

# VEIÐIMÁLASTOFNUNIN

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EXPLOITATION OF ATLANTIC SALMON IN ICELAND

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Eintak bókasafns

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Introduction

Iceland is an island in the North Atlantic situated between 63° 30' and 24° 32' W longitude and between 13° 30' and 24° 32' W longitude. It covers an area of 103,000 km<sup>2</sup>. The climate is cool, temperate, and oceanic with rapid changes. The summers are cool but the winters are relatively warm. There are only five species of fish living partly or wholly in freshwater native to the country. These are the Atlantic salmon (Salmo salar L.), the sea trout (Salmo trutta L.) as well as a land-locked variety, the brown trout, the sea char (Salvelinus alpinus L.) and land-locked variety, the lake char, the European eel (Anguilla anguilla L.) and the three spined stickleback (Gasterosteus aculeatus L.).

Rivers

There are about 250 rivers in Iceland of which about 80 rivers and river systems hold salmon. There are three types of rivers with respect to their origin. These are spring-fed rivers, direct run-off rivers and glacial rivers. In some cases the rivers are mixtures of all three types. They vary with respect to types of riverbeds, discharge, variation in amount of flow, temperature of the water, ice cover, and anchor ice. Since Iceland is a mountainous country there are many hindrances in the rivers for migratory fishes. Salmon is found mostly in short streams and the lowland parts of the rivers and are generally most abundant in rivers which have their origin in lakes or flow through lakes.

The best salmon rivers with one exception are located in the western half of the country. The river system Ölfusá-Hvítá in the south and the river system of Hvítá in the west produce the largest catches which amount to about 40% of the total yield in the country. The salmon rivers in the south and the west yield over 70% of the catch and those of the north

and the east less than 30% (Fig. 1.).

On the eastern half of the country there are a few salmon rivers. These are located in the north and northeast districts. The Laxá in Thingeyjarsýsla district is by far the most productive river in these parts and one of the best salmon rivers in the country with respect to the number of salmon caught annually by anglers. It is also one of three rivers in the country yielding salmon with largest average weight and the one where most often the largest salmon are caught each year.

Northeast Iceland is the coldest part of the country and the sea off the coast there colder than elsewhere around the island. The fluctuation in salmon catches in rivers in these parts can be great, the ratio between the catches during the best years and the poorest ones during the period 1976-1985 was between 10:1 and 20:1, where as the corresponding figures for larger salmon rivers elsewhere in the country were less than 4:1 during the same period.

#### Catch statistics

Official records of salmon catches are available since 1897. During the years 1897-1909 the average annual catch was 5,167 fish. From 1910-1950 the average catch rose to about 15,000 and further to about 64,000 during the years 1971-1980 the average total weight being about 240 metric tons. The record catch was 1978 when 78,625 salmon were caught by rod and line and gill nets weighing 283 metric tons. Besides this 1,953 salmon returned to ocean ranching sites weighing about 7 metric tons. In 1979, 1981 and 1983 weather conditions were most unfavourable to freshwater life of salmon and sea temperature was unusually low causing considerable drop in catches in general especially in 1981, 1982 and 1984. In Fig 2. the number of salmon caught from 1946-1986 has been plotted. At the bottom of the Figure to the right are returns of salmon to ocean ranching sites. The ratio between grilse and salmon varies most often between 50:50 to 60:40. There are only few salmon that spend more than two years in the sea.

It is to be expected that the fishermen showed at first a certain reluctance to report accurately their catches since the record were also used in connection with taxation. But as time passed the catch statistics have improved considerably.

During the last 40 year a great emphasis has been put on getting accurate catch statistics with considerable success. Special logbooks are placed in all angling huts and lodges for daily recording of catches and netsmen are cooperative in sending in their catch figures after each fishing season. The Institute of Freshwater Fisheries collects the logbooks from the rivers in the autumn each year for registrating information by computers from the logbooks on the fish and fishing of the passed season.

#### Fishing methods

According to law only two methods of catching salmon are allowed at present i.e. angling and gill-netting. Earlier salmon were also caught by seines, in traps and by spears. Salmon fishing is permitted for maximal three months in each salmon river during the period 20th May to 20th September. Netting is allowed only for half of the week from Tuesday morning to Friday night and angling in each river for 12 hours each day during the period 7 a.m. and 10 p.m. with a limited number of rods in each river.

Netting for salmon takes place mainly in three glacial rivers: the Thjórsá and the Ölfusá-Hvítá in the south and the Hvítá in the west. In most of the other rivers the salmon fishing is leased to anglers exclusively. The nets take annually about 30-40% of the total river catches.

