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1

"SPECIMEN" BROWN TROUT AND SEA TROUT FROM IRISH WATERS

by

ARTHUR E. J. WENT.

Up to the year 1955 when the Irish Specimen Fish Committee was established details of many large brown and sea trout taken from Irish waters were lost because of the lack of any formal means of recording them. Some large brown and sea trout were, however, brought to notice because a number of anglers were aware that the Fisheries Division was interested in any unusual fish and as a result scales and measurements, together with other details of the capture of these fish, were often sent to the Fisheries Laboratory for examination and report. A fair number of brown trout and sea trout were authenticated and recorded in this way up to 1955.

The need for the proper authentication of the species of a fish compelled the Irish Specimen Fish Committee to insist on scales being presented with each claim for a specimen brown trout or sea trout because the Committee was aware that anglers sometimes incorrectly identified the species. For instance some trout-like grilse (i.e. *Salmo salar*.) were sometimes identified as brown trout or sea trout. A considerable amount of valuable material has been obtained as a result of the Committee's activities as to the age and growth of *specimen* brown trout (fixed at 10 lb or over for lakes and 5 lb or over for rivers) and sea trout (6 lb or over). The present paper deals with all the material collected up to the end of 1967 fishing season and relates to brown trout of 10 lb weight and upwards and sea trout of 6 lb and upwards. As the original information collected by the Irish Specimen Fish Committee was obtained in inches and pounds, these units have been used throughout this paper.

THE BROWN TROUT

It has been known for a long time that some waters hold brown trout of large dimensions, whereas others only hold small fish. The reasons for these differences have been the subject of many investigations in the past. Some waters in Ireland, such as Lough Sheelin, provide the angler with a consistently high average weight of trout but seldom provide really large trout to the rod. Other waters, such as Lough Mask, however, provide some big brown trout in most years.

Up to the middle of 1963 the accepted Irish record for a rod caught brown trout was the so-called *Pepper's Ghost*, a fish of 30½ lb taken in 1861 from Lough Derg by District Inspector J. W. Pepper. The stuffed specimen of this fish was acquired by the National Museum, Dublin in 1960 from the legal representatives of Mr. Pepper's son and

in 1963 the writer obtained from the Museum authorities permission to take a small patch of skin from the back of the fish where removal would not harm its exhibition value. From this piece of skin a number of scales were obtained from which it was found possible to determine that the fish was not a brown trout but a stale, probably a male, salmon which had spent two years in the river and probably four years in the sea (Went, 1964).

The next largest rod caught brown trout from Irish waters was one of 26 lb 2 oz taken by William Meares from Lough Ennell (Belvedere) on 15 July, 1894. Fortunately the stuffed specimen of this fish was also preserved in the National Museum, Dublin and repeating the process of obtaining a piece of skin it was possible to show that this was a brown trout just over eleven years of age (Went, 1964).

Since 1900 details of 234 brown trout weighing 10 lb and upwards have been recorded from Irish waters in many publications (Table 1). Of these, 88 (37.6%) were obtained from Lough Mask, 63 (26.9%) from Lough Corrib, and 16 (6.9%) and 15 (6.5%), respectively from Lough and River Erne and the Killarney Lakes (see Table 2 for details).

Some or all of the details of the weight, length and date of capture are available for most of the brown trout taken since 1955 and in many cases scale readings (including growth determinations) are available (Table 2). Details of a few fish caught before 1955 are available and they have also been given in Table 2. Not all the trout referred to in Table 2 are *specimen* within the meaning of the term as used by the Irish Specimen Fish Committee, because a few were taken by netting and others taken on rod and line did not qualify for various reasons which it is unnecessary to discuss here.

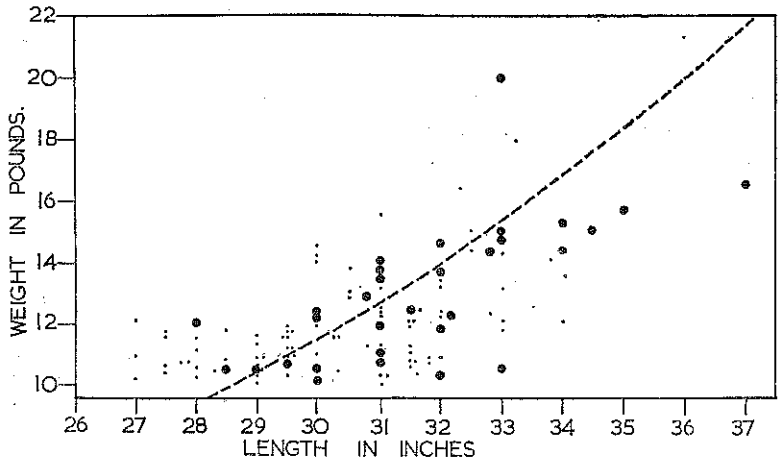

Fig. 1. Weight/length relationship of the large brown trout referred to in this paper. The broken line gives the weight/length relationship for a condition coefficient of 1 on Nall's scale (see page 3). Large circles=fish taken before 1 May each year and small circles those taken thereafter.

There is considerable variation in the condition of the large brown trout investigated as will be seen from Fig. 1. In Fig. 1 those trout taken before the 1 May have been indicated by large circles and those taken thereafter by small dots. There is no doubt that some of the fish caught early in the season were in poor condition due to lack of time to recover from spawning. On the other hand some of the earlier fish were in excellent condition. For example, the 20 lb Shannon trout taken on 22 February, 1957 was certainly very much above the weight one would have expected from its length—yet the weight and length were confirmed by no less than three reliable independent people as the writer has already mentioned elsewhere (Went, 1957). Major Place, its captor, described the fish as rather like a rugby football, not an inapt description from the weight/length relationship. The writer saw both of the 36 inches fish from Lough Corrib (Table 2, Nos. 4 and 11) taken in June, 1955 and on 27 June, 1959, respectively. The first was a poor conditioned male which had not recovered from spawning, whereas the second was a fine clean fish in the best of condition. Its stuffed skin is now in the possession of the Irish Specimen Fish Committee.

