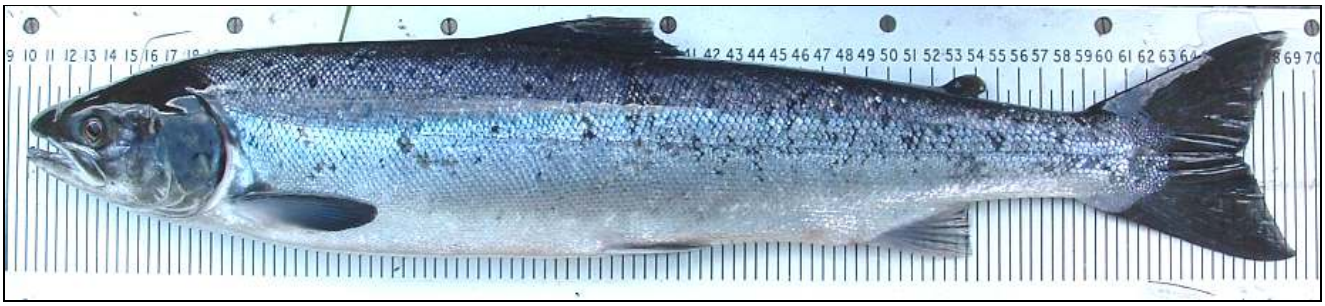
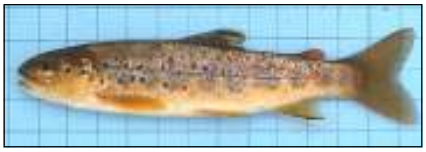
WESTER ROSS FISHERIES TRUST

REVIEW MAY 2007





WESTER ROSS FISHERIES TRUST

Registered Charity number SCO24787

REVIEW

by

Peter Cunningham and Dr Lorna Brown

with contributed articles from

Jim Raffell, Ron Greer and Bob Kindness

May 2007

Front cover photos

Grilse taken at the Tournaig trap in September 2006 (Ben Rushbrooke); Steve Kett and Calum Button sampling trout in Gleann Tanaghaidh, August 2006; Ben Rushbrooke, Rob Dewar and Norman Thomas with an Arctic charr at Loch an Draing, November 2006; 62cm Ferox trout taken in a gill net in Loch Maree, July 2006 (Steve Kett); two types of Arctic charr caught in Loch Maree, July 2006 (Steve Kett)

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Dr Steve Kett sampling trout for the Loch Maree Wild Trout Project, July 2006 *(Peter Cunningham)*

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Part 1 **Chairman's preface**

The Trust was formed in 1996 and is now entering its second decade. The challenges facing the Trust are changing. Sea lice numbers for the third consecutive year are at low levels. We have completed nine river fisheries management plans and electrofished all the major water courses in our area, not to mention some minor ones as well. Lorna Brown is doing a splendid job as part of our educational remit in her "salmon in the classroom", and the children's log in the Ullapool news was a delight to read. We have success stories in regenerating river systems like the Carron, the Shieldaig and the remarkable story of the Tournaig System.

Sadly 2006, despite relatively good spring fish catches, showed a decline in numbers of salmon caught, apart from the rivers Balgy and the Carron. Full credit to the River Carron proprietors and Bob Kindness for their far sighted restocking programme. Fish are smaller and thinner since the early 1990s, 15% lighter at a given length of 60 cm, which is surely a reflection of poor maritime feeding. The sea trout picture continues to be patchy with some good news such as the increased numbers in the Sheildaig system but poor returns in the River Ewe.

Juvenile salmon numbers were as good as any over the past 5 years, with salmon parr found virtually throughout accessible parts of the rivers Kanaird, Ullapool, Dundonnell, Little Gruinard, Tournaig, Kerry and Badachro. Salmon have recolonised the Sguod and Barrisdale systems and parts of the rivers Elchaig and Kanaird. The Bruachaig system restoration is an attempt to reinstate a precious spring run. The Charr Discovery Week produced unique footage of stream spawning charr. Regrettably escapee farm salmon continue to appear in our rivers with 23 being caught in the Ewe and others in the rivers Dundonnell, Gruinard and Sheildaig.

The 2006 finances appear to be healthy, but there is the worry that we are being increasingly funded by the Scottish Executive and "he who pays the piper calls the tune". I fear for our independence.

The next decade will inevitably bring increased DNA sampling. This has already started in the Wester Ross Wild Trout project and the Loch Maree Inventory Fish Survey started this year, with 2 types of charr being caught. Our knowledge of what happens in our lochs with access to migratory species is minimal. What can we do (if anything) about minnows? The end of Section 2.3 touches on the issue of nutrients in this case a septic tank discharge. Has there been a reduction of the availability of nutrients in rivers? More work needs to be done on recapture rates; how often, in these days of catch and release, are fish recaptured? Finally and most importantly we come to the issue of climate change. Already in a dozen or so years salmon are smaller and thinner, sea temperatures are changing, both in the deep seas and in our coastal fringes. In my opinion this is the biggest challenge that salmonids face in the future.

Finally, many thanks to Peter Cunningham, Dr Lorna Brown, Ben Rushbrooke, Norman Thomas, David Mullaney and their colleagues. It is with great regret that I have to announce the departure of Brenda Kerrison, who has left the office in apple pie order and whose steely efficiency will be sorely missed. We are in the throes of replacing her. And last but not least many thanks to Veronica Mullaney for her invaluable financial support.

Johnie Parry, May 2007

Part 2 **Salmon and Sea trout Stocks**

2.1 **Overview**

Wester Ross Fisheries Trust was set up in 1996 in response to declining catches of wild salmon and sea trout in local waters. The Trust currently works towards the conservation and enhancement of all native species of freshwater fish in the area, including brown trout (see Part 4) and Arctic charr (Part 7). Because of their importance to local fisheries, salmon and sea trout populations remain our primary concern. Traditional salmon and sea trout fisheries continue to support local employment, providing jobs for ghillies and estate staff, and helping to support many tourism related businesses. By returning to freshwater to spawn, salmon and sea trout also support other wildlife. Nowadays, many of the tourists who come to Wester Ross to fish are as excited about the prospect of seeing an otter, a Black-throated diver or a White-tailed eagle as they are about catching a large trout or a fresh run wild salmon. Seeing other special wildlife is all part of the experience of fishing in Wester Ross.

Salmon at sea

The Trust's research and monitoring work contributes to our understanding of the bigger picture. At the Rivers and Fisheries Trusts Scotland [RAFTS] AGM in March 2007, Prof Chris Todd (St Andrews University) described how grilse returning to Scottish waters had become thinner since the mid 1990s. In 2005, grilse taken in the nets at Strathy Point on the north Sutherland coast and at the mouth of the North Esk (Angus) were found on average to be 15% lighter at a given length (60cm) than in the early 1990s. Thinner salmon have less energy to reach headwater streams and produce fewer eggs. The decline in the condition of returning grilse was shown to correlate with warming sea temperatures in the Norwegian Sea where salmon feed.

Since 2002, Ben Rushbrooke has measured and photographed nearly all adult fish that have entered the upstream trap at Tournaig (see Part 3.1). The grilse on the cover of this report was taken on 23rd of September 2006. Like many other fish taken in 2005 and 2006, it was thin. WRFT can do little to mitigate adverse conditions at sea or prevent global warming; we try to do our small part by minimising unnecessary travels and car sharing when possible. Our aim is to ensure that conditions within the freshwater and near-shore environments in and around Wester Ross are as favourable as possible for wild fish and fisheries. Guided by the results of our field surveys, WRFT offers advice and support for those who manage the river systems in which our local salmon and sea trout spawn.

(l-r) John Webb (Atlantic Salmon Trust Biologist) and keepers Brian Fraser (Eilean Darroch Estate) and Alastair Macdonald (Dundonnell Estate) discussing some of the pros and cons of alternative hatchery protocols at the Dundonnell Estate hatchery in November 2006.

Population structuring

Recent advances in genetic techniques have enabled further progress in our understanding of stock structuring. Even within quite small river systems, we now know that there may be several discrete salmon populations. Drs Caroline Thompson and Eric Verspoor (Fisheries Research Services) together with the Argyll Fisheries Trust investigated salmon population structuring in small rivers entering the Loch Feochan area, comparable to parts of Wester Ross (e.g. Loch Broom, Gruinard Bay, Loch Duich). Through DNA microsatellite analyses of samples, not only was it possible to show that juvenile salmon in neighbouring rivers belonged to different populations, salmon at the tops of the rivers Nell and Euchar were genetically discrete from those in the lower parts of respective systems. It was also possible, with a high degree of confidence, to consign most of the adult salmon taken in the nets in the sea-loch nearby to specific populations, and even to estimate the number of spawning adult fish in respective populations.

WRFT and the FRS genetics team are working together to answer some interesting questions relating to the recolonisation of Tournaig by straying salmon (see Part 3.1); population structuring of wild trout (including sea trout, see Part 4) and to learn more about the genetic diversity of Arctic charr (see Part 7). A clear understanding of population structuring is particularly important for fisheries management where stocking is proposed. This is because there is a risk of adversely affecting the genetic make up of an existing population which has become highly adapted to its environment over many generations. Poorly adapted populations are less productive than those which belong where they are.

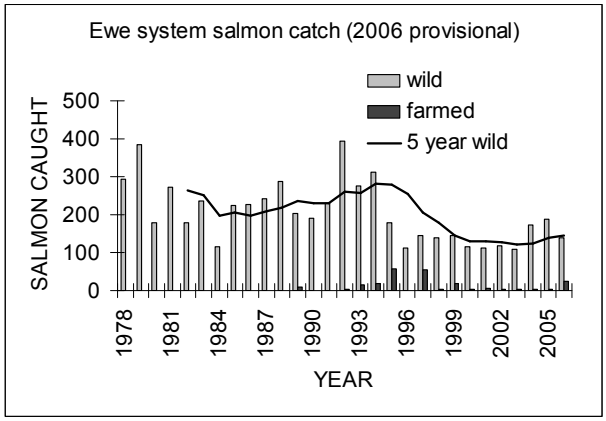
All said, salmon and sea trout are opportunistic and can be quick to colonise or recolonise vacant habitat as we are discovering. The occurrence of sea trout and salmon populations in southern hemisphere countries demonstrates their ability to survive and prosper in initially unfamiliar environments. With sensible, well informed management of our rivers and seas, wild salmon and sea trout will continue to return to the spectacular waters of Wester Ross for many years to come. What wonderful fishes!

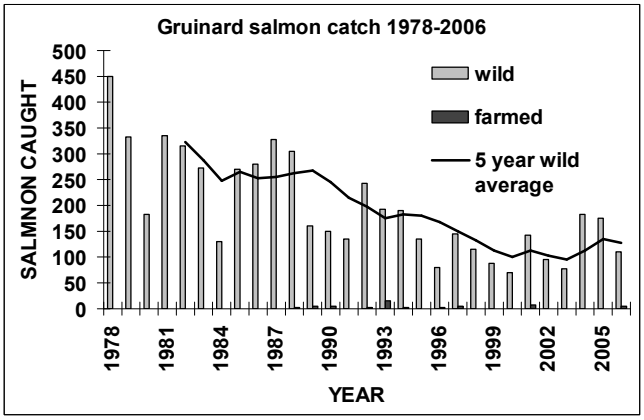
2.2 **Rod catches**

Salmon

From returns submitted, it appears that rod catches of wild salmon in 2006 were generally down on those of 2004 and 2005, except in the Balgy and the Carron (see Part 10). Figure 2.1 shows the catches of salmon in the River Ewe system and Gruinard River in 2006.

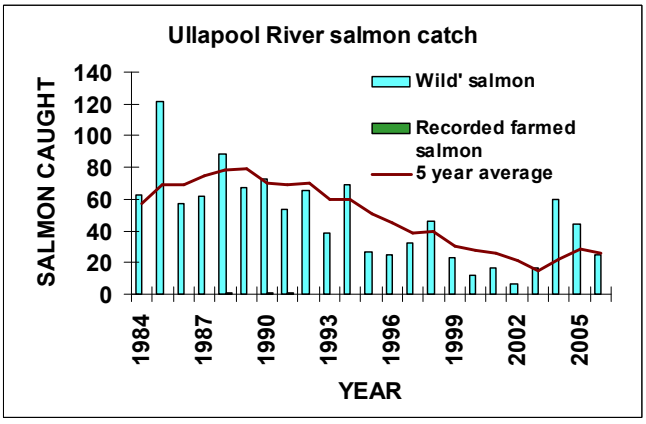
Figure 2.1 *River Ewe system and Gruinard River salmon catches*

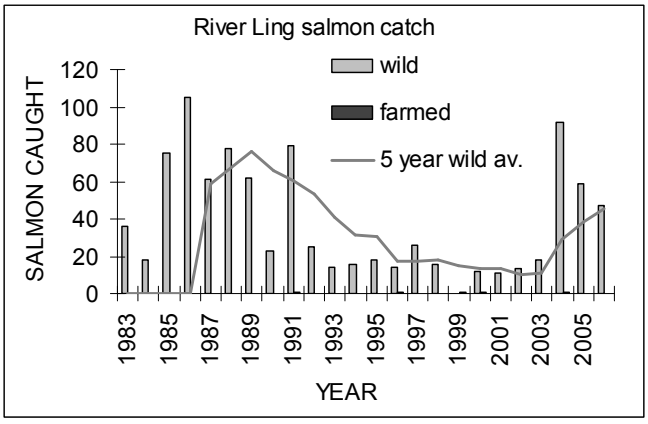




Two of the rivers in which salmon have to ascend sizeable falls to reach spawning areas are the River Ullapool and River Ling. Figure 2.2 shows that the catch of salmon in both rivers was lower than in both 2004 and 2005.

