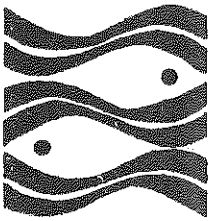

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Population estimates of juvenile salmonids in the corrib system 1980

By
J. Browne and P. Gallagher

Fishery leaflet No. 112

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Population assessments of the juvenile salmonids in the Corrib System are being made as part of the overall management plan for the Galway Fishery. In 1980 the first of a series of reports which will be issued annually gave information on the juvenile stocks and on the state of the spawning and nursery tributaries during 1979. Details of the methods used and some background on each of the tributaries were presented. Chemical and biological data on water quality along with numbers, size, age and survival of both salmon and trout are given in Fishery Leaflet 103.

During 1979 eight tributaries were surveyed and in two cases upstream and downstream reaches were examined. In 1980 the effort in terms of personnel and equipment was increased but the high rainfall during the period of work, from mid-July to mid-September, meant that only two further stations were studied, one on the Dalgan river and the other on the Balinbrack river. The methods used and the scope of the work were identical in 1979 and 1980.

In these assessments the emphasis is on salmon type tributaries and salmon type habitats within these tributaries so that trout numbers could be expected to be low.

Results The following data for all the tributaries are given in Tables 1-4.

1. Chemical data on the water.
2. Mean lengths of salmon and trout by age group.
3. Salmon population estimates.
4. Trout population estimates.

Estimates of trout and salmon are given as number per m^2. Details of the actual fishings and the particular reach or reaches fished are outlined in the following section. Figures for "survival" are for the one year period 1979 to 1980. Background information on the two tributaries not included in the 1979 work, the Dalgan river and the Balinabrack river, is given.

Water quality on the basis of biological assessment remained good at all stations and showed an improvement in the case of the upper reaches of the Sinking river.

All fish species present in each reach were counted and described as:

Frequent	:	more than 50
Scarce	:	10 - 49
Rare	:	less than 10

These terms have been adopted in preference to those used in Leaflet 103.

The Sinking River

The Boyanagh Bridge reach was fished on August 21 and 22. The water level was suitable for electrofishing on both occasions.

The reach measured just under 4m in width, and was a relatively good salmonid habitat with bed of gravel stone and silt with 60% deep flow and 40% riffle. Trout, stone loach and eel were scarce and salmon frequent.

The number of 0+ salmon at 0.12 was a change from the previous year when No 0+ salmon were caught

The Dunmore Castle reach was fished on August 29 and refished on September 1. The water levels were very high on both occasions making electrofishing difficult. The reach measured under 7m in width and was a very good salmonid habitat with bed of gravel and stone with 55% riffle and 45% deep flow. Salmon, stone loach and trout were frequent while eels were scarce.

The number of 0+ salmon was the highest recorded for any river in the eastern part of the system and twice as high as in 1979. The number of 1+ salmon was normal for rivers in this part of the system. The survival of salmon from 0+ to 1+ was 16%.

The Grange River

The Cloondahamper reach was fished on August 19 and 20. The water level was high on both occasions and made electrofishing difficult. The reach measured just over 3m in width and was a very good salmonid habitat with bed of gravel and stone with 80% riffle and 20% deep flow.

The number of 0+ salmon was about average for rivers in this part of the system. The number of 1+ salmon showed an increase on the 1979 figure. The mean length of salmon in this stretch was about average but was higher than in 1979 when the length was 6.74 cm. No 1+ trout were recorded for this reach, in contrast with last year when 0.1 per m^2 were recorded.

The Castlemoyle reach was fished on August 17 and 28. The water level was high on both occasions making electrofishing difficult. This reach measured 6m in width and made a satisfactory salmonid habitat with bed of stone, gravel and silt with 60% deep flow, 30% riffle and 10% pool. Salmon and stone loach were frequent, trout scarce and pike rare. The number of 0+ salmon at 0.45 was about average. It was not possible to estimate the number of 1+ salmon or of trout because there were too few recoveries on the second day.