Workers at the former Fishery Board for Scotland devised a formula for comparing the condition of sea trout of different lengths and at different times of the year (Nall, 1930). This formula can also be usefully used for brown trout. The weight/length relationship according to this formula is:—

$$\text{Condition coefficient} = \frac{10^6 W}{427 L^3}$$

where W is the weight in pounds, L is the length in inches.

A condition coefficient of unity is about normal for well fed trout in the larger size ranges. A curve representing a condition coefficient of 1 has been added to Fig. 1. From this it would be seen that of the fish taken before the 1 May in any year 11 had condition coefficients of 1 or over whereas 20 had coefficients below 1. From 1 May onwards the position was that there were actually equal numbers of fish having condition coefficients of less than 1 as those with condition coefficients of more than 1. It is clear that many of the larger brown trout fail to maintain the body proportions which one regularly expects from the smaller well conditioned fish.

Although the rules of the Irish Specimen Fish Committee demand that sets of scales shall be submitted with every claim for a specimen brown trout, it is not always possible to obtain an age (and growth) reading. In many cases the scales of these brown trout are suitable for the purpose for which they were submitted, namely identification of the fish as a brown trout, but they cannot be used, for various reasons which we need not go into now, for age and growth determinations. Nevertheless, in the majority of cases age and growth determinations were possible from the scales submitted. As will be seen from Fig. 2 there is considerable variation of length within any one age group. For example, fish having lengths of 28 inches had ages from 7 to 11 years and those of 30 inches in length from 6 to 11 years.

Although Fig. 2 has been drawn up for all waters there is a similar difference for individual waters as will be seen from Table 2 in relation to Loughs Mask and Corrib for which considerable material was available.

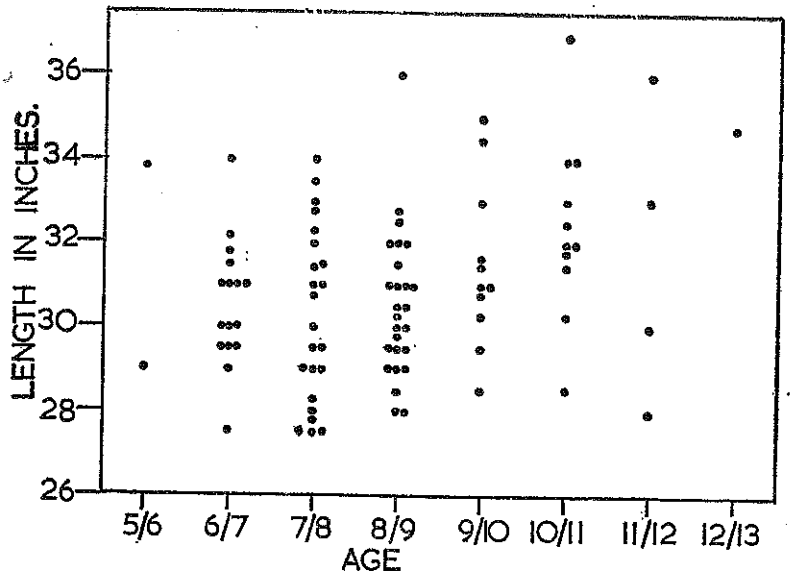

Fig. 2. Diagram indicating the relationship between age and length. 5/6=fish in their sixth year; 6/7 fish in their seventh year, etc.)

Where the scales were satisfactory for both age and growth determinations the growth of the fish was calculated in the usual way, i.e. on the assumption that the growth of the fish was directly proportional to the growth of the scale. The results for each individual fish are given in Table 2 and the mean growth rates for the separate waters are given in Table 3. For convenience the growth rates calculated for Loughs Derg (Southern, 1935), Corrib (Went, 1943) and Rea (Went, 1949) have been added to Table 3 to give some idea of fast growth rates previously recorded from Irish waters.

Generally speaking, the trout referred to in this paper showed rapid growth. In the case of Lough Corrib, for example, the mean growth rate was well in excess of that calculated for the more normal size fish taken on rod and line as can be seen from Table 3 and the following comparison:—

	Mean length in inches at end of year						
Lough Corrib	1	2	3	4	5	6	7
According to Went, 1943	3.2	7.0	11.2	14.1	15.7	19.1	23.7
Specimen trout	4.8	8.8	13.0	17.2	21.3	24.7	26.8
Difference in lengths	1.6	1.8	1.8	3.1	5.6	5.6	3.1

Up to the end of the seventh year the mean growth rate of the Corrib specimen brown trout was higher than that of the more normal (smaller) fish taken on rod and line.

Generally speaking, in most of the brown trout the annual increment in growth made in the first, second or third years is greater than that made thereafter. The figures given in Table 3 for Loughs Mask and Corrib, for which a fair number of observations were made, have been used to provide incremental growths, i.e. the increase in lengths per year (for cases where there were five or more fish) as folows:—

	First year	Second year	Third year	Fourth year	Fifth year	Sixth year	Seventh year	Eight year	Ninth year
Lough Mask	4.4	4.1	4.6	4.6	4.5	4.0	1.9	1.8	1.4
Lough Corrib (Specimen)	4.8	4.0	4.2	4.2	4.1	3.4	2.1	1.8	
Lough Corrib (Went, 1943)	3.2	3.8	4.2	2.9	1.6	2.4			

In the case of Lough Mask and the large Lough Corrib trout, the growth increment remained very high until the end of the eighth year, whereas in the more normal Lough Corrib trout by the fifth year it had decreased to less than 50% of that of the third year. This is perhap better shown in the form of a diagram (Fig. 3).

