

**ADVISORY VISIT TO THE WHITE CART WATER,  
STRATHCLYDE, ON 9 SEPT, 2005**

**Undertaken on Behalf of the Wild Trout Trust**



**Frontispiece: White Cart Water near Eaglesham**

**By Dr Andy Walker, Ellwyn, Moulin, Pitlochry PH16 5ER  
(Tel: 01796 472743; E-mail: [Libisandy@aol.com](mailto:Libisandy@aol.com)), Windrush AEC Ltd**

## **1.0 OBJECTIVES**

The Walton Angling Club requested advice from the Wild Trout Trust on their fishing stretch near the picturesque village of Eaglesham in the upper reaches of the White Cart Water, a lower tributary of the River Clyde, which it enters between Renfrew and Clydebank. On 9 September, 2005, an advisory visit was made to consider what the club could do to maintain and improve the habitat for brown trout. The visit was not intended to be a survey of the river, but to provide a broad overview for discussion.

## **2.0 GENERAL DESCRIPTION**

Walton Angling Club was established over 100 years ago. Today, it still flourishes serving the angling community in and around Eaglesham (further details are available through the club's excellent website (<http://www.waltonac.com/>)).

The club manages approximately five miles of the White Cart upriver from the weir at Waterfoot. It also has fishing rights for the Earn Water, a tributary of the White Cart that enters the main river at Waterfoot, and the Polnoon Water that meets the Cart below Mains Farm, south of Eaglesham. In order to cater for the substantial membership (currently well over 100), although not all members fish the rivers, supportive stocking of brown trout (largely put-and-take size) has been carried out for many years, using fish from commercial fish farms in Central and South West Scotland. Fishing is carried out by fly-fishing and bait-fishing. Spinning and the use of spinning equipment are banned.

The upper White Cart is inaccessible to salmon and sea trout. In addition to brown trout, the river contains stickleback, minnow, bullhead and stone loach. Unlike within the largely urbanised catchment of the lower parts of the river, the upper areas flow through open, largely pastoral, farming country and are fed by spring seepage and surface run-off and from reservoirs (Dunwan, Picketlaw and High Dam). There have been occasional pollution incidents and fishkills, the most recent being of a stretch of the Polnoon Water, although the source of the problem was not identified. The Club carries out restocking annually with brown trout of a takeable size for angling. Sections of the river have been electro-fished and juvenile trout of natural origin were comparatively scarce (pers.comm. Willie Yeomans, Clyde River Foundation).

## **3.0 ADVISORY VISIT**

### **3.1 Background**

Members of Walton AC taking part in the advisory visit comprised Club President Stuart Nichol, Aird Wallace, Malcolm Brown and Simon Cocker, plus sons. We walked down and inspected the Polnoon Water from Mains Farm to the confluence with the White Cart and from there to below the bridge and ford (by Hole). It was explained that this stretch will be affected by a flood plain scheme, part of a major initiative in the River Clyde catchment by Glasgow City Council to alleviate downstream flooding damage (plans were shown later). A large earth and concrete dam with a vorticing mechanism in the outlet channel will be constructed to hold back peak flows during spate events. An embayment pool will be constructed above the dam. Further upstream, about 750 metres of the banks of the White Cart and Polnoon will be lowered by one metre to establish a wetland area for wildlife. The previously

straightened stretches of the Polnoon below Mains Farm (about 700 metres) will be re-meandered. Also in the Mains Farm area, there will be a flood defence wall, 275 metres in length and up to 1.5 m above existing ground level.

Clearly, this scheme will cause major changes to the trout habitat locally and will affect the present fishery in various ways. In addition to the initial disruption caused by the civil works, consequential changes to the flow pattern and to the banks are likely to affect the present sequence of pools and riffles, there may be siltation of the bed and questions remain about angling access within areas that are scheduled as wildlife wetland habitat. The Club should make a strong case for its inclusion in the planning process to protect and hopefully enhance their fishing interests through positive suggestions for trout habitat and fishery engineering.

### **3.2 Comments on the existing habitat and fishery**

Based on the advisory visit, a number of general comments can be made. The following series of images and footnotes provide a fair impression of the overall fishery and its surroundings:



**Plate 1: Polnoon Water at Mains Farm – narrow stream with overgrown banks**



**Plate 2: Polnoon Water: downstream from Mains Farm, showing straightening, but good riparian vegetation**

Over most of walked length of the fishery, both banks were protected by old fencing, some of which was in need of repair or replacement. Generally, the bankside vegetation was lush and overhanging and the banks well-established. Only in a few places were areas of bank overgrazed and trampled by cattle, with consequent erosion and widening. Most of the Polnoon Water had been straightened for better field drainage, but some natural re-meandering was taking place. Further down, the channel was narrower and deeper, with overhanging banks. This deeper section normally yields some of the largest trout caught in the fishery. The majority of the larger stocked trout seek deeper stretches like this with overhanging banks and vegetation. During the visit, the water was fairly darkly stained and it was difficult to see fish, but smaller trout were seen rising at several points, even though previous electro-fishing results (unseen) had indicated low densities of juveniles. It is possible that the electro-fishing efficiency was reduced in some deeper stretches, especially if a backpack shocker was used. This can be a problem in high-nutrient streams.