The Abbert River

The Abbeyknockmoy reach was fished on August 26 and 28. The water level was high on both occasions making electrofishing difficult. The reach measured under 8m in width and made a satisfactory salmonid habitat with bed of stone, gravel and silt with 65% riffle, 25% deep flow and 10% pool. Trout, salmon and stone loach were frequent and eels rare.

The number of 0+ trout in this reach although qualifying as "frequent" was the lowest recorded for any river in the system. As in 1979 no 1+ trout were recorded. The numbers of 0+ and 1+ salmon were also among the lowest recorded for any river in the system. Survival of 0+ to 1+ salmon was 4%.

The Dunmore River

The Dunmore reach was fished on 5 and 7 August 1980. Electrofishing conditions were poor on both occasions. The reach measured just under 4m in width and made a fair salmonid habitat with bed of gravel, stone and silt, with 50% riffle, 40% deep flow and 10% pool. Trout were frequent, salmon and stone loach scarce. There were not enough 0+ salmon caught to estimate the population. The number of trout was among the highest recorded for any river in the system. Survival of 0+ to 1+ trout was 27%.

The Deereen River

This reach was fished on July 24 and 27. Conditions for electrofishing were good on both occasions. The reach measured approximately 3m in width and was a satisfactory salmonid habitat with bed of gravel stone and silt with 70% riffle and 30% deep flow. Trout were frequent, salmon, stone loach and eel were scarce.

The number of 0+ trout was the highest recorded for any river in the system. Survival of 0+ to 1+ trout was approximately 5%. The population of trout, though high was greatly reduced from the numbers in 1979.

The Bunowen River

The Glengowla Bridge stretch was fished on July 31 and August 6. Fishing conditions were suitable on both occasions. The reach measured 3m in width and was a good salmonid habitat with bed of gravel and stone with 60% deep flow and 35% riffle and 5% pool. Salmon and trout were frequent and minnow and eel were rare.

As in 1979 the numbers of 0+ salmon were among the highest in the system. Survival of 0+ to 1+ salmon was 3%.

The Balinabrack River

This river rises in the Maamturk Mountain area. It flows through poor agricultural land for its entire course, entering Lough Corrib at Maam Bridge. The fishing station was at Glenlush and measured 110m in length by 12m wide. It was an excellent salmonid habitat with bed of gravel and stone with 70% riffle and 30% deep flow. The stretch was fished on August 20 and 21. Conditions were good for fishing.

The number of salmon in this river was among the lowest for rivers in this part of the system. Trout numbers were also low for these rivers. The mean lengths of salmon and trout were average for this part of the system.

The Dalgan River

This river rises north of Ballyhaunis, Co. Mayo and is the upper reach of the Clare River. The land quality is poor along most of its course. The reach electrofished was at the town of Ballyhaunis, and fishing conditions were good. It was a satisfactory salmonid habitat with bed of stone, gravel and silt with 85% riffle, 10% deep flow and 5% pool. Trout and stone loach were frequent and eel rare. The stretch was fished on August 19 and 20.

No salmon were present. The number of trout was about average for rivers in the eastern part of the system.

Discussion

In general the salmon numbers found were similar to those reported in 1979. The high numbers reported in the Cornamona River in 1979 however were not recorded in 1980.

The survival to 1+ from the high 0+ numbers in 1979 was very poor at 0.16. This fact emphasises how important it is to have the ideal number of spawning fish in a tributary and not too many as appears to be the case in this river. The tributaries in the Corrib system appear to be reasonably well stocked with salmon. The 0+ trout show lower numbers in nearly all rivers in 1980. The trout appear to have had a relatively poor spawning year. It is not possible to say how this spawning will affect the trout stocks until 1981 when survival from the 0+ group can be studied. The numbers showing may be sufficient for what are poor trout streams.

A summary of the condition of each tributary follows.

