clearly, therefore, it was essential to embark upon a comprehensive water vole survey programme of almost every watercourse in the project area to identify the locations of the remaining water vole populations and the opportunities for enhancing the habitats of streams, waterways and adjoining land for water voles.

<u>Water Vole Surveying</u>

General Catchment (base-line) Survey:	2007 (prior to summer flooding)
Environmental Assessment (site-based) Surveys:	2008 & 2009 (Frome Valley SNA, River Cam Catchment, Little Avon Catchment & Netheridge/Hempsted Area)

NB: No Environmental Assessment Surveys undertaken in 2007, except Frampton Pools SSSI, due to summer flooding & establishment of mink monitoring/control programme.

Total survey length/area (excluding base-line):	69,675 m flowing water* 89.02 ha open water/wetland sites

*38,225 m rivers/streams, plus 31,875 m IDB network

Presence-Absence Data

Flowing Waters (ALL): 16,000 m positive (**23%**) and 53,675 m negative (77%)

Rivers & Streams: 8,200 m positive (**21.5%**) and 30,025 m negative (78.5%)

IDB Network: 7,800 m positive (**24.5%**) and 24,075 m negative (75.5%)

Open water/wetlands: 2.18 ha positive (**2.5%**) and 86.84 ha negative (97.5%).

NB: positive increases to 54% if you exclude sites greater than 1 ha, e.g. Frampton Pools SSSI, Stroudwater Canal, Purton Timber Ponds, etc.

Although extremely positive that just over a fifth of all watercourses surveyed had evidence of surviving water vole populations, it should be noted that almost without exception all the water vole populations identified were isolated and of very low density, I.e. scarce. Sadly water voles were found to be absent from the Little Avon River, the Doverte Brook, the Newport Brook, the River Ewelme, the lower River Frome and the Stroudwater Canal.

Based on the knowledge gained from the water vole surveying programme is was possible to identify and prioritise stretches of watercourses suitable for enhancement to form sufficient habitat to support a minimum viable population.

The water vole surveying programme identified five key watercourses/areas for water voles in the project area:

i. Wickster's Brook (a tributary of the River Cam).
ii. River Cam.
iii. Ozleworth Brook (plus 2 minor tributaries).
iv. Drainage network in and around the Wildfowl & Wetlands Trust at Slimbridge.
v. Drainage network in and around the Netheridge Reserve near Gloucester.

The Wickster's Brook, River Cam and the Ozleworth Brook were the main focus of the Berkeley Vale Water Vole Recovery Project's habitat enhancement scheme working closely with farmers/landowners the Environment Agency. For specific details of works undertaken and partnership working (with LSIDB, Wildfowl & Wetlands Trust and the Netheridge Reserve) please see Output 3 & Achievement 1 below. What follows is the overall picture:

Wickster's Brook

Total length: 5,100 m.
Length enhanced for water voles: 3,450 m (68%), including 2,900m stretch downstream of M5 (>1.5-2 km).
Suitability of remaining unenhanced stretch: OK

River Cam (from outlet up to major culvert which blocks colonisation further upstream to the River Ewelme).

Total length: 6,750 m, in two obvious sections upstream and downstream of M5.
Length enhanced for water voles in downstream section (into which the Wickster's Brook flows): 2,950 m (100%).
Length enhanced for water voles in upstream section: 680 m (18%).
Suitability of remaining unenhanced stretch: 950 m very poor (industrial/urban), 400 m poor (heavily overshaded and/or ravine-like), 1,770 m OK (work programme on-going).

Ozleworth Brook (from outlet up to Ozleworth Bottom)

Total length: 5,600 m.
Length enhanced for water voles: 3,050 m (54%), plus 2,450 m (48%) of tributary, Kilcott Brook – work programme on-going.
Suitability of remaining unenhanced stretch: Poor (heavily overshaded).

Mink Control

The non-native American mink is an opportunistic and voracious predator of game birds, domestic poultry and native river wildlife, in particular the water vole. Being small enough to fit down water vole burrows, mink are a major factor in the disappearance of water voles throughout Britain. The mink has no natural predator, so their control is vital in reversing the decline in our water vole population.

Following the summer flooding of 2007 we established a network of mink rafts throughout the project area ready for the spring 2008 breeding season. Since then we have continued to run 50-60 mink rafts on the Little Avon River (including the Ozleworth, Dyers & Kilcott Brooks), the adjoining Internal Drainage Board network of drainage ditches and the neighbouring river catchments of the River Cam and the lower River Frome. We have also continued to coordinate our mink control programme with the efforts of the Wildfowl & Wetlands Trust at Slimbridge and Gloucester City Council at the nearby Netheridge Reserve (a captive-bred water vole release site). In addition, we have continued our relationship with the Three Counties Mink Hunt, thereby enabling us to obtain their 'bag' records and monitor their activities on the Little Avon River to ensure that they continue to have very little disturbance impact on the resident otter population.

11 mink culled by the programme in 2008, with a further 8 culled in 2009. Wherever possible mink carcasses have been passed on to the Central Science Laboratory for research purposes.

