IP(09)06

Protection, Restoration and Enhancement of Salmon Habitat Focus Area Report

Iceland

ICELAND

Protection, Restoration and Enhancement of Salmon Habitat

Focus Area Report

December 2008

Introduction

The Council has asked each Party or jurisdiction to prepare a **Focus Area Report on Protection, Restoration and Enhancement of Salmon Habitat.**

The proposed structure and contents of the Focus Area Report was described in NASCO document CNL(08)33. These outlines are followed in this document. The report reflects the current situation in Iceland based on the best available data. As the fishing rights in Iceland go with the ownership of the land or estate adjacent to the river banks the Icelandic government has limited rights to set up restoration programs on salmon streams but river owners are by law expected to protect the in-river habitat. As river owners are obliged to form a "Fishing Association" the protection of the in-river habitat is the shared responsibility of all shareholders in a "Fishing Association" and board of the "Association" must comment on any licenses issued with respect to any construction or mining work within their jurisdiction.

The prime responsibility for habitat management and protection rests with the "Fisheries Association" on each river under the supervision of the "Salmonid Division" of the Directorate of Fisheries, herein referred to as the "Competent Management Authority". Compilation of in river habitat information is, however, mostly done by the Institute of Freshwater Fisheries.

Various planning agencies both at the governmental as well as at the community level enter the licensing processes especially when operations are on a large scale and would in most cases need an "Environmental Impacts Assessment" (EIA) in line with EU laws and regulations enacted in Iceland as it is a member of the European Economic Area. Since the creation of the Economic Area in 1994 over 70 % of EU Laws and Directives have been introduced into Icelandic Law.

The general situation with respect to in river habitat in Iceland has been described in Council papers CNL(07)22, a "Compilation of Implementation Plans" and CNL(03) 15 "Habitat Protection and Restoration" from a special session on Salmon Habitat in the Faroe Islands in June 2002.

1. Provide an overview of salmon rivers within the jurisdiction, with a map.

The location of Icelandic salmon rivers is shown on the map in figure 1. The main river is numbered and denoted as the entry point of the main stem river into the sea. First order tributaries are denoted with small letters of the alphabet (a,b,c…etc). Icelandic salmon and major sea trout rivers are listed in table 1. It lists the river or tributary name, river type, length, size of the catchment area, wetted area and average, maximum and minimum salmon catch. Rivers and tributaries with an average catch in excess of 100 salmon are labeled with white numbers on black background as noted on the map.

2. Describe the current status of salmon habitat and specify, to the extent possible, the quantity and quality of salmon habitat (historic and current).

Iceland is as an island in the North Atlantic with an area of 103.000 km^2 . There are only five native species of fish in fresh water in Iceland. Three of these species are the salmonids: Atlantic salmon (*Salmo salar*), Brown trout (*Salmo trutta*), and Arctic charr (*Salvelinus alpinus*). The others are European eel (Anguilla anguilla) and three-spiked sticklebacks (*Gasterosteus aculeatus*). Rainbow trout (*Onchorynchus mykiss*) were introduced from Denmark for fish farming in the early 1950s but do not propagate to any extent naturally. Of these species the Atlantic salmon has the highest economic value. In the most recent years Flounder (*Platichthys flesus*) has invaded freshwater in southern and southwestern Iceland and lamprey (*Petromyzon marinus*) seems to be affecting sea trout populations in the same areas. These natural introductions of alien species are most likely related to a general rise in temperature associated with suspected global warming.

Salmon fisheries have, from the time of the first Icelandic settlement been of high value and are frequently mentioned in the "Sagas" written in the first centuries after the settlement, some 1100 years ago. Early Acts written in the 12th century describe how the salmon fishing rights should be shared between landowners, as well as how salmon should be allowed to pass up rivers to the uppermost regions. This underlines that Icelandic salmon resources have been important and highly regarded for centuries.

The total Icelandic population is about 320 thousand whereof over 50 % are living in the greater Reykjavík area including suburbia towns. The Icelandic countryside as a whole is thus sparsely populated and can be regarded as a rural area. Agriculture is distributed over the countryside in the lowland areas, where most of the salmon rivers are also located.