#### Administration

The freshwater fisheries including the salmon fishery comes under The Ministry of Agriculture. The Director of Freshwater Fisheries administers the fisheries under the Ministry and is the head of the Institute of Freshwater Fisheries. Locally the fishing associations, which are about

150 in number, manage the fishery for individual rivers and lakes, carry out enhancement programmes, hire bailiffs and often own angling huts and lodges. Fishing rights are privately owned and go with the land adjoining rivers and lakes. The owners are most often local farmers since almost all rivers and many lakes are in agricultural areas. The members of each fishing association are the owners or the tenants of farms on respective rivers. The fishing associations have functioned effectively. They play an important part in the administration of the salmon fishery in the country.

#### Rate of exploitation

Iceland is in an unusual position to study the exploitation rate of the salmon stocks in individual rivers, since salmon fishing, with a minor exception, takes place in the rivers. There are, however, catches of unknown magnitude made of Icelandic salmon off West Greenland and in the Faroe area as indicated by a few Carlin tags and micro tags which have been retrieved from salmon caught in these areas and by a salmon tagged off West Greenland in 1972 which was caught in West Iceland river the following year (Fig. 3). Eight tags have been returned from West Greenland one from East Greenland five from the Faroes and one from West Norway. Since 1974 micro tags have almost exclusively been used to tag salmon smolts in Iceland. It is not known how many micro-tagged Icelandic salmon may have been caught off West Greenland from 1975 until 1985 when scanning for micro tags was started there. In this first year of scanning one Icelandic micro tag was returned out of total of 36 micro tags retrieved.

A few attempts have been made to assess the exploitation rate of salmon in Icelandic rivers with different methods. In the Ellidaár direct counts were carried out at first and later by a mechanical fish counter. In the Ólfarsá redds were counted. In the Nordurá a resistivity tube counter is located in a fish pass. In the Blanda and the Ölfusa-Hvítá the tag and recapture method was used.

### The Ellidaár

The river Ellidaár is located within the City of Reykjavík in Southwest Iceland. It is 6 km long and is the outlet of Lake Ellidavatn, which is 74 m above sea level. There is a hydro-electric power station on the river about 0.8 km above the estuary and a power dam about 1.5 km above the power station. There is a weir with a trap located just below the power station where the counts have been made since 1931. The fish were counted manually until 1960 when a mechanical fish counter was installed. There have been many changes made in the riverbed and in the natural flow pattern after the building of the power station and the power dam in 1921, causing degradation of natural condition for salmon in the river system.

A study was made of the rate of exploitation of salmon in the Ellidaár from 1935 to 1976 based on total rod catch and total run, see Table 1. Data were missing for a few years. Estimates were made for these years by methods discussed by Mundy et.al. (1978). The rod catch from 1935 to 1976 was averaging 34.6% of the run. During the period from 1935 to 1955 the average catch was 38%. During the following decade it fell to 28%, but from 1966 to 1976 it rose again then to about 35%. The range of the catch for individual years was from 18 to 58%.

### The Úlfarsá

The Úlfarsá is a small river located a few kilometers north of the Ellidaár. It is 10.6 km long and is the outlet of Lake Hafravatn which is 76 m above sea level. The average natural flow is about 800 l/sec. The spawning takes place during the latter half of October. Since the flow is small the redds are easily seen and counted except on a few occasions when redds were crowded at two places and some overcutting occurred there at high stock levels. In such cases estimates of the number of redds were made. At spawning fords of the river there were a few to many redds at the same places all the



years, but on the other hand there were spots where redds were observed on one or more occasions. Redds were counted for the entire river or parts there of in the autumn of 1955, 1956, 1957, 1959, 1960 and 1963. It was estimated that one redd represented one female and one male. The rod catch for the each year was added to the estimated number of salmon spawning in the river the same year. The result was that the average rod catch for the six years was 28.5% of the run, varying from 14.1% in 1959 to 46.2% in 1957, see Table 2.

### The Nordurá

The Nordurá is a tributary to the glacial river Hvítá in Borgarfjörður district in West Iceland. Counting of salmon takes place through a resistivity tube counter in a fish pass at the waterfall Laxfoss, which is located about 16 km upstream from Nordurá-Hvítá confluence. About 3 km upstream from the Laxfoss is another waterfall, the Glanni, where salmon has been able to leap when water level has been low. In 1985 a fish pass was built on one side of the waterfall. Above the Glanni salmon occupy about 27 km of river with good spawning grounds.

Table 3 shows the number of salmon counted at the Laxfoss for the years 1972-1985 with the exception of the year 1979 which registered an unbelievably high count, which is considered unreliable. In the Table there is also listed the number of fish caught by rod and line above the fish counter as well as the total rod catch for the river.

The average count of salmon for the mentioned thirteen years period amounted to 2,304 fish, the range being from 323 in 1984 to 3,993 in 1975. The average catch above the fish pass was 583 fish varying from 216 in 1984 to 838 in 1980. The average catch rate of fish above the counter was 25.3% varying from 10.9% in 1983 to 81.6% in 1985.