Mink control remains a vital tool in water vole conservation for the project area given the linear and often low density nature of our remaining water vole populations. Consequently our mink monitoring/control programme, and the associated otter survey programme, is on-going beyond 31/03/2010 – a permanent fixture for the foreseeable future.

Habitat Restoration/Creation Schemes

Creation of Nature Reserves & Protected Sites

i. Acquisition of site of a former trout farm at Nind on the Ozleworth Brook (Key Wildlife Site for water voles) as a nature reserve for Gloucestershire Wildlife Trust. Management Committee being established in 2010 – responsibilities to include the management of the Ozleworth Brook downstream site (also a Key Wildlife Site for water voles).
ii. Acquisition of extension land to the Rackleaze Wetlands site on the River Cam for Stroud Valleys Project.
iii. Designation of the Severn Trent Water Netheridge Reserve (a captive-bred water vole release site), managed by Gloucester City Council's Severnside Project, as a Key Wildlife Site.
iv. Designation of a roadside wet ditch (Peter's Street – a tributary of the Wickster's Brook), which is home to a very isolated water vole population, as a Conservation Road Verge.

Capital Works (TOTAL)

Watercourse Livestock Fencing (schemes):	14
Installation of Cattle Drinking Bays (schemes):	4
Watercourse Livestock Fencing (Wickster's Brook):	2,775 m
Watercourse Livestock Fencing (Wickster's Brook, HLS):	575 m
Watercourse Livestock Fencing (Capehall Brook):	300 m
Watercourse Livestock Fencing (River Cam):	500 m
Watercourse Livestock Fencing (River Cam, tbc 2010):	375 m
Watercourse Livestock Fencing (Ozleworth Brook):	1,225 m
Watercourse Livestock Fencing (Kilcott Brook, HLS):	750 m
Watercourse Livestock Fencing (TOTAL):	6,500 m
Junction Pond Creation (2 sites):	2
Linear Pond Creation Scheme (Little Avon River, tbc 2010):	1
Pond Restoration (Capehall Brook):	2
Pond Restoration (River Cam, tbc 2010):	1
Mill Pond Restoration (Kilcott Brook, HLS):	1
Back-channel Creation (Ozleworth Brook):	1
River Channel Reprofiling (Wickster's Brook):	350 m
Wet Ditch Restoration (2 sites):	200 m
Replacement of water level control structures (Nind NR):	2
Silt Toxicity Testing Programme (River Cam, tbc 2010):	1
Hedge Laying/Restoration (Capehall Brook):	600 m
Hedge Laying/Restoration (Kilcott Brook, HLS):	375 m
Willow Pollards (River Cam):	29
Willow Pollards (Wickster's Brook):	5
Willow Pollards (Ozleworth Brook):	3
Willow Pollards (Kilcott Brook, HLS):	7
Otter Holts (5 sites):	6
Otter-proofing of faulty sluice (Wickster's Brook, tbc 2010):	1

Beetle Loggery (Nind NR): 1

Capital Works (01/04/09-31/03/10)

Installation of Cattle Drinking Bays (schemes): 2
Watercourse Livestock Fencing (Wickster's Brook): 2,200 m
Watercourse Livestock Fencing (Capehall Brook): 300 m
Watercourse Livestock Fencing (River Cam): 500 m
Watercourse Livestock Fencing (Ozleworth Brook): 550 m

Junction Pond Creation: 1
Pond Restoration (Capehall Brook): 2
River Channel Reprofiling (Wickster's Brook): 350 m
Wet Ditch Restoration (2 sites): 200 m
Replacement of water level control structures (Nind NR): 2

Hedge Laying/Restoration (Capehall Brook): 300 m
Willow Pollards (River Cam): 14
Willow Pollards (Wickster's Brook): 5
Willow Pollards (Ozleworth Brook): 2

Otter Holts (5 sites): 4
Beetle Loggery (Nind NR): 1

Habitat Management

Bankside/hedge cut & river channel clearance (Wickster's & Capehall Brooks): 2,350 m
Scrub Control, Coppicing & Shade Reduction: 8 Sites
Alder/Poplar/non-native Willow/dangerous Pine Clearance: 6 Sites
6m Rough Grassland Riparian Buffer Creation (Kilcott Brook, HLS): 1 Site
Himalayan Balsam Control (Wickster's & Kilcott Brooks): On-going
Annual Rotational Riparian Vegetation Management Plan (agreed with EA): 5,850 m*
Annual Rotational Wet Ditch Management Plan (agreed with landowners): 2 Sites
Annual Rotational Wet Ditch Management Plan (agreed with Highways): 2 Sites
Annual Rotational Wet Ditch Management Plan (agreed with LSIDB): 2 Sites**

* Wickster's Brook & River Cam downstream of M5.
** i. Ryall's Lane; ii. Black Ditch, Netheridge Farm Rhine & Netheridge Brook.

Key: "HLS" denotes works delivered through Higher Level Stewardship.

"tbc 2010" denotes works to be delivered as part of the 2010 capital works programme.

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