The catch of salmon broadly reflects stock size of Icelandic salmon, since effort remains fixed. In the period from 1974 to date the landed rod catch of naturally produced salmon has fluctuated from 23.500 to 53.000 salmon (figure 2). In recent years the proportion of "Catch and Release" has increased as well as the angling catch of hatchery salmon released as smolts (enhancement of salmon fishing with smolts). This enhancement activity mostly takes place in rivers with poor nursery areas for salmon. The net catch in Icelandic rivers has declined due to a buy-out of coastal fisheries and a lease of gill net fishing rights in two glacial rivers (figure 3). In those rivers the fishery associations in clear water tributaries lease net fishing rights in glacial main-stem rivers. This has increased the upriver rod catch at the expense of the net catch in the glacial streams.

Most of the hydroelectric power plants constructed on Icelandic rivers are on glacial rivers leaving salmon habitat generally intact with respect to dams and water level regulations. In one glacial river system a dam in the upper areas has led to positive change in salmon abundance. The stocks involved were small and the change in flow pattern through water regulation and lower turbidity have improved conditions for upstream migration and significantly increased the salmon catch and fry production in mid-section of that system.

It has been noted that bridges and culverts can prevent or hinder migration of salmon parr in small streams. There are also examples of gravel digging in or close to river beds that may temporarily affect salmon nursery areas. All such activity is now subject to a license from the Competent Management Authority after an environmental evaluation.

Iceland is a geologically young country especially close to the center where it divides at the upper part of the North Atlantic ridge where volcanic activity is frequent. As a result of the young geology and layered lava beds, waterfalls and other obstacles impassible for migrating fish can be found in many river systems.

In general salmon habitat in Icelandic salmon rivers has remained unchanged by human activities both regarding habitat quantity and quality. Positive changes, however, have taken place where rivers have been opened up through the construction of fish-ways over impassable waterfalls. Thus 950 km (27 %) of the total of 3500 km passable for migrating fish have been opened up with fish ladders. Fish ladders have in most rivers been effective and resulted in increased productivity of salmon.

Measurement of the size of salmon producing areas and habitat quality has been conducted in 25 salmon rivers. The main purpose is to use the evaluation as a part of the "Share of Dividends" among the landowners which must share the income from the fisheries through a formal document, which usually is revised every 8 years. The "Share of Dividends" is based on length of the riverbank, catch within a particular river section as well as the estimated share in the total smolt production. This biological evaluation can only be done through in-river assessment of the spawning and rearing capacity.

There are no major problems with water quality or water chemistry affecting production or mortality of salmon in Iceland. As an example the pH of ground- and run-off water in Iceland is mostly above 7 and problems with acid rain are unknown.

3. Describe the process for identifying and designating priority/key habitat areas or issues to be addressed.

To date no need for any identifying or designating priority/key habitat areas or issues have risen and therefore no such mechanism has been made. It should be mentioned that during the process of making a priority list for the construction of hydro-electric power plants the existence of salmon populations and valuable salmon fisheries has been one of the major factors taken into account. Hydroelectric development has thus not affected Icelandic salmon fisheries to any extent.

4. Describe the activities and approaches used to share and exchange information on habitat issues, and best management practices, between relevant bodies within the jurisdiction.

The fishing rights go with the adjacent land and all landowners need to form a "Fisheries Association" that manages the fishing rights and are responsible for sustainable fisheries. The "Fishery Associations" are by law also obliged to manage their in-river habitat in a responsible way.

By law all construction as well as mining activity in a water course or closer to a river bank than 100 meters is subject to the approval of the Competent Management Authority (CMA). All applications for such activity must be reviewed by the relevant "Fisheries Association" and competent experts in water course management. In case of major constructions an environmental impact assessment is mandatory by law. Due to the great responsibility of the "Fisheries Associations" it can be concluded that Iceland can be regarded as one salmon habitat management area under the supervision of the CMA.

The final approval of any major undertaking rests, however, with the local Community Council, which checks whether the project conforms to local planning.

5. Description of Plans: Describe work undertaken and/or planned to establish comprehensive salmon habitat protection, restoration, and enhancement plans, and the extent to which these plans apply to the following:

In general all salmon producing areas are protected by law. It can also be stated that no impacts have been identified which would require a restoration or enhancement plan. However, there is a need for caution in two rivers located close to or within the capital city of Reykjavik due to the encroachment of the human population and resulting pollution and poaching activity. A few rivers and their surroundings are protected through "Nature Conservation Acts".

Due to the private ownership of salmon rivers through the ownership of the adjacent land the Icelandic government does not have the authority to set up a habitat restoration program on a salmon river and any such program would be a private initiative. If a Fisheries Association, however, would embark on such a program they would possibly be entitled to partial financial support from the Icelandic Enhancement Fund, if the project was considered important for the salmon resource.