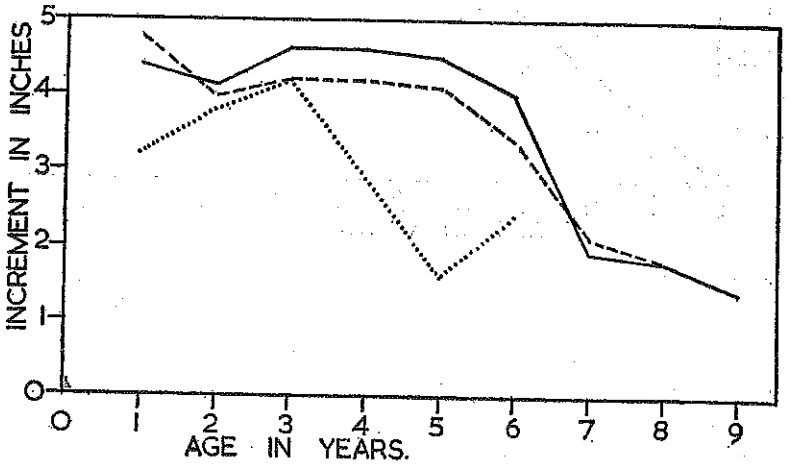

Fig. 3. Incremental growth for Lough Mask (full line): Lough Corrib, "specimen" trout (broken line) and Lough Corrib, ordinary trout (dotted line).

The incremental growth rate indicated in Fig. 3 certainly gives a clue as to the difference between the normal brown trout in a water and those destined to achieve specimen weight. We know that normal brown trout in the early stages are predominantly invertebrate feeders and when they get to a certain age they probably are unable to restore the material lost at spawning and maintain a high growth rate as well. Consequently from about the fourth year the growth rate tends to go

down as shown for the normal Corrib trout in Fig. 3. At the stage at which the increment in growth shows a drastic decline in normal trout those destined to be specimens continue to maintain a fairly good growth rate due, we consider, to the adoption of a fish eating habit, enabling large brown trout to survive and grow without undue expenditure of energy in catching their food. In confirmation of this it should be stated that not a single specimen brown trout referred to in this paper was taken on a fly. All were taken on spinning or trolling gear with lures other than a natural or artificial fly.

There is, as already shown, considerable variation in the length in any one year and this is illustrated in Fig. 4, in which in addition to the average growth rate for Lough Mask the range in length at the end of each year of life for the large trout involved has been indicated.

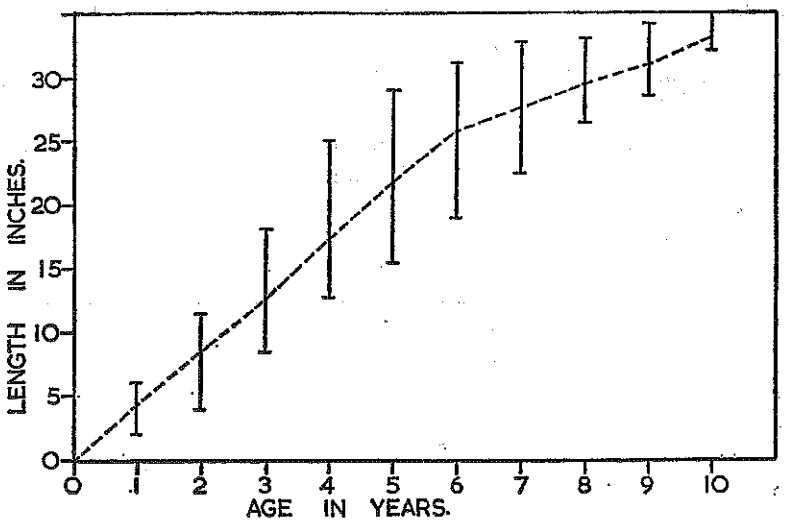

Fig. 4. Growth rates of Lough Mask "specimen" trout with ranges in lengths indicated by vertical lines for each year.

The variation in the growth rate from the different waters is also fairly great. The Killarney trout, for example, grew at moderate rates but continued to do so up to their tenth year. The Lough Carra trout at the end of their fifth year were about the same length as those for Killarney at the end of their ninth year.

THE SEA TROUT

In many of the older angling books there are many references to large Irish sea trout (see *The Angler's Guide*) but the sizes mentioned must be accepted with considerable reserve because, as already stated, even experienced anglers can be mistaken in naming a species, especially where sea trout or brown trout are concerned. The insistence of the Irish Specimen Fish Committee on the proper identification of

the species has produced some valuable information on Irish sea trout in addition to that on Irish brown trout. The scales of a sea trout, apart from being used to identify the species, can be used to obtain details of the age of the individual fish.

The Irish record rod-caught sea trout was one of 12 lb taken from the River Dargle on 3 October, 1958. Details of it and its scales were submitted to the Irish Specimen Fish Committee with a claim for a *brown trout* but the fish turned out to be a rather stale sea trout. It was in its eighth year of life, having spent two years in fresh water before going to the sea as a smolt, then just over one year in the sea and had returned to fresh water and spawned on four successive occasions.

Details of 41 specimen sea trout taken on rod and line are given in Table 4 and details of 8 unusually large sea trout taken by commercial methods are given in Table 5.

