



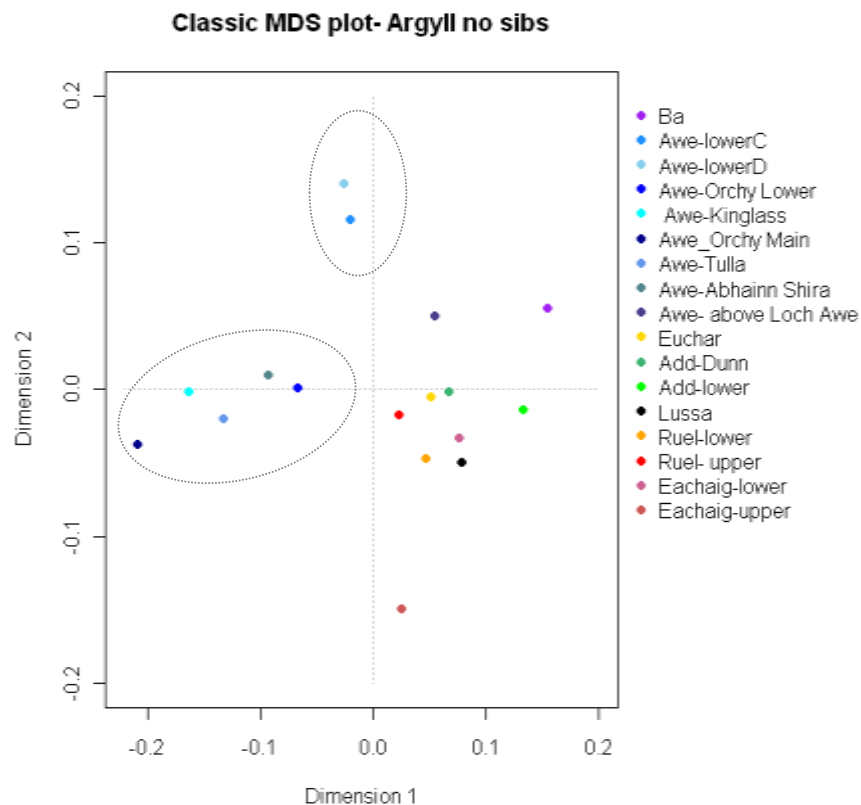
AFT Report to LAIA / ADRIA Projects & Management Update, October 2010

Following the report circulated in July, the AFT has continued its work programme on the Awe catchment on behalf of the Loch Awe Improvement Association, Awe District River Improvement Association and Project partners;

1. Improve understanding of fish populations

1.1 Atlantic salmon genetics

AFT is a partner in the Focusing on Atlantic Salmon Management On Populations (FASMOP) project as a member of RAFTS with funding support from Scottish Government. Results from the initial analysis of samples taken from salmon parr across Argyll show that the salmon of the Awe catchment are a complex of several different breeding groups and are very distinct from other catchments (Figure 1).



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This result confirms that there are distinct spawning groups within the catchment; the River Orchy (upper & lower), Allt Kinglass, River Awe, Loch Tulla tributaries and the Clachan Dubh (Loch Awe) all exhibit distinctive differences between them. Each of which will be adapted to their local environment with behavioural traits that are important to the fishery such as sea-winter age (MSW salmon or 1SW grilse) body size and run timing. The implications are that each stock component requires specific management in relation to exploitation, habitat management and any future hatchery support initiatives.

It is essential that scale and genetic samples from fish caught in the rod fishery are collected to investigate exploitation levels on different stock components.

2. Improve understanding of factors affecting productivity

AFT is working on two projects supported by Scottish Government (via RAFTS) in the Awe catchment aimed at improving management and fishery performance;

2.1 Mitigation measures for operation of a hydroelectric generation installation for Smolt Migration and Salmonid Fish Recruitment (2009-2011).