Although there are no systematic restoration or enhancement plans regarding Icelandic salmon habitat being planned or executed, there are ample provisions in the "Salmonid Fisheries Act" to conserve and protect existing habitat. These will be highlighted in sections c through f.

a. Identify impacts and potential risks to the productive capacity.

Since there are no formal restoration or enhancement plans with respect to salmon habitat, no impacts or potential risks from major projects can be identified. Major flooding can certainly have an impact on in-river habitat, which sometimes must be considered a natural disaster beyond human control (force-majeure). Repair of damage to river banks and the surrounding agricultural areas as well as building of barricades to prevent further damage is mostly dealt with by the "Soil Conservation Agency".

b. Include procedures for implementation, in a timely fashion, of corrective measures.

It leads from the foregoing that such procedures do not exist in the Icelandic habitat management system.

c. Place the burden of proof on proponents of an activity which may have an impact on habitat.
For all major activities an "Environmental Impact Assessment" is needed. On smaller scale the CMA formulates provisions for licensed activities to minimize the impacts including effects on fish stocks during construction. A biological impact evaluation is a licensing prerequisite even for small scale activities. The construction of bridges and culverts as well as flood control activities can be taken as examples.

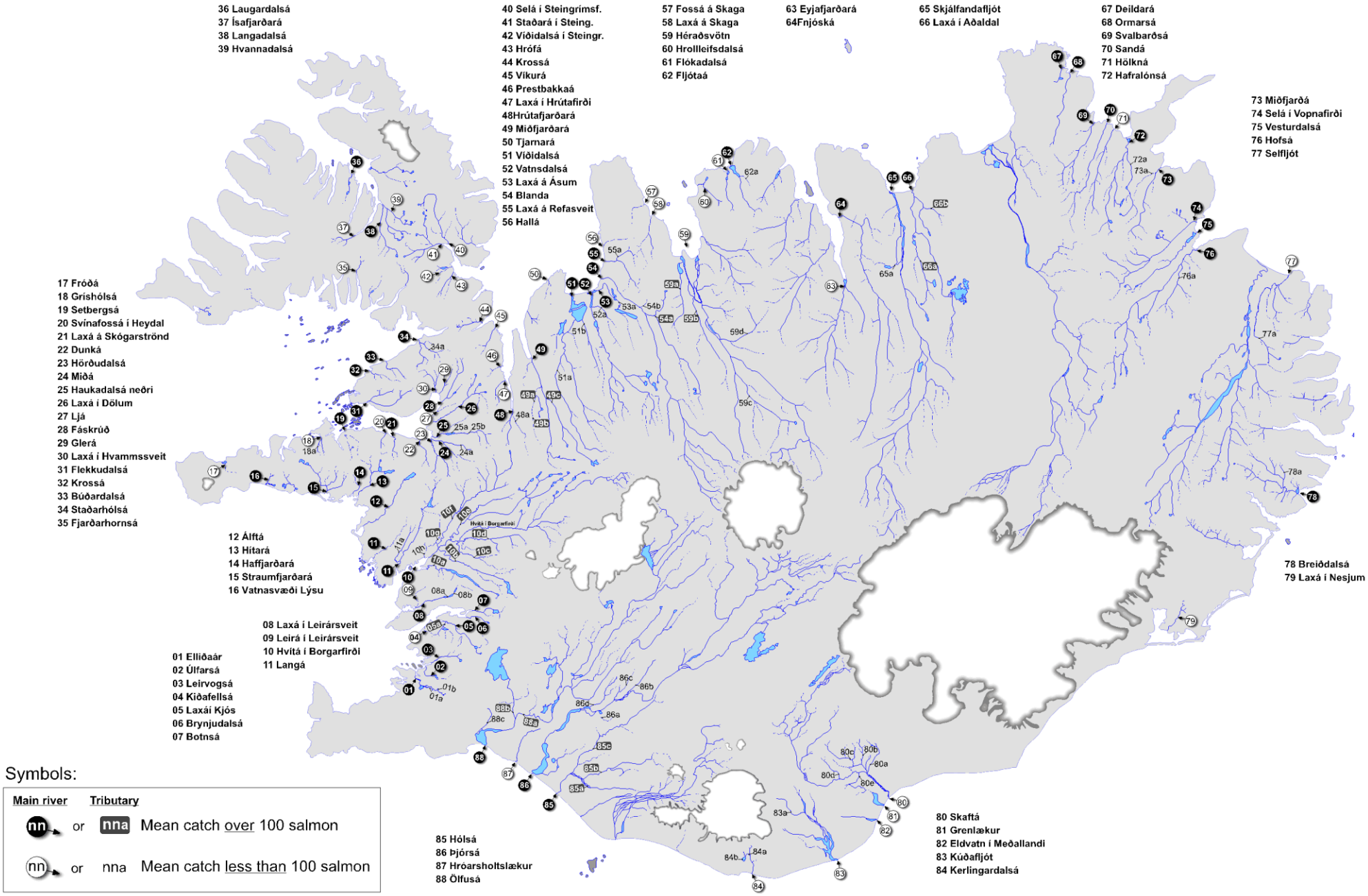
d. Address how the risks and the benefits to the Atlantic salmon stocks are weighed with the socio-economic implications of any given project.
The economic value as reflected by the income to "Fisheries Associations" from leasing fishing rights or selling of fishing licenses is one of the major factors weighed against the benefits of any constructions or projects which may affect salmon populations. Due to the high value of the salmon fisheries the environmental impacts from such activities on salmon rivers have been relatively minor. Hydroelectric development is a good example, where salmon interests have been considered of greater importance than the production of electricity. This development has been facilitated by the fact that ample glacial water resources for hydroelectric power development have been available in the central areas of Iceland, which are not accessible to salmon. Socioeconomic conflicts between hydroelectric development and the utilization of anadromous fish populations has so far not been an important issue in Iceland.