In a recent survey of the investigations into sea trout in Irish waters (Went, 1962) it was shown that on average previous spawners were much larger than the maiden or unspawned fish as can be seen from the following:—

Water	Average length in inches		Average weight in pounds	
	Maiden fish	Previous spawners	Maiden fish	Previous spawners
Mattock (Boyne)	16.7	19.7	2.01	3.43
Ilen	11.5	19.1	0.69	3.00
Waterville	14.2	18.7	1·12	3.44
Cashla	12.3	17.0	0.79	1.98
Gowla	11.4	16.5	0.57	1.79
Bundorragha	12.6	19.0	0.85	2.70
Foyle	14.8	16.6	1.56	1.93

Our investigations have, in fact, shown that very few maiden or unspawned Irish sea trout weigh more than three pounds and very few indeed more than four pounds. As the Irish Specimen Fish Committee limit for sea trout is six pounds one would expect most, if not all, of the Irish specimen sea trout to be previous spawners. Out of a total of 49 sea trout weighing 6 lb or over of which we have the scales only one was a maiden fish. This was a 6 lb 2 oz sea trout taken on 13 August, 1961 from the Erriff River. A sea trout of similar size (it was not actually weighed but it was measured) was caught commercially some years earlier in the Boyne. The Erriff fish taken in 1961 was just over five years of age and had spent two years in fresh water before going to the sea as a smolt and just over three years feeding in the sea.

All the fish indicated in Tables 4 and 5 had initially ascended from the sea in their second, third, or fourth post-smolt migration summers and, with one exception mentioned above, had spawned on one to eight occasions but mostly two to four. The $10\frac{3}{4}$ lb fish from Lough Currane (Waterville) taken on 10 August, 1967 was unusual as to age

and number of spawning marks. Normally one would have expected a fish of this weight to have spawned on more than one occasion. It was a remarkably fast growing fish in excellent condition.

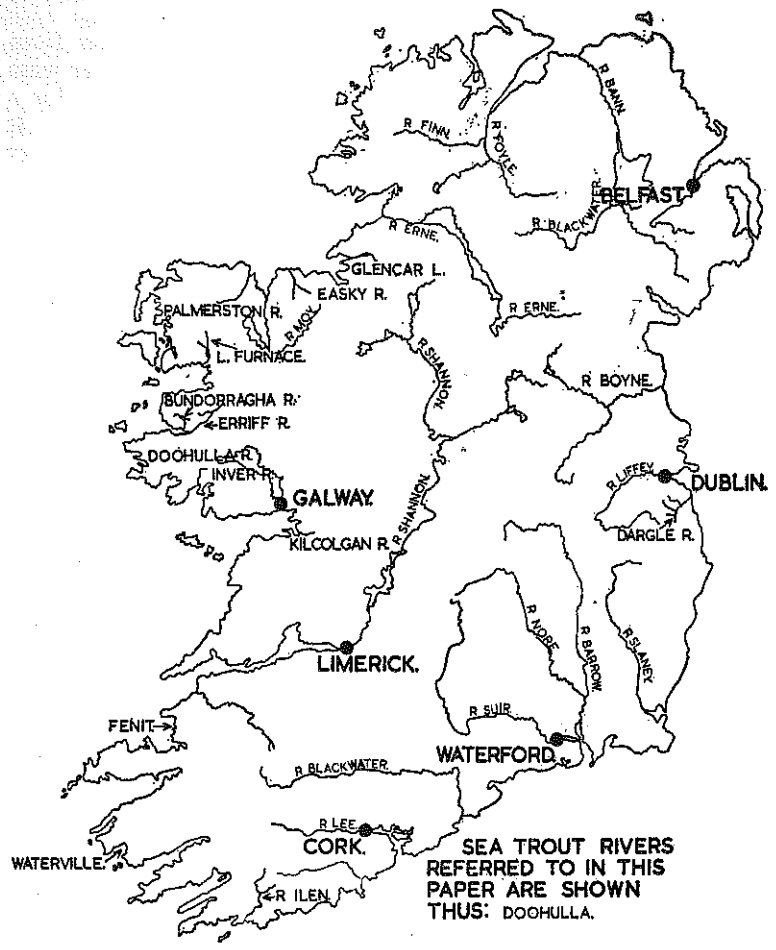

Fig. 5. Sketch map of Ireland showing the location of the waters from which large sea trout were taken.

Despite the large numbers of rivers in Ireland which held sea trout, *specimens* taken on rod and line have come from relatively few waters. The Delphi Fishery, including Dhulough and the Bundorragha River has accounted for ten such specimens; the Erriff River (including its lake Tawnyard) has accounted for nine; the Waterville River and its lakes, Currane, Cloonaghlin and Nahiska, for eight; the Boyne and Inver systems (inculding Loughs Currell and Luggeen) for three each, the Dargle and the Palmerston or Cloonaghmore River flowing into Killala Bay for two each and one each from the Doohulla, Easkey and Ilen Rivers and Furnace Lough and Glencar Lake. The location of these river systems in Ireland has been indicated in Fig. 5.

RESUMÉ.

1. Mainly as a result of the activities of the Irish Specimen Fish Committee a considerable amount of information has been obtained on the large, so-called *specimen*, brown trout and sea trout taken in Ireland in recent years.

2. The weight/length relationship, the age and growth of the brown trout, have been described and it has been shown that those brown trout destined to become *specimens* (i.e. 10 lb or over in weight) maintain a high growth rate long after the growth rate of more normal trout has fallen to a relatively low level. It is suggested that the adoption of a fish eating habit enables these large trout to survive and maintain a high growth rate.