**Plate 3: Stuart Nichol shows the size of some of the trout in this section**



**Plate 4: Lower Polnoon – cattle cross here, leading to flattened banks and a wider, shallower channel. The collapsing outside of the bend is vegetated but might be protected better by taking back the fence and planting willows for root binding**



**Plate 5: Deeper pool at the junction of Polnoon and White Cart Waters. The White Cart looks smaller than the Polnoon at this point, but has some deep stretches.**



**Plate 7: A shallow section of White Cart with no fencing of the right bank and some collapsed banking. Good juvenile habitat is present, but the stretch is unlikely to hold many bigger trout, except towards the neck of the pool**



**Plate 8: A broken fence leads to a section of bank that is badly trampled and needs attention**



**Plate 8: A lot of the fencing is in a poor state of repair. Some bends would benefit from protection using boulder revetment, or interwoven willow shoots.**



**Plate 9: Approximate intended site of large dam for flood scheme**



**Plate 10: Below Dam site, showing rock ledges at middle/top and good pool habitat downstream**



**Plate 10: Sewage effluent discharging in this stretch degrades the water quality.**



**Plate 11: Natural appearance of the White Cart below Ford**

## 4.0 CONCLUSIONS

The walked stretch showed a challenging and intimate little fishery, much of which is better fished by wading and casting upstream. The banks mostly are reasonably stable but some parts are collapsing on the outside of bends where the ground is sandy loam, easily eroded by spates. Stock fencing is inadequate or absent in places and requires attention, although the farmers may be waiting to see the full implications of the flood prevention scheme. The Club has already undertaken an impressive number of habitat improvements including planting trees to strengthen the river banks, providing cover for the trout and helping to attract fly life. The most useful trees for this purpose are willow and alder. These will root very easily from withies obtained locally. Low stone groyne have been built in order to create better holding pools and well-oxygenated cascades (see the club website). However, further attempts to create deeper pools and to protect banks by tree-planting should be held back in view of hydrographic changes that are likely to occur as a consequence of the imminent flood scheme. Any plans for significant river works should be discussed first with the scheme engineers, in case money would be wasted. After April, 2006, it is understood that all such works will require a permit from the Scottish Environmental Protection Agency (SEPA).

Aquatic invertebrate abundance and diversity is very good throughout most of the fishery, but deteriorates below an old sewage plant, where the water quality is adversely affected by an effluent. SEPA's overall classification of this stretch of the White Cart Water by Eaglesham (2004) was only Grade B (Fair), whereas the Polnoon Water was classified as A2 (Good). At that time, only about 12% of Scotland's extensive network of rivers and streams with a catchment area of 10 km<sup>2</sup> or more were classified as Fair or poorer. The problem of water quality deterioration below the Eaglesham sewage treatment plant is being addressed.

In spite of habitat improvements that have been carried out, the natural population of trout is believed to suffer from low recruitment, based on reported low densities of juveniles obtained by past electro-fishing surveys, although several small trout, presumed to be of wild origin were seen rising. Recently, the Clyde Rivers Trust has carried out an extensive electro-fishing census (>30 sites in Autumn). The data remain to be worked up and will be utilised in an M.Res. student thesis on "Trout Production in the White Cart System" (pers. comm. W.Yeomans). If the study confirms the earlier reports of low densities of juveniles, this could be due to a number of factors. Much of the bed of the river was fairly silty, although this may have been partly due to the lack of recent spates. Other than the silty bed, the river had sufficient variety of depth and flow to cater for good juvenile production, but spawning conditions may be better further up the system where the gradient is steeper and the bed may be cleaner. Unfortunately, the spawners may be unable to migrate above Mains Farm because of a weir, although this was not inspected during the advisory visit. If, as was suggested, the weir is a barrier to spawning migration, it would be worth considering ways to extend the effective nursery area, either by removal of the barrier, or easing passage with a fish ladder. Trout fry arising from any redds in the main channel will require shallow gravel sections at first, but will gradually extend their territories into pool habitat as they grow. There they are likely to find the large stockies that remain

uncaught and these bigger fish may suppress the numbers of wild fry and parr by predation.