e. Consider the effects of habitat activities on biodiversity in the area affected;
In Iceland this item would only apply to minor local projects such a gravel mining, flood control and river improvement. The effects of such activity on river biodiversity are taken into account in biological evaluations linked to licensing schemes, which deals with any construction or mining activity in or close to salmon rivers.

f. Take into account other biological factors affecting the productive capacity of Atlantic salmon populations.
Organic pollution has not been regarded as a problem in Icelandic salmon rivers. Inorganic pollution such as acidity due to acid rain has not been observed in Iceland and the ph. of most rivers is above 7,0. The regulations on sewage treatment and the standard of waste water quality are in line with EU regulations.

6. Overview of Ongoing Habitat Activities: Summarize ongoing or planned habitat work to demonstrate progress in implementing the salmon habitat protection, restoration and enhancement plans identified above in item 5. Where possible, quantify the extent to which habitat has been restored or enhanced, or describe other criteria used to evaluate progress.
No need for habitat restoration work has been identified to date and no major restoration programs have been launched. Construction of fish passes to increase salmon spawning and nursery habitat is, however, ongoing in various areas. These are entirely private initiative and financed by the local fisheries association with some support from the Salmonid Enhancement Fund. In the past 950 km (27 %) of the total of 3500 km passable for migrating fish have been opened up with fish ladders. Fish ladders have in most rivers been effective and greatly increased the abundance of salmon.

Figure 1. Map showing Icelandic Salmon rivers. Rivers with a catch of more than 100 salmon are shown as dark labels (see symbols). Further information is in table 1.