The Sinking River

There appears to be an improvement in the water quality in the upper reaches. The presence of 0+ salmon which were not recorded in 1979 is further evidence of this improvement. The numbers of 0+ salmon in the lower section increased dramatically to show the highest levels recorded in 1980. The range of the estimate is very wide probably reflecting the high river levels obtaining during the assessment. The numbers of trout remained low.

The Grange River

The stock position in this river appears good. There are reasonable numbers of both salmon and trout in the upper reaches. The distribution of fish was patchy in the lower reaches and this will be investigated in future work.

The Abbert River

This river appears to be understocked despite the fact that it forms a good salmon habitat. The water quality is good and food is abundant. Survival in this river is poor and it appears to have a greater potential for salmon productivity than it is realising at present. The numbers of both salmon and trout 0+ age were lower in 1980 than in 1979. This may be an indication of poor spawning in 1980. This river may benefit from restocking.

Dunmore and Deereen Rivers

The Dunmore River

This river appears to provide a better habitat for trout than for salmon. Salmon numbers were low in 1979 and even lower in 1980. The water quality is satisfactory and this river may benefit from restocking .

The Deereen River

The Deereen appears to be a marginally better salmon river than the Dunmore but other conditions are similar.

The Bunowen River

There is a good population of 0+ salmon in this river and the numbers were maintained over the two years of sampling. The numbers of trout are high for rivers on the western side of Lough Corrib. The survival of 0+ to 1+ salmon is very low and needs to be investigated. The 0+ salmon are very small and may be in direct competition with the larger 0+ trout.

The Loughkip River

The number of 0+ trout declined in 1980. There are few if any 0+ salmon although water quality is good and the habitat appears to be suitable for salmon. Some 1+ salmon were recorded from the stretch sampled and these are thought to be from a restocking with spring yearlings.

The Owenriff River

The Owenriff appears to be a particularly good salmon river. It maintained high numbers over two years of sampling. The survival from 0+ to 1+ is good despite the fact that the salmon are among the smallest recorded in the system. There is not a significant trout population in the river.

The Cornamona River

This is a highly productive river of good water quality. The gravel is very suitable for spawning and early rearing. There may be a shortage of space for 1+ fish which would explain the poor production. Sampling reveals that the fauna is sparse which may indicate overcropping. While the numbers of 0+ salmon are very much reduced from 1979 they will represent very high stock levels. The survival at approximately 3% is the key feature of this tributary. There was relatively little range in the trout populations.

The Balinabrack River

This river was sampled for the first time in 1980. The habitat is good. The numbers of salmon are low although growth is average. The poor numbers in this tributary need to be investigated. The number of 1+ is reasonable so that 1979 may just have been a poor year for 0+ production in this tributary. Trout production appears normal for this type of river.

The Dalgan River

No salmon were found in this apparently suitable river. There is no obvious reason for this and an explanation will be sought. The trout population is similar to other populations in this area.

Acknowledgements

We wish to thank members of the Galway Board of Fishery Conservators, and the staff of the Zoology Department at UCG. We wish to thank especially the Manager and staff of the Galway Fishery for their co-operation and Miss Eileen Barret, Mr Austin Curtin, Miss Siobhan Crinnion, Miss Catherine Cronin and Miss Rachel Piggins for their assistance.

