



**Wild Trout Trust
River Laxa, Iceland**



**An advisory visit undertaken on behalf of Mr Ori Vigfusson by the
Wild Trout Trust on the Upper Valley and Myvatn Beats of the
River Laxa on the 29th May 2008**

Background

The Wild Trout Trust is a UK based charity dedicated to the conservation of wild trout and their habitats. The Trust prides itself in providing free advice to those interested in protecting and improving wild trout fisheries and has a proven track record in delivering improvements on the ground through a programme of advisory and practical visits, many of which are turned into habitat enhancement projects.

In May 2008 the Wild Trout Trust was approached by Mr Ori Vigfusson, who is well known to fishery groups in the UK with an interest in salmonid fisheries for his sterling work in conserving North Atlantic salmon stocks. Mr Vigfusson is a member of the Wild Trout Trust and was keen to obtain an independent view from the Trust on the general condition, current management and potential of the world-renowned River Laxa fishery in northern Iceland. The Trust was asked in particular to view the trout fishery, which extends from Lake Myvatn downstream for approximately 16km to the Power Station below Bruar. This reach being divided into two separate fisheries, the Laxa Myvatn and the so-called Laxa Valley beat.

The advisory visit was carried by Mr Andy Thomas, who is one of two conservation officers employed by the Wild Trout Trust and was undertaken on the 29th May 2008. Mr Thomas was accompanied by Mr Vigfus Orrason and during the visit had access to view the entire fishery and was able to speak to both permanent staff and visiting anglers.

In compiling this report, the advice and views put forward are those of the author, on behalf of the Wild Trout Trust, and are designed to provide the readers of this document with the opportunity to look forward and evaluate future options for protecting both the physical habitat and also the long term status of the stock itself.

Introduction

The River Laxa as well as being a famous salmon river and is also considered by many to be the best brown trout fishery in Europe and possibly the world. The unique set of geological circumstances that has led to the natural creation of this highly productive fishery is fuelled by lake Myvatn at the head of the system. The porous volcanic geology provides a stable and pure source of nutrient rich water that in turn promotes an annual bloom of algae, driving productivity. This short but explosive web of growth allows the lake to support an internationally important and protected wildfowl habitat (RAMSAR site) as well as providing the building blocks for sustaining a fantastic trout fishery in the out flowing River Laxa.

For the Wild Trout Trust to be invited to view and comment on such an immaculate and truly wild system is a rare privilege. That said, there are some potential issues that need to be carefully monitored and managed if the fishery is to maintain its reputation as one of the finest in the world.

Habitat Assessment

From very limited research carried out, and from observations taken from both the river bed and from the gut contents of recently killed trout, the whole system is obviously incredibly rich in aquatic invertebrates and molluscs. Large numbers of chironomidae were observed and several species of cased caddis and snail were observed on rocky substrate found on the bed of the river. The black volcanic sand found in areas of slack water did not appear to be supporting the rich fauna that was present in the more stable substrates and is thought to be predominantly entering the system via an upstream tributary (Kraka). Soft shifting sands are a known problem in many UK river systems. The unstable nature of sandy substrate is hostile for macrophytes and many macro invertebrates and can limit spawning success by blocking up the small interstices in gravels, potentially smothering salmonid eggs and leading to a reduction in egg to fry survival. It may, however, be an important component in the productivity of the lake itself. Fortunately the gradient, size and scale of the spawning and nursery habitat available negate any potential adverse effect the sand may be having on salmonid recruitment in the fishery as a whole.



Black volcanic sand

The completely natural shape and form of this river provides a superb habitat for salmonid fishes. The heterogeneous nature of the channel provides habitats for all life stages throughout the whole length of the reach examined. Deep pools, energetic runs and long shallow glides are broken up by numerous islands forming undercut holding water as well as gently shelves margins ideal for juveniles. Broad, shallow, gently flowing reaches are regularly interspersed with narrow fast flowing gorges providing not only variation in habitat for trout but also the food of trout. The braided channels and numerous little loops and side streams create superb spawning and nursery habitat.

In conclusion, a near perfect habitat for trout that needs no interference or management but may need to be protected from any future changes in adjacent land use. Although not evident in the upper Laxa catchment, there was evidence of what looked to be comparatively recent plantations of soft wood trees in some local valleys. Perhaps the soil is not deep enough to support forestation locally, however angling groups with an interest in protecting this river for future

generations should take note of the adverse effects such forest operations can have on the success of salmonid fisheries.

Another slight concern regards the impacts that grazing sheep may be having in certain areas. The density of sheep seen during the visit was very low and unlikely to be of concern. There were however some reaches where grazing sheep had sufficient access to be causing some potential instability to bank side habitat through over-grazing. This can potentially be a problem leading to rapid erosion of sediments resulting in damage to spawning success. The usual remedy for this problem is simple stock fencing. In this near pristine landscape fencing may be an issue in terms of visual aesthetics. Perhaps the best approach is to ensure that there is a widespread understanding and dialog between the anglers and the local farming community in order that densities of sheep are kept low, particularly adjacent to the small channels known to support good quality spawning habitat.

