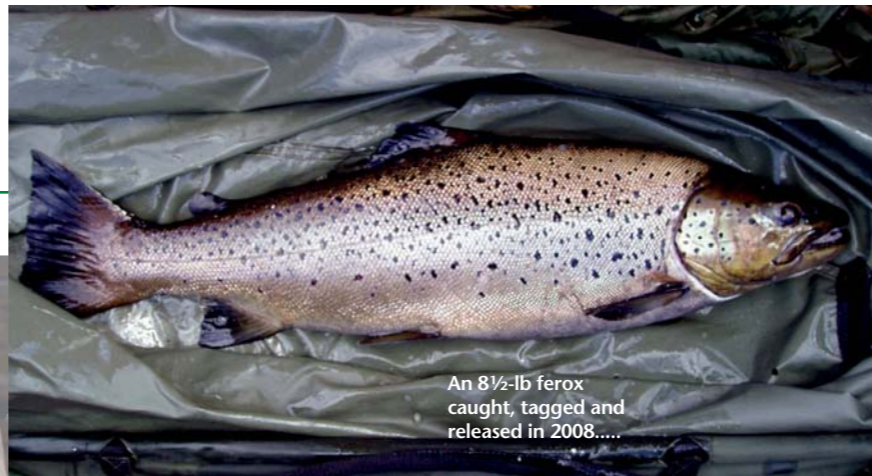




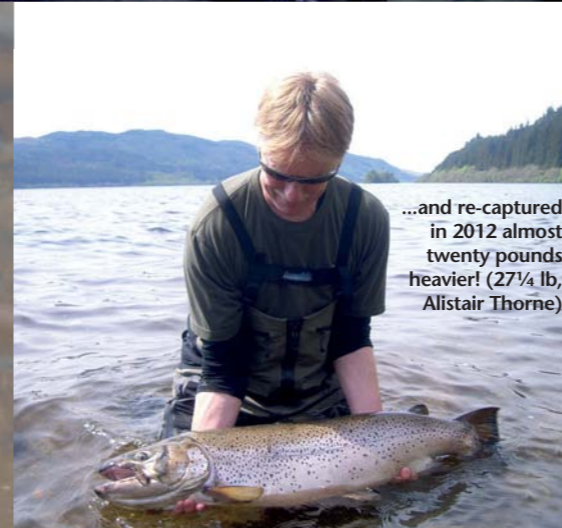
Awesome trout

Alan Kettle-White of Argyll Fisheries Trust highlights the work taking place to conserve the ferox trout of Loch Awe.



An 8½-lb ferox caught, tagged and released in 2008.....

Alan Kettle-White with a 30-lb Loch Awe ferox



...and re-captured in 2012 almost twenty pounds heavier! (27¼ lb, Alistair Thorne)

Ferox trout are relatively rare, even within the few waters where they occur. This scarcity reflects their 'apex predator' status in the food chain of large and often nutrient poor lochs where prey fish abundance may be low. Whilst their potential size gives this iconic fish a legendary status amongst the brown trout fraternity it also makes them harder to catch than most trout.

Compared to the relatively rich limestone loughs of Western Ireland, the base-poor granite rocks of most Scottish lochs and English lakes host a lower density of fish and anglers' expectations should be trimmed accordingly. Even in Scottish lochs, catch rates of ferox vary, with Loch Awe having a reputation as being the most difficult. This

is tempered however, by quality: Loch Awe holds the current British record and the three previous heaviest ferox trout caught in the modern era.

Captures of such large trout are not just a recent phenomenon, as demonstrated in a letter written by John Colquhoun, the famed ferox angler, to *The Field* in November 1880. The letter gives details of large ferox caught by 'old Willie Maule' who said it was not seldom that he landed fish from 25 to 28lb. Maule trolled with a ¼ lb brown trout, or sometimes larger. Rumours of a 38lb ferox caught from Loch Awe were 'scotched' by Colquhoun as he claimed it to be a salmon kelt after viewing part of its skin (the rest destroyed by fire).

In his *Anglers Companion to the Rivers and*

Lochs of Scotland published in 1847, Thomas Stoddart writes: "At the pass of Brandir, the celebrated *Salmo ferox* descends (from Loch Awe) to spawn, entering, for this purpose, the streams immediately below the outlet of Loch Awe (the River Awe)." He also goes on to say: "The *Salmo ferox* has become scarce, and a good specimen can only be obtained after much perseverance." This concurs with Colquhoun who blamed deterioration in sport on those anglers using artificial bait, in favour of dead or live trout, that "put the trout down". An alternative suggestion is that the number of long-lived, multiple spawning ferox already removed from the loch by trophy hunters had something to do with the decline in catches.