Figure 2.2 *Ullapool River and River Ling salmon catches*





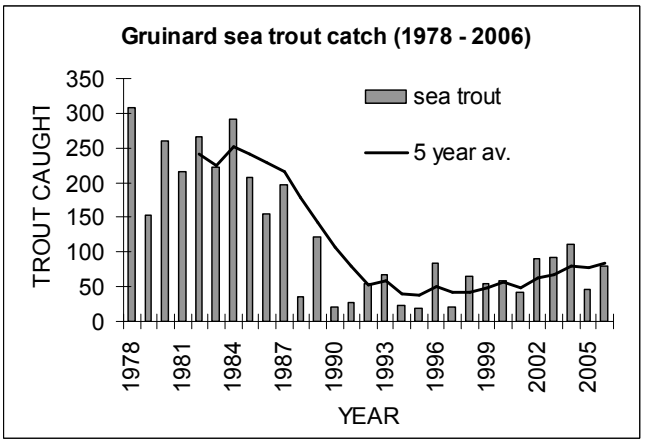
In contrast, the rod catch of salmon in the River Carron was 200, the highest for several decades. Please see Bob Kindness's article in Part 10 for further details of this.

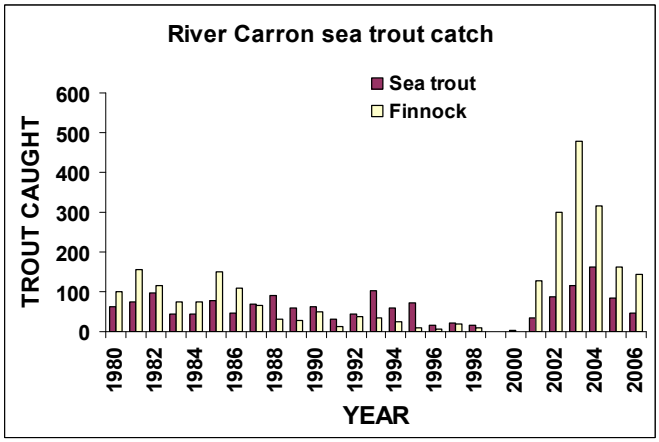
Escaped farm salmon were taken in the Dundonnell River, River Gruinard and River Ewe. In the River Ewe, 23 escaped farm salmon were taken, the third highest total on record. Many of these fish were taken from late September and were of very similar size and were males. Two mature male escaped farm salmon were taken during broodstock capture at Coulin near the head of the River Ewe system. Similar fish were taken in the FRS Shieldaig trap by Loch Torridon from late September onwards. No reports of escapes of farmed salmon were received from local fish farms. Sometimes it is stated that escaped farm salmon which enter freshwater tend to remain in the lower parts of river systems. This has not been our experience in Wester Ross. In autumn 2001, a radio-tagged female escaped farm salmon also ascended the Ewe system as far as the Coulin River where it was assumed to have spawned.

Sea trout

The 2006 sea trout picture varied from river to river. Recorded catches in the River Ewe system were close to the lowest on record. However, sea trout fishing effort was inconsistent especially on Loch Maree. A few larger 3lb+ (48cm+) fish were taken at the end of the season in the River Ewe. Further north, rod catches of sea trout were a little higher, with reports of some better fish of 50cm + taken in some of the northern rivers.

Figure 2.3 *Sea trout catches in the River Gruinard and the River Carron.*





2.3 **Juvenile fish populations**

Each year WRFT survey teams try to visit as many river systems as possible primarily to find out about the health of salmon populations. Teams generally focus upon areas where there is greatest uncertainty about the occurrence of wild salmon or where findings are likely to be of particular value.

Informing local management

Before we visit a river, we'll try to agree a time when the local fisheries proprietor or manager can meet us so that survey results and other observations can be reported and discussed on the day of the field visit. When the fishery manager is able to join us in the field, our work can be particularly effective in exchanging information and discussing options to tackle any problems that the survey reveals. Subsequent preparation of river specific reports tends to be prioritised according to the need for management intervention (or non-intervention!) and local interest although we try to ensure that for each of the major river systems a report is produced every two or three years. We respond quickest to those who value the information we provide.

Informing national policy: the Scottish Fisheries Co-ordination Centre

Wild salmon are of economic and cultural importance to Scotland. Those responsible for regional and national policy should therefore have a good understanding of the status of wild fish populations (not just catch records) and the problems they face. WRFT fish survey results are fed into the Scottish Fisheries Co-ordination Centre [SFCC] database (please see www.sfcc.co.uk). WRFT retains ownership of all the survey data it collects unless the data is collected as part of a contract agreement. Fisheries trusts' data have been used to inform government agencies responsible for protecting rivers and wild fish populations at the national level, including Fisheries Research Services [FRS], Scottish Natural Heritage [SNH] and the Scottish Environmental Protection Agency [SEPA]. At some point in the future, the SFCC and Scottish Executive may together agree a series of electro-fishing sites for annual monitoring - to establish trends and changes in the juvenile salmon population at the regional and national scales from year to year.

Electro-fishing surveys in 2006

Between July and October 2006, WRFT electro-fishing teams trained to SFCC survey protocols sampled sites in 17 systems. Most sites were in shallow riverine habitat which is more suitable for juvenile salmon than trout. Eel, flounder, minnow and stickleback were also sometimes recorded. At nearly all sites, a timed 'semi-quantitative' methodology was used to produce catch-per-unit-effort [CPUE] data. This type of data combined with fish size data, provides the most useful information required to guide local fisheries management. At a few sites, the more time-consuming SFCC 'fully-quantitative method' using stop-nets and multiple-run fishing was used to obtain more precise data describing local densities of juvenile fish at the time of fishing. Data from 'fully-quantitative' surveys can be used to investigate longer-term trends in fish densities in more detail. To date, however, variations from year to year have been difficult to interpret (c. Armstrong, 2005). Data from a few 'fully-quantitative' sites have generally not been found to be more useful for informing local fisheries management than data from a larger number of 'timed' sites.

Juvenile salmon occurrence in 2006

Overall, results in 2006 were as good as any over the past 5 years. Salmon parr (progeny of adult salmon that entered in 2003 and 2004) and fry (progeny of 2005 salmon) were found virtually throughout accessible parts of the rivers Kanaird, Ullapool, Dundonnell, Little Gruinard (see below), Tournaig, Kerry and Badachro. Wild salmon were found to have recolonised the Sguod and Barrisdale river systems and parts of the Elchaig and Kanaird since previous surveys in 2004 or 2005. At Tournaig we found that the stray wild salmon that entered in 2004 and 2005 had spawned to the extent that the juvenile salmon population was considered to be close to carrying capacity (see Part 3.1, and WRFT Review May 2006).

Detailed reports were drafted for the Gruinard, Little Gruinard, Elchaig, Glenmore, Glenbeag and Barrisdale rivers. In parts of both the Gruinard and Little Gruinard rivers, densities of salmon fry and small one-year-old parr were high. Few larger parr were recorded at main river sites. This may be partly because we were unable to fish in the deeper bouldery areas where they were most abundant. However, in both rivers fish growth is very slow at many sites and food availability appears to be a major factor limiting smolt production. In the Little Gruinard, fry and parr were much larger at sites just below the outlet of the Fionn Loch than at sites further downstream where densities were much higher (Figure 2.4, 2.5 and 2.6).

Figure 2.4 *Distribution and relative abundance of salmon fry in the Little Gruinard River SAC for Atlantic salmon, 23rd Aug – 8th Sep 2006. Note that each circle is proportional to Catch-Per-Unit-Effort except where the circle has a grey fill indicating 'presence' only.*

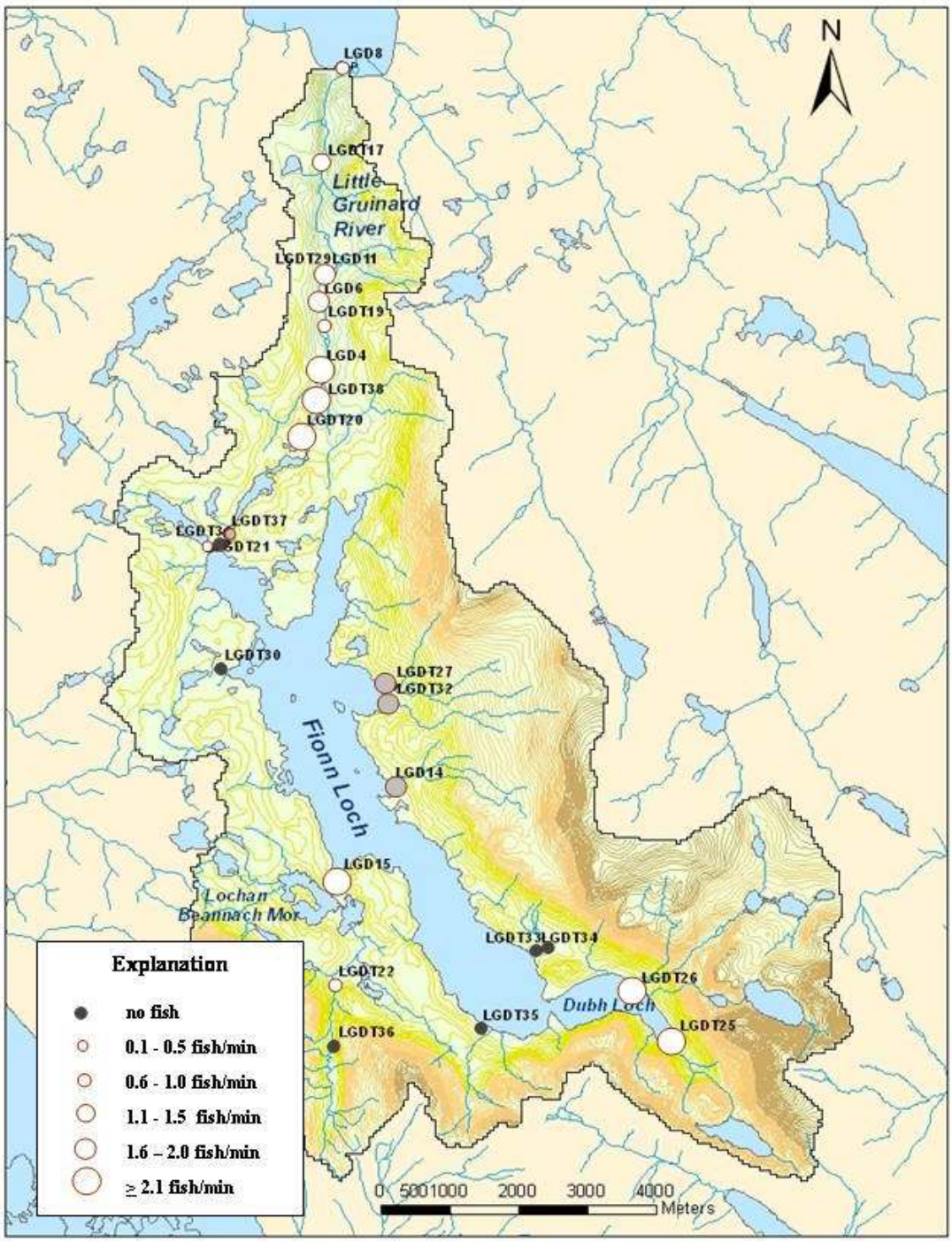
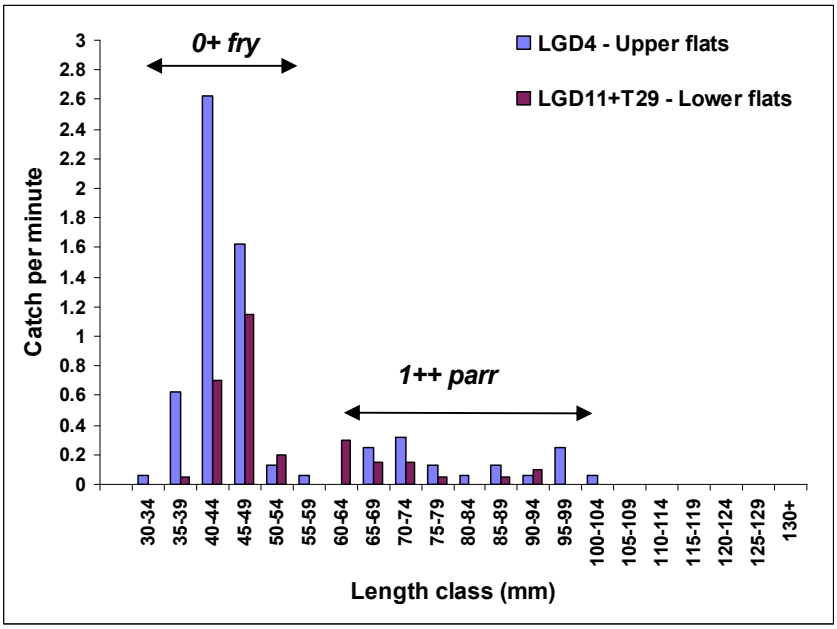
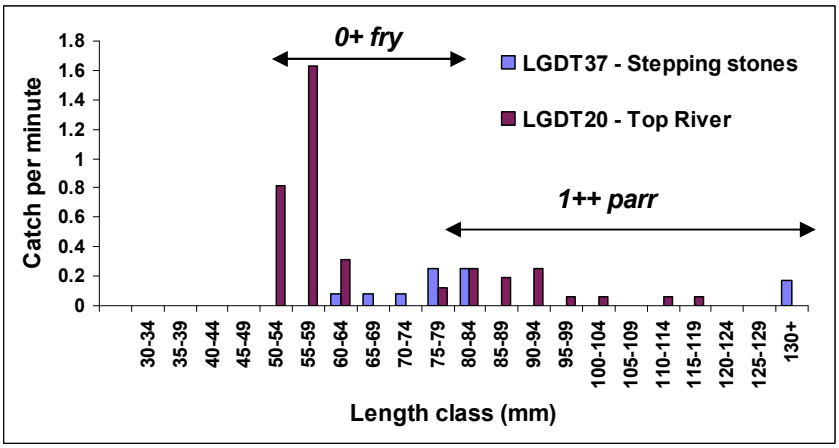


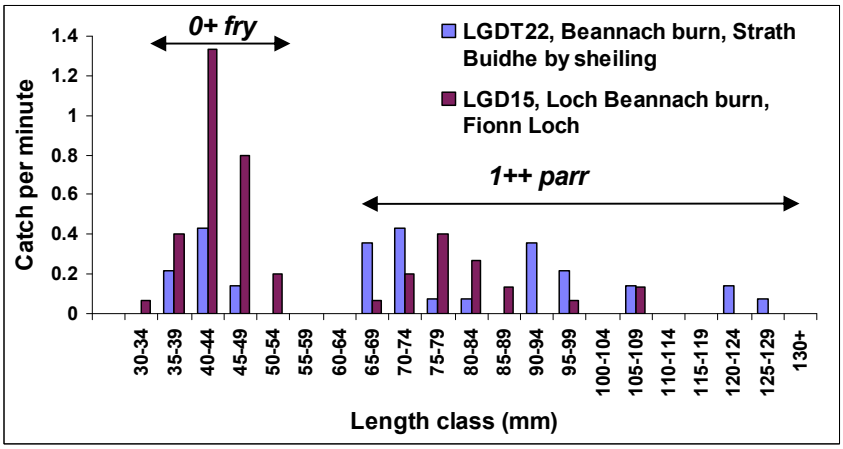
Figure 2.5 *Length distributions of juvenile salmon in the Little Gruinard River, 23 August – 3rd September 2006. Note how fish sizes and therefore growth rates varied in different parts of the river system.*



a. These sites (LGD4, LGD11 & LGDT29) are in the main river. All sites were close to areas with extensive ancestral spawning redds (see Figure 2.6). Fry were abundant at both sites, but note their small size. Very few parr larger than 80mm length were recorded.

