HISTORIC OVERVIEW OF THE SEA TROUT COLLAPSE IN THE WEST OF IRELAND

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WHELAN, K.F.. The Salmon Research Agency of Ireland, Farran Lab., Furnace, Newport, Co. Mayo.

Details of the sequence of events culminating in the sea trout stock collapse of 1989 have previously been published (Whelan, 1991, 1992, 1993 and Whelan & Poole, 1993). The present paper draws on these accounts and provides supplementary information on stock and catch fluctuations over the years 1990 to 1992 and on sea trout catches in the U.K. over the same period.

THE PROBLEM EMERGES

The author's involvement with sea trout research started in 1982, when he was involved in a detailed five-year programme on the River Erriff in county Mayo, in the west of Ireland. At that time the fishery was generally performing very well with good, healthy stocks of fish. The sea trout populations were, of course, prone to the normal, dramatic fluctuations in dearth and abundance which we have come to expect but, in general, there was no evidence of any overall decline. In some fisheries, however, there was increasing evidence of a slow decline in stocks and this was largely attributed to poaching and a plethora of environmental problems such as: field drainage and maintenance, fertilisation of the hillside, afforestation, etc..

The initial indication of a more serious decline appeared in many fisheries along the western seaboard in 1986. Since the previous year had been a particularly successful year for both anglers and commercial fishermen, little notice was taken of this decline and it was assumed to be part of the natural cycle of the sea trout.

However, as this decline continued into 1987 and 1988, some fishery owners became quite alarmed and several local meetings were organised to discuss the problem. At that time the serious decline was only evident from some of the major fisheries (e.g. Delphi, Erriff, Costello, Ballynahinch) while others appeared to be performing normally (e.g.. Newport, Culfin). Catch data from fisheries in other parts of Ireland also indicated that no serious problems were occurring. It was assumed that where serious problems did exist these were caused by a combination of the environmental factors outlined previously. However, some biologists argued strongly that all evidence pointed towards a marine based problem.

In the autumn of 1988 a seminal meeting was held in Aasleagh Lodge on the river Erriff to discuss the continuing problems and also to agree on a strategy regarding the overall management and conservation of sea trout stocks. The meeting was arranged jointly by Michael Kennedy, Manager of the Western Regional Fisheries Board, and the Western Game Fishing Association.

Representatives from a broad spectrum of interest groups attended and it was decided that an action group, later to be named the Sea Trout Action Group (STAG) should be formed. Subsequent to the meeting all of the points discussed were synthesised in a lengthy document which called for the implementation of a whole range of legislative and policy changes such as:

* Sea trout to be defined in law as a distinct species from salmon
* Sea trout to be designated as "sport fish" and only exploited as such.
* The close season for sea trout to be extended from dates in Feb/March to May 15th
* Draft net licences to be specific to traditional stations
* Central and regional fisheries boards to have power to issue emergency conservation bylaws (e.g. in times of drought)

* Strict control to be placed on a number of potential sources of pollution in freshwater
* Further studies to be undertaken on the effects of overgrazing on upland streams
* Afforestation, planting of conifers to be restricted in sensitive areas
* Management and development programmes to be compiled for all sea trout fisheries
* Derelict or abandoned fisheries to be acquired by Fisheries Boards
* Additional research to be undertaken on many aspects of sea trout life history and conservation
* Additional resources to be devoted to protection of sea trout stocks.

U.K. FISHERIES IN THE 80'S

But what of U.K. fisheries during the mid to late 80's ? In England and Wales sea trout catches were satisfactory throughout the 80's and both 1987 and 1988 were considered good years. For example in Wales catches between 1980 and 1986 were in the region of 20,000 fish. While in 1987 and 1988 over 30,000 fish were taken each year.

In contrast in western Scotland catches of sea trout were exceptionally poor in 1988 but the overall pattern throughout the 80's was one of a great deal of inherent variations between districts.

