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in the Corrib system 1981***

***By
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Population Estimates of Juvenile Salmonids
in the Corrib System 1981

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This is the third in a series of reports regarding the stocks of juvenile salmonids in the Corrib system.

During the 1981 season fourteen tributaries were surveyed and in two cases upstream and downstream reaches were examined. These included three which had not been studied previously: the Failmore, Letterfore and Black. The methods were identical to those used in 1979 and 1980. As in the previous years the rivers were selected because they were known salmon holding tributaries and do not reflect trout numbers in the system.

The population numbers are assessed by electrically fishing a selected area. The fish caught are marked by fin clipping and allowed to re-mix with the fish in the stream. The next day fishing is repeated in the same place and the proportion of marked to unmarked fish gives an estimate of the population. While it is not essential that river conditions remain the same on both days it does help the accuracy of the estimate. There is a tendency for fish to move out of their home territories during floods.

Population surveys yield the best results when a large proportion of the tagged fish are recovered. Ideal electro fishing conditions are low water, overcast sky and similar river conditions on both days.

RESULTS

Details of the stretches of river sampled, the water analysis and the catches are given in Tables 1-4. The salmon and trout populations are expressed in accordance with accepted scientific practice as numbers per square metre, written m^2 . Juvenile fish which are not yet one year old are referred to as 0+ fish while fish in their second year are

called 1+ fish and so on. Fish species other than trout and salmon present in each region are listed as:

Frequent : more than 50 specimens observed

Scarce : 10 - 49 specimens observed

Rare : less than 10 specimens observed

These figures are rough estimates and are intended to give an indication of the abundance of the species concerned.

A description of each of the three rivers which were not included in the earlier years' work is given. The other rivers are described in Leaflet 112.

The Sinking River

In the upper reaches at Boyanagh Bridge eels were scarce while stone-loach were frequent. The population of 0+ salmon at 0.2 per m² was double the 1980 figure. Survival from 0+ to 1+ was 17.5%. In the lower reaches at Dunmore Castle eels were again scarce and stone-loach frequent. The population of 0+ salmon although lower than in 1980 was the second highest recorded for rivers in the eastern part of the catchment, 1.2 per m². Survival from 0+ to 1+ was slightly lower than in the previous season.

The Grange River

In the upper section at Cloondahamper the number of 0+ salmon at 0.4 per m² was much lower than the 1980 figure which was 1.2 per m², however the number of 0+ trout in this reach has almost doubled since 1980. The survival of salmon from 0+ to 1+ was 11%. The number of 1+ trout present was 0.03 per m² which again was a change from 1980 when no 1+ trout were recorded for this reach.

The number of 0+ at 0.4 per m² has changed only slightly from the 1980 figure in the lower stretch at Castlemoyle. The survival for salmon from 0+ to 1+ was 28%. As in the Cloondahamper reach there was an increase in the number of trout per m² but at 0.1 per m² the trout numbers were still low suggesting the reach is a more suitable salmon habitat.

The Abbert River

The number of 0+ salmon at 1.7 per m² was the highest recorded for any river in the eastern part of the system and was much higher than that

recorded for 1980. The number of 1+ salmon at 0.1 per m² was also higher than the 1980 figure. The mean length of 0+ salmon at 5.3cm was significantly smaller than the 7.1cm recorded for 1980, this may be explained by the later date of fishing in 1980 (26 August).

The Dunmore River

Stone loach, eel and pike were present in this reach. Electrofishing conditions were poor on the second day due to a flood. No marked 0+ fish were recovered on the second day, thus making it impossible to establish the 0+ group populations. However, it was possible to estimate the total numbers of salmon and trout in all age groups together. The number of salmon and trout at 0.08 and 0.4 respectively compared favourably with the 1980 figures. The lengths of both salmon and trout were average for rivers in the eastern part of the system.

The Deereen River

The number of salmon in this reach was low at 0.3. The total number of trout at 1.23 is among the highest recorded in the rivers sampled. The low number of salmon in this river may be explained by the lack of suitable spawning gravel. The spawning and nursery area in this river is confined to the lower kilometre of the river.