Following the pioneering of ferox angling

in the highlands of Scotland in the Victorian era, there is a long period of relatively few reports of ferox captures until relatively recently. Then, in the late 1980s, fishery scientists of the *Ferox 85* group and writers such as John Bailey perked the interest of a few like-minded anglers in the now legendary *Salmo ferox*.

Since the capture of the first official modern British record trout of 19lb from Loch Awe in 1993 by Alistair Thorne of the *Ferox 85* group, the interest in this form of trout has grown. Driven by the prospect of catching a fish of a lifetime, a few hardy souls began to fish Loch Awe specifically for ferox. Slowly a few fish began to fall to anglers who were learning their craft through experience on the water and sharing (some) information. The record tumbled on Loch Awe again and again with ferox of over 25lb and over 30lb before a massive fish of 31lb 12oz was caught by Brian Rutland in 2002 (and another of 30lb 8oz the following year). These amazing fish aside, the number of ferox trout being caught on Loch Awe has remained very low, with one or two notable ferox being caught in the early part of the season, but some years none are caught at all.

Scales taken from some of these large fish show a common trait: they were all 10 or more years old. Similarly, data published in Ron Greer's book *Ferox Trout and Arctic Charr* indicated that Awe ferox had the fastest growth rate of any water in Scotland. As a fisheries biologist (and angler) working in Argyll, I ask myself what is it about

this environment that nurtures such great specimens and why so few of them?

Dr. Alastair Duguid, took genetic samples from trout fry and parr throughout the Awe catchment to compare with samples taken from large ferox caught on the loch (as most were killed as trophies). When compared, a genetic match was found with the young fish sampled in the River Awe, indicating that at least some of the large ferox were outflow spawners, as was highlighted in the writings of Stoddart back in the Victorian era. This study also showed that the genetic make-up of Loch Awe ferox had more in common with ferox in Loch Laggan than with other loch or sea run brown trout in the Awe catchment.

The conditions in the River Awe may also have influenced ferox potential, as it also once produced very large salmon

too, a number weighing 50lb or more. The Awe is a short, high gradient river of four miles between Loch and sea, with few places where normal spawning-grade substrate can settle. It can be surmised that competition for the limited area of spawning habitat and the larger-than-average size spawning substrates (grapefruit rather than the marble size used by normal trout) drive the natural selection of larger fish. Rivers flowing out from a loch also produce much more stable habitats than in-flowing rivers, the natural peaks and troughs of flow, temperature and nutrient availability being 'tempered' by the third largest freshwater body in these islands. Studies of salmon parr body-shape found River Awe salmon parr to be larger and more robust (deep shoulders and large tail) compared to the more slender, slower growing parr in the major in-flowing river, the Orchy. Later genetic studies found these two populations to be very different; it is possible that a similar difference exists between the trout populations.

The unique set of conditions left by the retreating glaciers at the end of the last ice age have reared the largest trout in the land, but in common with most other freshwater habitats, it has been changed by the hand of man. Since the early 1960s much of the water leaving Loch Awe is abstracted by the hydroelectric

scheme at the Awe barrage which has bisected the loch and the river, diverting the water into a pipe and down to the turbine 4 km downstream. The physical structure of the barrage and changes in flow regime challenge managers to ensure that both trout and salmon are able migrate up and downstream and that there is sufficient water in the river to allow spawning in the autumn, eggs to be incubated over-winter, fry hatched in the spring and for juveniles to grow through the summer.

When the scheme was commissioned, the salmon fishery and hydro operators negotiated the amount of water given back to the river at different times of year. Naturally, the fishery wanted sufficient water in the river during the summer when the salmon are running and to negate

floods that put the rods off the river. This arrangement suited the hydro operator that needed to meet the higher demand for power in the winter time. The barrage also flooded the most productive spawning redds where the loch met the river. In compensation, the Salmon Fishery Board was given a salmon hatchery. This agreement left the river and its fish with a much-changed environment for the next 50 years.

In 2010, Argyll Fisheries Trust began a survey of the habitat in the river, spawning activity and resulting fry and parr populations. This study found significant issues for fish attempting to spawn in low winter flow on the large substrate. The study also found that much of the potential spawning habitat was now unusable, in backwaters now disconnected from the main channel. These marginal spawning sites were used on occasion during a

"Driven by the prospect of catching a fish of a lifetime, a few hardy souls began to fish Loch Awe specifically for ferox."