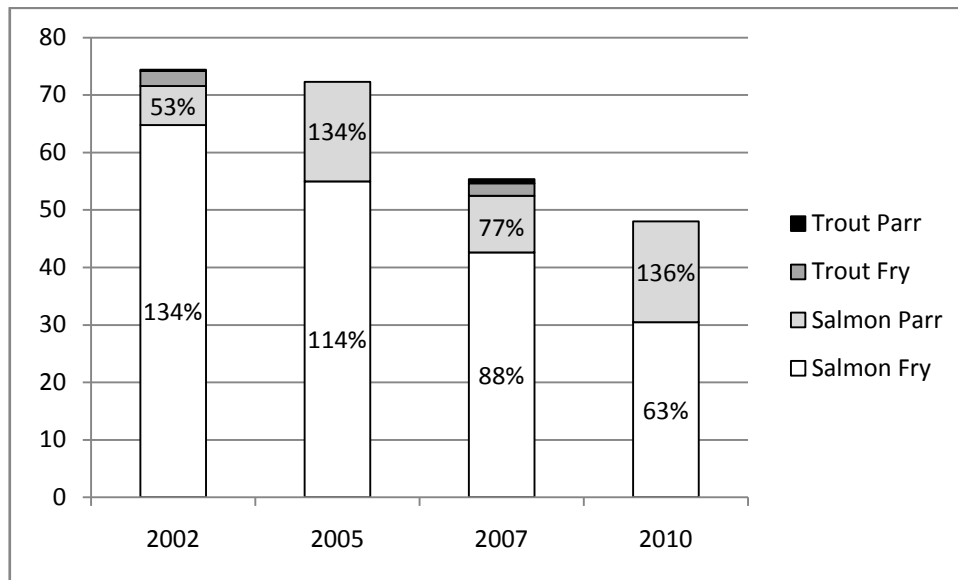
AFT have undertaken electrofishing surveys at a number of established sites to assess juvenile salmon and trout recruitment in the River Awe. Surveys were conducted in June 2010 in areas where redds had been identified in December 2009 (to assess the egg-to-fry survival) and compare abundance against previous surveys.

Following the results reported in July, some time-series analysis has been undertaken to look at trends in abundance of juvenile fish. Three of these sites have been previously sampled in 2002, 2005 and 2007 and comparative average results for the three sites are shown below in Table 1 and Figure 2.

Table 1. Average results for the River Awe Mainstem (min. No. Per 100m²)

Year	Salmon Fry	Salmon Parr	Trout Fry	Trout Parr
2002	64.8	6.8	2.7	0.2
2005	55.0	17.3	0.0	0.0
2007	42.6	9.9	2.2	0.7
2010	30.5	17.5	0.0	0.0
mean	48.2	12.9	1.2	0.2

Fig.2 Average fish abundance for the River Awe (2002-2010)



The 2010 data indicate that there were relatively fewer salmon fry in the River Awe compared to previous surveys, but average density remained high compared to other Argyll Rivers. The longer-term trend indicate a decline in abundance between 2002 and 2010, but is likely to vary year-to-year depending on a number of factors including the number of adult spawners and egg-to-fry survival.

Adult spawners

The number of adults counted at the Awe barrage in the previous year provides a guide to the comparative size of the adult salmon sea returns influencing the numbers of fry in each of the survey years.

Table 3. Adult and Juvenile percentage comparisons (2001-10)

Year	Adult count	% of Avg. count (64-09)	% Avg. fry density	% Avg. Parr density
2001/2	3,066	114.6	134	53
2004/5	2,880	107.7	114	134
2006/7	2,894	108.2	88	77
2009/10	799	29.9	63	136

The numbers of returning adults were highest in 2001 (3066) and lowest in 2009 (799) compared to a longer-term average of 2,675 between 1964 and 2010. Counts in 2001, 04 and 06 were all higher than the average (108 to 115% of average), while the count in 2009 was less than one-third of the average (30%). The subsequent difference in fry density follow a similar pattern to adult counts with the average fry numbers exceeding the average in 2002 (134%) and 2005 (114%), but were lower in 2007 (88% of the average) despite higher adult counts in 2006. Despite the adult count being 30% of the average in 2009, fry density in 2010 was over 60% of the average, indicating that there are compensatory factors of reduced density-dependant mortality as fewer fry compete for resources. Average parr density found in 2010 was highest at 136% of the average compared to other years indicating the over-wintering of fry spawned in 2008 has been relatively successful. At this time, there do not appear to be significant declines in juvenile production that is sufficient

to significantly reduce smolt output, but further data is required to identify and quantify other factors controlling smolt output from the River Awe.

