



## River Darent – Darent Valley Trout Fishers



An advisory visit carried out by the Wild Trout Trust – April 2010

## **1. Introduction**

This report is the output of a Wild Trout Trust advisory visit undertaken on the River Darent in Kent. The advisory visit was carried out at the request of Darent Valley Fly Fishers which controls the fishing rights on the Castle Farm and Preston Farm beats of the River Darent.

Comments in this report are based on observations on the day of the site visit and discussions with Mr Tony Kelland, Colin Lambert and Martin Sutton from the DVTF and Peri Karageorgopoulos and Ben Lord from the Environment Agency.

This report is a follow up to two previous WTT advisory visits carried out on behalf of DVTF by Vaughan Lewis in 2002 and 2007.

Throughout the report, normal convention is followed with respect to bank identification i.e. banks are designated Left Bank (LB) or Right Bank (RB) whilst looking downstream.

## **2. Catchment overview**

The Darent or Darenth is a Kentish tributary of the River Thames. Its name is believed to be derived from the celtic word meaning 'river where oak trees grow'. Fed by springs in the hills south of Westerham and Limpsfield Chart it flows for 21 miles (34 km) eastwards and then northwards to join the Thames estuary near Crayford Ness.

The Darent is a groundwater fed chalk river and has all the usual characteristics associated with a chalk stream: clear water, abundant macrophytes, low banks and comparatively stable flows. The river has, however, suffered from over abstraction and has on a number of occasions virtually dried up on many sections, with catastrophic consequences for the fishery.

Like most chalk streams, the Darent has been heavily modified to provide power for milling and water for historic agricultural irrigation systems. The river also supplies flow into a number of large on-line lakes that fragment habitats and put additional pressures on water quality and quantity.

## **3. Fishery overview**

The DVTF are committed to managing the River Darent in a way that maximizes the potential of the river for wild trout and to provide an acceptable level of sport for their members through an annual stocking programme. The club received written advice from the WTT in 2002 and 2007 and several of the recommendations put forward in the reports have been taken forward by the club. One of the recommendations included the use of in-stream incubator boxes for rearing hatchery-derived brown trout eggs. This followed an earlier scheme driven by the EA where incubator boxes were populated with green eggs procured from wild Darent broodstock.

Both schemes undoubtedly produced elevated numbers of fry for the river but to date, follow up surveys carried out by the EA have failed to identify any significant survival of 1+ parr. Changes in trout stocking policy introduced by the EA now recommend that no fertile, hatchery-derived trout are introduced to rivers and the WTT, having considered all of the evidence, also believes that stocking with domesticated fertile strains is not in the best interests of wild trout. Background to this conclusion can be found on the WTT website at <http://www.wildtrout.org/images/frontpage/conservation/wttstockingposition.pdf>

This undoubtedly gives clubs like the DVTF a dilemma. The club is committed to trying to improve the wild component of the stock, but they are concerned that there are precious few "wild" parent trout left in the system and the critical mass might be too low to kick start a true recovery in wild stocks. Whilst these concerns are valid, the continued introduction of juvenile trout, either via incubator or direct from the hatchery will mask any attempts to boost natural wild production. Regular stocking with low densities of sterile adult fish will provide the membership with good sporting opportunities without suppressing any recovery in the wild population.

In addition to the incubator programme, the DVTF have followed up the advice given with a number of habitat related initiatives. These include the consolidation of marginal silt beds using hazel faggot revetments, and in places, the use of stock fencing to protect soft, vulnerable banks. The club would like to carry out more extensive stock fencing but has yet to convince all of their landlords of the merits of excluding livestock from the river channel.



Hazel faggot revetment used to consolidate marginal silt and protect vegetated berm.

## 4. Habitat assessment.

### 4.1 Castle Farm Beat

The majority of the Castle Farm Beat is deep glide habitat and although this type of water is fine for holding adult trout, there is very little good quality spawning and juvenile habitat. There were exceptions to this, and the section shown on the cover photo to this report and the riffle immediately downstream of the Castle Farm access road are good examples of spawning and nursery habitat.



The riffle downstream of Castle Farm Bridge – good juvenile habitat although very limited in size.