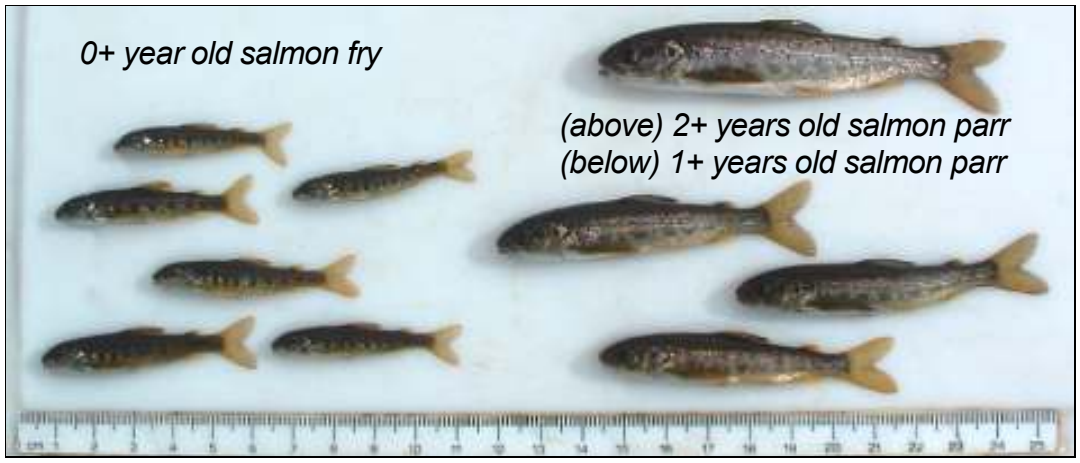


b. In contrast to 'a', at the two highest sites in the river below the Fionn Loch (LGDT37 & LGDT20), fry were much larger. At the site just below the Fionn Loch (LGDT37) some of the 0+ fry were over 80mm in length, as large as the 1+ year old parr at lower sites in the main river, reflecting good feeding and rapid growth (a 134 mm parr at the stepping stones site was aged as a 1+ year old) .

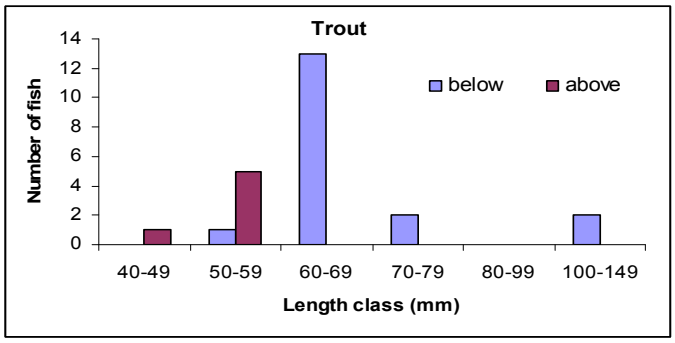


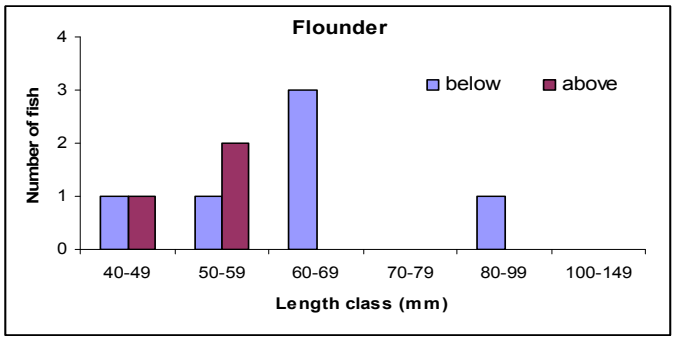
c. The Beannach lochs and stream system is the most important spawning tributary above the Fionn Loch. Even in this system there was variation from site to site in the size-at-age of salmon fry and parr in different places. Of the total catch, a relatively larger proportion was of 80mm in length or over and considered likely to smolt and go to sea in 2007.

Figure 2.6 *Site LDGT29 in the right channel of the Lower Flats, Little Gruinard River, a natural spawning channel. Note the 'ancestral' salmon redds. Of 24 fish caught, only 7 (29%) were 50mm or more in length, reflecting the abundance of fry-sized hiding places in the substrate. The picture at the bottom contrasts the size of 0+fry (6 of 20 fish shown) with parr of 1+years old (3 fish) and a parr of 2+ years old (the biggest fish, top right) caught at this site on the 23rd August 2006.*



In much of Wester Ross, biologicial productivity is limited by the availability of nutrients and food. Many streams are highly oligotrophic and juvenile salmon and trout may have to survive long periods without a meal. In some places the relationship between nutrient levels and fish abundance is easily recorded in the field. Figure 2.7 contrasts the numbers and size of fish taken around a septic tank inflow into a river in the southern part of the WRFT area. Below the outflow, the streambed was mossy. Above the outflow, the streambed was of bare stones. In ten minutes of electrofishing at sites below and above the outflow respectively, we found the following. Below the outflow there were more fish, and trout fry were on average more than 5mm longer than above the outflow.





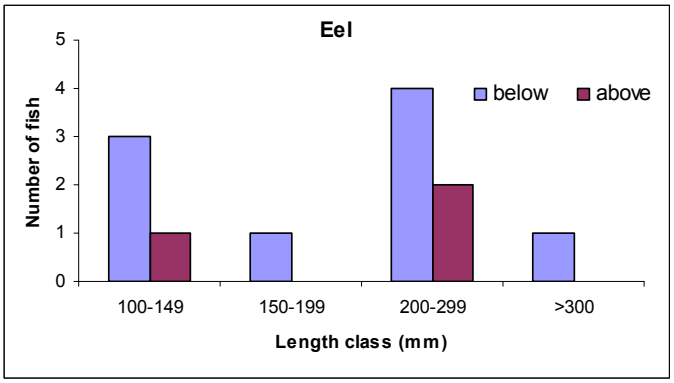


Figure 2.7 *Number and size of trout, flounder and eel caught in 10 minutes fishing at a site immediately downstream from ('below') a septic tank outflow and 10 minutes fishing at a comparable site upstream ('above') the septic tank outflow. There were more fish in the enriched area and most were larger!*

SEPA may have concerns about the levels of nutrient discharged at this point! However, if made-made impacts to the ecology of the catchment area over millennia (e.g. loss of forest, loss of top predators, high grazing pressure) have led to a reduction in the availability of nutrients in the river, a little additional nutrient may be needed to restore natural fertility. In the impact zone wild fish were apparently thriving!

Thanks to Dave Mullaney, Norman Thomas and to all other field assistants, estate staff and others for help during the electro-fishing surveys in 2006. If you would like to join the WRFT e-team for a day in the field in summer 2007, please contact the WRFT Biologist.

Reference: Armstrong, J. D. (2005) Spatial variation in population dynamics of juvenile Atlantic salmon: implications for conservation and management. *J. Fish Biol.* 67 (Supplement B) 35-52

Part 3 **TWG related research and monitoring**

Supported by

3.1 **AMG Updates**

Loch Ewe Area Management Group (compiled by Lorna Brown)

The Loch Ewe AMA was signed two years ago, and in the last year there have been two meetings. Both the farmed and wild fish representatives feel they benefit from the exchange of information. In 2006 the TWG provided funding for two projects through the Ewe AMG; the continuation of the Tournaig Project and a restocking programme for the Bruachaig River. The local Marine Harvest manager has invited the Ewe Proprietors and the AMG secretary to visit the cages to see their recent improvements. This visit will take place in the summer and the next meeting is scheduled for October 2007.

Carron/Kishorn Area Management Group (compiled by Karen Starr)

This seventh year of the Carron/Kishorn Area Management Agreement (AMA) has overall been one of consolidation and further co-operation between the members of the group. We welcomed the establishment of direct Scottish Executive funding for the AMA process and the appointment of a new more local Regional Development Officer based in Ullapool. The AMGs are now seen as a central plank in the efforts to ensure healthy wild and farmed salmon in Scotland.

The AMA/TWG process continues to produce the goods by providing funding for a project looking into the effectiveness of the impressive and continuing stocking work carried out by Bob Kindness. This tagging project marked a percentage of stocked salmon parr in 2006 with a coded wire tag so any recaptures of tagged fish will give us feedback on how well these particular fish have done. The project is also part funded by the newly created River Carron Improvement Association. Funding has also been provided to tag all the smolts stocked this year, a total of 29,000 over the two years. The Carron AMG would also like to extend its congratulations to Scottish Sea Farms at Kishorn, which was recently short-listed for an award for best-kept salmon farm.

Loch Torridon Area Management Group (compiled by Karen Starr)

The Loch Torridon AMG has continued to be busy during 2006. The change in funding was also well received, and the Regional Development Officer (RDO) is welcomed to all meetings. She has already carried out site visits to fish farms in the AMA area. Further scientific research has been possible in this AMA due to the presence of the Fisheries Research Services (FRS) Outstation at Shieldaig. FRS are looking into many aspects that affect the work of the AMG…sea lice and how they spread; re-stocking; river restoration; survival of sea trout smolts once they reach the sea lochs; and predators to pick just a few examples. FRS has thus provided a much-appreciated extra perspective to this AMA.

Communication remains the key to the efforts to monitor and improve salmonid (salmon (wild and farmed) and sea trout) health in Loch Torridon, and this continues to improve as time passes and it is maintained as new members join or leave when staff changes take place in the different organisations involved.

Loch Alsh – Duich AMG (contributed by Nigel Pearson)

The Loch Duich AMA meetings have proceeded well and have been primarily concentrating on ensuring that the relationships are place. The group has focused on monitoring sea lice, monitoring fish health, and keeping a weather eye on seal populations.

3.2 **Tournaig Trap Project**

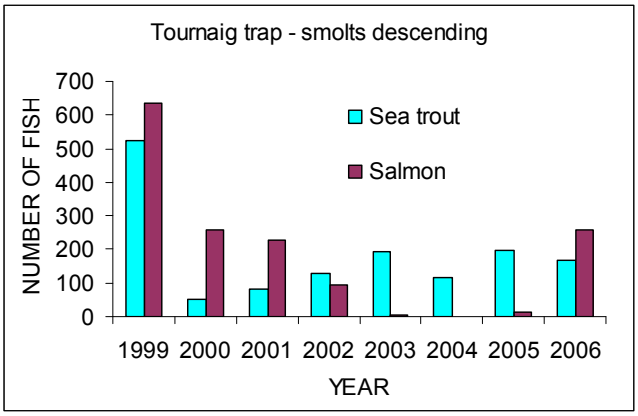
thanks to Letterewe Estate and to The National Trust for Scotland for continued support.

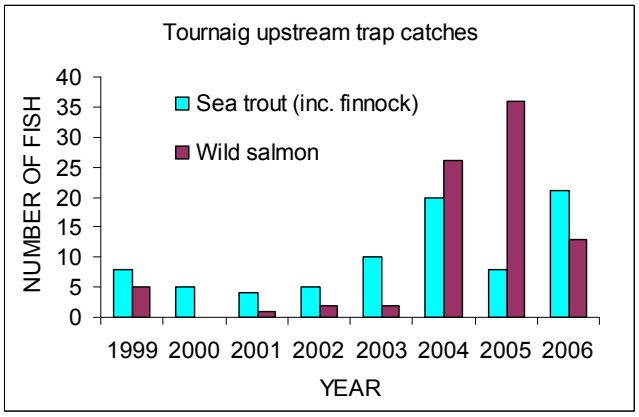
The Tournaig Trap project was set up in 1999 to monitor fish populations in a small river system near Poolewe. In 2006, downstream and upstream traps were operated throughout the year to record the movements of salmon and trout into and out of the system. Traps were checked daily by Ben Rushbrooke (Garden Cottage Nursery). Silver eels were also recorded as they descended to the sea in the autumn. In addition, an electro-fishing survey was carried out to record the distribution and relative abundance of juvenile fish, especially salmon fry and parr within the catchment area. E-fish surveys confirmed whether the adult salmon that were released above the trap the year before spawned. Survey results can also help predict the relative size of the salmon smolt run in the following year. The Tournaig project has demonstrated how a small river system can be repopulated by stray wild salmon to the extent that juvenile salmon were present throughout the accessible part of the river system at or near carrying-capacity densities, without any stocking. Further background information is given in the WRFT Review May 2006.

Summary of trap catches in 2006

In 2006, 167 sea trout smolts and 257 salmon smolts (mostly S2s) descended during spring smolt emigration (Figure 3.1). Twelve wild salmon and 21 sea trout and finnock entered the upstream trap later in the year. This was the highest number of sea trout so far recorded in the upstream trap. Ten of the 12 wild salmon were smolt-aged by scale reading as 2 or 3 year old smolts. As no S2 or S3 salmon smolts descended to sea from Tournaig in 2005, all or nearly all the wild salmon that entered the system in 2006 were stray fish from other river systems (as in 2004 and 2005).

Figure 3.1 *Catches of salmon and trout in the traps at Tournaig, 1999 to 2006.*





In addition to salmon and trout, 187 silver eels were recorded descending in the autumn. Other silver eels may have been missed during a period when the water level was higher than the screens set to direct fish into the downstream trap.