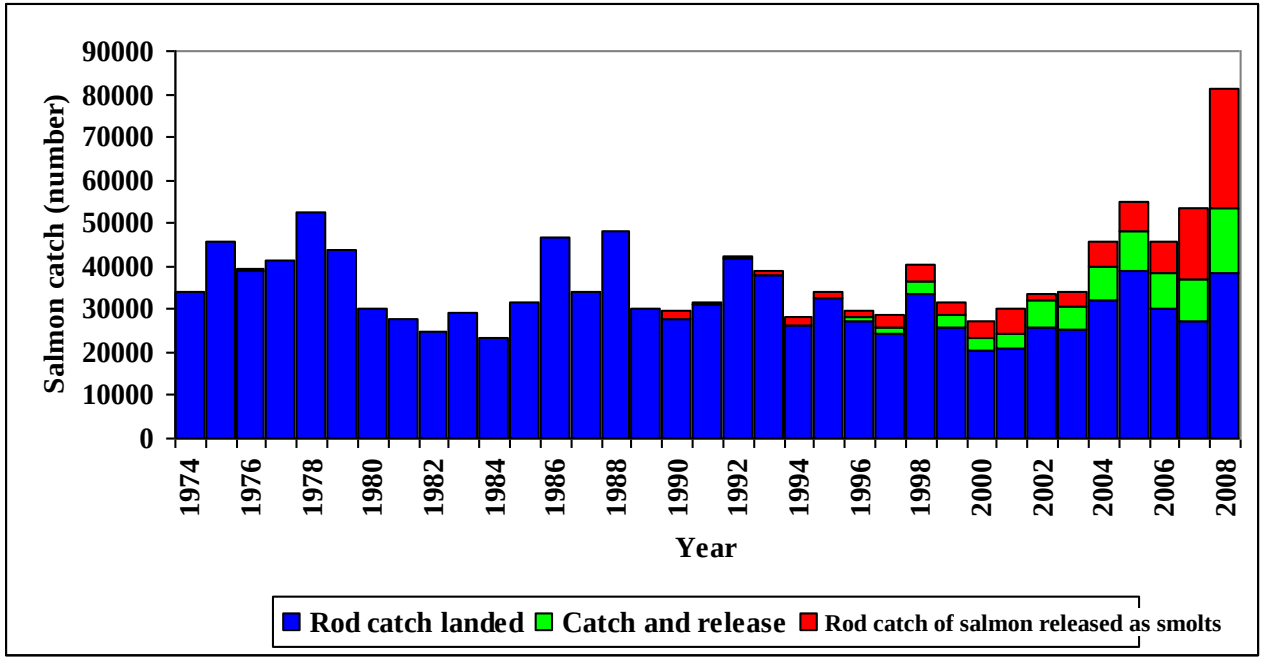


Figure 2. Rod catch in Icelandic salmon rivers 1974-2008. (The 2008 catch figures are provisional).

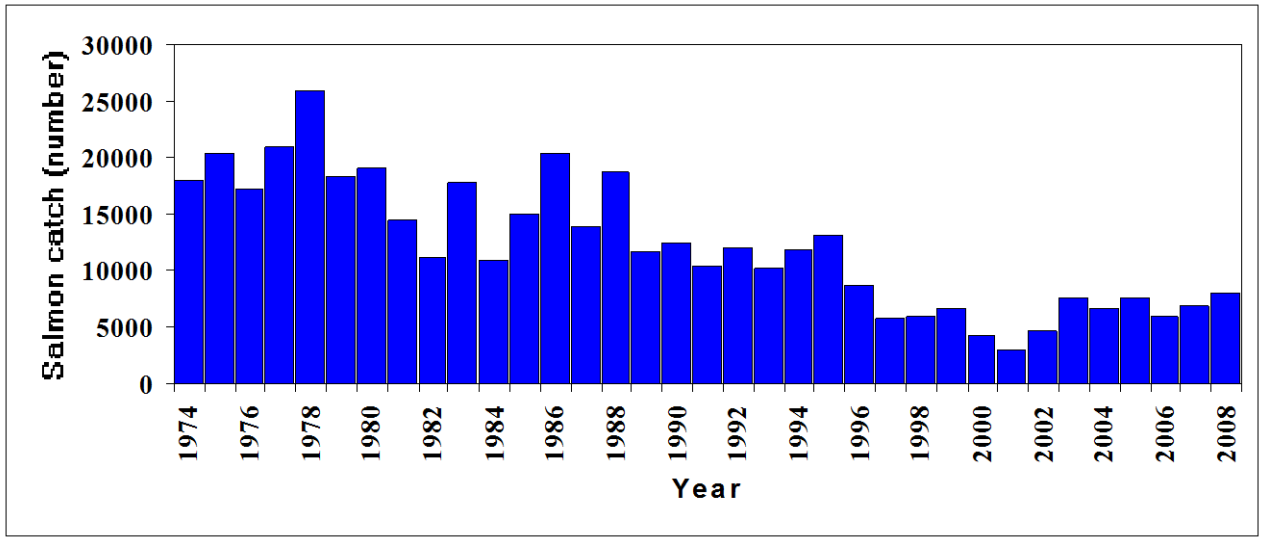


Figure 3. Gillnet catch in Icelandic salmon rivers 1974-2008. (The 2008 catch figures are provisional).

Table 1. Some key information regarding Icelandic salmon rivers.