Further electrofishing and redd counts will be undertaken during the Autumn as part of the assessment of the factors affecting recruitment of salmon in the River Awe.

2.2 Stream crossings project 2009/10/11

In partnership with ADRIA, LAIA and Forestry Commission and Scottish Government grant, AFT are assessing obstacles to fish passage in the Awe catchment;

A desk study to of existing habitat and electrofishing data has been undertaken to identify and prioritise assessment of stream crossings and other obstacles to fish migration. To date, 41 electrofishing surveys have been undertaken on 20 tributary streams in the southern basin of Loch Awe to access potential obstacles to fish migration.

Survey results indicate;

- 6 streams were found to have no fish to be present
- 7 streams were found to have full obstacles to fish passage
- 1 stream was found to have a partial barrier to fish passage
- 8 streams were found to have no obstacles

Further information on obstacles will be collected through redd counts this autumn to further evaluate stream crossings at sites where fish access may be affected.

3. Prevent inappropriate developments likely to affect fishery performance

AFT is working in partnership with Argyll DSFB, renewable energy developers and regulatory agencies to minimise impacts on the productivity of fish populations and the performance of fisheries;

3.2 Carraigh Gheal Wind Farm

Further to the habitat and fish population surveys in five catchments on the west side of Loch Awe in 2009, AFT has undertaken habitat surveys on 5 other catchments to inform the Environmental statement and monitoring for the West Loch Awe Timber Haulage Route. Results will be Reported by the spring of 2011.

4. Prevent loss of productivity from biosecurity issues

As part of the implementation of the fisheries biosecurity plan for Argyll & The Islands AFT has two projects now underway in the Awe catchment with RAFTS partners;

4.1 Eredine Forest Non-Native Invasive Plants Project 2010/11/12

A survey of 25 tributary streams of east Loch Awe conducted in 2008/9. Three non-native invasive (NNI) species of flora were identified a number of locations on in 12 tributary streams & some reaches of the shoreline of Loch Awe; Japanese knotweed, Rhododendron Ponticum and Himalayan Balsam.

AFT has secured funding for control and eradication of INNs in the Eredine Forest via a joint RAFTS bid to the SEPA Restoration Fund. FC and AFT has begun work to tackle Rhododendron ponticum in riparian zones within the Forest with further work to follow over the next 2 years;

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2010	2011/12
<p>January; Cutting & disposal of mature Rhododendron Ponticum (FC) was undertaken.</p> <p>October; Initial chemical control measures for Japanese knotweed & Himalayan Balsam (Root treatment & spraying) and chemical treatment of Rhododendron Ponticum regeneration. Pulling of Himalayan Balsam.</p>	<p>May 2011 – follow-up survey of treatment areas to assess effectiveness of the work programme. Report to stakeholders. Identify & fund further treatment plan.</p> <p>Summer 2011; follow-up treatment. Report to stakeholders.</p> <p>May 2012 – follow-up survey of treatment areas to assess effectiveness of the work programme. Report to stakeholders. Identify & fund further treatment plan.</p>

The initial chemical control measures will be undertaken on Forestry Commission ground this autumn by contractor.

4.2 Awe Catchment Non-Native Invasive Plants Project 2010-15

Funding has now been secured to expand this project to the rest of the Awe catchment as part of an EU bid with other RAFTS partners. The project involves over £200,000 worth of work in the catchment over the next four years. The first phase of survey work will begin this winter, but some funds may be available to begin control measures also. Meetings with the project coordinator are taking place this week and an announcement and schedule will be available in the near future.

5. Maintain and improve habitats

AFT is working to develop habitat improvement projects with a range of funding partners including riparian owners, Forestry commission and fishery interests (LAIA & ADRIA);

5.2 Loch Awe - Eredine Forest Habitat Improvement Project

Further to the habitat improvement works undertaken on 25 tributary streams in the Eredine Forest (South-east Loch Awe) in the winters of 2008 and 2009 (reported in July 2010), a further redd count will undertaken in the autumn of 2010. The results of this work will be reported in the spring; time-series photographs of the restored riparian zones are being taken to track the recovery of vegetation along stream banks.

