**Jón Kristjánsson**
**Fisheries Scientist**
**Reykjavík**

March 2011

# Salmon in Haffjardara 2010

## Parr survey

The salmon parr population in Haffjardara was investigated August 16 and 17, 2010. The main river was fished with electricity at 7 sites. The tributary Flatna was fished at one site. The parr were aged and density of the various year classes estimated. During the test fishing the water level was very low and conditions for electrofishing were good.

Table 1 shows the results from the parr survey. Fry (age 0+) was found in high numbers at all sampling sites. 1+ parr were numerous but 2+ and 3+ were low in numbers. Growth was good, and the parr was in average condition. Two and tree year old parr were most numerous in the upper part of the river, the stretch above Ófæra.

| | | | | Age classes | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site No. | Location | Date | Areal | 0+ | | 1+ | | 2+ | | 3+ | | Sum | Density |
| | | | $m^2$ | no | ml | no. | ml | no | ml | no. | ml | | Fish/100 $m^2$ |
| 1 | Long Pool | 17/8 | 30 | 5 | 3.4 | 12 | 6.2 | 5 | 8.4 | 4 | 9.3 | 26 | 86 |
| 2 | Upper Lunceon | 17/8 | 30 | 7 | 4.2 | 13 | 6.7 | 3 | 9.1 | | | 23 | 76 |
| 3 | Below Falls | 17/8 | 40 | 6 | 3.7 | 19 | 6.1 | 2 | 8.5 | 4 | 10.4 | 31 | 78 |
| 4 | Stone | 17/8 | 30 | 13 | 3.8 | 1 | 5.4 | 1 | | | | 15 | 50 |
| 5 | Home pool | 17/8 | 50 | 20 | 3.5 | 6 | 5.8 | | | | | 26 | 52 |
| 6 | Sheep | 16/8 | 40 | 14 | 4.2 | 19 | 6.5 | | | | | 33 | 82 |
| 7 | Above Sea Pool | 16/8 | 80 | 28 | 3.9 | 14 | 6.9 | 1 | 11.6 | | | 43 | 54 |
| 8 | Tributary Flatna | 17/8 | 40 | 12 | 4.2 | 7 | 6.6 | 1 | 10.6 | | | 20 | 50 |
| **Total:** | | | **340** | **105** | | **91** | | **12** | | **8** | | **216** | **64** |
| 1009 | | | 320 | 108 | | 31 | | 6 | | 1 | | 146 | 46 |

Table 1. Mean length at age (ml), and number of salmon parr (no) caught at various sites in Haffjardara and the tributary Flatna August 16 and 17, 2010. The total catch of parr in 2009 is also shown.

## The salmon catch in 2010

The total catch in 2010 was 1969 fish. The catch of grilse and salmon since 1984 is shown in table 2. Out of the 1969 fish caught in Haffjardara, 1509 (77%) were released.

The catch of grilse (I SW fish) was 1672 fish and the catch of salmon (II SW fish) was 297 fish, 18% of the total catch (fig 3).

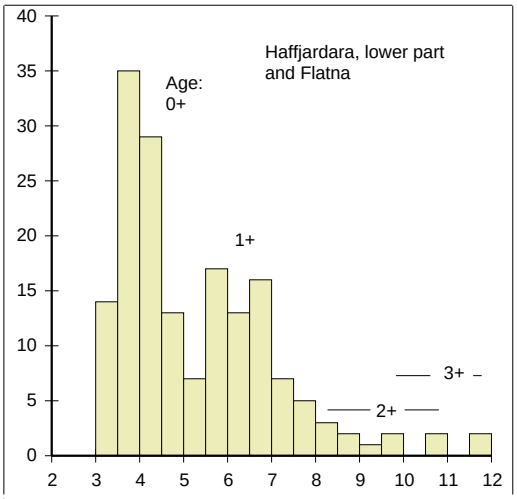



Fig. 1. Length distribution of salmon parr caught in lower part of Haffjardara and Flatna 2010.