The Bealinabrack River

The number of 0+ salmon in this river at 0.6 per m² had increased significantly since 1980. The number of 1+ salmon at 0.3 was greater than the number of 0+ recorded for 1980, however this may be explained by the fact that this reach is more suitable for 1+ salmon having a high percentage of fast flowing riffle. The number of trout in this reach was low, but again it does not make a suitable 0+ group habitat, because the riffle area is deep and composed of slightly larger stone than is suitable for 0+ fish. The mean lengths of salmon and trout were average for rivers in the western part of the system.

The Bunowen River

The population in this river was estimated by the successive removal method, because many of the 0+ group were under 3.5cm and could not be marked easily. The number of 0+ salmon at 1.1 per m² was significantly lower than the 1.8 recorded in 1980. The number of 0+ trout in this reach was similar to that recorded in 1980. The mean length of 0+ salmon for this reach at 4.3cm was among the lowest recorded for any river in the system.

The Loughkip River

No 0+ salmon were found in the reach examined. There were 1+ salmon at 0.09 per m² but these are likely to be the survivors from restocking carried out in the autumn of 1980. It appears that the Loughkip River is a more suitable river for trout than for salmon.

The Cornamona River

The number of 0+ salmon at 4.9 per m² was the second highest recorded in the system, almost double the population in 1980 which was 2.5.

The number of 1+ salmon at 1.2 was seven times greater than the number recorded for 1980. The survival of salmon from 0+ to 1+ was 49% compared with 3% for 1979/80. The large 0+ population in 1979 obviously suffered extreme mortality or migration perhaps because of the high numbers. The number of trout in this reach at 0.5 was much higher than in 1980.

The Owenriff River

The number of 0+ salmon was 3.7 per m² compared with 1.1 in 1980. The number of 1+ salmon was 0.3 which gave a survival of 26% from 0+ to 1+. Very few trout were recorded.

The Letterfore River

This river is a tributary of the Owenriff and rises in the Knockletterfore Mountains. It flows through poor quality land for its entire course.

The reach electrofished was downstream of the bridge on the Oughterard/Maam Cross Road. This reach was comprised of 50% deep flow, 45% riffle and 5% pool and made an excellent salmonid habitat with bed of gravel and stone.

The number of 0+ salmon at 7.3 was the highest recorded for any river in the system. In another reach approximately one mile from the source of the river large numbers of 0+ salmon were present. This river appears to be too heavily stocked with salmon, for the available food supplies.

The Western Regional Fisheries Board took a number of mature female fish from this river in December 1980 for spawning purposes.

The Black River

This river rises northwest of Tuam, Co Galway and for much of its course flows through poor quality land. The reach electrofished was at Moyne Castle on the Headford/Ballinrobe road.

It measured over 5m in width and made a satisfactory salmonid habitat with bed of gravel, stone and silt. The stone loach population was very high at approximately 5 per m². The number of 0+ salmon at 1.2 per m² was average for rivers in the eastern part of the system. Trout numbers were low.

The Ross River

This river rises north west of Moycullen and has a number of lakes in its catchment. The surrounding land is of poor quality pasture. The reach electrofished was upstream of the bridge on the Moycullen/Oughterard road. It made a satisfactory salmonid habitat with bed of rock gravel and stone with 40% riffle and 60% deep flow.

No salmon or stone loach were present. The number of 0+ trout at 0.03 was low considering they were the only species. Their average length (7.6cm) was high for rivers in this part of the system. The lower reaches of this river are canal like and may mitigate against salmon migration.

The Failmore River

This river rises in the Maumturk Mountains south west of Maam village. It flows through poor quality land for its entire course. The reach electrofished was approximately 1km upstream of Teernakill bridge. This reach made an excellent salmonid habitat and comprised of 65% riffle and 35% deep flow with bed of stone and gravel.

The number of 0+ salmon in this reach at 0.7 may be a slight underestimate because of the width of the river. There are both 1+ and 2+ salmon present in this reach which suggests that salmon do not reach the critical condition for migration after a year. The fauna sample suggests that food is the limiting factor in this river.

DISCUSSION

There has been little general change in juvenile salmonid numbers over the past three years and water quality has remained good throughout. The majority of the tributaries appear to be well stocked with the exception of the Upper Sinking and Lower Grange. The Upper Sinking river does not have suitable spawning gravel due to slow flow resulting in deposition of silt. The Lower Grange has suitable spawning

gravel but the numbers of 0+ group have been low over the past three years. This area may be used as an overflow area when numbers are high upstream. The deep areas of the Lower Grange have a considerable number of pike and this may be a contributing factor.