DNA samples from a proportion of salmon smolts emigrating in 2006 were taken to find out how many parent fish there were in 2003. These samples are being analysed by Dr Eric Verspoor at the FRS Freshwater Laboratory and results and the full recolonisation story will be reported in detail in the next WRFT Review.

In addition to the 12 wild salmon (confirmed as 'wild' by scale reading), three escaped farm salmon entered the Tournaig system in 2006 including the fish shown (right). All were caught in September and killed.

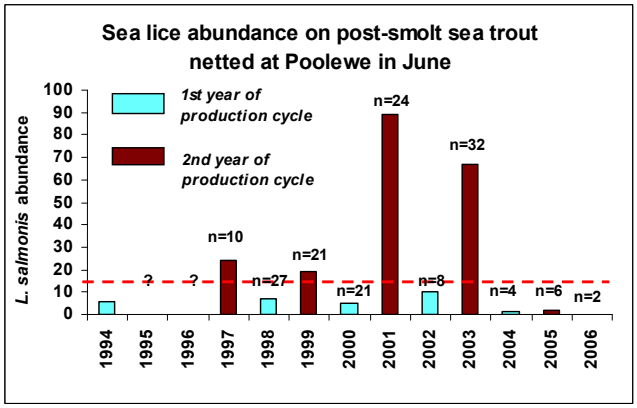
photo by Ben Rushbrooke

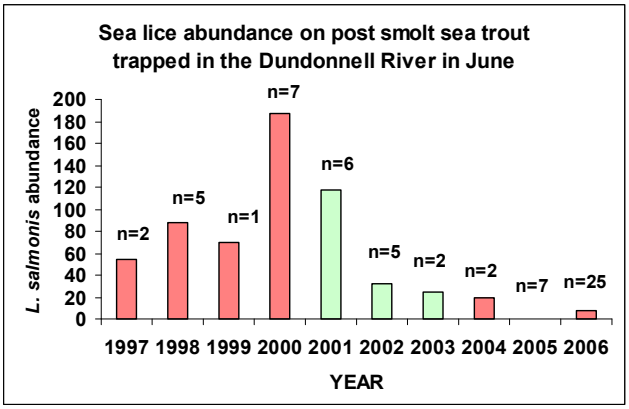
3.3 **Sea lice monitoring**

The sea louse *Lepeophtheirus salmonis* is a naturally occurring parasite of salmon and sea trout. Like many other naturally occurring parasites of fish, normal levels of parasite infection are not sufficient to adversely affect the survival of the host fish. However, during the 1990s, many sea trout, especially post-smolts of less than 25cm in length, were recorded carrying unusually high levels of lice (sometimes an average infestation of 50+ lice per fish) in river estuaries within Wester Ross especially during the early summer when they should have feeding further out in the sea lochs. Similar observations were made elsewhere in Scotland, Ireland and Norway (*for a review see Boxaspen 2006*).

Since 1997, WRFT has monitored sea lice abundance on wild sea trout within the area primarily to inform those with concerns for the health of both wild and farmed fish. In 2006, routine monitoring of any early-returned sea trout was carried in June out using established protocols at Dundonnell (fyke net trap in estuary), and Poolewe (gill netting at high water). At Achintraid by Loch Kishorn, the fyke net could not be successfully fished until the first week of July. In addition, anglers and angling clubs submitted reports of sea trout catches and sea lice infection levels from the River Broom, Glenelg River and from Kinlochhourn.

For the third year in succession, the picture was generally good in June. At Poolewe only 2 post-smolt sea trout (no lice attached) and 3 larger sea trout (including a 34cm fish with 31 lice attached) were caught during routine monitoring. At Dundonnell, two fish with over 50 lice were recorded in June. All other June fish had low levels of infection (11 lice or less). However, higher lice levels were recorded in July. Sea trout and post-smolt sea trout caught on 17 June at Dundonnell had up to 50 lice present on dorsal fins. Sea trout at the River Gruinard nearby had 'quite high lice burdens'. At Achintraid there were problems operating the fyke trap during the month of June. During the first week of July, 17 post-smolt sea trout (>25cm length) were caught with average lice burden of 15 lice per fish (including 8 fish with more than 15 lice). 8 larger sea trout (25 cm to 35 cm length) were also taken with an average lice burden of 23 lice per fish. All these fish may have returned early to freshwater in response to their sea lice burden.





Members of the Glenelg Angling Club inspected wild sea trout caught on rod and line in the Glenmore River estuary between the 20th of June and the 28th of September. In total, 29 fish were caught of between 11cm and 32 cm in length. Of these, only 2 carried sea lice. In Loch Hourn, 8 larger sea trout were taken by rod and line in the sea. Most of these fish carried lice. 36 lice were counted on the largest fish, a 53 cm sea trout aged seven, spending its 5th summer at sea (having smolted aged 2).

The mouth of the Glenmore River, by Glenelg. Not more than 4 sea lice were recorded on any of the 27 sea trout caught here by members of the Glenelg Angling Club in 2006 (Nick Saunders).

In recent years, the in-feed aquaculture pesticide *emamectin benzoate* (trade name 'Slice') has enabled greater control of on-farm sea lice levels than previously possible. Because farmed fish greatly outnumber wild fish in local waters, good on-farm sea lice control is vital to ensure further recovery of wild sea trout populations around Wester Ross. Even to maintain the status quo, it is important to appreciate that an increase in the number of hosts will invariably need to be matched by a reduction in the number of gravid female lice per host fish (Boxaspen, 2006), and vice versa. The 2006 sea lice monitoring results emphasise the need for continued vigilance by all parties in our efforts to monitor and control sea lice.

Acknowledgements

For help with sea lice monitoring and providing records in 2006, thanks to Donald Macleod, Johnie Parry, Brian Fraser, Alastair Macdonald, Ben Rushbrooke, Norman Thomas, David Mullaney, Willie Hardy (for use of a fine boat), Ray Dingwall, Murray Stark; Nicholas Sanders, Gonzalo Zelaya, N. Adams and other members of Glenelg AC, and to Tim Fison. Tight lines!

Reference

Boxaspen, Karin (2006). A review of the biology and genetics of sea lice. – ICES Journal of Marine Science, 63: 1304 - 1316

3.4 **Bruachaig Salmon restoration project**

The Bruachaig River is a major tributary of the Kinlochewe River, which in turn, is the largest and most important spawning and nursery stream for wild salmon within the River Ewe system. Records indicate that wild salmon were formerly present within the Bruachaig River above the waterfall complex at OS Grid Reference NH 059 608 as far upstream as headwaters in Strath Chrombuill. However since the late 1990s, no salmon of wild origin have been recorded within a 10km stretch of spawning stream above the falls.

The primary aim of this fishery management project is to attempt to kick-start the recovery of a wild salmon population. This follows on from a stocking trial in 2004 when about 800 hatchery reared fry of local wild origin (progeny of fish collected as parr Bruachaig River 2001) and raised at the FRS Aultbea Fish Cultivation Unit were stocked. Unfortunately, the captive broodstocks at Aultbea had to be culled before a larger number of fry were available for stocking. Nevertheless, follow-up electro-fishing surveys of the stocked area demonstrated very good growth to 1+ parr stage by summer 2005 and the potential for production of large numbers of salmon smolts from the area above the lower falls.

Prime salmon parr habitat in the Bruachaig River below the Heights of Kinlochewe with 1+ parr (photographed in July 2005) stocked as fry in 2004 as part of an earlier stocking trial.

The new project aims to scale up operations, depending upon the availability and suitability of broodfish taken from the Kinlochewe River and tributaries. Through consultation with FRS scientists and the TWG Restoration Co-ordinator, the benefits of stocking are being carefully weighed against the risks. If fully successful, the project will lead to the restoration of a self-sustaining wild salmon population capable of contributing around 20-30 additional salmon per year to the rod fishery within the River Ewe system (based on estimated rates of marine survival for recent years). The project will also foster ecological recovery (otters, dipper, fish eating birds, invertebrates; marine nutrient transfer, etc.) in the Bruachaig River above the falls.

In October and November 2006, six wild female salmon and five wild male salmon were caught in the Kinlochewe River and at the top of the A' Ghairbhe River. These fish were transferred to holding facilities kindly provided by Coulin Estate, where eggs were stripped, fertilised and hatched. Fry will be stocked into the Bruachaig River in the late spring 2007. The project will continue in 2007-2008.

Thanks to Pat Wilson and Ian Cross of Kinlochewe Estate, Graeme Wilson and Letterewe Estate, Ray Dingwall and Inveran Estate, Mark Vincent (Loch Maree Hotel) and Dr John Ogle for help in obtaining broodfish. Special thanks to Neil Morrison and Philip Smith of Coulin Estate for providing hatchery facilities and help at all stages of the project. Many thanks to John Webb, AST Biologist and TWG Restoration Project Co-ordinator, for help and practical assistance.

Part 4 **Good News from Shieldaig**

by Jim Raffell

The FRS Sea Trout Project is funded by the Scottish Executive Environment and Rural Affairs Department (SEERAD)

Introduction

The Shieldaig Sea Trout Project is a fisheries project run by the Scottish Executive's fisheries research agency, FRS, and arose from widespread concerns about declining stocks of sea trout and some salmon populations in the West Highlands and Outer Islands.

The sea trout is a sea-going or anadromous form of the brown trout. Like salmon, the fish spends its juvenile stages in freshwater and migrates to sea to feed before returning to over-winter as a finnock or breed as a mature adult. Runs of returning adults and finnock have supported locally economically important fisheries in NW Scotland. The decline in sea trout numbers has led to a substantial drop in the numbers of visiting anglers, with serious consequences for many rural areas.

The aim of the Shieldaig Sea Trout Project is to examine why there has been a collapse in sea trout and to find ways to help restore them to their former abundance. The Shieldaig Sea Trout Project provides for the first time, in a West Highland river, secure information on the status of a sea trout population by examining stocks passing through a two-way trap situated near the River Shieldaig estuary.

Monitoring marine survival

The Shieldaig trap has been in operation since the spring of 1999. Each spring we capture and PIT [Passive Identification Transponder] tag approximately 1500-1700 sea trout smolts. This allows us to make estimates of marine survival and growth performance when the surviving fish return at the end of the summer. A restocking programme has been in place since 1997. Currently we stock the Shieldaig River with eggs from both captive native Shieldaig brood fish and from non-native Coulin (River Ewe) stock. The trap forms an integral part of monitoring the success of any restoration methods.

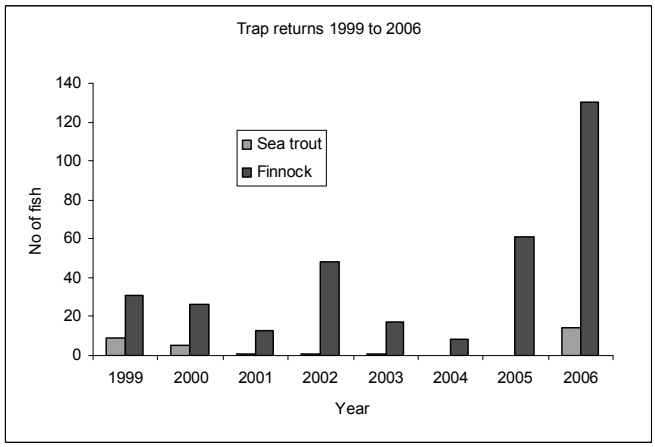
The work at Shieldaig has contributed much to our knowledge of natural and abiotic factors affecting sea trout populations, particularly the relationship between fish farm lice levels and shoreline densities of infective juvenile lice. Shieldaig has become the focus of a number of FRS scientific studies researching various elements of sea louse biology. FRS Biologists work closely with local wild fish interests and with fish farmers as members of the Torridon Area Management Group The future focus of the Sea Trout Project will be mainly restoration whilst maintaining ongoing lice studies and monitoring of juvenile fish populations.

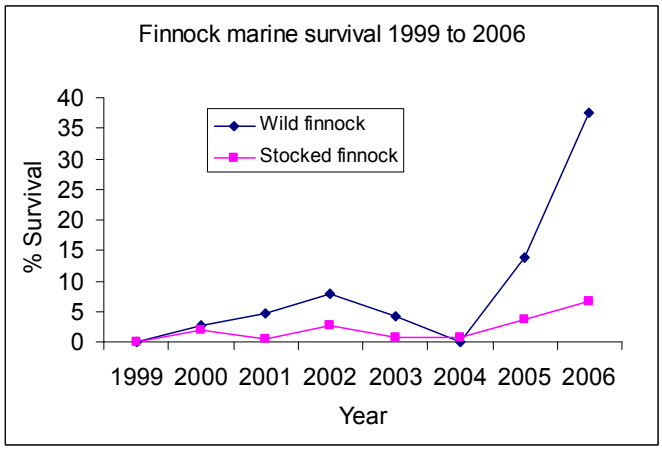
Recent years have seen a considerable improvement in marine survival of sea trout smolts. 2006 saw the best returns since trapping began with increased numbers of finnock and, crucially, mature sea trout returning to the river. Changes in aquaculture management systems and effective medications have been

reflected in significantly reduced levels of infective sea lice larvae at the shoreline and offshore, reductions in early returning sea trout post smolts and increased marine survival.

Figure 4.1 demonstrates the improvements in marine survival. We are now seeing mature fish returning again, which we hadn't seen since 2003. Figure 4.2 illustrates the variation in marine survival of stocked and wild spawned post-smolt components. Wild spawned fish have consistently shown a superior ability to survive and return. Reasons behind this could be variations in genetic or ecological fitness.