Number	River	Tributary (1)	Tributary (2)	Tributary (3)	River[a] Type	Conduct-tivity µScm^{-1}	pH	Access[b] river length km	Nursery[c] areas gained km	Catchment area km^2	Glacial cover of catchment area km^2	Wetted area km^2	Production[d] units	Avarage[e] catch	Max catch	Min catch
1	**Elliðaár**				L+S+D	83		6		280		200	5548	1138	2071	414
1a		Hólmsá			D+S	84			11					+		
1b		Suðurá			L	85								+		
2	**Úlfarsá (Korpa)**				S+D+L	84		3	4	54		95	1715	300	709	110
3	**Leirvogsá**				D	73	8,1	10		85				475	1057	136
4	**Kiðafellsá**				D	86		4						+		
5	**Laxá í Kjós**				D+S	50		1	19,2	211		894	17823	1274	3422	629
5a		Bugða			D+S	57		4		64				221	461	90
			Meðalfellsvatn		S									20		
			Dælisá		D	46				21				+		
6	**Brynjudalsá**				D	33		0,5	9,5	42				150	597	11
7	**Botnsá**				D+S	64		3	8	79				113	247	20
8	**Laxá í Leirársveit**				D+S			13	9,1	142		419	11524	1017	1887	545
8a		Selós			S			0,5						+		
8b		Þverá			S			1						+		
			Vötn í Svínadal		S									+		
9	**Leirá í Leirársveit**				D	66		7		44				20		
10	**Hvítá í Borgarfirði**				D+L+J	66		56		3880				513	1238	213
10a		Andakílsá			D+S	57		8		214				153	331	63
10b		Grímsá			D+S	77		31		313		2395	28254	1331	2116	717
			Tunguá		D	83		11		67				+		
10c		Flókadalsá			D	79		5	14	160				351	613	181
10d		Reykjadalsá			D+L	133		25		210				101	275	25
10e		Þverá			D	93	8,0	18		482		2365	54343	1932	4165	1082
			Kjarrá		D	96	8,2	31		200				+		
			Litla-Þverá		D	113		14		122				+		
10f		Norðurá			D	48	8,4	15	67					1634	3138	856
10g		Gljúfurá			D	54		5	8	50				206	522	73
10h		Gufuá			D	113		17		40				+		
11	**Langá**				D+S	44	8,5	0,5	22	206		1009	22736	1407	2405	610
11a		Urriðaá				156		20		56				75	202	13
12	**Álftá**				L+D	74	7,8	10	15	118				279	485	132
13	**Hítará**				S+D	70	7,9	16	13	318				368	706	151
14	**Haffjarðará**				L+D+S			13		300				738	1290	465
15	**Straumfjarðará**				D+S	68	7,7	8	1,5	221		402	10677	347	755	161
16	**Vatnasvæði Lýsu**				D	74		3,3						139	325	63
17	**Fróðá**				D+L			4	4					83	254	13
18	**Gríshólsá**				D			5						48	125	5
18a		Bakkaá			D									+		
19	**Setbergsá**				D	62	7,6	1,5	11	37				105	296	0
20	**Svínafossá í Heydal**				D	74	7,8	0,7		41				43	43	43
21	**Laxá á Skógarströnd**				D	68		2		46				126	277	33
22	**Dunká**				D	57		4,5		44				97	169	39
23	**Hörðudalsá**				D	48	7,7	18		94				44	116	1
24	**Miðá**				D		7,8	22		220				119	258	31
24a		Tunguá			D			3		32				+		

Table 1. Some key information regarding Icelandic salmon rivers. (cont.)