Local farmers and landowners should also be made aware of the potential dangers associated with certain treatments used to control disease and parasites in livestock. Some treatments used in the UK to control diseases and parasites in livestock have been responsible for decimating invertebrate populations in rivers leading to a collapse in many fisheries. This may not be an issue in Iceland but steps should be taken to raise awareness with local groups involved in rearing livestock to ensure that the river is fully protected.

Simple macro invertebrate monitoring techniques such as those developed by the Riverfly Partnership are an excellent way of monitoring the health of your own rivers on a regular basis. Information about such monitoring techniques can be found at www.riverflies.org.uk



Heavily sheep grazed bank vulnerable to erosion

On the upper river there is what appears to be a crucially important loop in the river known as the Home river. It is understood that this comparatively short reach can in some years produce nearly 50% of the rod catch for the upper beat. The location of this loop, being very near to the lake source may in part be why it is so productive. It may also be comparatively easy to fish being smaller and gentler in nature than some of the other beats. It certainly lends itself to a wider range of angling techniques, being ideal for dry fly and nymph fishing.

During my inspection it was apparent that the flow into the Home river was being throttled by a makeshift timber arrangement. The purpose of the wooden structure was apparently to ensure that the abstraction point downstream functioned correctly. The gap and the natural nature of the take-off point could easily change in a flood event or be further eroded by ice flow. Measuring the

flow splits at this point might be sensible should the flow regime change. The home river is obviously a very important beat and should the flow regime change then there may be knock-on impacts to its productivity. Understanding why it is so productive may help to shed light on other beats and reaches of the Laxa should any management or intervention be required in the future.

It is generally accepted that on salmonid fisheries any water abstraction points should be adequately screened to prevent the entrainment of parr.



Home River take-off with timber throttle



A shallow spring fed side pool – crucial juvenile habitat

The Wild Trout Trust specialises in trout habitat management and restoration. The upper Laxa is a perfect example of a pristine environment for brown trout and it is hard to imagine how it could be any better.

Information on trout movements may help to establish further protection for the fishery from future development threats. Although most anglers believe that Laxa trout are residential, not much is known about their movements. A tagging programme may answer some questions about migrations as well as providing data on individual trout growth and recapture rates. To monitor pure movements, a programme of PITT tagging and in-river listening stations may provide some useful data.

Angling Impacts and Exploitation

The single biggest influence on quality of this fishery is the angling activity. Both the upper and lower fishery are very carefully managed with limited access for angling which is controlled on a rotational beat basis. The upper fishery (Laxa Myvatn) is currently divided into 15 beats with each beat limited to a maximum of three rods with some beats rested each day. During my visit this fishery had 18 rods fishing two sessions each per day. The Laxa valley beat was restricted to 12 rods fishing daily.

Catch records supplied from 2000 to 2007 indicated that the catches were very stable with the upper fishery yielding approximately 4000 trout per season with the lower fishery contributing a further 2000. From these records it is impossible to make any robust assessment of the size or current condition of the trout population. Although angling effort may be relatively constant in terms of angler days, the actual angling practises are likely to have changed with some anglers engaged in "catch and release" tactics and others turning to more modern tactics of using fluorocarbon line and heavy upstream nymphing tactics. Any underlying trend in the size, number and weight of trout caught is likely to be masked by subtle changes in angling practises.

Data from the catch records indicate the average size of rod caught fish to be approximately 1.5kg, with slightly larger fish taken in the lower beat. The average sizes overall are probably somewhat smaller than those quoted in the catch returns because some of the anglers questioned indicated that they only recorded "sizeable" fish, with significant numbers of smaller fish not being entered into any catch log. From observations and photographs taken at both lodges, the fish actually killed for the table seemed to be in excess of the average weight quoted in the annual records, with most anglers seemingly wanting to take the bigger fish for the table rather than the more average sized specimens. In any event, wild trout caught in these densities and sizes are a very rare occurrence, if not in Iceland, then certainly in the rest of Europe.

It was interesting to talk to some of the anglers bringing in their catch at the end of the day. There is obviously a culture for "taking" large rod caught fish for the table by many of the local anglers but by no means all. One angler said that

he believed the fishery was under far too much pressure and that he was worried about the quality of the fishing available to future anglers and particularly to those fishing later in the season. He also said that some anglers just could not accept that the supply of big Laxa trout was a finite resource, even though most believed the stock to be residential. There is no doubt that most visiting anglers from the UK and America would not expect to be allowed to kill so many large trout and with attitudes toward "catch and release" of salmonid fish spreading to all corners of the world it was surprising that there appeared to be such an appetite for killing these exceptional fish.



Morning catch of "average sized" Laxa trout

Some of the key questions the Wild Trout Trust has been asked to address is what are the likely impacts to the annual catch statistics if there was a move

towards more of these larger fish being returned alive to the river? Is there a density dependant relationship that might lead to a reduction in the average size of rod caught fish? Would the fishery lose income as a result of a catch and release policy?