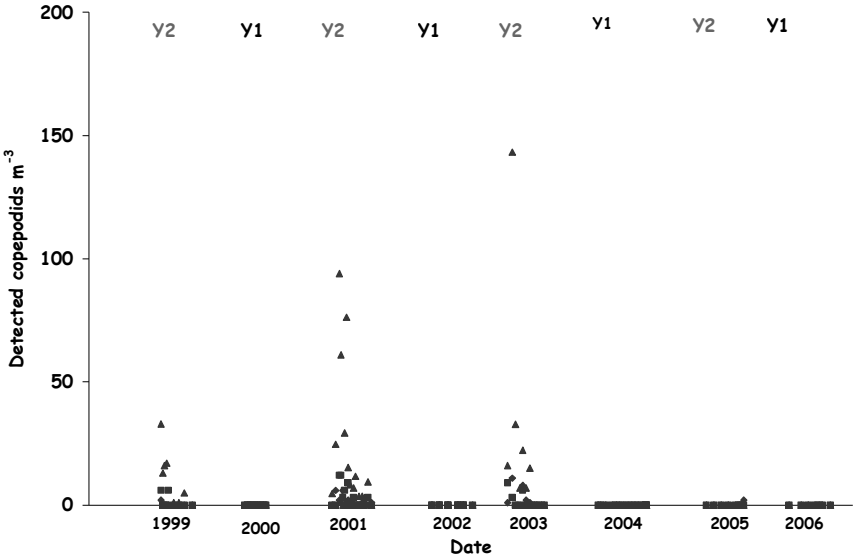
(left) ***Figure 4.1*** *Numbers of sea trout and finnock returning to the FRS Shieldaig trap, 1999 – 2006.*
(right) ***Figure 4.2*** *Marine survival rates of wild and stocked Shieldaig finnock, 1999 – 2006.*





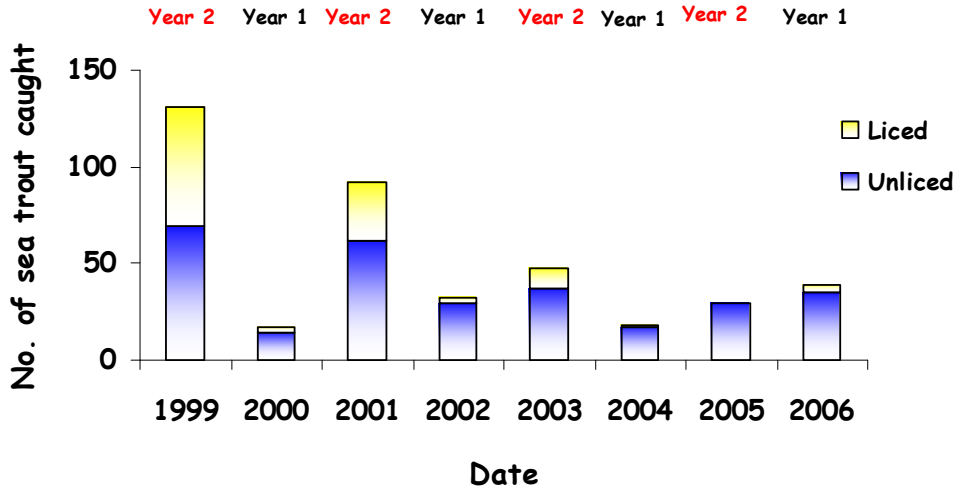
A key factor behind this improvement, we believe is the considerable reduction in the density of infective sea louse copepodids at the shoreline. Work by FRS scientists has demonstrated that lice are transported, often very swiftly, by wind and tide and concentrated in 'hotspots' at the shoreline, the main foraging zone for sea trout post smolts. Figure 4.3 shows the variation in spring time copepodid levels in Loch Shieldaig and their relationship with fish farm production cycles.

Figure 4.3 *Concentrations of sea louse copepodids caught in plankton trawls near the shoreline in Loch Shieldaig and production cycles at nearby fish farms.*



Concurrent with this reduction in parasites, there has been a decrease in the numbers of early returning sea trout post-smolts. A feature of sea lice epizootics has been the return of fish, often with heavy lice burdens, after only a few weeks or even days at sea. The levels of liced early returnees in the lower Shieldaig river have closely followed the patterns seen in springtime lice densities (Figure 4.4).

Figure 4.4 *Numbers of early returned sea trout post-smolts in the lower part of the River Shieldaig, 1999 – 2006.*



Shieldaig visitor centre: extending awareness

In April 2000, an interpretation centre was opened as part of the project. The centre describes the sea trout life history and the recent population decline in western Scotland. In addition, the display boards explain the nature of the Shieldaig Sea Trout Project and the scientific work used to study sea trout and to examine ways of restoring their numbers at Shieldaig. There are also interactive displays for young children that teach them about the life cycle of the sea trout, their predators and prey, through a series of games. You can also find up to date information about the project and other local environmental issues such as seals and sea lice. Publications regarding Scottish fishery issues and reports from fishery trusts are available for reference

Please pop into the visitor centre if you can and browse. It is important that people appreciate the rich biodiversity of our rivers and lochs and how the sea trout fits in. Staff will be posting information on our activities and latest data from the trap throughout the summer. If the staff are available they will be happy to answer any questions, listen to your comments and hear any news you may have on sea trout elsewhere. If you see us at work in the Glen we will be happy to explain what we're up to.

An annual project report outlining the progress of the Shieldaig project is available from the visitor centre. If you cannot get to see us please download our annual report from the FRS website. The Shieldaig Sea Trout Visitor Centre is located approximately one mile from Shieldaig village. The entrance is sign-posted on the minor road to Applecross about 100m from the junction with the Shieldaig/Lochcarron road. There is visitor parking in front of the Centre.

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Part 5 **Wild Trout studies**

5.1 **Wester Ross Wild Trout Project**

Supported in 2006- 2007 by

Introduction

The Wester Ross Wild Trout project was set up in 2003 to learn more about the productivity of wild trout lochs within parts of Wester Ross and to investigate options for managing them. By adopting a collaborative approach with anglers, angling clubs and with local fisheries proprietors, the project aimed to generate interest and create greater awareness, especially within the local community, of the potential for developing local waters for wild trout fishing and for wildlife. In 2006, in addition to further samples from a range of hill lochs in the Gairloch area, trout were sampled in lochs near Cove (Loch Ewe) and in the hills above Loch Broom. Trout were also sampled from streams flowing into Loch Maree and from the loch itself for studies of growth and genetic variation as part of the '**Loch Maree Wild Trout Project'**, an off-shoot of the Wild Trout Project (see Part 5.2). In parallel with research studies, a series of children's angling days were again organised in collaboration with local angling clubs all of which were popular with youngsters and well attended.

The following is a summary of the draft project report which drew together conclusions and presented recommendations for future management of trout lochs and wild trout angling in the area. To receive a copy of the full draft, please contact the WRFT Biologist at info@wrft.org.uk. Comments and feedback welcome!

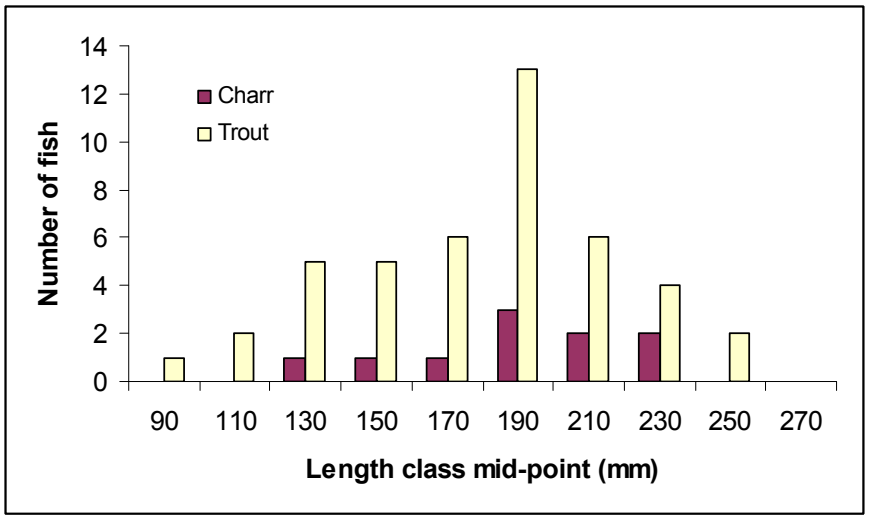
Trout loch productivity

It was not possible to quantify the productivity of trout lochs in terms of sustainable yields. Mark-recapture experiments were unsuccessful. The Angler Log book scheme was not widely supported: local anglers are reluctant to report their catches if there is a possibility that by doing so, others will be attracted to their most productive waters. However, productivity was not considered to be the over-riding factor limiting the quality of trout fishing in Wester Ross. Lochs in some areas could sustain higher fishing pressure, especially if 'catch and release' was to become more popular.

A recently planted rowan tree takes root above one of the less accessible lochs in the Gairloch Hills. This loch has large stocks of 100 – 150g trout (10+ can be caught within a 2 hour session). Trout spawn in the burn in the foreground.

Larger trout in excess of 350mm in length were found in a wide range of lochs throughout the area at altitudes of up to 380m. Even in high altitude lochs and lochans, brown trout are capable of reaching 350mm in length within 4 years if there is an adequate food supply. However, most lochs in Wester Ross are oligotrophic and trout generally grow more slowly, unless they are present at low densities or the feeding is especially rich (e.g. lochs with farm salmon smolt cages).

Figure 5.1 *Sizes of Arctic charr and Brown trout taken in multi-mesh gill nets in Loch an Draing, recorded on 9th November 2006. This loch is further from the road and less likely to have been stocked than more accessible waters.*



Managing trout lochs

The degree of 'wildness' of trout especially in some of the smaller lochs was uncertain. Trout have been stocked into and transferred from loch to loch by enthusiastic anglers. The amount of fish transfer may be underestimated: local trout enthusiasts are not inclined to advertise the places where they have introduced fish, for obvious reasons! There is a long tradition of this type of management.

The genetic consequences of stocking have not simply been ignored by local residents. Rather than prioritising a need to conserve native stock, some anglers maintained that 'new blood' was periodically required to maintain the 'quality' of wild trout populations. Note that these views are not endorsed by the WRFT Biologist!

Management recommendations acknowledge the potential for increased disturbance of important wildlife especially nesting birds if wild trout fishing is promoted without careful planning. With a more enlightened clientele, the development of high quality wild trout fishing and protection for other special wildlife are mutually compatible objectives. The need to manage lochs depends very much upon where they fall within a complex 'matrix' of categories. For large less accessible, rarely fished lochs, with healthy and abundant stocks of wild trout and little other wildlife of note, the need for any management intervention is less than for lochs with small stocks of larger than average trout and breeding divers that are a short distance from a public road.

Management recommendations have the following objectives:

1. Safeguard native populations of wild trout
2. Safeguard other special wildlife, especially protected species
3. Restore / enhance the quality of lochs for wild trout and other wildlife
4. Identify opportunities for developing wild trout fishing

Managing anglers

Local anglers are able to access local trout lochs through membership of their local angling club for a modest annual subscription. Permits for visiting anglers are available in all the major villages and holiday centres. There are no Protection Orders in force in Wester Ross. Fishing for brown trout without lawful authority or written permission is therefore a civil offence. Most anglers now fish responsibly taking only as many fish as they feel is reasonable. Some anglers now practice 'catch and release'. A good photo of a live fish looks better and last longer than a dead fish. If 'catch and release' of larger fish can become more popular, the possibilities for providing top quality wild trout fishing in Wester Ross can increase greatly.

Guidance for trout anglers might be as follows:

1. Anglers should be informed of the need not to disturb protected wildlife in their quest for wild trout. They should be advised not to visit some areas before July without a local guide where the risk of disturbing special breeding birds is high. On arrival at an unfamiliar loch, they should consider the possibility of divers or other protected birds breeding nearby before starting to fish.

2. If the loch is accessible to sea trout, all trout of less than 20cm should be returned. Because of the recent decline in sea trout, all sea trout and finnock should be returned. Taking up to 4 brown trout of 25cm or over per trip is likely to have little detrimental impact upon the recovery of a sea trout fishery (it might even assist the recovery if they are cannibal). However, all catches should be recorded and reported so that guidance can be reviewed in response to any changes.

3. If the loch is inaccessible to sea trout, over 2 ha (~4 football pitches) in area, has an inflowing stream where small trout can be seen in the pools, and most trout caught are below 25 cm in length, then taking as many fish as you can eat (up to a limit of ~10 fish) is likely to have little detrimental impact on the overall stock (remaining trout may grow faster). All catches should be recorded and reported.

4. If the loch is inaccessible to sea trout over 2 ha in area and the average length of trout is between 25 and 35cm, then taking four trout per trip is likely to have little detrimental impact on the stock. All catches should be recorded.

5. If the loch is less than 2 ha in area and the average length of trout is more than 25cm, return trout less than 30cm and consider returning all others, except any particularly 'special' fish for a special meal.

6. If the loch is isolated and less than 0.5 ha (1 football pitch) in area, if you catch a large trout, it is likely to be one of very few trout in the loch. If it is carefully caught (small hook), carefully handled and carefully released, you may be able to catch it again when it has grown even larger.

Developing trout fishing in Wester Ross

There are opportunities for developing easily accessible lochs as wild trout fisheries to incorporate wildlife habitat enhancement, with provision of facilities, instruction and guidance for beginners and less able-bodied anglers. Some of these opportunities lie within the 'common grazings' of crofting townships. Funding agencies might wish to consider supporting feasibility studies and business plans. Wester Ross has the potential to become one of the premier destinations for wild trout fishing in spectacular natural surroundings. However, developing this potential is as much about developing management structures and fostering local interest in management as it is about managing the fish themselves.

Acknowledgements

Many thanks to all those who have contributed information or helped with the project in other ways. (Due to a shortage of space on this page, please refer to the list of names at the back of this report!)

5.2 **Loch Maree Wild Trout Project**

~ exploring the biodiversity of brown trout and sea trout within a special part of Scotland ~

The Loch Maree Wild Trout Project is focusing on the *genetic variability* of trout within the River Ewe catchment area. This exciting project will provide detailed information about the genetic status of wild trout populations to assist management and raise awareness of the biodiversity of native wild trout and of conservation needs. Loch Maree was formerly a premier sea trout loch fishery. The project will identify how many different kinds of trout there are within the catchment, how they are related to each other, and the extent to which ancestral trout populations are retained within the Ewe catchment.