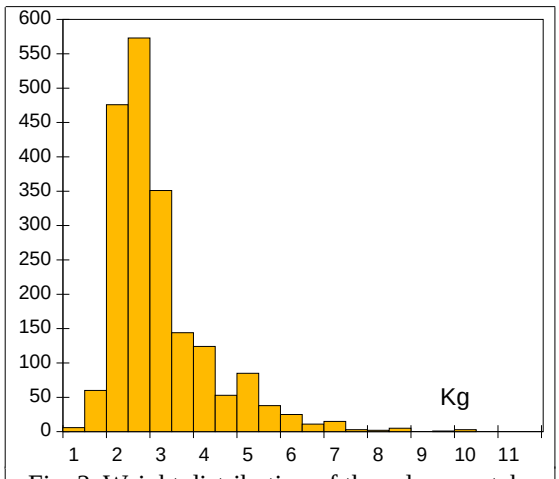



Fig. 2. Weight distribution of the salmon catch in Haffjardara in 2010. One 10 kg and one 11.5 kilo fish were caught.

| Year | I SW | II SW | Total | % II SW | Released | % Rel. |
|---|---|---|---|---|---|---|
| 84 | 202 | 351 | 553 | 63% | | |
| 85 | 364 | 215 | 579 | 37% | | |
| 86 | 978 | 161 | 1139 | 14% | | |
| 87 | 309 | 226 | 535 | 42% | | |
| 88 | 744 | 130 | 874 | 15% | | |
| 89 | 533 | 130 | 663 | 20% | | |
| 90 | 475 | 148 | 623 | 24% | | |
| 91 | 594 | 126 | 720 | 18% | | |
| 92 | 703 | 122 | 825 | 15% | | |
| 93 | 550 | 83 | 633 | 13% | | |
| 94 | 567 | 103 | 670 | 15% | 4 | 1% |
| 95 | 577 | 155 | 732 | 21% | 0 | |
| 96 | 533 | 69 | 602 | 11% | 24 | 4% |
| 97 | 490 | 70 | 560 | 12% | 0 | |
| 98 | 678 | 74 | 752 | 10% | 193 | 26% |
| 99 | 668 | 122 | 790 | 15% | 302 | 38% |
| 00 | 612 | 60 | 672 | 9% | 278 | 41% |
| 01 | 465 | 67 | 532 | 13% | 246 | 46% |
| 02 | 847 | 96 | 943 | 10% | 493 | 52% |
| 03 | 912 | 95 | 1007 | 9% | 525 | 52% |
| 04 | 954 | 179 | 1133 | 16% | 616 | 55% |
| 05 | 1075 | 215 | 1290 | 17% | 929 | 72% |
| 06 | 874 | 203 | 1077 | 19% | 749 | 70% |
| 07 | 899 | 141 | 1079 | 13% | 767 | 71% |
| 08 | 1740 | 271 | 2011 | 13% | 1599 | 80% |
| 09 | 1344 | 278 | 1622 | 17% | 1227 | 76% |
| 10 | 1672 | 297 | 1969 | 15% | 1509 | 77% |
| **Avg 84-10** | **754** | **155** | **911** | | | |
| **Avg 00-10** | **1036** | **173** | **1212** | | | |

Table 2. Catch of grilse (I SW), salmon (II SW) and percentage of salmon and number and percentage of released fish in Haffjardara 1984-2010.

