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EEL RESEARCH 1965 - 1971

By

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The catch of eels for the Republic of Ireland is very low. It averages 125 tons a year, thus comparing unfavourably with such figures as 800 tons for Northern Ireland and 1,500 tons for Holland. Since 1965 experiments have been in progress to find out whether there is any possibility of increasing the production of this valuable fish. A detailed report of the investigations was completed in March 1972 and this leaflet gives a summary of the most important conclusions.

The approach to the problem was to make a study of some aspects of the life of the eel, concentrating on lakes where commercial eel fishing was well established. In addition to this some fishing trials were made in the estuaries of rivers such as the Munster Blackwater and the Shannon where no large-scale eel fishing had ever taken place.

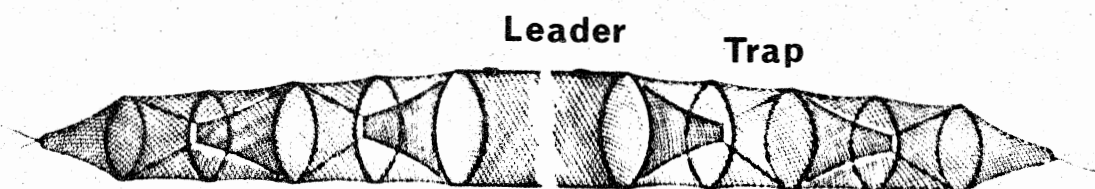


Fig.1. Fyke net unit.

The eels for the study were caught in Summer Fyke nets, one of which is shown in Fig.1. Each net unit consists of two "traps" attached mouth to mouth by a curtain of netting called the "leader". The overall length of the units varied from 15 yards to 8 yards - a net of intermediate length, with leader 7 yards long, proved to be the most efficient. These nets are laid in a train on the bottom. Eels, swimming about in search of food, when they meet the leader travel along it and into the trap. Other fish are very seldom caught; unlike the eels they turn and swim away from the leader so that they do not enter the trap. This discovery was a fortunate one since it means that this type of net may be used without risk to the stocks of other fish or to the interests of anglers.

In the course of the period 1965/1971 eels were sampled in fifteen lakes, two river estuaries and two rivers. A total of 5,283 eels were measured, the ages of 2,186 were determined and the stomachs of 1,493 were collected so that the food of the eels could be studied. The waters where sampling took place are shown in Fig.2. The results are summarised in Tables 1 and 2.

The "unit catch", that is the catch per net per day, is shown in Table 1. The highest (and therefore the most dense population) was recorded from the South Sloblands off Wexford Harbour and after it came the river estuaries. A relatively high figure was shown for the South Basin of Lough Corrib but otherwise the catches were low in the lakes with one exception, that of Drumlona Lake near Cootehill, Co. Cavan, where conditions of feeding for eels seem to have made it especially attractive to them. The length distributions of the eels are also shown in Table 1. In the Corrib and Fergus lakes eels were small but on the Shannon and Erne systems in lakes far upstream a large proportion of the eels caught were of a good size, longer than 20 inches (heavier than 8 oz.).

Table 2 gives figures for the rate of growth and for the age distributions. The eels of the Erne system grew much faster than elsewhere. Growth rates in the other lakes and in the estuaries showed little variation, except in Lough George where growth was very poor. The age distributions showed two interesting features. The first was a steady increase in the numbers of older eels as distance from the river mouth increased. This shows that the eels travel very slowly upstream and in each population none but the older ones reach the more remote waters. The distributions also give an idea of the age at migration. The peak age group is that at which most of the eels reach maturity. This peak was at a low age on the Erne system (7-9 years) showing that these eels not only grew rapidly but reached maturity at an early age. The Shannon system eels matured later than those of the Corrib system and this explains why, in spite of the growth rate of the two systems being about the same, the mature ("silver") eels caught at Killaloe on the Shannon are bigger than those from the Corrib.

The study of the food of the eels showed that in some of the river systems, such as Corrib and Erne, smaller eels lived on invertebrates (insect larvae, water louse, snails etc.) and the larger ones ate fish. This was not, however, an invariable pattern and it was found in the Shannon system that practically no fish were eaten by eels of any size. It seemed possible that the lack of fish in the diet may explain the late maturing of these eels. The food in the estuaries was quite different - in the lakes the eels seldom ate large invertebrates but in the estuaries they usually did so. An important finding was that the lake eels hardly ever ate young salmon or trout, most of the fish they took were perch. In the River Erriff, Co. Mayo, trout or salmon were found in several eel stomachs. The full report showed that eels in the larger lakes were not likely to compete with other fish for food,

nor to damage the salmonid stocks by predation. Increasing the eels stocks could, therefore, be carried out without risk of damage to angling interests.

The main conclusions of the Report are:-

1. The low catch of eels in the State results more from poor stocks of young eels than from inefficient methods of fishing.
2. On account of the very slow growth rate of the eels intensive fishing for the immature ("yellow") eels could deplete the catches for periods of several years at a time. In the interests of conserving the stocks for fishermen interested in both yellow and silver eels the size limits should be strictly observed.
3. The stocks, and hence the catches of eels, could be greatly increased by transplanting elvers.

Table 1 Unit catch and length distributions.