Site of the hydro electric dam before and after construction

CONSERVATION

release of autumn flood water, salmon and trout cutting redds in the newly wetted habitat. A few days later, the water would drop away to the controlled winter level and many of the redds were left high and dry. Studies at the few spawning sites used at the normal regulated flow level found that fish struggled to make a redd due to lack of flow and large substrate size. Electrofishing studies found that some eggs did survive and young fish were being recruited, but the numbers of young trout and salmon were much less than might be expected. Studies of fish counter data on the Borland lift fish pass found that upstream migration of fish through the barrage is generally very efficient, but downstream migration of salmon smolts and kelts in the spring and the spawning ferox from Loch Awe is only possible when flood water is released under the gates on the barrage. While this is usually possible in most years, dryer periods significantly delay or even possibly prevent downstream migration.

Raising concerns over existing management regimes affecting the productivity of fish populations, the Trust negotiated with the regulator (SEPA), the hydro operator (SSE) and the salmon fishery to improve conditions in the river to better suit the requirements of fish recruitment. Renewable energy production targets and socio-economic considerations have meant that there has been no increase in the total amount of water available to improve the flow for fish in the River Awe. Therefore we set about redistributing the available water over the year, with angling interests giving up some of the summer 'fishing flow' to provide freshets to allow spawning trout and salmon to access and utilise spawning sites more effectively, plus a higher base flow over winter to ensure that eggs remain wetted and improve numbers of fry produced.

2012 was the first year of 'regime change' and initial indications appear favourable



Spawning habitat in the margins of the River Awe, depleted of water by flows managed for hydroelectric generation



Digging channels to provide flows to disconnected spawning habitat

for fish recruitment after off-line spawning braids were re-connected to the main river by excavating channels. Redd counts in January 2013 found numbers of redds in the newly connected spawning habitat. More work is required to allow sufficient water into the spawning sites to maintain the eggs deposited, but not so much that the spawning gravel will be washed away during a flood release.

While the work to improve the spawning habitat in the River Awe will continue, there are also issues of fish migration yet to be resolved. Another management issue is substrates accumulated upstream of the barrage are now affecting the water off-take into the hydro scheme and there is a plan to move this material into the river downstream. While we have concerns that ferox trout unable to move downstream past the barrage may utilise this material for spawning, the material is also required to supply existing spawning sites downstream. Changes to existing management practices require robust information to be collected and presented to the regulator who has a policy of evidence-based fishery management. With this in mind, Argyll Fisheries Trust and the *Ferox 85* group began a joint project to find out the movements of ferox trout in relation to their spawning sites and the operation of the barrage. To find out where and specifically when the ferox were spawning, this project set about trying to attach radio tags to ferox trout in the

autumn of 2011.

Despite tens of days spent fishing in and around the Pass of Brander in the autumn of 2011, no suitably sized ferox were caught. Larger radio tags with a longer battery life were ready to be deployed at the start of the 2012 season. Incredibly, David Greenwood,

a veteran of the ferox fishing scene caught three fantastic fish in one day; 25lb, 15lb and 14.5lb. All the fish were tagged and released back to the loch. Rather than spend time tracking the fish at this early stage of the season, more effort was spent deploying tags. I was very fortunate to catch a fish of a lifetime – 30lb in weight. Soon after, Alistair Thorne and David Greenwood caught another two fine specimens of 27.25lb and 19.5lb. All these fish were radio tagged and safely released.

The capture of this number of large fish on Loch Awe was unprecedented. One of these fish, the 27.25lb fish caught by Alistair Thorne, was already marked with a floy tag. I checked my records and found that I had caught (and tagged) this fish back in 2008 at a weight of 8.5 lbs. This recapture demonstrated the growth potential of Awe ferox with nearly 20lb gained over a four-year period. It also proved that ferox trout could survive capture and release, which is now thankfully the default position of most if not all ferox anglers fishing Loch Awe.

With all our available tags deployed, I began the hunt to try and find where 'our' fish were hunting. Loch Awe is 41km in length and has a surface area of over 38km² so we knew that locating the tagged fish would not be easy. Regular weekend and evening trips were taken around the loch by road and over open water by boat, searching for a signal from the depths. Long hours finally paid off with four of the seven tags deployed being located by mid-summer. The recorded movements of these tagged fish have shown us that they move long distances, utilising habitat tens of kilometres from their original tagging sites. Unfortunately, none of these tags were retained on the fish until spawning time, so no data were collected on their movement in relation to the barrage and potential spawning sites. Lessons were learned and we are now planning to tag other fish in 2013 in a bid to gather the information we need to ensure that the celebrated *Salmo ferox* trout remain part of our wild brown trout heritage. 🐟



A 25-lb Loch Awe ferox caught by David Greenwood is released carrying a radio tag



A 19-lb ferox caught by David Greenwood