Salmon of the Nordurá origin is also caught by nets in the Hvítá. During the thirteen years period in question 48.2% of the total catch of salmon in the Hvítá, river system was netted. Assuming that the mentioned percentage of Nordurá salmon stock was caught in the the Hvítá the catch should have amounted to 1,539 fish. The average annual rod catch for

same period was 1,654 salmon. The total catch of Nordurá salmon would thus have been 3,193 fish. The average number of salmon left after the fishing season in the river above the counter was 1,721 fish or 57.4 salmon per kilometer above the counter on the average. If assuming that the same number of salmon per kilometer was left below the counter then there should have been 918 fish in that part of the river. The total salmon stock of Nordurá should thus have been close to 5,832 fish. On the basis of the figures at hand it is estimated that 3,193 salmon or 54.8% of the total stock were caught, 1,654 or 28.4% by rod and line, 1,539 or 26.4% by nets in the Hvítá and 2,639 salmon or 45.2% were left in the river after the fishing season.

#### Blanda

During the years 1982 to 1985 salmon in the glacial river Blanda in North Iceland were caught in a trap in a fish pass about 2 km above the estuary. The salmon were tagged with numbered "spaghetti" tags before being released up above. During the period 2,077 salmon were tagged or 519 fish on the average per year, see Table 5. Salmon were able at a certain flow level to leap the cascades on one side of the fish pass. From the ratio of tagged to untagged fish caught above the fish pass it was estimated that 503 untagged salmon were caught. Adding them to the tagged ones the total run up above the fish pass amounted to 2,580 salmon or 645 fish on the average per year. The rod catch above the fish pass was 669 salmon or 26%. The average catch varied from 21% in 1982 to 31% in 1983. Rod fishing in the Blanda is also carried out below the fish pass where greater part of the total rod catches are made amounting to 80% on the average for the four years. When the rod catches for all the river system are added up, they amount to 3,374 fish or 822 on the average per year. The size of the run is estimated to be 5,198 fish or 1,300 per year on the average the total rod catch amounts to 65%. The total catch varied from 82% in 1982 to 55% in 1985.

There is a great difference in exploitation rate above

and below the fish pass. It may be explained by the difference in the kinds of bait used. Above the fish pass earthworms and artificial flies are used as bait as is done in most Icelandic clear water rivers while large spoons are almost exclusively used in the glacial water below the fish pass.

### The Ölfusá-Hvítá

The Ölfusá-Hvítá in South Iceland is one of the largest river systems in Iceland. The main river is of glacial origin, where netting for salmon takes place, while the tributaries are clear water streams with rod fishing only. Salmon can migrate as far as 90 km upstream in the main river. During the years 1960 to 1972 924 clean salmon were trapped and tagged in the estuary of the Ölfusá-Hvítá. Tags of 333 salmon were returned or 36.0%, varying from 18.3% in 1961 to 49.1% in 1969. Since returning of tags is expected to be incomplete the actual catch of tagged salmon has more likely been close to 50%.

### Discussion

The methods of assessing the exploitation rate of salmon being used in Icelandic rivers have certain shortcomings which render them inaccurate. The sorts and magnitude of inadequacies vary from river to river and the rate of exploitation varies from year to year depending on the size of runs and catchability during the fishing season. When the runs are at their smallest the percentage of the catches is highest, while when the runs are biggest the percentage of the catches is lowest. This can be seen from the Elliðaár data for 42 years, where the biggest run was 8.9 times larger than the smallest one, while the biggest annual catch was only 3.2 times larger than the smallest one.

It is seen from Table 1 that the salmon runs in the Elliðaár has increased during the period 1935 to 1976 from 2,493 for the first ten years period to 5,234 for the twelve years period 1965 to 1976 and so have the rod catches from 1,032 fish to 1,851 respectively. The exploitation rate by rod

fishing is about the same except for the period 1955-1964 when it is lower. The increase in the total run after 1965 can partly have been the result of that a bag net fishing just outside the estuary of the river was abandoned in 1964 allowing the salmon on their way to Ellidaár, which would otherwise have been caught in the bag net, to enter the river. The bag net catch amounted to about 500 salmon per year on the average according to catch records from 1947 to 1963. Another possible factor leading to increase in the run is that in 1965 a fish pass was built in an impassable dam at the outflow of Lake Ellidavatn opening up the lake and its tributary, the Hólmsá, for spawning and for rearing of salmon parr. Then enhancement measures have also played part in enlarging the run. The number of salmon caught increased more than twofold with advancing years and the angling effort was almost doubled during the 42 years, which is covered by the study.

The counts of salmon through the fish pass in Laxfoss in the Nordurá will not furnish accurate information about the run up above. The counter is mounted in the fish pass, which is located in the middle of the waterfall. It is exposed to great fluctuations in the amount of flow. Floods will impede salmon ascending and they have on a few occasions damaged the counting mechanism, but such damages have been repaired as soon as the floods have receded. Floods may last for many days at the time in the summer or even be frequent and lasting through the whole summer as was the case in 1983. An attendant looks after the counter ones or twice daily, except when floods prevent him from wading across to the counter. He reads off the counting, measures the temperature of air and water, reads the water gauge and writes down remarks about the weather.