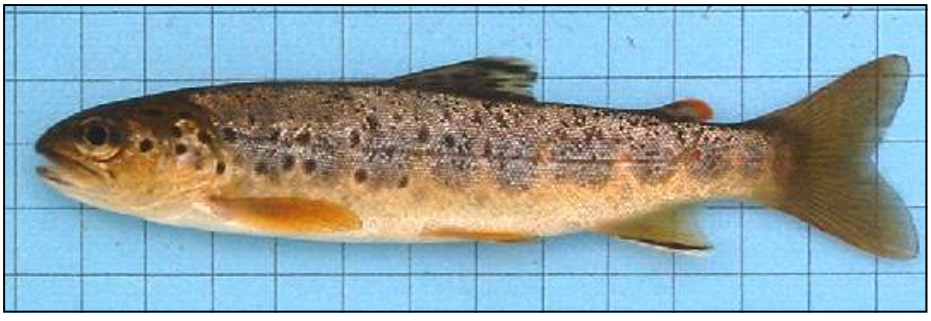
Over the years, trout from outwith the local area have regularly been stocked into hill lochs by proprietors and angling clubs. Some anglers continue to regard 'Loch Leven trout' as being of better quality than locally native trout: if they catch a particularly fine looking trout they may attribute it to past stocking! However, more recently, there has been growing awareness and acceptance of the need to identify and protect populations of native brown trout. Thanks to studies such as that of Duguid *et al* (2006) demonstrating that the 'ferox' trout in Lochs Awe and Laggan are genetically distinct from sympatric brown trout in respective lochs, awareness of the need for the genetic conservation of Scotland's native wild brown trout is growing.

This collaborative project which will look at all trout within the catchment (brown trout, sea trout and 'ferox') may draw attention to the need for better informed management of wild trout in Scotland to safeguard locally native populations. The project is being developed by Dr Steve Kett of Middlesex University, Dr Eric Verspoor of Fisheries Research Services in collaboration with WRFT. Post-graduate student, Calum Button is undertaking much of the analytical work, based at the FRS freshwater Laboratory near Pitlochry.

Progress to date

During the summer of 2006, sample collection expeditions visited headwater streams above the Talladale Falls, Victoria Falls and in Gleann Tanagaidh above the Heights of Kinlochewe. Some excursions were more successful than others. No trout were found in the Allt Toll a' Ghiubhais the above the waterfalls within Beinn Eighe NNR. Elsewhere samples were collected using rod and line, electro-fishing equipment and nets. The project will be more formally launched on 22 May 2007 (International Biodiversity Day) when some initial results will be presented. Wild trout enthusiasts from the local area and beyond are invited to join sample collection expeditions. Please contact the WRFT Biologist for further details.

Steve and Calum sampling trout amid the midges in Gleann Tanagaidh, August 2006. All trout are measured, photographed to compareand contrast morphology and DNA samples taken to assess genetic associations with other populations of trout.



Part 6 **Nordic Protocol Fish Sampling in Loch Maree**

Supported by

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The Highland Council

SCOTTISH NATURAL HERITAGE

Kinlochewe Estate

In 2005, WRFT carried out an investigation of the occurrence of small fishes around the margins of Loch Maree using electro-fishing (see WRFT Review may 2006). Minnow was captured at every site in Loch Maree and was the most abundant fish at every site. However, trout were only recorded at 4 sites in Loch Maree. No juvenile salmon were recorded at any of the loch sites. To gain a broader understanding of the occurrence of different fish species and the health of fish populations within Loch Maree, WRFT commissioned a fish inventory study of the loch using multi-mesh gill nets. The survey was led by highly experienced stillwater fisheries scientist, Ron Greer. The following summary is based on the draft report by Ron B. Greer, Johan Hammar & Eric Verspoor.

Introduction

Ron Greer retrieving a gill net from Loch Maree.

With the extensive interest and significance of angling in Scotland (Radford *et al*. 2004), the lack of knowledge of the original distribution of fish species other than salmon and trout within the country must be considered as little less than astonishing. Recent increased interest in angling for pike, with associated with live bait use and for other coarse fish species with its own associated culture of fresh introductions of various non native cyprinids and percids, (e.g. Landward, BBC Scotland 2004) represent a very serious threat of major ecological changes in the ecology of Scottish freshwaters.

Such changes have profound implications for the integrity of the biodiversity of native fish species. This is all especially pertinent for the native, near pristine, fish biodiversity of Loch Maree at a time of global warming and due to the known presence of non-native pike (and perhaps other non-native species) in contiguous adjacent watersheds (e.g. Loch a' Chroisg and Loch Bad na Sgalaig). The various biotic and climatic threats to the continued well-being of the native biodiversity of fish and bird species in Loch Maree are thus very acute. It is against this worrying background that the netting survey of Loch Maree took place in July 2006.

Methods

The extreme eastern end of Loch Maree was sampled. The method used was based on the NORDIC system of stratified random sampling using multiple mesh gill nets (see Appelberg, 2000). This system has recently (May, 2005) been accepted as a valid sampling system for lakes under the European Water Framework Directive. All fish that were caught were individually measured for length and weight, the exception being minnows where only a sub-sample was weighed. Fin tissues samples of the salmonid species were retained and preserved in alcohol for future DNA analyses. Likewise appropriate samples were retained for future scale, otoliths and stable isotope analyses. The salmonid component of the catches was photographed for later morphometric analyses. The catch has been retained in deep freeze pending further analyses for internal meristic features, parasites etc..

Results

A total of 221 fish was caught (see Table 6.1). The majority of these was taken in shallow water benthic nets and was minnow (Figure 6.1). Salmon parr were taken in the benthic 0-3m nets. Small charr with relatively big eyes were taken in the benthic nets set in deeper water. Two larger charr with relatively small eyes were taken in the pelagic nets (see photo on cover). The largest fish caught was a 'ferox' trout of 63cm. In terms of biomass (Figure 6.2), Brown trout was the most abundant species caught. Further details and discussion are included in the project report, available from the WRFT Biologist (info@wrft.org.uk).

Table 6.1 *Species, total numbers and weight of fish recorded, caught and sampled in Loch Maree with benthic and pelagic Nordic survey nets during July 17–19, 2006.*

	Atlantic salmon	Brown trout	Arctic charr	Minnow	3-sp. stickleback	Eel	Total
Number	8	42	19	120	30	2	221
Weight	320	9,433	1,366	228	19	354	11,720

Figure 6.1 *The relative abundance of different species of fish shown as catch per unit effort (CPUE) in numbers per gillnet set at different depths overnight at the bottom and 0-3 and 3-6 m overnight in the pelagic zone.*

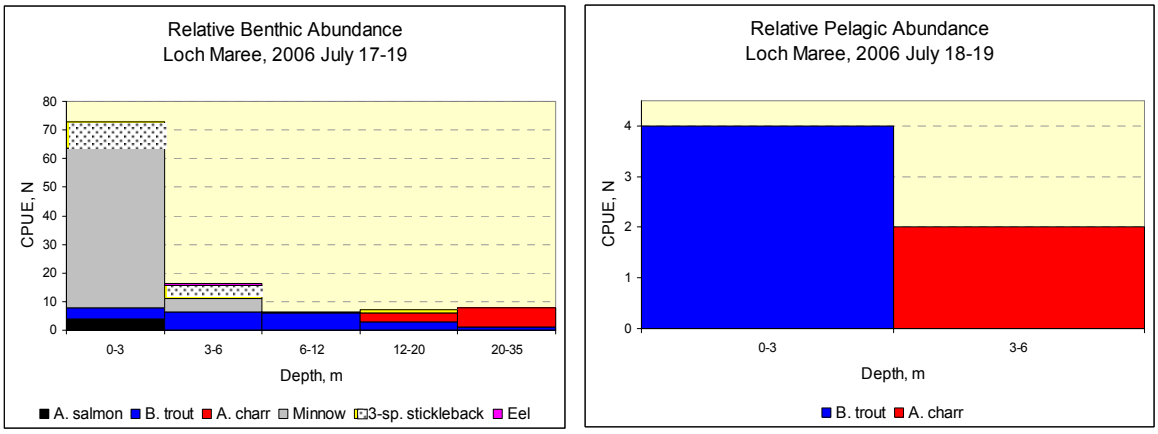
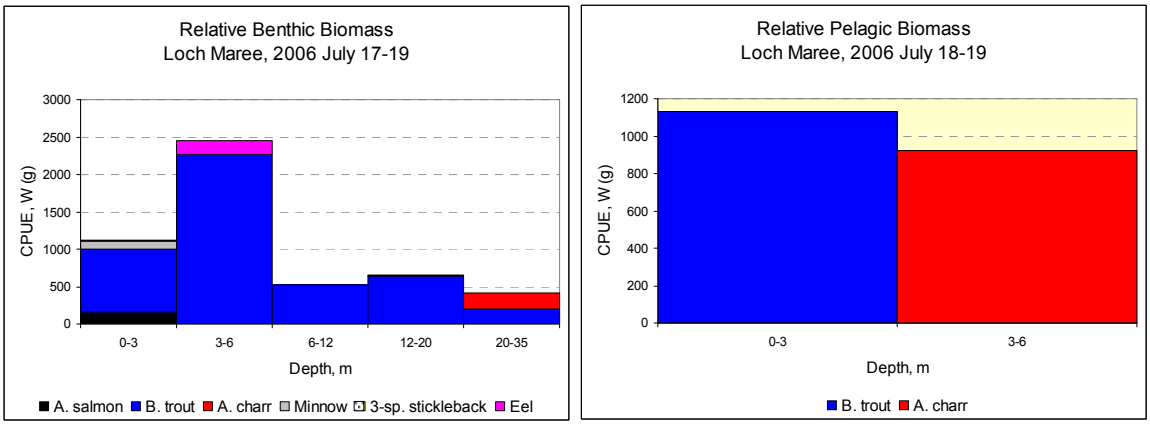


Figure 6.2 *The relative biomass of different species of fish shown as catch per unit effort (CPUE) in weight per gillnet set at different depths overnight at the bottom and 0-3 and 3-6 m overnight in the pelagic zone.*



Many thanks to all helpers and to Pat Wilson and Ian Cross for permission, use of a boat and support.

Part 7 **Arctic Charr Discovery Week**

Supported by

WRFT, in line with other members of RAFTS is concerned for the conservation and management of all indigenous freshwater fish species. The Arctic charr (*Salvelinus alpinus*) is a spectacular member of the salmon family which fascinates both scientists and anglers. The most northerly freshwater fish in the world, it is of major economic importance in arctic areas including North America, Scandinavia and Russia.

In the last WRFT Review (May 2006), we reported observations of Arctic charr spawning in streams in Wester Ross. Elsewhere within the British Isles, stream spawning charr populations are unusual. The 'Arctic charr discovery week' in November 2006 was organized by Wester Ross Fisheries Trust in collaboration with local estates and fisheries scientists to provide opportunities for both charr specialists and other wild fish enthusiasts to participate together to learn more about our little known local charr populations.

The aims of the week were:

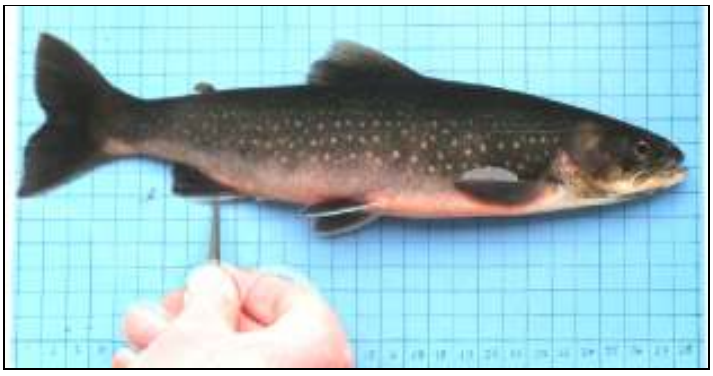
1. To learn more about the occurrence and biology of Arctic charr in lochs in Wester Ross through sampling with nets and rod and line.

2. To raise awareness, both locally and nationally, of the occurrence of arctic charr in Wester Ross and of their value as part of the Scottish native fish fauna.

A small group of fish experts from across Scotland and Ireland, including Prof Peter Maitland from the Fish Conservation Centre, met at the Loch Maree Hotel. The focus of the week was to investigate the occurrence of Arctic charr in Loch Maree and other nearby lochs.

Results

During the week, charr were recorded in Loch an Draing (*Figure 5.1*) and Loch Kernsary where previously only anecdotal reports existed. Only one charr was taken in Loch Kernsary *(left)*. This fish spent a week in an aquarium before being returned to the loch. Charr were confirmed to still be present in lochs Tollie and Maree (two types of charr – see cover photo) but not in a small un-named lochan near Slaggan (where they were found in the 1980s) or in Loch a' Bhaid luachraich.



(photo by Ben Rushbrooke)

Spawning studies

Post-graduate student, Jon Low demonstrated his method of snorkel surveying charr spawning areas in Loch Maree. Jon has located many previously unknown spawning sites in Irish loughs and is developing a system from which the status of charr populations can be monitored. Jon found areas of suitable substrate where charr are likely to spawn in Loch Maree but we may have been too early for finding eggs in the loch substrate. Adult charr taken in gill nets in Loch Maree were unspawned.

The highlight of the week was the unique recording of the behaviour of stream-spawning Arctic charr by a local team led by Aaron Forsyth of the Wester Ross Marine Reserve Partnership, using a remotely operated vehicle (ROV) with camera attachment. By positioning the camera, with its own lighting system, in a stream spawning site, we were able to observe colourful male charr in combat and female charr excavating redds. Brown trout were also recorded, one of which used the ROV as a refuge from the attentions of charr.

John Sangster and Aaron Forsyth with the ROV: pre- test-flight checks (6/06)

Jon Low snorkelling in search of charr spawning sites in Loch Maree.

A feature of the week was the involvement of the local community. Professor Maitland and Jon led a practical session with students at Gairloch High School. The week culminated in a well attended public meeting in Gairloch on the Friday night, where talks were presented and the ROV film of wild charr in their natural habitat was shown. A DVD copy of edited highlight was shown at the RAFTS AGM in March, and has been sent to the BBC Autumn watch.

Prof Peter Maitland, Peter Cunningham and Fergus Mackenzie taking DNA samples from charr in the hotel boatshed. (Jon Low)

Nick Thompson serving 'charr pie' to [clockwise] Eric Verspoor, Colin Bean, Jon Low, Mark Vincent, Peter Maitland, John Sangster, Aaron Forsyth and Alex Lyle. (The pie, made from locally smoked haddock rather than charr, was very delicious!).