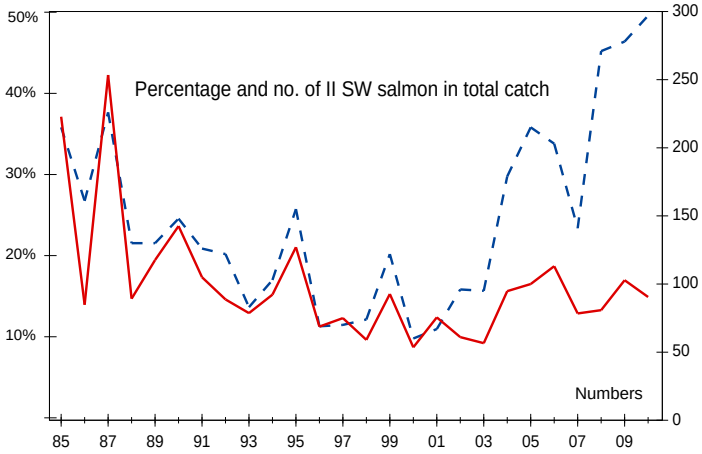



Fig. 3. Percentage (unbroken line) of salmon (II SW) in the total catch in Haffjardara 1985- 2010. Numbers of II SW fish shown by the broken line.

## Tagging from 1999

Since 1999, 982 fish have been tagged in Haffjardara. 140 (14.3 %) have been recaptured within the same season (table 3).

| Year | No. tagged | No. recaptured | % rec. |
|---|---|---|---|
| 1999 | 45 | 1 | 2 |
| 2000 | 0 | 0 | 0 |
| 2001 | 14 | 4 | 29 |
| 2002 | 91 | 17 | 19 |
| 2003 | 73 | 22 | 30 |
| 2004 | 96 | 18 | 19 |
| 2005 | 131 | 18 | 14 |
| 2006 | 76 | 13 | 17 |
| 2007 | 68 | 5 | 7 |
| 2008 | 156 | 21 | 13 |
| 2009 | 88 | 9 | 10 |
| 2010 | 144 | 12 | 8 |
| **Total:** | **982** | **140** | **14.3** |

Table 3. Tagging results 1999-2010. Fish, tagged and recovered within the same fishing season.

## Tagging 2010

Tagging took place in a 2 week period from 2/7 to 15/7. When tagging finished a total of 730 fish had been caught. 144 fish were tagged and released.

12 fish (8.3%) from that tagging were recaptured. In addition, 1 fish tagged in 2009 was recaptured. Results from the recoveries in 2010 are shown in table 4.

One fish, tagged in 2009, a 2 kg's male, was recaptured in Sheep exactly 366 days after it was tagged in the same pool.

| Tagged | | | Recovered | | | |
|---|---|---|---|---|---|---|
| Tag No. | Date | Pool No. | Date | Pool no. | Timeout Days | Up/down N.of pools |
| 79993 | 12.7.2009 | 2 | 13.7.2010 | 2 | 366 | 0 |
| 94157 | 2.7.2010 | 23 | 29.7.2010 | 26 | 27 | 3 |
| 94121 | 2.7.2010 | 24 | 28.7.2010 | 32 | 26 | 8 |
| 101783 | 3.7.2010 | 2 | 23.7.2010 | 2 | 20 | 0 |
| 101793 | 4.7.2010 | 2 | 1.8.2010 | 2 | 28 | 0 |
| 101796 | 4.7.2010 | 2 | 25.8.2010 | 32 | 52 | 30 |
| 101963 | 4.7.2010 | 2 | 10.8.2010 | 22 | 37 | 20 |
| 101909 | 5.7.2010 | 2 | 11.8.2010 | 10 | 37 | 8 |
| 101913 | 5.7.2010 | 2 | 3.8.2010 | 2 | 29 | 0 |
| 101801 | 8.7.2010 | 7 | 14.9.2010 | 32 | 68 | 25 |
| 101851 | 9.7.2010 | 7 | 13.7.2010 | 7 | 4 | 0 |
| 101821 | 9.7.2010 | 20 | 27.7.2010 | 10 | 18 | -10 |
| 101885 | 11.7.2010 | 23 | 21.8.2010 | 33 | 41 | 10 |

Table 4. Tagged and recaptured salmon in Haffjardara 2010. 'Time out' is the time between tagging and recapture.
'Up/down' is the movement of the fish, how many pools the fish moved up or down (minus sign). One fish from tagging in 2009, no. 79993, was caught exactly one year later in the same pool. This was a male, 2 kg's on recapture.