3. The age and life history of some Irish sea trout of 6 lb. or over were determined from their scales. It was shown that, with one exception, the fish were previous spawners with one to eight but usually two to four spawning marks on their scales. The details of the places of capture of these fish have been indicated in Fig. 5.

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TABLE 1. Details of large (10 lbs. or over) brown trout taken in Irish waters since 1900 but including the Irish record rod-caught trout from Lough Ennell.

Water	Weight group (lb.)													Total	Maximum weight
	10	11	12	13	14	15	16	17	18	20	21	24	26		
L. Mask	23	21	16	12	4	6	2	1	3					88	18 lb. 12 oz.
L. Corrib	14	10	13	5	5	5	8		1	1	1			63	21 lb. 6 oz.
L. and R. Erne	5	4	2		2			1						16	17 lb.
Killarney Lakes	3	2	4	2	1	1	2	1						15	17 lb. 4 oz.
L. Conn	4	1	3					2						9	16 lb.
L. Melvin	1	3	2	1	1		1							8	14 lb.
L. Derg	1	2	1	1										7	17 lb. 4 oz.
L. Carra	2		1		2			1						5	14 lb. 8 oz.
L. Currane	2	1												3	11 lb.
L. Ennell	1													2	26 lb. 2 oz
R. Shannon			1											2	20 lb
L. Cullin	1			1			1			1		1	1	2	16 lb. 8 oz.
R. Suir		1	1	1										2	13 lb. 12 oz.
L. Owel					1									2	13 lb.
R. Laune				1										2	12 lb. 14 oz.
R. Bann														1	14 lb. 5½ oz.
R. Deel														1	13 lb. 8 oz.
R. Maigue														1	13 lb. 8 oz.
R. Blackwater														1	12 lb.
L. Derravaragh														1	10 lb. 12 oz.
L. Lene	1													1	10 lb. 8 oz.
R. Boyne	1													1	10 lb. 2 oz.
L Gill	1													1	10 lb. 1 oz.
Total	62	45	45	25	17	12	14	5	4	2	1	1	1	234	

TABLE 2. Details of the large brown trout referred to in this paper.