Another source of inaccuracy in counting figures is the fact that salmon can leap the waterfall to some extent when the water level is low. It is expected that this has happened in 1974, 1978, 1984 and 1985. If counts and rod catches above the counter for these four years are left out, the average counts for the other nine years left are 2,933 salmon instead of 2,304 and the average rod catch is 615 fish or 21,8%.

As mentioned previously a fish pass was built in 1985 in the waterfall Glanni, which is located about 3 km above the Laxfoss. In June 1986 a resistivity tube counter was installed in the fish pass. 1166 salmon were counted through and 280 salmon were caught in the river up above the Glanni or 24.0%, which is close to the exploitation rate for the thirteen year's count in the Laxfoss. But it is possible that some salmon have leaped the Glanni waterfall at low water levels as they did before the fish pass was built.

The flow of the glacial river Blanda varies a great deal. On hot days the snow and ice on the glacier Hofsjökull in the central highlands melt causing floods in the Blanda with increased turbidity of the waters, which can slow down the upstream migration of the salmon. The same may happen during or after heavy precipitation on the extensive catchment area of the river. Below the cascades and the fish pass is a narrow gorge. During floods the heavy current through the gorge acts as a barrier to upstream migration of the salmon. This happens when the flow rises above 55-60 m<sup>3</sup>/sec, which can last for many days at the time. During such condition the salmon will cumulate in one large pool below the gorge, where they are heavily fished for. In 1982 94% of the total catch of the Blanda and its tributary Svartá was made there 76% in 1983, 79% in 1984 and 65% in 1985.

It is to be expected that reporting of tags in the Ölfusá-Hvítá river system was incomplete. In 1967 and 1970 412 of salmon were tagged out of the total of 924 for the 13 year period of tagging or 45.6%. When going through the records of returned tags and which fishermen had reported them, it appeared that those who returned tags had caught 64% of the netted catch and part of the angling catch. Assuming that the tagged salmon were distributed throughout the river system, the average exploitation rate should have been above 51%, while the tag returns were 36%. Even 51% might be too low since it is not certain that the fishermen who returned tags have sent in all of those they retrieved.

#### Summary

In Iceland are 80 rivers and river systems which hold

Atlantic salmon. Most of them are found in the western half of the country. The fishing takes place almost exclusively in the rivers and their estuaries by rod and line and by gill nets in three glacial rivers mainly. The average annual catch for the last twenty years has been about 55,000 salmon averaging about 190 metric tons including returns of ocean ranched salmon.

Attempts have made to assess the exploitation rates of salmon in five rivers by counting through traps, by redd counts and by tag and recapture method.

The average rod catches were most often between 25,3% to 34,6%, except for the Blanda where the rod catch was 64,9% on the average for the four years period studied.

The average rod catch for 42 years in the Ellidaár is 34.6%. The catches vary from 23% in 1963 to 58% in 1937. In the Úlfarsá the average catch for six years is 28.6%. The catches vary from 14,1% in 1959 to 46,2% in 1957. In the Nordurá above the fish counter at the Laxfoss the average catch for thirteen years is 25,3%. The catches vary from 10,9% in 1984 to 81.6% in 1985. The latter figure is expected to be unreliable. An estimate for the average rod catch for the whole river amounts to 28.4%. The average rod catch for four years below the fish pass in the Blanda is 50%. The catches vary from 36% in 1985 to 77% in 1982. Above the fish pass the average catch for the same number of years is 26%. The catches vary from 21% in 1982 to 31% in 1983. When the rod catches below and above the fish pass are added up, the average catch is 65%, the smallest one was 55% in 1985 and biggest one was 82% in 1982. In the Ölfusá-Hvítá river system the average tag returns were 36,0%, varying from 18,3% in 1961 to 49,1% in 1969. Because of incomplete tag returns it is estimated that the exploitation rate has been 51% on the average, ranging from 25% to 70%. An estimate was also made of the number of salmon of the Nordurá stock, which was netted in the Hvítá. This amounted to 26,4%.