AFT has undertaken further consultation with Forestry Commission during the winter and additional work has been undertaken;

- Removal of conifer from stream banks and loch shores
- Coppicing of native trees where overshadowing has reduced productivity

7. Management

7.1 Management plan

To establish best practice fishery management planning the new FMP is being developed on a catchment basis considering all aspects of mixed fish communities and the different fisheries they support. The plan seeks to deliver collaborative projects that will benefit both salmon and trout fishery interests and provides a platform for project development, identifying potential for funding opportunities. The work on the first draft of the plan is underway and is due for consultation of the draft in the late autumn of 2010.

7.2 Plan & Project Funding

The current level of investment into fisheries in Argyll is limited by the productivity and performance of the fishery. In example, funding to the Trust direct from fishery interests in Argyll is less than 30% of all funding. Funding for protection, investigation and improvement work to AFT from Awe fisheries represents a total of approximately 12,000 per annum (<10% of Trust income). To undertake sufficient work to realise improvements, additional funding will be required. As a charitable Trust and a member of RAFTS, AFT has potential to use funds from fishery interest as seed to attract other funding partners and potentially generate a significantly larger spend on fishery improvements.

The current development of collaborative projects (see over leaf) that are secured for this and next year (2009/10 and 2010/11) are worth a total of £121,225 with an investment of £12,428 from ADRIA and £9,550 from LAIA (total £21,978 over two years).

Other management costs to undertake site monitoring, plan and project development and consultation with developers are estimated at a cost of £18,000 over two years which may be spread over the whole catchment. These figures are maximum estimates and will vary year-to-year depending on requirement.

Consultation and agreement between ADRA, LAIA and AFT on projects, management activities and the development of a catchment fishery management plan are required if longer-term planning and further investment are to be secured.



Years	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11	Grand Total
PROJECTS	ADRIA	ADRIA	LAIA	LAIA	SG/RAFTS	SG/RAFTS	S&SE	S&SE	FC	FC	AFT	AFT	Total	Total	
FASMOP Genetics	0	1,800	0	0	2,320	0	0	0	0	0	0	0	2,320	1,800	4,120
River Awe Project	2,000	2,000	0	0	6,500	7,000	5,000	5,000	0	0	2,000	2,000	15,500	16,000	31,500
Eredine Forest Habitat	1,332	1,332	2,668	2,668	0	0	0	0	3,000	3,000	0	0	7,000	7,000	14,000
Eredine Forest INNs	0	250	0	500	0	3,970	0	0	0	2,700	0	3,000	0	10,420	10,420
Stream Crossings	1,000	1,000	1,000	1,000	6,663	7,250	0	0	2,500	2,500	2,000	2,000	13,163	13,750	26,913
Awe Biosecurity / INNs	0	1,714		1,714		25,703	0	0		5,141	0	0	0	34,272	34,272
Total Estimated Projects	4,332	8,096	3,668	5,882	15,483	43,923	5,000	5,000	5,500	13,341	4,000	7,000	37,983	83,242	121,225
Years	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11	Grand Total
FISHERY MANAGEMENT	ADRIA	ADRIA	LAIA	LAIA	SG/RAFTS	SG/RAFTS	S&SE	S&SE	FC	FC	AFT	AFT	Total	Total	
Site Monitoring	1,500	1,500	1,500	1,500									3,000	3,000	6,000
Plan / Project Development	2,000	2,000	2,000	2,000									4,000	4,000	8,000
Development Consultation	1,000	1,000	1,000	1,000									2,000	2,000	4,000
Total Management (Est.)	4,500	4,500	4,500	4,500	0	0	0	0	0	0	0	0	9,000	9,000	18,000
Estimated Grand Total	8,832	12,596	8,168	10,382	15,483	43,923	5,000	5,000	5,500	13,341	4,000	7,000	46,983	92,242	139,225

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