No.	Date of Capture	Weight lb. oz.	Length inches	Age in years or Comment.	Length in inches at end of— 1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year	9th year	10th year	11th year
					A, LOUGH MASK										
1	24/6/46	12 3	—	11+ or 12+				Not calculated							
2	13/8/50	18 8	—	No reading				,, ,,							
3	8/5/50	14 0	30.0	8+				,, ,,							
4	11/6/52	10 4	27.0	7+	4.0	7.3	13.5	18.3	22.6	24.8	26.2				
5	17/3/56	11 14	29.5	8 or 9				Not calculated							
6	May, 1956	12 0½	31.5	10+				,, ,,							
7	26/8/56	17 8	32.0	8+	5.9	10.2	15.8	20.3	23.2	26.2	29.0	30.7			
8	Aug., 1956	11 0	27.0	No reading				Not calculated							
9	28/9/56	11 8	28.0	11+				,, ,,							
10	18/5/57	12 0	—	No reading				,, ,,							
11	15/6/57	13 2	33.0	,, ,,				,, ,,							
12	22/7/57	13 0	30.5	8+	4.2	7.1	9.5	14.6	19.5	22.7	26.2	28.3			
13	18/2/58	10 12	29.5	8	4.5	9.1	14.8	22.3	24.2	26.6	28.0	29.5			
14	27/2/58	12 0	31.0	6+	4.8	9.8	15.0	18.4	26.6	28.6					
15	30/3/58	13 8	31.0	8	4.4	7.5	10.6	14.6	19.6	23.6	27.5	31.0			
16	30/5/58	11 4	29.0	7+				Not calculated							
17	22/7/58	13 0	30.5	8+	4.5	7.6	9.9	16.2	19.6	22.9	25.8	28.0			
18	14/8/58	12 6	32.8	8+	3.9	9.9	14.2	21.9	23.9	25.8	27.7	30.8			
19	3/9/58	13 6	32.0	No reading				Not calculated							
20	25/3/59	12 4	32.2	7	5.3	10.2	14.2	18.3	26.5	30.9	32.2				
21	26/3/59	15 0	33.0	No reading				Not calculated							
22	24/3/59	14 12	31.0	,, ,,				,, ,,							
23	24/5/59	12 0	33.0	,, ,,				,, ,,							
24	22/7/59	10 4		,, ,,				,, ,,							
25	29/8/59	12 0	31.5	9+	4.8	9.8	13.9	19.6	24.8	26.5	28.2	29.8	30.8		
26	8/9/59	13 6	32.0	No reading				Not calculated							
27	5/3/60	14 8	32.8	8	6.0	9.7	12.9	16.0	22.9	28.7	31.0	32.8			
28	17/3/60	10 8	28.5	9				Not calculated							
29	21/5/60	11 0	—	No reading				,, ,,							
30	21/5/60	10 4	—	,, ,,				,, ,,							
31	26/5/60	10 3	—	6+				,, ,,							
32	24/8/60	10 4	29.5	6+	4.6	7.9	11.2	16.7	22.3	28.3					
33	6/10/60	11 12	28.5	8+				Not calculated							
34	13/10/60	11 4	31.5	8+	5.8	8.6	11.0	16.2	21.2	24.5	27.4	29.4			
35	23/5/61	11 4	31.0	6+	5.1	10.9	18.1	25.0	28.9	30.2					
36	10/3/62	11 2	31.0	6	4.8	8.3	16.0	20.5	26.0	31.0					
37	31/5/62	10 8	28.3	7+	2.8	6.7	13.1	16.7	21.5	25.0	27.5				
38	28/8/63	10 12	31.5	No reading				Not calculated							
39	27/8/64	13 7	—	,, ,,				,, ,,							
40	30/8/64	10 7	27.5	8+	4.0	7.8	10.9	14.3	17.0	20.1	23.9	26.3			
41	1/3/65	12 7	31.5	7+	3.5	4.5	10.9	16.7	22.9	26.8	28.4				
42	5/3/65	14 12	32.0	10+				Not calculated							
43	5/3/65	12 4	30.0	Scales unsuitable				,, ,,							
44	20/7/65	10 0	—	10+				,, ,,							
45	July, 1965	16 8	—	8+				,, ,,							
46	2/8/65	10 12	31.8	6+	5.8	10.0	16.2	21.6	26.5	30.3					
47	15/8/65	10 8	29.8	8+	2.2	4.1	11.0	15.7	21.1	23.1	27.2	28.7			
48	15/8/65	10 5½	29.0	7+	4.4	9.9	13.7	18.2	20.4	26.5	28.0				
49	6/9/65	11 7	30.8	7+	4.8	8.9	11.9	13.8	21.6	24.8	29.1				
50	16/9/65	11 8	27.5	No reading				Not calculated							
51	20/2/66	15 10½	35.0	10	4.2	7.7	10.7	14.0	19.1	25.5	29.0	31.9	34.1	35.0	
52	28/5/66	11 14	30.0	6+	4.6	8.8	11.5	18.1	24.2	28.7					
53	12/6/66	10 12	31.8	10+				Not calculated							
54	14/6/66	15 3¾	32.5	10+	4.6	10.2	14.4	17.0	19.6	23.6	25.5	27.3	31.1	31.7	
55	16/6/66	12 8¼	33.5	7+	5.0	9.5	13.0	20.3	24.9	27.8	32.6				
56	16/6/66	10 5½	31.6	9+	3.4	8.8	12.1	17.3	21.3	25.7	27.6	29.1	30.5		
57	15/9/66	11 12	29.5	9+	4.2	7.0	10.1	12.7	17.1	22.8	24.8	27.2	28.5		
58	27/9/66	14 4	33.0	10+	4.1	7.6	10.1	14.7	19.9	23.8	27.1	28.9	30.7	32.1	
59	30/9/66	11 8	29.5	8+	5.2	8.8	12.5	17.3	20.3	24.9	26.8	28.6			
60	16/2/67	11 12	32.0	6 or 7				Not calculated							
61	30/5/67	10 8	28.0	8+				,, ,,							
62	11/6/67	13 4½	32.0	8+	3.7	8.8	11.3	13.9	18.5	21.8	26.6	31.3			
63	11/6/67	10 0	31.0	8+	3.8	10.6	15.5	19.5	22.6	27.6	29.0	30.5			
64	14/6/67	13 2½	31.0	8+	3.5	7.4	10.6	13.3	19.5	22.2	25.8	29.5			
65	15/6/67	10 15	29.5	6+	5.5	11.4	16.2	20.4	26.3	28.4					
66	3/7/67	11 12	33.0	9+				Not calculated							
67	11/7/67	12 8	31.0	9+	4.7	8.4	11.1	12.9	18.3	24.2	26.9	29.0	30.4		
68	11/7/67	10 2	31.0	6+	4.8	10.7	16.4	22.5	27.1	29.9					
69	22/7/67	12 8	31.5	6+	2.0	4.4	8.4	12.6	15.4	23.8					
70	26/8/67	11 10	27.5	7+	3.5	6.0	10.4	13.4	16.1	18.9	22.4				
71	27/8/67	13 4	34.0	7+	4.5	10.1	14.1	17.6	21.5	26.2	30.3				
72	29/10/67	18 0	33.3	8+				Not calculated							