Table 1 Chemical Parameters of Tributaries Sampled in the Corrib System

Name	Mg	Ca	Na	K	Total Hardness as Ca CO_3	Nitrite Ug atm N/l	Nitrite and Nitrate Ug atm N/l	Total Ammonia Ug atm N/l	Orthosphate Pho Ug atm P/l	Silica Ug atm Si/l
Abbert	5.9	144.8	8.3	2.8	386.2	0.3	115.0	3.2	0.1	51.0
Deereen	6.3	158.5	9.0	3.8	422.C	0.2	148.2	0.5	0.1	59.1
Grange Upper	5.5	159.1	8.8	1.8	420.1	0.6	71.5	0.8	0.1	42.4
Grange Lower	5.3	154.0	9.9	1.7	406.8	0.3	59.4	0.2	0.1	44.5
Dalgan Upper	5.7	138.2	9.8	1.2	368.7	0.9	48.5	1.7	0.1	75.7
Dalgan Mid.	5.7	139.3	10.6	1.5	371.5	5.5	102.2	8.7	0.4	77.8
Dalgan Lower	5.6	143.4	11.2	1.4	381.4	4.4	104.7	1.5	0.3	75.0
Cloonfad	5.5	143.2	9.4	1.5	380.4	0.3	63.8	0.7	0.	63.5
Dunmore	6.8	139.3	8.9	1.4	375.9	0.2	90.7	2.0	0.0	65.5
Sinking Upper	6.7	124.1	9.7	1.2	337.6	2.C	43.4	1.5	0.1	44.8
Sinking Lower	5.2	130.9	8.8	1.5	348.4	0.3	63.8	0.7	0.1	60.9
Lough Kip	2.5	26.6	11.4	0.9	76.8	0.5	14.0	2.0	0.1	57.8
Bunowen	1.9	8.1	8.7	0.3	28.6	0.2	3,1	2.0	0.0	40.1
Owenriff Lower	1.2	4.5	8.0	0.3	16.4	0.2	1.5	1.8	0.0	12.5
Cornamona Lower	1.6	4.8	7.2	0.3	18.8	0.1	1.9	0.5	0.0	25.5
Cornamona Upper	1.9	7.5	7.4	0.3	26.9	0.1	0.1	1.7	0.1	23.4
Balinabrack	1.4	3.0	6.1	0.3	13.8	0.1	4,3	0.7	0.0	25.0
Failmore	1,4	12.7	7.0	0.3	37.8	0.1	1.6	0.8	0.C	35.9
Owenriff Upper	1.1	7.1	7.2	0.3	22.5	0.1		4.5	0.C	10.9

Table 2 Mean lengths(cm) of salmon and trout according to age

	Salmon				Trout					
	0+		1+		0+		1+		2+	
River	Mean length	S.D.	Mean length	S.D.	Mean length	S.D.	Mean length	S.D.	Mean length	S.D.
Sinking upper	7.14	0.50	—	—	8.10	0.52	16.01	1.24	22.34	0.79
Sinking lower	7.07	0.80	13.77	0.89	8.97	0.78	19.33	2.17	-	-
Grange upper	7.13	0.66	13.17	0.65	8.58	0.63	-	-	-	-
Grange lower	7.50	0.77	13.39	0.77	-	-	-	-	-	-
Dunmore	-	-	12.24	1.19	6.89	0.62	14.09	1.34	-	-
Abbert	7.11	0.83	12.78	1.02	9.25	1.41	-	-	-	-
Deereen	5.46	0.57	10.36	1.07	6.19	0.80	13.29	1.8	-	-
Dalgan	-	-	-	-	7.06	0.52	14.59	1.33	-	-
Owenriff	4.61	0.52	7.69	0.97	-	-	-	-	-	-
Bunowen	3.78	0.48	7.39	1.03	4.73	0.75	-	-	-	-
Loughkip					5.39	0.23	10.98	1.87	-	-
Cornamona	4.67	0.45	7.71	0.76	5.51	0.50	-	-	-	-
Balinabrack	4.53	0.39	7.22	0.63	5.85	0.81	-	-	-	-