Number	River	Tributary (1)	Tributary (2)	Tributary (3)	River[a] Type	Conduct-tivity µScm^{-1}	pH	Access[b] river length km	Nursery[c] areas gained km	Catchment area km^2	Glacial cover of catchment area km^2	Wetted area km^2	Production[d] units	Avarage[e] catch	Max catch	Min catch
25	**Haukadalsá neðri**				D+S	54		6		239				659	1232	331
25a		Haukaldalsvatn			S									+		
25b		Haukadalsá efri			D			10		34				19	27	9
26	**Laxá í Dölum**				D	88		24		256				1001	2385	324
27	**Ljá**				D	128		8		35				+		
28	**Fáskrúð**				D	51		8		133				224	464	96
29	**Glerá**				D			1,5		61				+		
30	**Laxá í Hvammssveit**				D	67		3,5		97				+		
31	**Flekkudalsá**				D	44		2	18	147				239	509	100
32	**Krossá**				D	59		2	10	47		114	2983	106	208	27
33	**Búðardalsá**				D	34	7,5	0,3	11,9	66				114	341	31
34	**Staðarhólsá**				D	80		6		55				160	768	18
34a		Hvolsá			D	78		9		68				+		
35	**Fjarðarhornsá**				D	40		6						26	115	0
36	**Laugardalsá**				D+S			0,3	10	56				311	703	111
37	**Ísafjarðará**				D	29	7,5	4		68				16	55	3
38	**Langadalsá**				D	32		20		334				165	444	31
39	**Hvannadalsá**				D	44	7,6	5		90				80	304	23
40	**Selá í Steingrímsf.**				D			8		218				30	95	0
41	**Staðará í Steing.**				D	30		12,5		170				65	169	6
42	**Víðidalsá í Steingr.**				D			1		72				53	182	0
43	**Hrófá**				D			7		74				48	94	14
44	**Prestbakkaá**				D	140		8		40				48	123	12
45	**Krossá**				D	53		6		55				88	180	19
46	**Víkurá**				D	76		11		57				81	219	5
47	**Laxá í Hrútafirði**				D	128		5		57				46	165	2
48	**Hrútafjarðará**				D	57		9		367				296	631	126
48a		Síká			D	82		3,2		107				+		
49	**Miðfjarðará**				D	90		33		790				1239	2581	433
49a		Vesturá			D	139		16	21	286						
49b		Núpsá			D	139		33		107						
49c		Austurá			D			11	12	213						
50	**Tjarnará**				D			2,5	6	72				38	112	0
51	**Víðidalsá**				D+S	106		23		914				1127	2023	580
51a		Fitjá			D	91		12	18	283				+		
51b		Gljúfurá			D	63		1,1	25,9	107				20		
52	**Vatnsdalsá**				D+S	81		32	2	1170				890	1582	323
52a		Giljá			D	80		2		94				10		
53	**Laxá á Ásum**				S+D	92		13		294				1022	1881	308
53a		Fremri Laxá á Ásum			S+D			6	19	241				10		
54	**Blanda**				D+J	71	8,4	77		2370	183			1025	2363	357
54a		Svartá			D	80				480				291	619	46
			Hlíðará		D	57				59				+		
54b		Auðólfsstaðaá			D	59								+		
55	**Laxá á Refasveit**				D	64		2	8,2	168				129	297	39
55a		Norðurá			D					55				+		

Table 1. Some key information regarding Icelandic salmon rivers. (cont.)

Number	River	Tributary (1)	Tributary (2)	Tributary (3)	River[a] Type	Conduct-tivity µScm^{-1}	pH	Access[b] river length km	Nursery[c] areas gained km	Catchment area km^2	Glacial cover of catchment area km^2	Wetted area km^2	Production[d] units	Avarage[e] catch	Max catch	Min catch	
56	**Hallá**				D	94		14		57				71	197	0	
57	**Fossá á Skaga**				D+S			1,5		68				25	98	5	
58	**Laxá á Skaga**				D	71		23		150				85	245	0	
59	**Héraðsvötn**				D+J					3650	239			20			N
59a		Sæmundará			D	95		24		172				100	303	18	
59b		Húseyjarkvísl			D	106		30		481				102	245	32	
59c		Hofsá			D+(J)	72				482	29			10			
59d		Norðurá í Skagafirði			D			15		400				+			
60	**Hrollleifsdalsá**				D	87		7		83				17	65	1	
61	**Flókadalsá**				D+S	54		9		95				53	164	2	
62	**Fljótaá**				S+D	58		7,5		144				158	388	49	
62a		Brúnastaðaá			D			1		34				+			
63	**Eyjafjarðará**				D	30		45		1300				21	71	6	
64	**Fnjóská**				D	36		3	30	1310				254	554	60	
65	**Skjálfandafljót**				D+L+J	74		21	52	3860	140			416	932	67	
65a		Djúpá			S+D	40		7		112				44	85	10	
66	**Laxá í Aðaldal**				L+S	157	9,2	26		2150				1609	3063	624	
66a		Reykjadalsá			L+D+S	80		30		234				217	657	25	
66b		Mýrarkvísl			L+D+S	89		7	20	263				225	490	49	
			Þverá		D+L	70		7						+			
67	**Deildará**				D+S	100		12		46				169	391	27	
68	**Ormarsá**				L+D	89		30		232				188	366	45	
69	**Svalbarðsá**				D	93		4		350				183	384	29	
70	**Sandá**				D	68	8,0	10		257				232	474	35	
71	**Hölkná**				D	73		11		70				90	219	11	
72	**Hafralónsá**				D	68		28		562				246	481	25	
72a		Kverká			D					157				+			
73	**Miðfjarðá**				D	90		3,2		300				139	248	15	
73a		Kverká			D									+			
74	**Selá í Vopnafirði**				D	76		7,5	20	750		963	23376	1068	2726	123	
75	**Vesturdalsá**				D	127		28		190		271	10673	211	513	34	
76	**Hofsá**				D	79		20	20	110				1121	2238	141	
76a		Sunnudalsá			D	62				200				+			
77	**Selfljót**				D	22		42		458				37	103	5	
77a		Gilsá			D	20								+			
78	**Breiðdalsá**				D	57		10	23	370				226	937	4	
78a		Tinnudalsá			D	26				151				+			
79	**Laxá í Nesjum**				D	80				55				20			
80	**Skaftá**				J+L+D	69		52		3000				5	13	0	
80a		Fossálar			D	55		15						+			
80b		Hörgsá á Síðu			D	50		10		40				12	20	9	
80c		Geirlandsá			D	53		22						50	162	12	
			Stjórn		D	72		1		36				+			
			Þverá		L+S	59		1						+			
80d		Fjaðrá			D	75		2		35				+			
80e		Tungulækur			L			10						8	31	0	2001-2007[M]