	Number measured	Unit catch	% less than 40 cm (16 ins)	% 40- 50 cm (16- 20 ins)	% over 50 cm (20 ins)
CORRIB SYSTEM					
Corrib South	349	4.4	45	38	17
Corrib Mid	797	1.9	45	39	16
Corrib North	378	1.3	37	42	21
Mask	127	1.2	21	56	23
Carra	71	0.5	17	47	36
FERGUS SYSTEM					
Inchiquin	276	0.8	47	35	16
George	76	0.3	64	28	8
ERNE SYSTEM					
Eonish	128	1.4	21	41	38
Tullyguide	40	0.5	15	50	35
Dromore	136	1.2	3	57	40
Drumlona	105	3.3	3	42	55
Town Lake	44	0.6	2	23	75
SHANNON SYSTEM					
Parteen	57	1.1	20	64	16
Derg	271	1.6	13	54	33
Key	287	1.4	6	54	40
SHANNON ESTUARY					
Battle Island	244	7.5	19	31	50
Ballinacuragh	129	9.3	38	30	32
SOUTH SLOBLANDS	408	15.6	32	54	14
BLACKWATER	1,900	4.3	42	37	21

Table 2 Age distributions and calculated growth rates.

	Calculated length at		Percentage of sample in age groups				
	10 years (cm)	15	4-8	9-10	11-12	13-14	15+
CORRIB SYSTEM							
Corrib S.	44	59	15	32	25	16	12
Corrib Mid 1967	41	54	3	23	22	19	33
Corrib N. 1968	40	58	9	21	25	20	25
Mask	42	53	15	32	25	16	12
Carra	44	58	7	27	32	25	9
FERGUS SYSTEM							
Inchiquin	47	63	13	29	27	22	9
George	36	46	10	37	21	13	19
ERNE SYSTEM							
Eonish	60	90	51	30	17	2	
Dromore	54	68	23	51	24	2	
SHANNON SYSTEM							
Parteen	45	54	30	33	22	11	4
Derg	43	58	9	22	32	22	15
Key	45	59	3	12	30	26	29
SOUTH SLOBLANDS	47	59	40	22	20	9	9
BLACKWATER 1966	44	61	57	23	10	4	6

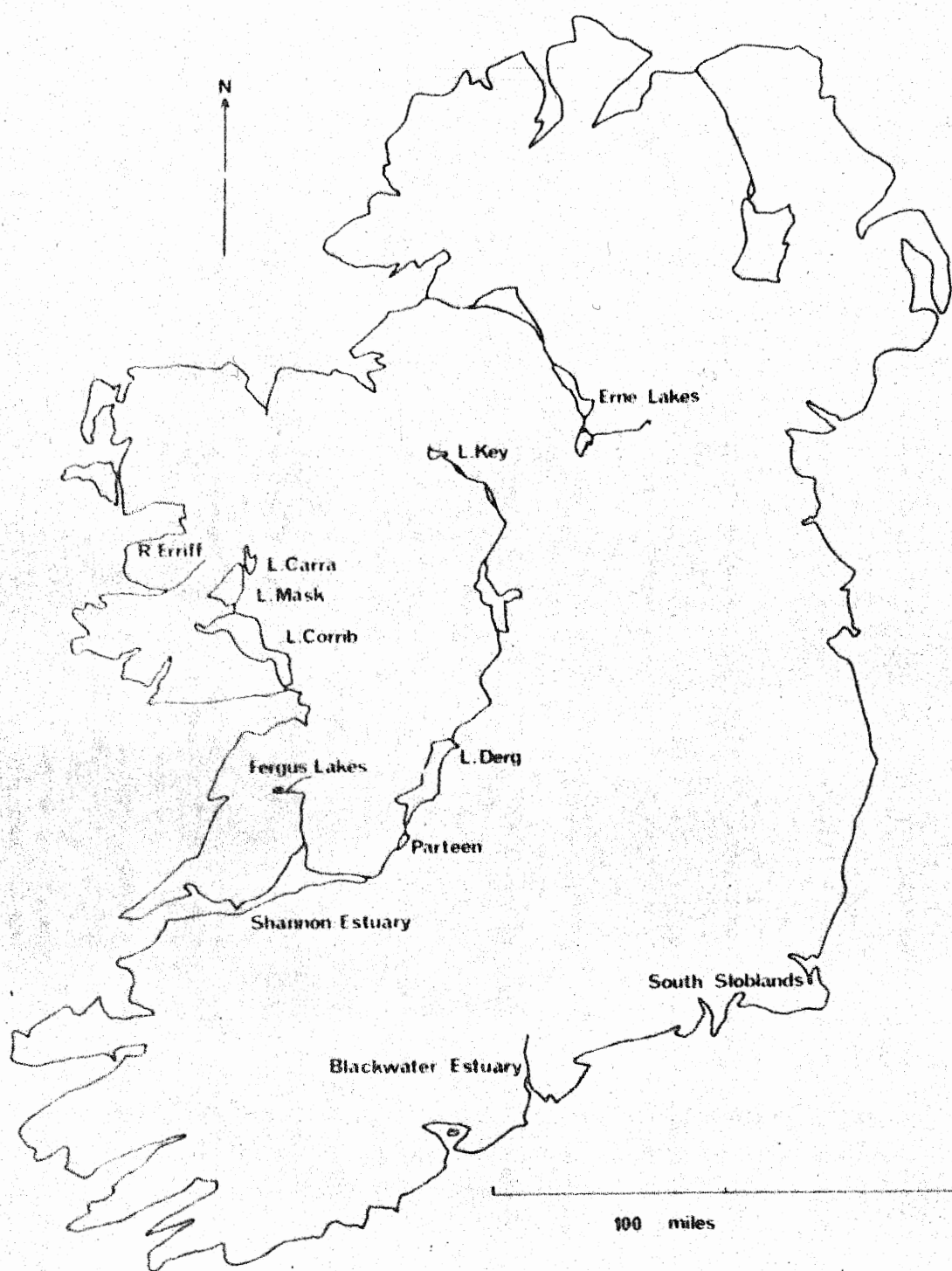


Fig. 2. Eel sampling locations. (Based on the Ordnance Survey by permission of the Government, Permit No. 1833).