#### Acknowledgements

Most sincere thanks are due to those who have supplied

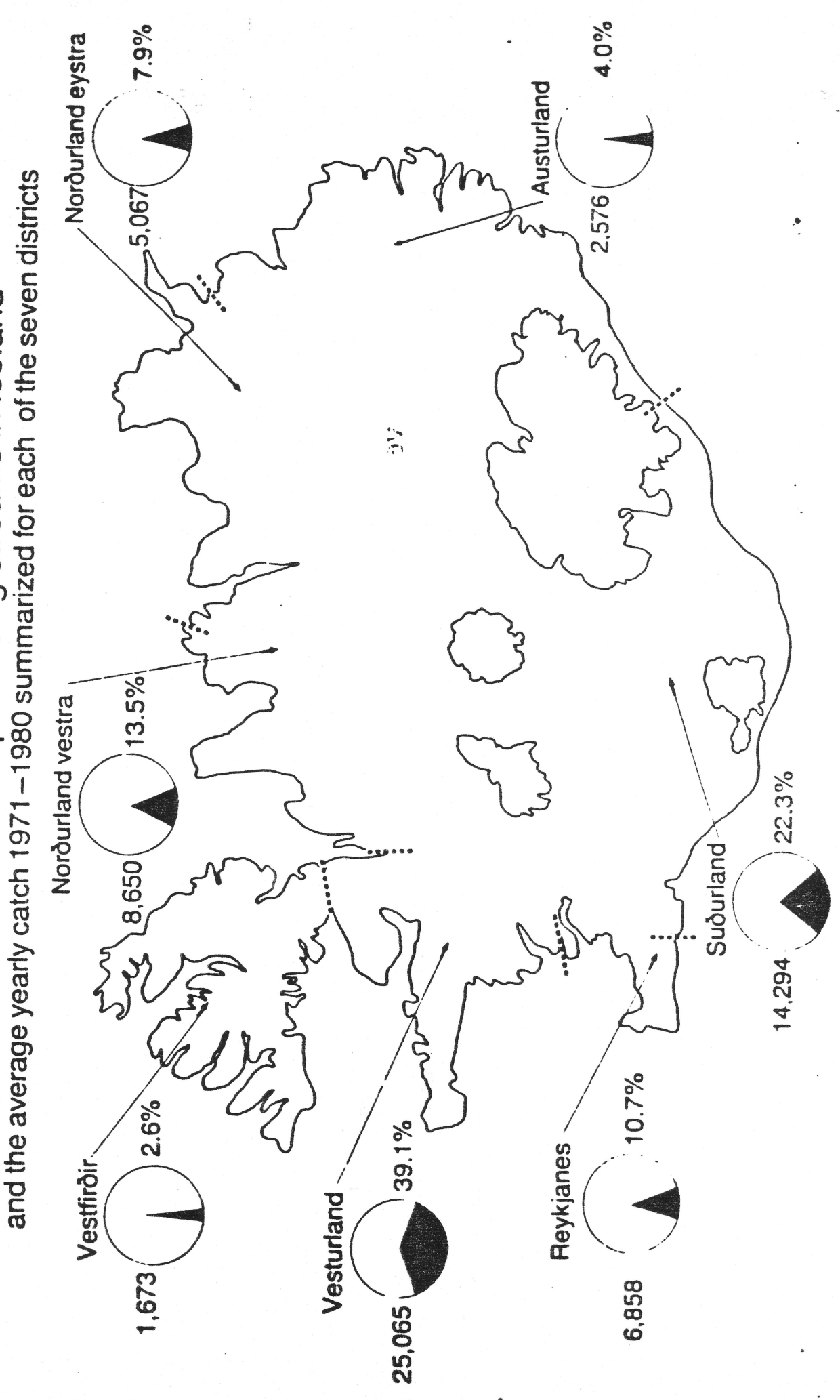
the author with information and material for this paper. Special thanks are extended to Mr. Ingólfur Ágústsson who has offered the author the counting data collected at the fish counter at the Laxfoss in the Nordurá. Thanks are also due to the staff of the Institute of Freshwater Fisheries.

References

- Ágústsson, I. 1973-1986. Laxatalningar í Laxfossi. Nordurá 1972-1985. Manuscripts. Reykjavík.
- Gudbergsson, G. and S. Gudjónsson 1986. Rannsóknir á fiskistofnum Blöndu. Manuscript. Reykjavík. 40 pp.
- Gudjónsson, Th. 1964. Áhrif vatnstöku úr Úlfarsá á veiði í ánni. Manuscript Reykjavík. 37 pp.
- Gudjónsson, Th. 1977. Recaptures of Atlantic salmon tagged at the estuary of the river Ölfusá-Hvítá, Iceland. ICES, C.M. M:40. 6 pp.
- Gudjónsson, Th. 1978. The Atlantic salmon in Iceland. In O.A.Mathisen ed. Salmon and trout in Iceland. J. Agric. Res., Iceland 10(2): 11-39.
- Gudjónsson, Th. 1986. Salmon, trout and char. Country and Population. Reprint from ICELAND 1986, Central Bank of Iceland. 14-23.
- Gudjónsson, Th. and D. Mills. 1982. Salmon in Iceland. The Atlantic Salmon Trust, Farnham, England. 22 pp.
- Hay, D.W. 1984. The relationship between redd counts and the numbers of spawning salmon in the Girnock Burn (Scotland). ICES, C.M. 1984/M:22. 4 pp.
- Mathisen, O.A. and Th. Gudjónsson, 1978. Salmon management and ocean ranching in Iceland. In O.A. Mathisen, ed. Salmon and trout in Iceland. J. Agric. Res., Iceland. 10(2): 156-174.
- Mills, D. H., 1986. The biology of Scottish salmon. Jenkins D. and W. M. Shearer ed. In The status of the Atlantic salmon in Scotland. ITE symposium no. 15. Natural Environment Research Council, Huntingdon. 10-19.
- Mundy, P.R., M. Alexandersdóttir, and G. Eiríksdóttir. 1978. Spawner-recruit relationship in Ellidaár. In O.A.Mathisen, ed. Salmon and trout in Iceland. J. Agric. Res., Iceland. 10(2): 47-56.
- Scarnecchia, D. L., 1984. Climatic and oceanic variations affecting yield of Icelandic stocks of Atlantic salmon. Can. J. Fish. aquat. Sci.. 41, 917-935.