TABLE 2—*continued.*

No.	Date of Capture	Weight lb. oz.	Length inches	Age in years or Comment.	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year	9th year	10th year	11th year
				B. LOUGH CORRIB											
1	22/5/52	12 4	32.0	8+			Not calculated								
2	2/9/54	10 0	34.8	12+			Not calculated								
3	24/5/55	10 9	—	No reading			,, ,,								
4	June, 1955	12 4	36.0	8+			,, ,,								
5	10/7/56	13 9½	31.0	No reading			,, ,,								
6	22/8/56	16 7	—	8+			,, ,,								
7	16/6/57	11 8¼	29.0	8+	3.3	9.0	13.0	16.9	19.9	22.9	24.8	27.0			
8	31/5/58	12 0	34.0	6+	6.0	11.2	19.5	24.3	28.9	32.0					
9	14/9/58	10 13½	32.0	10+	4.7	7.7	12.3	14.2	17.3	20.4	24.9	27.3	29.3	30.8	35.0
10	19/4/59	10 6	32.0	7+	6.2	10.1	16.2	22.9	26.6	29.1	30.9				
11	27/6/59	21 6	36.0	11+	5.8	8.0	10.8	15.0	19.2	21.8	23.4	26.0	29.0	31.8	
12	19/8/59	10 0¼	29.0	6+	3.1	7.9	13.4	17.6	21.6	27.3					
13	28/3/60	15 0	34.5	9+			Not calculated								
14	10/3/61	10 8	29.0	No reading			,, ,,								
15	10/7/61	11 0	31.0	7+	3.9	6.6	11.9	17.4	23.3	27.3	29.9				
16	9/6/62	11 12	—	8+			Not calculated								
17	4/9/63	10 13	31.5	7+	7.1	12.6	16.4	21.0	26.6	28.8	31.0				
18	4/9/63	11 8	30.3	8+	5.6	11.9	16.4	20.2	22.3	25.1	27.5	29.5			
19	21/9/63	10 12	31.5	No reading			Not calculated								
20	22/3/64	13 12	32.0	,, ,,			,, ,,								
21	19/2/65	14 6	34.0	11	4.4	7.3	9.8	11.8	14.9	21.3	26.0	28.6	30.4	31.7	34.0
22	25/4/65	10 8½	33.0	8	3.0	6.0	9.0	15.0	19.0	23.6	28.3	33.0			
23	28/6/66	11 12	29.5	No reading			Not calculated								
24	29/8/66	10 3½	28.0	7+	4.1	6.9	9.5	14.9	18.6	21.4	23.3				
25	29/9/66	13 13	30.5	9+			Not calculated								
26	22/3/67	16 8	37.0	10+	4.1	6.1	9.5	12.8	18.6	21.7	24.9	28.9	34.2	36.1	
27	20/5/67	10 7	30.3	9+			Not calculated								
28	24/6/67	15 8	31.0	8+	6.3	11.3	14.1	17.3	21.0	23.5	26.4	29.2			
29	29/8/67	12 3½	31.0	No reading			Not calculated								
				C. LOUGH AND RIVER ERNE											
1	March, 1956	10 4	—	8			Not calculated								
2	7/3/56	10 12	31.0	No reading			,, ,,								
3	18/9/57	11 2	28.0	8+			,, ,,								
4	10/8/58	12 3	31.0	No reading		Scales too	eroded for	calculation.							
5	13/8/58	11 0	29.5	8+	3.6	6.6	10.0	13.9	21.4	25.2	27.0	28.4			
6	13/8/58	11 10	29.5	6+	4.2	7.9	14.2	20.3	24.5	27.2					
7	15/8/58	10 8	27.5	7+	3.3	8.2	10.5	16.5	22.7	24.9	26.4				
8	21/3/59	12 0	28.0	No reading			Not calculated								
9	25/4/59	14 0	31.0	,,			,, ,,								
10	20/8/59	14 3	30.0	No reading			,, ,,								
11	20/9/59	16 7	32.3	7+	3.2	9.0	13.7	21.4	25.3	29.2	30.9				
12	21/5/60	11 2	29.5	7+	2.1	6.4	11.8	18.0	21.8	27.0	28.9				
13	24/6/62	12 1½	27.0	No reading			Not calculated								
14	29/9/64	17 0	31.0	8+	3.0	6.2	12.0	19.7	22.5	24.2	26.4	29.5			
15	16/3/66	14 10	33.0	No reading			Not calculated								
				D. LOUGH CONN											
1	29/9/59	11 0	30.0	7+	3.4	9.4	12.7	16.9	20.4	26.5	28.4				
2	29/4/61	12 5	30.0	8+	3.6	8.5	12.4	16.3	19.7	23.0	26.4	29.1			
3	21/6/63	10 11	27.5	6+	3.2	7.2	13.1	20.7	23.8	26.9					
4	17/7/67	10 12	27.8	7+	4.0	6.8	10.8	12.5	15.5	22.1	26.3				
				E. LOUGH CARRA											
1	11/8/57	10 13	29.0	5+	5.2	9.8	16.9	23.9	27.0						
2	11/8/60	14 1	33.8	5+	6.0	10.0	12.2	24.7	28.4						
3	20/10/64	14 8	36.0	6+	3.7	8.4	12.3	16.6	22.9	27.2					
				F. KILLARNEY LAKES											
1	20/2/51	15 4	34.0	10+	4.6	9.3	13.4	17.4	22.6	26.2	29.0	30.8	32.0	33.1	
2	16/6/57	10 13	28.5	10+	3.0	4.9	8.1	10.3	11.9	13.7	15.1	18.2	23.6	26.2	
3	30/3/58	10 2	30.0	11+	3.2	5.8	8.0	9.5	12.0	13.6	15.0	16.7	21.2	26.9	28.9
				G. LOUGH DERG (SHANNON)											
1	June, 1954	11 8	30.3	10+			Not calculated								
2	18/8/58	10 12	29.0	8+			,, ,,								
3	30/5/63	11 3	29.5	7+	5.0	12.5	20.8	24.6	25.8	27.3	28.7				
				H. RIVER SHANNON											
1	22/2/57	20 0	33.0	11+	3.8	7.8	11.1	13.6	16.3	20.0	21.9	25.3	28.8	31.0	32.7
2	18/8/58	10 12	29.0	8+			Not calculated								
				I. RIVER LAUNE											
1	3/10/65	11 15	—	10+			Not calculated								
2	30/4/66	12 14	30.8	10	3.4	6.3	10.3	12.7	16.6	19.2	23.1	25.8	28.7		

TABLE 2—*continued.*

				J. LOUGH MELVIN							
1	19/9/57	10 14½	—	No reading				Not calculated			
2	5/9/58	14 0	—	,, ,,				,, ,,			
3	1/3/64	11 8	—	,, ,,				,, ,,			
				K. LOUGH LENE (Westmeath)							
1	25/3/62	10 8	30.0	7	3.3	7.5	13.0	24.3	27.6	29.1	30.0
				L. RIVER BANN, etc							
1	8/7/67	14 5½	32.5	No reading				Not calculated			
2	Sept. 1967	11 0	—	,, ,,				,, ,,			

TABLE 3. Growth rates (inches) in the waters referred to in this paper, together with the growth rates calculated for Loughs Derg, Corrib and Rea previously. (The numbers in brackets indicate number in each age group examined).