The 'Discovery Week' was supported by grants from Wester Ross Environment Network, Scottish Natural Heritage and the Highland Council. The organisers would like to thank all supporters and helpers, and The Loch Maree Hotel for making the week such a success.

Part 8 **Mayflies and Stoneflies in Wester Ross**

Supported by

Mayflies (Ephemeroptera) and Stoneflies (Plecoptera) are two of the most important groups of freshwater invertebrates in streams in Wester Ross. Together, the two groups are often the dominant insects in the fast flowing, well oxygenated streams of the area. The Wester Ross fauna is currently represented by 21 Mayfly species and 24 Stonefly species (*Macadam*, pers. comm.). As well as being of biodiversity interest in their own right, they are an important food source for birds such as dipper, and for juvenile salmon and trout. Mayfly and Stonefly species are good indicators of water quality and of the health of a stream. Some species are sensitive to acidification and are not found in waters that have recently been acid-flushed. Waters with high pH draining more basic terrain usually support species not found in more acidic water. The abundance of Mayfly and Stonefly larvae can relate to the productivity of respective streams and the fertility of the land from which they drain.

In March 2007, Wester Ross Fisheries Trust organised a workshop based at Gairloch in collaboration with Dr Craig Macadam of Buglife / Ephemeroptera recording scheme, a leading expert on freshwater invertebrates. Craig has run workshops elsewhere with the Riverfly Partnership (www.riverflies.org) and we were delighted that he was able to come to Wester Ross. The workshop was aimed at wildlife enthusiasts, fly fishers, and any others with an interest in learning about the biodiversity of their local streams.

PC collecting a 3 minute 'kick sample' in the Tollie hills, with enthusiastic support. (Nick Benge)

The workshop was based in Gairloch and took place over 3 days in early March, a good time to study mayflies and stoneflies as many are just about to hatch. In addition to Craig, there were 11 other participants, including 2 local ghillies, one member of the local angling club, 2 countryside rangers, one SEPA employee, one water garden specialist, 4 fisheries trust/foundation biologists, and a dog! The format included presentations and practical stream sampling and sorting / instruction sessions back in the WRFT office. Craig provided his own new identification keys in booklet form to the British mayflies and stoneflies. These user-friendly guides were much appreciated and used by all participants.

Sampling

A total of 9 x 3minute kick samples were collected and sorted during the workshop. Of these, 6 were from streams draining the Gairloch Estate 'Baile Mor' WGS. Three sites were in the Tollie burn or tributary Allt an Leth-chreige. A small pond nearby with sphagnum moss was sampled. Two sites were in the Abhainn Achaidh a' Chairn above Gairloch, including one below and one above the location where aeration waters draining the former landfill site enter. The other 3 sites were in and around the Feur Loch by the 'Red Stable' (green shed) in the River Kerry catchment. Results are summarised in Table 8.1. Although no new species were found to add to Craig's Wester Ross list, participants were able to gain familiarity with many species which also occur elsewhere in Scotland.

(left) Nick Benge (Watergems) and Dr Kjersti Birkeland (R. Tay Foundation) with a sample from the Abhainn Achaidh a' Chairn, Gairloch.

(right) ***The three gadgers****! [top-bottom] Predatory stonefly larvae of Perlodes microcephalus, Perla bipunctata, Dinocras cephalotes (grid squares1cm).*

Table 8.1 *Mayflies and stoneflies found in three minute kick samples during the workshop.*

Stoneflies	Stream	Loch
Brachyptera risi	common	uncommon
Protonemura meyeri	uncommon	
Ampinemura sulcicollis	**abundant**	uncommon
Nemoura cinerea	uncommon	
Nemoura spp.	uncommon	
Leuctra inermis	common	
Leuctra spp.	uncommon	
Perlodes microcephalus	uncommon	
Isoperla grammatica	uncommon	
Dinocras cephalotes	common	
Perla bipunctata	uncommon	
Siphonoperla torrentium	uncommon	

Mayflies	Stream	Loch
Baetis rhodani	**abundant**	common
Baetis vernus	common	
Electrogena lateralis	common	
Ecdyonurus venosus group	**abundant**	common
Leptophlebia vespertina		**abundant**
Leptophlebia spp.	uncommon	
Paraleptophlebia submarginata	**abundant**	
Rhithrogena semicolorata sub group	common	

Explanation	
>2 or more per sample (average)	**abundant**
1-2 per sample (average)	common
<1 per sample (average)	uncommon

Many thanks to all participants and to Gairloch Estate for permissions to collect samples. Thanks to Mary Gibson and the SNH Kinlochewe office and to The Highland Council for supporting this project. Thanks to Dr Craig Macadam for his excellent presentations and instruction throughout the course. The WRFT biologist would thoroughly recommend a similar course to other interested groups in Scotland.

Part 9 **Environmental Education Projects**

by Dr Lorna Brown **Supported by**

9.1 **Salmon and trout in the Classroom**

August 2006 saw the last electro-fishing demonstration take place for the "Salmon and Trout in the Classroom" Project. This is an environmental education project that the Trust had been running since early 2004. Initially developed by the Galloway Fisheries Trust, the project brings the fascinating and complex life cycle of salmon and trout into the classroom by providing mini-hatcheries for participating schools. The pupils are responsible for caring for salmon or trout eggs until they reach the first-feed stage, at which point they are released into the wild. In the autumn we return to the release site and electro-fish to let the children see how much their fry have grown.

In total fifteen schools within the Trust area have been involved in this project. Each year we have been able to assess and improve the project using feedback forms. The electro-fishing has proved to be very popular with the pupils – as one teacher pointed out on her feedback form "the pupils cheered aloud when every fish was caught!" The feedback forms show that all of the schools would be keen to participate again and it is hoped that we will be able to offer the project to a new cohort of primary children in the coming years.

The "Salmon in the Classroom" Project was funded by Scottish Natural Heritage and the Highland Council Determined to Succeed initiative. Thank you once again to all the estates and the Seafield Centre who kindly helped with this project.

9.2 **Life in Lochans**

Identifying invertebrates in the classroom at Applecross Primary School. (Lorna Brown)

In 2005 we approached the Wester Ross Environment Network (WREN) in the hope of securing some funding to cover the shortfall for the "Salmon in the Classroom" Project. Having prepared a talk that went down very well with an enthusiastic WREN committee it was disappointing to discover that WREN could not fund this project as part of their funding came from SNH, who were already part-funding this project. However the committee remained enthusiastic about the environmental education work carried out by the Trust and so a new project was created to fulfil the requirements of the WREN funding. In spring 2006 the "Life in Lochans" project got underway with Gairloch and Poolewe Primary Schools kindly offering to be the "guinea pigs" for this new project.

The aim of the project was to interest pupils in the rich biodiversity found within a local loch system by involving them in a field survey examining the aquatic animals and plants. The pupils were asked to imagine that a new development was going to affect the loch system and that they were ecologists charged with surveying for rare or endangered species which may be vulnerable to disturbance. An initial brainstorming session was used to determine the level of knowledge the pupils already had. It was interesting, for example, to find out that many pupils

did not realise that salt water species such as mackerel and haddock would not be found in a freshwater loch system.

A major component of the project is to ensure that the pupils have responsibility for designing the survey including choosing the target species, the techniques to use and considering health and safety issues. We found that the pupils often have very complex ideas at this stage, suggesting underwater motion-sensitive cameras and so we have to give them some guidance as to realistic equipment and techniques available. The survey techniques we used include sweep netting for invertebrates, trapping amphibians and fish, identifying mammalian signs, scanning for birds using binoculars and electro-fishing for fish. Back in the classroom after the field trip the pupils prepared scientific reports of the species found in different habitats throughout the water course. The Poolewe pupils have since been in touch with a school in the USA who have carried out a similar project and they have been swapping data and reports by e-mail.

One condition of the WREN grant was that the project had to be accessible to the general public and so we also advertised two public "Freshwater Family Fun days". The Gairloch day took place on May the 6th and was well attended, with a total of 13 adults and 20 children taking part. A number of children remained at the Mihol Loch throughout both morning and afternoon sessions and we took a small enthusiastic party to Loch Tollie to search for minnows later in the afternoon. Wednesday August the 9th dawned with howling gales and horizontal rain, so I was pleasantly surprised that anyone was enthusiastic enough to venture out to Loch na Beiste, near Laide. The day remained showery but yet more brave souls arrived for the afternoon session, taking the total to 16.

If the number of species observed and identified could be considered as an indicator of the success of the project then this project has certainly been extremely successful. Species observed on the field trips included endangered freshwater pearl mussels and rare white-tailed eagles. In my mind the enthusiasm and sincerity shown in the Thank You letters the pupils wrote to the project volunteers shows how successful the project was. As one boy who should have been on holiday wrote "I'm glad I didn't go away on holiday because the field trip was much better than going to the cinema or the aquadome".

Finally, the **Loch Maree Open Day** took place on the 14th of October during the local school holidays. The weather was good, and many families came to find out all about the fishes and other small creatures living in the loch and surrounding waters. Boat tours and fishing trips were provided by SNH and the Loch Maree Hotel; Meryl Carr (HC Countryside Ranger) and Jim Raffell (FRS Shieldaig Sea trout Project) led hands-on activities in the boat shed. At the end of the day, all the fishes (minnow, stickleback, brown trout, finnock, salmon parr and eels) that were caught during the day in traps, by electro-fishing and with rod and line were anaesthetised, examined by the children, then returned to the loch after a period of recovery. [**The Loch Maree Open Day 2007** is scheduled for 13th October. Please contact the WRFT Biologist nearer the time for confirmation and further details]

At the end of 2006 we were approached by schools in the south of the WRFT area who were keen to participate the "Life in Lochans" project. We have recently secured funding from SNH and the Royal Society and will be starting the project in late May.

Acknowledgements

Thank you to Gairloch and Poolewe Primary schools for allowing us to trial the "Life in Lochans" project in their schools. Thank you to Kenny Nelson of SNH and Meryl Carr, Highland Council Countryside Ranger for assistance on the fieldtrips. Thank you to Graham Leonard, Jennifer Robertson and Jim Brown for help during the Gairloch fieldtrips and to Dee Roberts, David Mullaney and Fiona Cameron for electrofishing assistance. Thanks also to Jim Raffell, Roddy Paul, Ben Rushbrooke and Mark Vincent for help at the Loch Maree Open Day. The electro-fishing equipment used for both projects was purchased in 2005 with grants from C.E.D. and RACE.

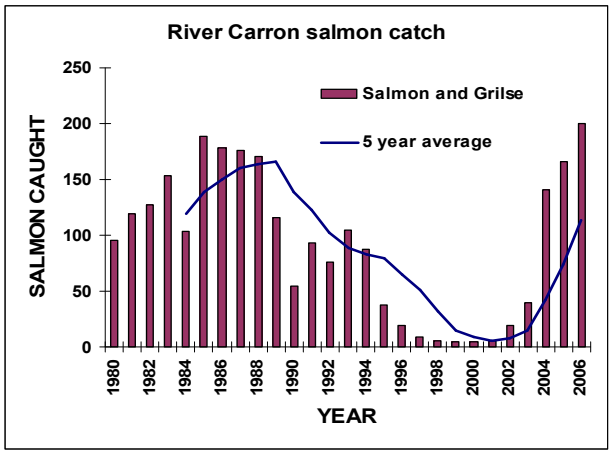
Part 10 **Catch and Release on the River Carron**

by Bob Kindness, *Seafield College.* bob_kindness@hotmail.com

Introduction

By the late 90's, the River Carron in Wester Ross was no longer a viable salmon fishery. The salmon catch for the entire river in 2001 was only 5 salmon and the 5-year average was 6.2. From once being one of the most productive rivers in the West Highlands, the river had reached rock bottom. Natural recovery from such a low level would be painfully slow if indeed it would happen at all. If the river was to become a viable fishery again, leaving things to nature did not appear to be the best option. With the full co-operation of all the river proprietors, a restoration programme was established during the second half of the 90's. The results from this programme have been spectacular with the salmon catches rising significantly from 2004 onwards to reach 200 in 2006 with a 5-year average of 113.8. While other rivers in the West Highlands had improved catches in 2004 and 2005, none displayed the level of increase as for the Carron and, in 2006, catches for the majority of West Coast rivers declined from the previous year. In stark contrast the Carron salmon catch in 2006 was 20% higher than the 2005 catch. From being one of the poorest rivers in 2001, the Carron had the highest salmon catch for any river in Wester Ross in 2006.

Several elements have been instrumental in making the restoration programme so successful. Without doubt the most important has been the robust stocking programme using both wild and captive broodstock. By re-establishing a smolt run through stocking juveniles at various stages, the benefits of more favourable marine conditions, partly due to closer co-operation with the salmon farming industry, have been clearly seen in the greatly improved adult returns.



Catch and release

Another important element of the restoration process is to generate an increase in natural spawning by maximising the amount of escapement of adults for spawning. This is done through "catch and release" whereby fish caught by anglers are returned alive to the river. In this way angling and thereby income generation can continue while maintaining a spawning stock. Many rivers in Scotland now practise "catch and release" at levels depending on the health of the salmon stock. However, for rivers with severely depleted stocks, all fish should be returned alive to the river to hopefully complete their life-cycles. This has been the policy for all the beats on the River Carron for the last 10 years. Only fish caught late in the season are not returned to the river but instead are retained for broodstock. The success of eggs stripped from these fish and the subsequent juveniles are several times higher than those produced naturally in the river. With the ferocity of winter spates now being experienced likely to result in a higher incidence of redd wash-out, success levels from natural spawning will be even less.

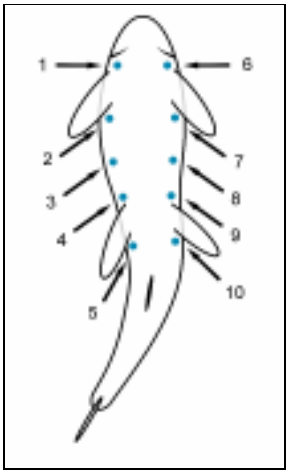
Although “catch and release” is widely regarded as being beneficial in situations where the released fish will make a significant contribution to natural spawning, it also attracts criticism from certain quarters within the angling fraternity. This mainly stems from an assertion that as many as 20% of released fish die after release. While this figure may be true for some rivers or parts of rivers, it is certainly not the case for the fish released in the Carron. Of approximately 150 salmon released in 2006, only 2 were subsequently found dead. Both of these fish were doubtful survivors at the time of release but were given the benefit of the doubt. The high survival rate of released fish on the Carron is undoubtedly due to the protocol laid down for all anglers fishing the river.