Fig. 1  
Distribution of salmon-producing streams in Iceland  
and the average yearly catch 1971-1980 summarized for each of the seven districts



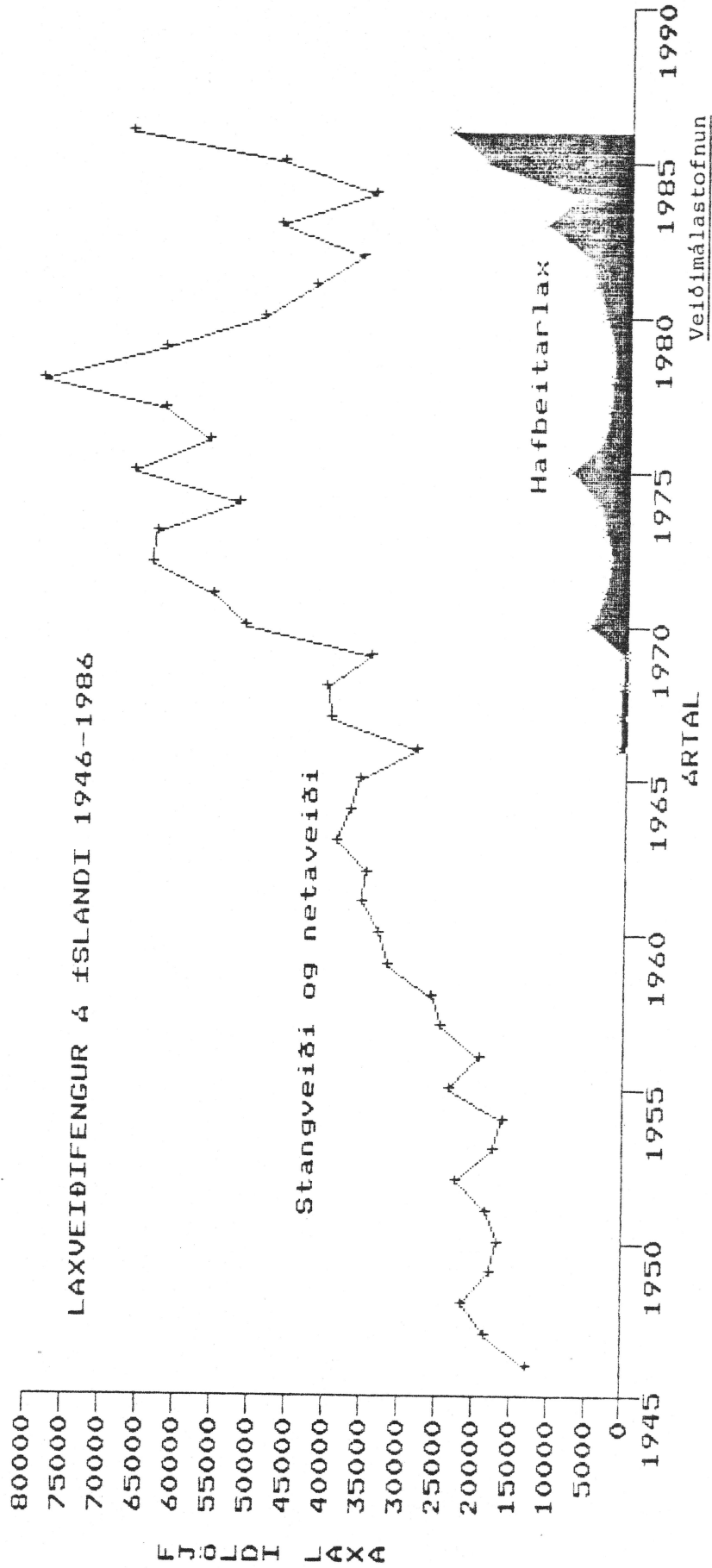


Fig. 2. Number of Atlantic salmon caught by rod and line and gill nets in Iceland from 1946 to 1986. At the bottom right are the catches of ocean ranched salmon from 1966 to 1986. Institute of Freshwater Fisheries.