In the 2002 and 2007 reports, many of the shallow gravel sections were described as “comparatively flat, compacted and silt laden”. This is a major problem and spawning success could be significantly enhanced if these key areas (Castle Farm bridge, shallows below the hatches and the section at the top of the beat) could be improved. Prescriptions for resolving these problems were set out in the recommendations section of the previous reports but there does not appear to have been any significant use of Large Woody Debris (LWD) flow deflectors to scour and break up compacted gravels. With the addition of some pegged down sections of LWD, the topography of shallow riffles could be made much more diverse, with pots and small pools and associated ramps of clean, loose gravel.

Techniques for using LWD flow deflectors are described in more detail in section 5.



Any spawning habitat near the top of a beat and with good parr habitat below is considered to be extremely important. Cleaning three or four square metres of gravel here in October will boost spawning success.

There was some discussion around a water level control structure which is located approximately halfway along the beat. The practice of placing boards into the structure during the summer to increase upstream water levels is undoubtedly damaging habitats. It is understood that these measures are taken to deter cattle from crossing the river. The constant variation in levels and water velocities is not allowing sustainable habitats to become established in this reach. It is hoped that the land owner can be persuaded that stock fencing, either permanent or temporary electric fencing is the best method to employ to retain cattle in the meadows.

Some access to the river for drinking may be necessary, but these should be limited to specific 'cattle drink' sections to limit the damage to banks and water quality. Alternatively, some landowners have enjoyed great success by installing drinking stations using self primed pasture pumps. These are particularly useful for beef cattle and have been used to good effect adjacent to chalkstreams with soft, vulnerable margins.



Pasture pump in use next to the River Test. No access for cattle to the river required

#### 4.2 Preston Farm Beat

Habitat quality on this beat is quite good and some excellent work has already been undertaken by the club to pinch the channel in places and locally increase water velocities. Luxuriant beds of water crowfoot (*Ranunculus spp*) were evident, potentially providing plenty of cover for juvenile trout. Some tree planting (in line with previous recommendations) has also been undertaken. Unfortunately, towards the top of the beat, the gradient of the river was quite modest, resulting in a rather deep and sluggish flow. Raising the bed with imported gravels to reduce the channel capacity and locally increasing water velocities is an option, although an expensive one.

Half way along the beat a small carrier leaves the RB and flows around the edge of the meadow. It is believed that this small stream has been stocked with fry on previous occasions. There is one very large debris dam potentially blocking access for fish wishing to migrate upstream and the culvert at the very bottom end of the stream is far from ideal. More flow could be diverted via this route if there was a chance of developing a spawning and nursery stream.

It is hoped that the EA can undertake an electric fishing survey of this stream during their summer survey programme to ascertain if the stream does support any small wild trout. The presence or absence of a self-sustaining wild population in this fishery will help the club to shape future fishery management plans.



Luxuriant crowfoot growth on the Preston Farm beat – potentially good holding habitat for both adults and parr.



Old stone weir. Removing the central third of the weir will increase upstream water velocities and improve trout habitats



Blockage on the upstream end of the stream culvert. An open channel and clear span bridge may encourage fish to run the stream.



Small side streams can sometimes be easily manipulated to provide optimum habitats for trout production. This carrier has potential for development.

Although the major threat to the Darent always surrounds water resources and the ever present threat of drought, there was also some discussion regarding water quality. Many angling clubs now take part in the Anglers' Monitoring Initiative in order to maintain a close eye on water quality, which is reflected in the invertebrate populations. One excellent method of monitoring water quality is to link up with the Riverfly Partnership. The Partnership provides training and a robust method of assessing fly life through periodic sampling of macro-invertebrates. This is a simple and effective way of keeping a close eye on water quality performance. More information can be found at [www.riverflies.org](http://www.riverflies.org).

## 5. Conclusions

There is understandable concern that there are not enough wild brood fish to kick-start this population and that the move to stocking with all-sterile fish will limit any spawning activity. It is understood that there are strong populations of wild fish further up the valley and it will be incumbent upon the EA to help answer a few fundamental questions before any significant resources are ploughed into improving these beats for wild fish.

The questions that need to be addressed are:

1. Are wild stocks present on the fishery and if so where?
2. If not, what is the nearest Darent population and are there any serious traps or blockages to fish finding their way down to the Preston and Castle Farm beats?
3. If natural colonisation is not possible could an ark population of wild Darent trout parr be transported from sites further upstream and stocked out into optimum parr habitat on the DVTF beat? Possibly the carrier, if improved?