Water	First Year	Second Year	Third Year	Fourth Year	Fifth Year	Sixth Year	Seventh Year	Eighth Year	Ninth Year	Tenth Year	Eleventh Year
Lough Mask	4.4(39)	8.5(39)	12.7(39)	17.3(39)	21.8(39)	25.8(39)	27.7(30)	29.5(21)	30.9(7)	32.9(3)	
Lough Corrib	4.8(14)	8.8(14)	13.0(14)	17.2(14)	21.3(14)	24.7(14)	26.8(12)	28.6(8)	30.7(4)	32.6(4)	34.5(2)
Lough and River Erne	3.2(6)	7.4(6)	12.0(6)	18.3(6)	23.0(6)	26.3(6)	27.9(5)	29.0(2)			
Lough Conn	3.6(4)	8.0(4)	12.3(4)	16.6(4)	19.9(4)	24.6(4)	27.0(3)	29.1(1)			
Lough Carra	5.0(3)	8.4(3)	13.8(3)	21.7(3)	26.1(3)	27.2(1)					
Killarney Lakes	3.6(3)	6.7(3)	9.8(3)	12.4(3)	15.5(3)	17.8(3)	19.7(3)	21.9(3)	25.6(3)	28.7(3)	28.9(1)
River Shannon	3.8(1)	7.8(1)	11.1(1)	13.6(1)	16.3(1)	20.0(1)	21.9(1)	25.3(1)	28.8(1)	31.0(1)	32.7(1)
Lough Derg	5.0(1)	12.5(1)	20.8(1)	24.6(1)	25.8(1)	27.3(1)	28.7(1)				
Lough Lene (Westmeath)	3.3(1)	7.5(1)	13.0(1)	24.3(1)	27.6(1)	29.1(1)	30.0(1)				
Lough Derg (Southern, 1935)	2.7(105)	6.6(96)	11.4(59)	15.5(31)	18.4(16)	20.2(12)	21.8(5)	23.0(4)			
Lough Corrib (Went. 1943)	3.2(104)	7.0(101)	11.2(89)	14.1(55)	15.7(31)	19.1(8)	23.7(3)	28.1(1)			
Lough Rea (Went. 1949)	3.5(135)	9.4(135)	13.8(116)	17.2(52)	19.3(26)	20.7(7)	24.2(1)				

(Arranged in order of weights downwards).

No.	Water	Weight in lb.	Weight in oz.	Length in inches	Date of capture	Scale readings: Freshwater Years	Scale readings: Initial period in sea in years	Scale readings: No. of Spawning marks	Age in years
1	R. Dargle	12	0	32.0	3/10/58	2	1+	4	7+
2	Loughnahiska	10	12	27.8	10/8/67	3	2+	1	6+
3	R. Boyne	10	8	29.5	2/9/59	2	1+	4	7+
4	Palmerston or Cloonaghmore River	8	14	—	10/9/66	2	1+	3	6+
5	R. Dargle	8	12	29.0	7/10/64	3	2+	2	7+
6	R. Boyne	8	12	27.8	2/8/66	2	2+	4	8+
7	L. Currane	8	6	28.5	21/9/66	2	3+	1	6+
8	Dhulough	8	3	26.0	22/6/67	3	1+	3	7+
9	Tawnyard L.	8	1	27.5	24/8/64	2	2+	5	9+
10	Palmerston or Cloonaghmore River	7	14¼	26.5	18/8/67	2	2+	4	8+
11	Tawnyard L.	7	14	26.0	24/8/64	2	1+	5	8+
12	R. Boyne	7	12	26.8	14/8/60	2	1+	4	7+
13	Cloonaghlin L.	7	8	—	12/7/27	—	—	—	—
14	Easkey R.	7	8	—	28/9/45	2	1+	8	11+
15	Erriff R.	7	7	—	29/5/65	3	1+	4	8+
16	Dhulough	7	4	25.5	16/7/54	3	1+	6	10+
17	Erriff R.	7	4	—	7/9/64	2	3+	1	6+
18	Furnace L.	7	4	25.5	9/9/66	3	1+	4	8+
19	Glencar L.	7	0	28.0	28/5/47	2	1+	8	11+
20	Lugeen L.	6	14	—	10/8/66	3	1+	4	8+
21	L. Currane	6	12	25.8	June, 1924	2	2+	2	6+
22	Dhulough	6	12	25.5	25/8/67	2	2+	2	6+
23	Bundorragha R.	6	12	24.5	5/8/67	2	3+	1	6+
24	Invermore Lake	6	8¼	26.0	8/9/67	2	1+	6	9+
25	Erriff R.	6	8	28.0	16/8/43	3	1+	7	11+
26	Erriff R.	6	8	25.0	18/8/51	—	—	—	—
27	R. Ilen	6	8	27.0	—	2	1+	2	5+
28	L. Currane	6	8	26.5	11/8/66	3	2+	1	6+
29	Dhulough	6	8	25.5	24/8/67	2	3+	1	6+
30	Curreel L.	6	7	26.5	29/8/67	2	1+	4	7+
31	L. Currane	6	7	—	—	3	2+	3	8+
32	Doohulla L.	6	4½	—	10/8/66	2	1+	2	5+
33	L. Currane	6	3	—	—	2	1+	3	6+
34	Erriff R.	6	3	—	30/7/65	2	1+	3	6+
35	Erriff R.	6	2	25.0	13/8/61	2	3+	—	5+
36	Dhulough	6	2	25.0	7/9/67	2	1+	5	8+
37	Erriff R.	6	2	—	23/8/65	2	1+	3	6+
38	L. Currane	6	0	—	—	3	2+	2	7+
39	Dhulough	6	0	24.5	14/8/43	2	1+	3	6+
40	Dhulough	6	0	25.5	21/8/56	3	2+	2	7+
41	Bundorragha R.	6	0	28.0	27/6/60	3	1+	2	6+