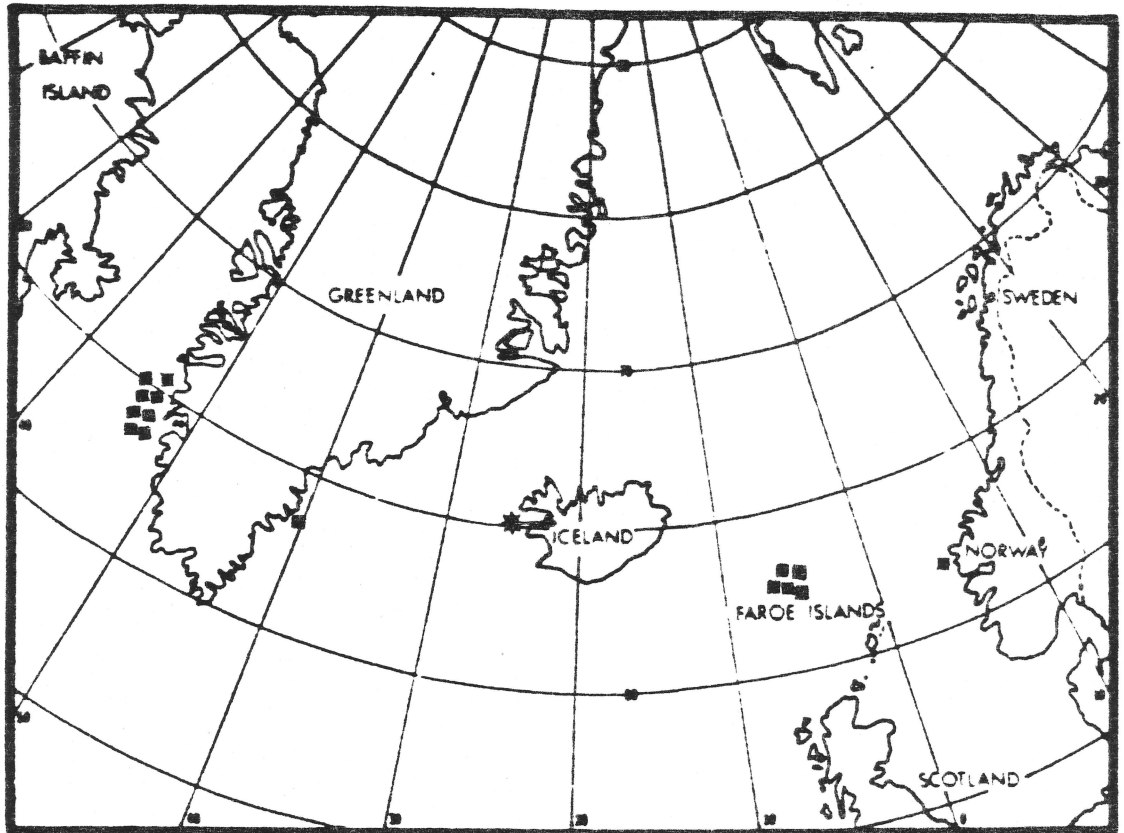


Fig. 3. Recoveries abroad of Atlantic salmon tagged and released as smolts in Iceland and recovery of a salmon tagged at West Greenland and caught in Iceland.

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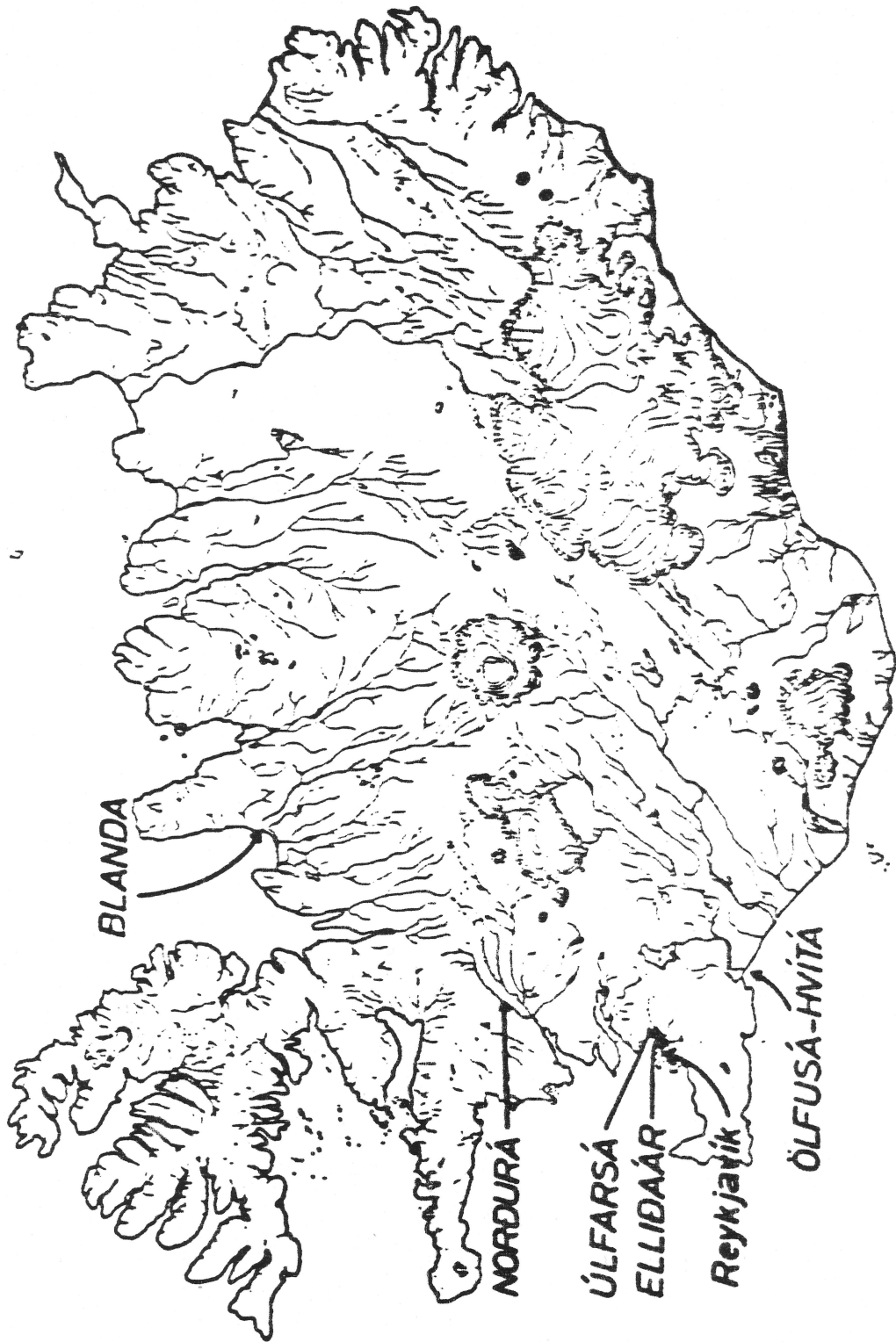