There are a number of rivers which produce large numbers of 0+ salmon, notably the Letterfore and Cornamona. The survival from 0+ group to 1+ group is sometimes poor. This may be due to migration out of the tributary or poor survival. This problem needs to be investigated.

The Letterfore river had 0+ group salmon in excess of 7 per m² and 1+ salmon at only 0.07 per m². The 0+ group fish in this river may move into the Owenriff, which would explain the relatively high survival rate over the past three years in that river.

The Cornamona river which has no such facility has had very low survival rates up to this year when the survival was exceptionally high at 49%. This may be explained by the fact that the Cornamona is a spate river and that during the relatively dry spells the mortality and migration may be higher. The summer of 1980 being exceptionally wet might explain the high survival.

The 0+ trout numbers in general were higher this year than in 1980. The numbers of 1+ trout still remain low in the rivers examined but as stated earlier the selection of the sites was based on a salmon type habitat.

As in other years there was a clear distinction between lengths of fish on the east and west sides of Lough Corrib. The average length of 0+ salmon on the east side was 6.3cm while the corresponding value for the west side was 4.7cm.

Since the overall numbers of salmon are remaining steady the emphasis of the 1982 work will be an intensive investigation of a few rivers to assess the nursery areas and the total production from each.

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Table 1: Length and numbers of salmon per m²

	Fork Length	Age	First Fishing	Second Fishing		Best Estimate	Numbers per m ² and 95% Limits			Survival
	mm						Min.	Best	Max.	
Sinking Upper	5.0- 5.9	0+	56	15	37	131.8	0.09	0.17	0.24	
	11.0-11.9	1+	15	6	6	13.7	0.01	0.02	0.03	25%
Sinking Lower	4.0- 7.9	0+	212	23	157	1393.4	0.70	1.19	1.69	
	9.0-14.9	1+	73	9	50	370	0.09	0.32	0.54	11%
Grange Upper	5.0- 7.9	0+	56	14	84	319.2	0.22	0.43	0.65	
	10.0-13.9	1+	33	10	33	102.0	0.06	0.14	0.22	11%
Grange Lower	5.0- 8.9	0+	60	8	58	393.1	0.10	0.42	0.73	
	10.0-14.9	1+	17	4	28	177.1	0.13	0.16	0.19	35%
Dunmore	4.0-12.9	0+ & 1+	16	4	16	54.4	0.01	0.08	0.17	-
Abbert	3.0- 6.9	0+	152	13	150	1639.3	0.72	1.68	2.65	-
	8.0-13.9	1+	28	9	49	142.1	0.06	0.15	0.24	-
Deereen	3.0- 5.9	0+	31	0	26	197.0	-	0.30	-	-
Bunowen	2.5- 4.9	0+	-	-	-	-	-	1.12	-	-
	5.0- 8.9	1+	-	-	-	-	-	0.02	-	-
Loughkip	5.0- 8.9	1+	27	9	39	109.2	0.04	0.09	0.15	
Owenriff	3.0- 6.9	0+	520	51	411	411.7	2.71	3.72	4.73	26%
	7.0-17.9	1+	49	6	43	307.1	0.02	0.28	0.53	
Bealinabrack	3.0- 6.9	0+	108	22	152	720.3	0.34	0.56	0.78	
	7.0-12.9	1+	33	3	51	388.3	0.19	0.31	0.43	
Failmore	3.0- 6.9	0+	240	46	154	789.7	0.49	0.67	0.85	
	7.0-12.9	1+	84	33	69	172.5	0.11	0.15	0.19	
Letterfore	3.0- 5.9	0+	278	24	293	326.9	4.33	7.30	10.27	
	7.0-10.9	1+	19	6	11	31.42	0.01	0.07	0.13	
Cornamona	3.0- 6.9	0+	563	99	516	217.1	3.96	4.85	5.74	49%
	7.0-13.9	1+	92	8	70	723.3	0.27	1.21	2.14	
Black	5.0- 5.9	0+	116	18	129	793.7		1.04		
	10.0-14.9	1+	24	10	14			0.04		

Table 2: Length and numbers of trout per m².