The numbers of juvenile trout could be enhanced by extending the extent of the upstream spawning migration or by stocking smaller trout. Normally, an extension of natural spawning potential above barriers would be preferable to stocking with trout of farmed origin, although there is no particular genetic issue because of the long history of introductions from outside sources. There is no run of migratory fish with which the stocked trout could compete for food and space and interbreed. No such run is likely unless there are plans to allow fish past significant barriers further downstream. The biggest concern over stocking fry, or parr-sized trout, that are the progeny of line-bred hatchery parents is that they might not survive in sufficient numbers to be cost-effective. Also, few of the natural fish are likely to grow to the large sizes of the stockies and the members would have to accept a smaller average size. The only other significant risk is through inadvertant introduction of exotic parasites or diseases. This risk can be minimised by using reputable suppliers each year.

Stocking big trout requires managing the catches so that some remain available for members for as long as possible. At first, the tendency is for the stockies to remain in large groups which are quickly exploited. Ideally, they would be shared out better by carrying out several stockings of smaller numbers of fish per season, although there would be significantly higher transport costs. Trickle stocking throughout the fishery rather than introducing in one location, can also prevent clumping of stock. There is also the likelihood that some or many of the stocked trout will migrate downstream from the fishery. They were not born or brought up there and so will have no particular affinity to the area after being stocked. Experience and marking experiments indicate that stocked trout generally stay close to the area of introduction for the summer months and are often lost to the fishery in the rigours of the post-spawning period.

At present, the major challenge for the club is the unknown extent to which the fishery will be changed works as a result of the flood defence scheme. There is a serious potential loss of amenity that the club has long enjoyed and looked after very successfully. The plans for wetland habitat should take account of the angling use of the river. Therefore, it is timely to ask the developers to consider ways by which the fishery can be enhanced in mitigation. One possible way to help achieve this aim would be to install a ladder above Main Farm if the weir is a block to migration. The expectation is that the Club will wish to retain and even extend the deeper water for holding large trout, rather than promote greater lengths of the shallower habitat that would be more suited as salmonid nursery water, as might be the case in the headwaters of salmon rivers. Contrary to this aim, the dam and vorticing outflow may hold back sediments that would otherwise be flushed away and therefore encourage shallowing of the water. It would be worth discussing this possibility with the scheme engineers. A possible solution for the club is to ask for the construction of angling ponds beside the river. These could be connected to it in the manner of oxbow lakes. Oxbow lakes are flooded bends that are left when a river meanders across a flood plain. They usually remain connected to the main channel and flood over in spates,

but they do not take the sediment load in the main flow and can hold very clear water. The size of these ponds or lake would depend on available space and terrain, but they should vary in depth down to perhaps 3 or more metres and preferably be drainable to allow better management of water weeds. They could be made relatively narrow in the manner of a river, or more pond-like, depending on members' preferences. In general, it is better when constructing trout ponds to vary the contours of the banks and plant bushes to create scenic interest and cover and add to the fishable length. As with the banks of the river, buffer zones of at least five metres wide should be fenced off in order to provide shelter and a good source of terrestrial insects. The flood prevention scheme will include provision for new fencing. In particular, existing stock fencing needs to be extended and repaired, renewed, and/or re-sited, to promote riparian and overhanging vegetation.

As noted earlier, part of the scheme requires the remodelling of much of the banks and some re-meandering of the river course (Polnoon Water). Where possible, the new banks should be engineered to incorporate overhangs and wall crevices to provide additional refuges for trout. This is more feasible on the outside of bends. See for example "A Wild Trout Trust Guide to Improving Trout Streams (2002)," a copy of which is enclosed (an updated version is being prepared at the moment). Further examples of practical bank engineering are shown in "Helping Fish in Lowland Streams," (Nick Giles and David Summers, 1996), a little booklet available from Game Conservancy Ltd, Fordingbridge, Hampshire, SP6 1EF.

For other practical details and specific habitat management advice, it is well worth consulting the Wild Trout Trust website (<http://www.wildtrout.org/>). Previous advisory visit reports by the various WTT consultants in various parts of Britain can then be reviewed and relevant parts downloaded. Club members will be aware that some of the legal requirements and most of the agencies that need to be consulted for any river management schemes are different in Scotland from England and Wales. Dr Willie Yeomans of the Clyde River Foundation, c/o Institute of Biomedical & Life Sciences, University of Glasgow and SEPA, East Kilbride Office, will be able to advise accordingly.

### **Postscript**

The advisory visit indicated that the Walton Angling Club, which has been active for more than a century, is still a very energetic and progressive organisation. It has an excellent core of hard-working, highly enthusiastic and good-humoured members, anxious to continue to preserve their fishing and encourage young anglers for the future of the sport. It is to be hoped that the flood defence scheme will provide rich opportunities for the further conservation and management of the White Cart trout fishings.