For these questions to be answered it will be necessary to stop the introductions of small hatchery-derived stock because the presence or absence of juveniles is the only reliable and effective method of confirming wild production. Other options, such as tagging or DNA investigations, are both complicated, expensive and can damage the fish.

There is not enough good quality juvenile habitat to sustain both wild juveniles and stocked juveniles. Wild fish are more likely to win any territory battle, but it is an additional pressure on already vulnerable wild stock.

A sensible way forward for the club is to implement the recommendations in the WTT reports and redouble efforts to boost spawning success through a programme of gravel improvements and autumn gravel cleaning. Continue the good work already started to provide improved holding habitats for adult trout and stock with sensible densities of adult sterile stocks. By all means catch and release stocked fish during the summer but take the obviously stocked fish out towards the back end of the season by relaxing bag limits (for stocked fish only) in September to avoid any additional predation and competition pressures on wild fish.

Habitat quality on many sections of the DVTF waters appeared to be good. The key bottleneck to improving wild production still appears to be spawning (egg survival) and good quality juvenile habitat, particularly overwintering habitat for fish approaching their first winter. Providing improved gravel quality for those fish that can spawn (however small that population might be) will enable the wild component of the stock to grow.



**Gravel cleaning can significantly boost spawning success on rivers with compacted gravels**

As previously mentioned, another good method of improving spawning success is to use pegged down pieces of large woody debris to help scour, clean and sort river bed gravels. This method is extensively used by the WTT as it not only helps to boost spawning success but also provides holding habitat and cover for a range of fish species. As the wood rots it also provides a primary source of food for aquatic invertebrates.

It is imperative that as much woody material as possible is retained within the channel but implementing a programme of introducing LWD flow deflectors, particularly on those comparatively flat, shallow gravel sections will create improved conditions for holding and spawning.



Two pieces of LWD configured to form an upstream "V". Structures like this scour local pots in the shallow bed and promote a clean, loose ramp of gravel downstream.

**It is a legal requirement that some works to the river may require written Environment Agency consent prior to undertaking any works, either in-channel or within 8 metres of the bank. Any modifications to hard defences will require a land drainage consent on any river designated as "main river". Advice can be obtained from the EA's Development Control Officer.**

## **6. Recommendations**

- Only stock with adult sterile stocks.
- Ask for assistance from the EA to identify any wild population in the carrier. If they are present, build the stock through a targeted programme of habitat improvement. If they are absent, investigate the possibility of procuring a Darent "ark" stock of juvenile wild fish from an upstream location.
- Leave as much woody material in the channel as possible

- Consider introducing more structure into the channel, particularly on shallow gravel sections by using LWD flow deflectors.
- Provide better over wintering habitat for juvenile trout on shallow reaches by pinning brushwood bundles into the margins.
- Instigate an early autumn programme of gravel cleaning to boost trout egg survival rates on selected areas.
- Consider signing up for some training in undertaking simple surveys as part of the Anglers Monitoring Initiative with the Riverfly Partnership. This is an excellent initiative and will give you a much better understanding about the productivity of your stream and an indication of long term water quality performance.
- Raise awareness amongst the membership over the importance of catch and release of small trout for wild trout conservation.

## **7. Making it happen**

There is the possibility that the WTT could help to start an enhancement programme. Physical enhancement works could be kick-started with the assistance of a WTT 'Practical Visit' (PV). PV's typically comprise a 1-3 day visit where approved WTT 'Wet-Work' experts will complete a demonstration plot on the site to be restored. This will enable project leaders and teams to obtain on the ground training regarding the appropriate use of conservation techniques and materials, including Health & Safety equipment and requirements. This will then give projects the strongest possible start leading to successful completion of aims and objectives.

The WTT can fund the cost of labour (two/ three man team) and materials (max £1800). Recipients will be expected to cover travel and accommodation expenses of the contractor.

There is currently a big demand for practical assistance and the WTT has to prioritise exactly where it can deploy its limited resources. The Trust is always available to provide free advice and help to clubs, syndicates and landowners through guidance and linking them up with others that have had experience in improving trout fisheries.

## **Acknowledgement**

The WTT would like to thank the Environment Agency for supporting the advisory and practical visit programmes.

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