Tributary	Fork length mm	Age	First fishing M	Second fishing		Best estimated N	Numbers per m ² and 95% limits			Survival
				R	C		Min.	Best	Max.	
Sinking upper		0+ & 1+	29	11	23	57.5	0.03	0.07	0.11	
Sinking lower	7.0-10.9	0+	7	2	7					
Grange upper		0+	25	5	21	91	0.01	0.10	0.19	
Abbert	5.0-8.9	0+	38	4	49	382.2		0.39		
Derreen		Total	81	8	85	77.4	0.29	1.23	2.17	
Cornamona	3.0-6.9	0+	53	7	45	304	0.09	0.51	0.92	
		Total	63	7	56	448	0.13	0.75	1.37	
Dunmore		Total	28	28	94	256.1	0.24	0.35	0.46	
Failmore		Total	26	6	37	142.7	0.02	0.12	0.22	
Bealinabrack		0+ & 1+	25	6	40	148.57	0.02	0.12	0.21	
Loughkip	4.0-7.9	0+	174	17	134	1302.8		1.14		
	8.0-2.9	1+	34	9	34	119		0.10		

Table 3: Mean lengths (cm) of salmon and trout according to age

	Trout				Salmon			
	0+ Mean	S.D.	1+ Mean	S.D.	0+ Mean	S.D.	1+ Mean	S.D.
Sinking Upper	7.3	0.6	18.5	2.7	7.6	0.9	-	-
Lower	7.7	1.2	-	-	6.5	0.7	11.3	1.2
Grange Upper	7.8	0.7	16.1	0.8	6.5	0.5	11.4	0.7
Lower	7.8	1.1	-	-	7.3	0.7	17.9	1.4
Dunmore	6.4	1.7	13.9	2.5				
Abbert	7.3	0.81	-	-	5.3	0.7	10.9	1.0
Deereen	6.0	0.9	13.2	2.1	4.6	0.6	10.1	1.1
Loughkip	5.7	0.5	12.4	2.1	7.0	0.7	-	-
Owenriff	6.4	0.6	-	-	4.5	0.5	8.7	1.1
Felinore	6.1	0.7	-	-	4.9		9.0	1.3
Bealanabrack	5.8	0.7	-	-	4.9	1.7	8.3	1.6
Letterfore					4.3	0.6	9.1	0.9
Cornamona	6.0	0.7	-	-	4.9	0.5	10.0	1.8
Ross river	7.6	0.9	13.0	2.2	-	-	-	-

Where there were not sufficient numbers no mean lengths are given.

Table 4: Details of reaches electrofished

River	Date	Conditions	Width	Area m ²	% Riffle	% Deep flow	% Pool	% Gravel	% Stone	% Silt	Water quality
Sinking upper	7/8 Aug	Good	3.8	636	45	65		55	25	10	Good
Sinking lower	17/18 Aug	Good	6.7	1166	55	45		25	75		"
Grange upper	25/26 July	Good	3.6	737	70	30		60	30	10	"
Grange lower	12/14 Aug	Good	6.0	946	55	45		55	35	10	"
Abbert	23/24 July	Good	8.2	975	65	25	10				"
Dunmore	28/29 July	Fair	3.7	684	70	20	10	50	35	15	"
Deereen	17/18 July	Poor	5.0	630	70	30		40	50	10	"
Bealinabrack	27/28 Aug	Good	9.3	1284	70	30		25	75		"
Bunowen	26 Aug	Good	3.8	720	60	35	5	70	15	15	"
Loughkip	16/17 July	Good	4.2	1146	25	65	10	40	55	5	"
Cornamona	11/12 Aug	Poor	4.5	600	65	35		20	80		"
Owenriff	17/18 Aug	Good	8.4	1107	60	40		50	50		"
Letterfore		Good	3.6	448	45	50	5	65	30	5	"
Black	31 Aug/ 1 Sept.	Good	5.4	756	30	70					"
Ross	24/25 Aug	Good	4.3	710	40	50	10	35	65		"
Failmore R.	2/3 Sept	Fair	8.5	1173	65	35		30	70		"