Several procedures are frequently quoted as being important when operating “catch and release”. These include the use of barbless hooks to aid hook removal and reduce damage, the use of soft knotless landing nets, keeping fish in the water as much as possible and handling carefully. While all of these are important and should be practised, of much greater importance is the fishes’ level of recovery before release. When a fish is being played by an angler its exertions result in an oxygen deficit in the muscle. If such a fish is released before full recovery there is a strong possibility that it will be carried away by the current and die. Two practices will help to alleviate this problem:- use appropriate tackle and land fish as quickly as possible thereby reducing the level of exhaustion and release them into quiet water with little flow. However, of greater significance is recovery time. It may take an exhausted fish hours rather than minutes to recover fully and no angler wants to spend that length of time holding a fish before letting it go.

On the Carron this problem is alleviated by the use of **specially designed keep-nets**. Each angler is provided with a keep-net that is very easy to use and set up at the edge of the river (see photo). Once a fish is placed in the net it settles down very quickly and can then be left for several hours if necessary until it is once again fighting fit. During this time the angler is free to continue fishing and, if lucky, add more fish to the keep-net. Successful anglers notify myself of the location of fish in keep-nets so that they can be examined and scale sampled before release.

In practice, “catch and release” will benefit fish stocks, however, it can also create a problem for fisheries management with regard to the need to be able to estimate the number of adult fish returning to the river. For rivers without either traps or fish counters the number of returning fish is normally estimated by considering the rod catch as a percentage of the total number of fish present. Depending on fishing effort, fishing methods and conditions this figure will generally be between 10 and 20%. For a river where “catch and release” is practised, if individual fish are caught more than once, there is a strong possibility that the total number of adults returning to the river will be overestimated. This could have serious consequences with regard to stock management.

To investigate this potential problem, a study was initiated during the 2005 season by the Seafield Centre to assess the catch frequency of salmon on the River Carron. This involved marking individual salmon before release in such a way that they could be recognised if caught again. The chosen method of marking was to apply spots of acien blue dye (a biological stain) to specific locations on the ventral surface of the fish using a panjet. This injects the dye through the skin by compressed air leaving a distinctive blue spot. Ten locations on the fish were used (see diagram) and by using 3 locations on each fish a total of 120 different fish could be marked. Fish were marked as soon as possible after capture using the collapsed keep-net to keep them quiet during the simple process (see photo). This eliminated the need to use anaesthetic and kept handling to a minimum. After marking, the fish were allowed to recover fully in the keep-net before being released (see photo). The panjet method was chosen in preference to either external



tags, which could be lost, or fin clips that would not allow individuals to be recognised and could encourage *Saprolegnia* infections.

For the 2005 season, the panjet equipment was not available until mid August and the first salmon was marked on the 18th of August. Marking continued until the 5th of October after which time rod caught salmon were retained as broodstock. A total of 34 salmon were marked. In 2006, a total of 79 salmon were marked between the 8th of July and the 26th of September. In both years all the fish that were marked were caught in the lower half of the river from the pool below Loch Dughaill to the sea.

Of the salmon marked in 2005, 3 fish were caught a second time. One was caught in the lower part of the New Kelso beat on the 1st of September and was caught again 14 days later having moved about 1,200 metres up the river. A second was caught towards the top of the New Kelso beat on the 3rd of September and then again in the same place 26 days later. The third was caught and marked as a small fresh run hen grilse below the Strathcarron bridge on the 19th of August. Between then and the end of the season it had moved to the top of the river and was caught on the 31st of October at Glencarron. Since it was a maturing hen, it was retained as a brood fish, duly stripped on the 29th of November and immediately returned as a kelt to the river at the Strathcarron bridge. On the 15th of March 2006, it was caught for a third time as a fully mended kelt at almost the exact location of its first capture. Despite all the handling this fish had survived to the point of returning to the sea.

In 2006, the increased number of salmon marked coincided with an increased number of second captures. A total of 11 fish were caught for a second time during the season. The time lapse between first and second captures ranged from 13 to 93 days with this latter fish only having moved approximately 300 metres up the river. None of the 11 fish had moved very far from the location of first capture:- 2 were in the same pool, 3 had moved down river and 6 had moved up river. The longest distance between captures was approximately 600 metres. A twelfth salmon was caught twice but not in the same season. This was an 18lb hen caught on the 1st of September 2006 by Roddy “Butcher” in the House Pool of the New Kelso beat. It was caught for a second time as a fully mended kelt on the 3rd of March 2007 not only in the same pool but in the exact same part of the pool. With good spawning gravel at the tail of this pool it is highly likely that this fish had moved little between captures.

This trial will continue for at least another season but already results to date have proved interesting. Some light is shed on the pattern of movements of salmon once they enter the river and an indication is gained of good survival of released fish through to spawning and beyond. However, the most significant finding is the percentage of released fish that are caught again. In 2005, 8.8% and in 2006, 13.9% of released salmon were caught for a second time. Bearing in mind that the Carron has a short season and is relatively lightly fished, the percentage for more commercially fished rivers with longer seasons is likely to be significantly higher. This has implications when rod catches are used to estimate adult populations. If second captures are not taken into account when making such calculations then stock levels will be overestimated. This will lead to an over-optimistic assessment being made of spawning escapement and perhaps a rosier picture being painted than is actually the case. To get a realistic measure of adult salmon numbers in a “catch and release” river, account must be taken of fish being caught more than once.

Part 11 **Financial Statement**

For the year ended 31 March 2006

		Unrestricted Funds	Restricted Funds	2007 Total	2006 Total
Incoming resources from generated funds		**£**	**£**	**£**	**£**
	Charitable donations & grants received				**Per Audit**
	Orrin Trust	1,000		1,000	**5,000**
	Kinloch Woodlands Trust	1,000		1,000	**2,000**
	Rafts	1,666		1,666	**5,550**
	Whitley Animal Protection Trust	2,111		2,111	**2,533**
	Bill Woodrow	1,500		1,500	**2,000**
	Individual donations	692		692	**780**
	Membership	861		861	**1,660**
	Corporate Donations				**3,200**
	Voluntary income	**8,830**	**0**	**8,830**	**22,723**
	Activities for generated funds				
	Contracts / Surveys	650		650	1,400
	Investment Income	536		536	454
	Sub Total	**1,186**		**1,186**	**1,854**
	Fish Farm Contributions	4,500		4,500	4,000
	River Contributions	4,645		4,645	6,020
	W R A S F B	23,000		23,000	19,340
	Other income	417		417	489
	Sub Total	**32,562**		**32,562**	**29,849**
	Total Donations	**42,578**		**42,578**	**54,426**
	Activities for generated funds (Projects)				
	AMA HIE		3,097	3,097	5,960
	Salmon & Trout		1,920	1,920	3,569
	Wild Trout		2,000	2,000	2,000
	Life in lochans		2,217	2,217	
	Ullapool FRMP		600	600	2,000
	AMA Seerad		20,635	20,635	
	Loch Maree Gill/ Fish survey		1,000	1,000	
	Arctic Charr week		2,520	2,520	
	FRS Marine Fisheries Labs		13,000	13,000	
	Closed Projects				7,700
	Sub Total		**46,989**	**46,989**	**21,229**
Total incoming resources		**42,578**	**46,989**	**89,567**	**75,655**
	Figures shown in Book keeping	**42,577**	**46,989**	**89,567**	**76,076**

		Unrestricted Funds	Restricted Funds	2007 Total	2006 Total Per Audit
Resources expended		**£**	**£**	**£**	**£**
	Costs of generating funds				
	Fundraising trading cost of goods sold	0	0	0	179
	Charitable activities	58,936	31,452	90,388	67,439
	Governance costs (Audit)	2,761		2,761	2,209
Total resources expended		**61,697**	**31,452**	**93,149**	**69,827**
Costs of activities in furtherance of charity's objectives					
	Support Costs				
	Wages & Contract labour		11,224	11,224	24,208
	Insurance	1,253		1,253	1,287
	Telephone	891		891	1,180
	Heat & Light	225		225	521
	Subscriptions	1,296		1,296	1,897
	Training expenses	359		359	389
	Research equipment		18,034	18,034	
	Misc office expenses	1,465		1,465	
	Misc Freight & Advertising		600	600	
	Repairs & renewals	73	680	753	807
	Management & Book keeping	5,282		5,282	1,529
	Professional fees	2,761		2,761	1,494
	Sundry Expenses			0	-237
	Bank Charges	32		32	76
	Total	**13,637**	**30,538**	**44,175**	**33,151**
Charitable activities direct costs					
	Publishing	1,315	365	1,680	**2,539**
	Motor vehicle travel & subsistance expenses	4,414	576	4,990	**4,556**
	Wages ,Soc Security , Pension	41,949		41,949	**26,774**
	Meeting & Conference exps	357		357	**419**
	Total	**48,035**	**941**	**48,976**	**34,288**
Charitable activities total costs		**61,672**	**31,479**	**93,151**	**67,439**
	Figures shown in book keeping	**61,670**	**31,479**	**93,149**	**71,805**
IMPORTANT NOTICE					
The 2007 figures are for information only and have not					
been checked or audited					
The figures above have been checked to Book keeping					
However there will be adjustments made by the Accountants					

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Nick Benge (Watergems)
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Willie Hardy

…and all the other proprietors, keepers and ghillies, fish farmers, school teachers, schoolchildren and parents, and everybody else who has carried a bucket or helped us with our work in other ways.

Supporting wild fisheries and the Trust's Work

The current work programme for 2007 – 2008 includes excursions to sample trout in hill lochs and mountain streams, electro-fishing, habitat and river invertebrate surveys of many rivers, sea lice surveys, family 'open' days and much else which may be of interest. Please contact the biologist at info@wrft.org.uk or tel. 01445 712 899 to join in for a day in the field.

Limited Edition Print by Bill Woodrow

A unique opportunity to acquire a limited edition print by the internationally renowned sculptor, Bill Woodrow RA, and to support the Wester Ross Fisheries Trust and the restoration of wild sea trout fisheries in Loch Maree.

Bill Woodrow's large bronze sculpture *Regardless of history* occupied the Fourth Plinth in Trafalgar Square during 2000 and 2001. His sculptures are represented in many important collections around the world, including Tate and the Museum of Modern Art, New York, His prints have been widely exhibited From Picasso to Woodrow at the Tate Gallery in 1995.

The print depicts two rods dapping for sea trout on the spectacular North Shore beat of the Loch Maree Hotel fishery. It is printed on white Zerkall 270gsm paper, size 49 x 38 cm and the actual image size is 41 x 31 cm. It is published in an edition of 200 and printed by Peter Kosowicz Printmaker. One of the prints now hangs in the meeting room of Fisheries Research Services Freshwater Laboratory at Faskally, Pitlochry. Donations received in 2005 and 2006 helped support the Loch Maree Fishes Survey, Loch Maree Open Day and Loch Maree Wild Trout Project .

The cost of each print is £100, unframed only, packing and UK postage included.

All profits will go to Wester Ross Fisheries Trust

Available from:
Bill Woodrow
14 Cormont Road
London
SE5 9RA

Cheques payable to:
Bill Woodrow.

Tel: 020 7733 2435
Email: bill@billwoodrow.com

Wester Ross Fisheries Trust

Harbour Centre, Gairloch, Ross-shire, IV21 2BQ

Tel: 01445 712 899
Email: info@wrft.org.uk

WRFT Registered Charity No: SCO24787

1. Member details

Please complete details

Title: Ms Miss Mrs Mr

First name: _____

Surname: _____

Postal address: _____

_____

_____

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2. Renew my membership

		Please Tick
One year	**£20**	
Single Life (1 card)	**£150**	
Joint Life (2 cards)	**£200**	

Rates are valid until 31/12/2006

3. Payment details

Membership Fees (from section 2)	**£**
Donation	**£**
TOTAL DUE	**£**

4. Method of payment

a. ☐ I enclose a cheque payable to Wester Ross Fisheries Trust for **£**

b. ☐ I would like to pay by Standing Order (please fill in the Standing Order form below – UK bank account holders only)

5. Gift Aid

Use gift aid and you can make your donation worth more. For every pound you give to us, we get an extra 28 pence from the Inland Revenue and it costs you nothing.

I want all donations I've made since 6 April 2000, and all donations I make in the future, to be Gift Aid until I notify you otherwise.

To qualify for Gift Aid, what you pay in income tax or capital gains tax must equal the amount we will claim in the tax year.

Just tick the box and sign below: ☐

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Please return this completed form to: **Wester Ross Fisheries Trust, Harbour Centre, Gairloch, IV21 2BQ**

Data Protection: The information you provide will be held for processing your membership and for mailing with information about Wester Ross Fisheries Trust. Your details will only be used by Wester Ross Fisheries Trust and will not be made available to any other organisation.

Instruction to your Bank or Building Society to pay Standing Order to:

Bank Name & Address: Bank of Scotland – Gairloch Office

Account Name: Wester Ross Fisheries Trust **Sort Code:** 80-06-87 **Account No:** 06000911

PLEASE PAY THE FOLLOWING

Amount £ In Words

Commencing:

Thereafter: Due Date: Annually On / /

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Bank Name: _____

Bank Address _____

_____ Postcode _____

Name(s) of account holder(s)

Branch sort code ☐☐-☐☐-☐☐ Bank/ Building Society Account Number ☐☐☐☐☐☐☐☐

WRFT Ref. No: (office use only)

Instruction to your Bank or Building Society: Please pay Wester Ross Fisheries Trust Standing Order Mandate from the account detailed in this instruction. I understand that this Instruction may remain with the WRFT and, if so, details will be passed electronically to my Bank/Building Society. A photo copy may also be kept on file with the SGA.

Please cancel all previous standing order and/or direct debit mandates under Wester Ross Fisheries Trust.

Signature(s) Date / /