Fig. 4. Map of Iceland showing the location of the salmon rivers discussed in this paper.

Table 1. The Ellidaár - Average rate of exploitation of salmon caught by rod and line 1935-1976 (source: Mathisen and Gudjónsson 1978).

Years	Total run	Total catch	Exploitation rate %
1935-1944	2493	1032	41.4
1945-1954	3307	1166	35.3
1955-1964	3810	1081	28.4
1965-1974	4148	1474	35.5
1975-1976	5429	1882	34.7
(1965-1976)	(5234)	(1851)	(35.4)

Average catch 1938-1976 34.6 %

Table 2. The Úlfarsá - Estimated exploitation rate of salmon based on redd counts and catch records (source: Gudjónsson 1964).

	1955	1956	1957	1959	1960	1963
Number of redds	495	140	53	269	117	205
Number of salmon	990	280	106	538	234	410
Catches	430	107	91	88	117	192
Stock size	1420	387	197	626	351	602
Exploitaion rate %	30.3	27.6	46.2	14.1	33.3	31.9

Average exploitation rate 28.6%

Table 3. The Nordurá - Counts of a resistivity tube counter in the fish pass at the Laxfoss waterfall and rod catches of salmon (source: Ágústsson 1973-1986).

Year	Counts	Rod catch above counter	Total rod catch in the river
1972	2993	782	2537
1973	3189	816	2322
1974	1418	537	1428
1975	3993	632	2132
1976	1858	613	1675
1977	1894	532	1470
1978	1075	692	2089
1980	3722	838	1583
1981	3096	497	1185
1982	3524	592	1455
1983	2132	233	1643
1984	323	216	856
1985	<u>735</u>	<u>600</u>	<u>1121</u>
	29952	7580	21496
Averages			
1972-1985 except for 1979	2304	583	25.3% 1654

Table 4. The Blanda river system - Counts and catches of salmon 1982 to 1985 (source: Gubjartsson and Gudjónsson 1986).

	1982	1983	1984	1985	Total
Tagged and released					
at trap in fish pass	202	411	361	1103	2077
Estimate of untagged					
salmon above fish pass	59	87	88	269	503
Total number of salmon					
above fish pass	261	498	449	1372	2580
Rod catch above fish pass	55	153	131	330	669
Exploitation rate above					
fish pass	21%	31%	29%	24%	26%
Rod catch below fish pass	854	503	495	766	2618
Exploitation rate below					
fish pass	77%	50%	52%	36%	50%
Net catch in upper Blanda	2	5	3	77	87
Total catch	911	661	629	1173	3374
Estimated run	1115	1001	944	2138	5198
Total exploitation rate	82%	66%	67%	55%	65%

Table 5. The Ölfusá-Hvítá - Clean salmon tagged in the estuary and tag returns 1960 to 1972 (source: Gudjónsson).

	Number tagged	Tag returns	
1960-1964	255	74	29%
1965-1968	394	150	38%
1969-1972	<u>275</u>	<u>109</u>	<u>40%</u>
	924	333	36%