Table 1 Chemical

Table 3 Length, numbers and survival of salmon

Tributary	Fork length mm		Age	First Fishing M	R	Second fishing C	Best estimate N	Numbers per m^2 and 95% limits Min	Mean	Max	Survival
Sinking upper	5.0	8.9	0+	34	8	28	108.88	0.05	0.12	0.18	
Sinking lower	5.0	8.9	0+	217	12	116	1945.23	1.35	2.81	4.28	
	12.0	15.9	1+	34	3	19	166.25	0.03	0.24	0.44	16%
Grange upper	5.0	8.9	0+	57	7	62	449.5	0.47	1.23	2.00	
	11.0	14.9	1+	20	7	27	70.87	0.09	0.19	0.29	16%
Grange lower	6.0	8.9	0+	52	9	53	280.9	0.20	0.45	0.69	
	12.0	15.9	1+	10	-	-	-	-	-	-	
Abbert	5.0	9.9	0+	86	32	64	168.72	0.08	0.12	0.15	
	10.0	15.9	1+	30	10	18	50.72	0.01	0.03	0.05	4%
Dunmore	6.0	7.9	0+	5	1	1	-				
	10.0	16.9	1+	16	9	13	22.1	0.02	0.03	0.04	27%
Deereen	4.0	6.9	0+	33	4	23					
	8.9	11.9	1+	11	0	6					
Bunowen	2.0	5.9	0+	192	27	166	1392.95	1.05	1.71	2.36	
	6.0	8.9	1+	8	1	16	72.00	0.00	0.08	0.17	7%
Lough Kip	9.0	11.9	1+	10	0	2					
Owenriff	3.0	5.9	0+	170	10	102	1585.63	0.47	1.08	1.68	
	6.0	13.9	1+	146	7	39	716.62	0.17	0.48	0.80	28%
Cornamona	3.0	5.9	0+	331	45	333	2403.39	1.79	2.46	3.13	
	6.0	11.9	1+	64	19	49	159.25	0.10	0.16	0.22	3%
Balinabrack	3.0	5.9	0+	197	22	133	360.73	0.21	0.26	0.31	
	6.0	9.9	1+	38	9	48	187.20	0.06	0.13	0.20	

Table 4 Length, numbers and survival of trout

Tributary	Fork length mm		Age	First fishing M	Second fishing R	Second fishing C	Best estimate N	Numbers per m^2 and 95% limits			Survival
Sinking upper	7.0	9.9	0+	4	1	9					
	13.0	17.9	1+	19	5	15					
	21.0	23.9	2+	10	2	9					
Sinking lower	6.0	10.9	0+	14	6	14	30.00	0.02	0.04	0.06	
	16.9	19.9	1+	7	4	8	12.8	0.00	0.01	0.02	6%
Grange upper	6.0	9.9	0+	26	8	42	126.00	0.16	0.34	0.52	
	17.9	22.9	1+	-	-	-	-	-	-	-	
Grange lower	6.0	11.9	0+	19	2	15					
	16.0	23.9	1+	5	2	5					
Abbert	6.0	11.9	0+	62	8	26	182.0	0.05	0.12	0.20	
	15.0	19.9	1+	-	-	-					
Dunmore	6.0	7.9	0+	91	14	66	505.8	0.33	0.62	0.91	
	11.9	17.9	1+	106	42	72	179.16	0.21	0.27	0.34	26%
Deereen	4.0	8.9	0+	111	16	82	540.23	0.80	1.42	2.04	
	9.0	16.9	1+	25	10	24	56.72	0.08	0.15	0.21	4%
Bunowen	3.0	7.9	0+	106	17	64	380.44	0.27	0.46	0.66	
	8.0	14.9	1+								
Loughkip	4.0	6.9	0+	89	8	92	920.00	0.31	0.78	1.26	
	8.0	14.9	1+								
Owenriff	4.0	6.9	0+	20	1	13					
	8.0	11.9	1+	2	2	2					

Table 4 (cont.)

Tributary	Fork length		Age	First fishing	Second fishing		Best estimate	Numbers per m^2 and 95% limits			Survival
Cornamona	3.0	7.9	0+	91	13	64	420.57	0.22	0.43	0.63	
	8.0	12.9	1+	9	1	8	40.00	0.00	0.04	0.08	5%
Balinabrack	4.0	7.9	0+	31	7	14	56.00	0.01	0.04	0.06	
	8.0	12.9	1+	40	8	33	150.33	0.05	0.11	0.17	
Dalgan	6.0	8.9	0+	50	8	57	323	0.1	0.36	0.57	
	12.0	17.9	1+	36	12	20	56.9	0.03	0.06	0.09	