## Parr density

Mean density of parr in the years 1994-2010 is shown in table 5.

Catchability of parr depends on several factors; temperature, water flow etc. Each year, sampling conditions are different. Despite high numbers of young parr (0+ and 1+) last 6-7 years, older parr (2+ and 3+) are relatively few. Increased recruitment in the recent years has not lead to increased smolt production.

It is interesting to compare the densities of the year classes, as they represent the mortality on a yearly basis. Table 5 and figure 4 show the ratio of one and two year old fish from 1994.

The number of 0+ fish is vastly underestimated; they are small and are difficult to catch, some are still in the gravel. Estimate of the density of one and two years old fish is more reliable, but most of the 3 years old will have left the river as smolts. In 2010, 12 out of 20 two and three year old parr were caught in the upper part of the river, above Ófæra. The river from there up to the lake was nearly dry and impassible for salmon at the time of parr sampling.

| Year | N.of parr / 100m$^2$ | | | | | Ratio |
|---|---|---|---|---|---|---|
| Age: | 0+ | 1+ | 2+ | 3+ | Sum | 2+/1+ |
| 94 | 3 | 4 | 3 | 1 | 11 | 0.79 |
| 95 | 4 | 12 | 9 | 1 | 26 | 0.76 |
| 96 | 6 | 13 | 11 | 1 | 31 | 0.89 |
| 97 | 7 | 18 | 9 | 1 | 35 | 0.51 |
| 98 | 13 | 13 | 13 | 2 | 41 | 1.02 |
| 99 | 8 | 16 | 4 | 2 | 30 | 0.24 |
| 00 | 10 | 14 | 8 | 0 | 32 | 0.59 |
| 01 | 18 | 31 | 14 | 1 | 64 | 0.47 |
| 02 | 3 | 16 | 10 | 2 | 31 | 0.63 |
| 03 | 30 | 15 | 17 | 2 | 64 | 1.16 |
| 04 | 14 | 16 | 9 | 0 | 39 | 0.53 |
| 05 | 42 | 5 | 6 | 1 | 54 | 0.24 |
| 06 | 16 | 18 | 4 | 0 | 38 | 0.20 |
| 07 | 31 | 27 | 8 | 3 | 69 | 0.30 |
| 08 | 23 | 18 | 8 | 2 | 51 | 0.46 |
| 09 | 34 | 10 | 2 | 0 | 46 | 0.19 |
| 10 | 31 | 17 | 4 | 2 | 64 | 0.24 |

Table 5. Mean density of parr in the years 1994-2010 and the ratio 2+/1+ parr. The 2+ parr are the smolt candidates for the following year.

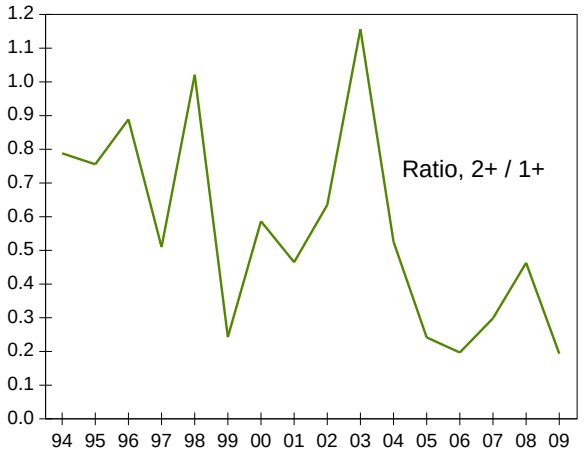



Fig 4. The proportion of two year old/one year old parr. This indicates declining smolt production in recent years.