To answer these questions we must look at what has happened on other fisheries around the world. For instance it is generally accepted that on UK rivers and lakes that catch and release (C&R) of wild stocks is essential to encourage and promote larger fish to come through and to protect valuable broodstock. Even on the great limestone lakes of central and western Ireland, where there was always thought to be an inexhaustible supply of big wild fish, it is now very much apparent that angling pressure has severely impacted on the quality of the sport on offer. Attitudes here, as in many other parts of the world are changing rapidly, with an acknowledgment, supported by science, that suggests if fish are returned alive they can provide equally good sport for someone else and still survive to spawn. If "trophy" sized trout are an essential component of the value of a fishery to visiting anglers then it would seem eminently sensible to introduce policies and angling rules that ensure they have every opportunity to grow to that size. The evidence is very clear: rod-caught trout or salmon that are carefully released can be recaptured on numerous occasions and still flourish and reproduce.

The well known optimum lies taken up by large trout on the Laxa and the ever increasing skill and technology available to the angler will severely restrict the fishery's ability to produce outstanding fish in the future, particularly if 2 to 3kg fish are taken and killed on what appears to be a remarkably frequent basis.

Increases in catch rates from rivers with C&R regulations have been spectacular in many parts of North America, most notably Montana. C&R was introduced to New Zealand by visiting American fly-fishers and is a predominant philosophy today, particularly in pristine wilderness rivers. The C&R philosophy is in keeping with New Zealand's dedication to conservation and sustainable fishing. Even in non-release areas, many anglers adopt the catch and release principle.

In the Wild Trout Trust we believe that great care must be taken not to over exploit wild stocks with rod and line. More trout released equals more trout for

others to catch. The longer the period a trout has to live and grow the greater the chance of spectacular catches. It is obvious that if a 3kg trout is killed it can never grow into a 4kg trout!

In the absence of detailed specific scientific survey data relating to the population dynamics of Laxa trout stocks it is impossible to predict the scale of any likely changes as a result of a move to C&R. It would be very simple however, to introduce the measure and monitor the catches (number caught, mean and maximum size) over a three-year period. If in the highly unlikely scenario that average weights and densities of trout declined it would be very simple to reintroduce a catch and kill policy.

A move to mandatory C&R on the Laxa river would undoubtedly be very unpopular with some of the current anglers in the short term. Experience from other countries suggest that most anglers eventually accept the concept and given the opportunity to continue to fish a world class venue rather than go elsewhere most will still wish to fish the river. For every one that wants to go elsewhere and kill trout there will be ten more that will want the opportunity to fulfil a lifetimes dream and fish a water that contains truly big wild trout.

If a bold move to C&R is considered to be too radical then it is recommended that the bag limit is reduced to one brace per day (not per session) and that all fish over 45 cm are returned alive. A letter box or "slot" limit will protect small fish that have yet to spawn (no data on minimum spawning size of Laxa brown trout are currently available) as well as ensuring that those fast growing fish capable of becoming trophy sized specimens will not only be available for more anglers to catch but will also have the potential to grow on. A further benefit is important genetic traits that have enabled those big fish to survive and grow can be passed onto the next generation and beyond.

To establish the levels of exploitation and to evaluate the potential for rod caught fish to grow on into larger specimens, it might be possible to tag individual specimens with Floy or Hallprint tags. These tags are visible to anglers and carry an individual code. Anglers could be instructed to return tagged fish once the tag number and details of the fish length and location of capture are recorded.

These tags require the use of an application tool and should only be applied by trained personnel. It should be recognised that some anglers can be disappointed when capturing a trophy sized fish, only to discover it has been captured before. A programme of tagging should therefore be limited in extent and only run for as long as useful information can be gathered. Tagging programmes must never be used just for pure interest but can be useful in developing changes to fishery management practises.



An evening catch of five large brown trout to just two rods.

Recommendations

- Careful monitor catchment land use and make appropriate information available to land owners and farmers to ensure long term protection of habitats.
- Identify key important spawning areas and protect from over grazing pressures.
- Assess the flow splits where the Home River leaves the Laxa.
- If throttling of the flow is necessary then construct a more robust and manageable hydrobrake.
- Move towards a "Catch and Release" policy to protect valuable stock and raise the profile even further of a river capable of producing outstanding specimen sized trout.
- Monitor stock performance and encourage anglers to record all catches to include an estimate of all numbers and sizes of fish captured, including those that are returned.
- If a move towards total C&R is deemed unacceptable then half the bag limit and introduce a "slot" size limit based on minimum size following first years spawning up to an absolute maximum of 45cm.
- Provide every angler with detailed guidance on the benefits of C&R and how to fish for (barbless hooks, etc) handle and release their quarry.
- Consider a tagging programme to monitor movement, exploitation rates, growth and longevity of individual specimens to help formulate policies to protect the fishery.

References

Young, R., Walrond, C. and Hayes, J. 1999. Catch and release : facts, fiction and the future. *Fish and Game, Special Issue 9*: 10-13, 16

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