Table 1. Some key information regarding Icelandic salmon rivers. (cont.)

Number	River	Tributary (1)	Tributary (2)	Tributary (3)	River[a] Type	Conduct-tivity μScm^{-1}	pH	Access[b] river length km	Nursery[c] areas gained km	Catchment area km^2	Glacial cover of catchment area km^2	Wetted area km^2	Production[d] units	Avarage[e] catch	Max catch	Min catch	
81	Grenlækur				L	112		30						5	20	0	
82	Eldvatn í Meðallandi				L	113		26						16	51	1	
83	Kúðafljót				D			33		182				+			
83a		Tungufljót			D	76		9						27	74	7	
84	Kerlingardalsá				J+D+L	103		12		93	22			85	446	16	
84a		Vatnsá			S+D+L	103		2		20				85	446	16	
84b		Heiðarvatn			S									+			
85	**Hólsá**				L					1860				1075	1343	806	2006-2007[M+X]
85a		Þverá			L	178				784	8			103	148	16	2001-2005[M+X]
85b			Eystri-Rangá		L	101	8,5	28		562	8			3215	7193	946	2001-2007[M+X]
85c		Ytri-Rangá			L	177		17	51	1000				2792	6105	735	2001-2007[M+X]
86	**Þjórsá**				D+J+L	83		48		7530	1010			N1950	5532	784	
86a		Minnivallarlækur			L	99								+			
86b		Fossá			D+L					223				+			
86c		Þverá			D									+			
86d		Kálfá			D	95		11		85				45	130	2	
87	**Hróarsholtslækur**				L			15	16,5					23	59	8	
88	**Ölfusá**				L+D+J+S	75				6100	620			3458	7415	1186	N
88														309	825	6	R
88a		Hvítá			L+D+J	62		69		4500	620			2761	8480	1215	N
88a														613	1175	190	R
			Brúará		L	56		19		225				48	92	14	
				Hagaós	L+S					278				+			
				Hólaá	L+S	81								+			
				Fullsæll	D+L									+			
			Tungufljót		L+J	51		11		770	250			+			
88b		Sog			L+S	75		8		1200				397	714	223	
			Ásgarðslækur			95								20			
			Tunguá		D+L									+			
88c		Þorleifslækur			D+L	208		13		115				+			
			Höskuldslækur											+			
			Litla-Laxá		D	83				105				20			
			Stóra-Laxá		D	53		37		512				310	709	76	
			Dalsá		D					31				+			
			Fossá		D					30				+			

[a] River type: D = Direct runoff river, L = Spring fed river; J = Glaciar river; S = Lake in the riversystem

[b] River length historically accessible for salmon up to a migration blockage

[c] River lenght (new nursery areas) gained through fishway construction

[d] Production units. Calculated from an assesment of salmon producing habitat

[e] + Denotes little salmon production, some historical evidences of salmon catch or the catch is included in the main stem catch records

[N] Net catch (in river)

[R] Rod catch

[M] Years used to calculate average catch

[X] Angling based on smolt releases