THE 1989 STOCK COLLAPSE

1989 was the first year in which sea trout stock collapse occurred in all of our mid-western fisheries. The winter of 1988/1989 was particularly mild. A drought

occurred throughout April and May and water temperatures rose quickly at the peak of the sea trout smolt migration.

Tragically, there was little sea trout research taking place during this period and there is only some anecdotal information available on the sequence of events which took place during May/June period of 1989. However, the following details are known:

In May, large numbers, of post-smolts and some mending kelts, appeared in the estuaries of the Delphi and Erriff systems.

Many of these fish were heavily infested with lice and photographic evidence is available showing the level of lice damage to the skin and fins of the more seriously affected fish.

In some fisheries appreciable numbers of very thin adult fish appeared during the angling season and the majority of these displayed poor gonadal development. As far as can be ascertained not all of these fish showed evidence of lice damage.

We also have evidence from both sea trout rod catches and from stock assessments at Burishoole that the spawning stocks were seriously depleted. The stock collapse appears to have occurred across all generations of sea trout but the `thin fish phenomenon' was largely confined to the older year classes. At Burrishoole, where it is possible to assess the stock based on trap data, the numbers of spawning sea trout plummeted from 1274 in 1986 to 151 in 1990, of which 120 were finnock and 31 older sea trout. Throughout the mid-west this stock collapse continued into 1990.

U.K. FISHERIES 1989 AND 1990

In England the 1989 catch was 50% of the 1988 catch. The downward trend continued during 1990. In Wales catches in 1989 and 1990 were in the region of 10,000 fish; the 1990 catch was estimated at 44% of the average for the previous ten years. While in Scotland sea trout catches in both 1989 and 1990 were low throughout the country; an overall drop of some 30% was recorded.

Despite the very low catches in England and Wales, which were largely attributed to extreme drought conditions, the fishery authorities noted good numbers of spawning trout on the redds and maintained that the problems were associated with a drop in catch, which was not reflected in a spawning stock collapse.

This is in stark contrast with the mid-western fisheries in Ireland where stocks were depleted and where very prolonged droughts, similar to those in England and Wales, were not recorded during the summer and autumn months. It is interesting to note that sea trout catches in Irish east coast sea trout rivers, such as the R. Dargle and the R. Slaney and its tributaries, were very poor in 1990 when prolonged drought conditions did prevail.

1990 SEASON

The sea trout stock collapse continued largely unabated in Ireland in 1990 and large numbers of prematurely returning lice infested sea trout were recorded in the estuaries of many mid-western fisheries. There was evidence, however, of a marginal improvement in finnock survival in the Clew Bay area. During 1990 research commenced in the Ballinskelligs Bay area in the south west where salmon farming had recently been initiated in the vicinity. No sea trout problems were recorded and the angling catch in L. Currane was exceptionally good.

1991 SEASON

The 1991 season saw a general improvement in the finnock survival in both the Killary Harbour and Clew Bay areas, while in many fisheries in Connemara escapement was again poor. In the south west angling catches in Lough Currane were again excellent although a small number of prematurely returning, lice infested post smolts were recorded.

1992 SEASON

In general sea trout angling showed a significant improvement throughout Ireland in 1992. Good catches were reported from fisheries in the northwest, southwest, south and east. For example, on the River Feale, in north Kerry, a daily bag limit of 20 sea trout per angler was imposed in the Abbeyfeale area.

In contrast the 1992 season saw a severe decline in the survival of both sea trout smolts and over-wintered finnock in Clew Bay; while smolt survival in the Killary Harbour fisheries improved. Escapment was again poor in many Connemara fisheries. In the south west angling catches in Lough Currane were generally poor and large numbers of prematurely returning post-smolts were recorded from the neighbouring River Inny.

U.K. CATCHES 1992

In 1992 rod catches were much improved in many Welsh rivers. On rivers in the south west (Tywi and Teifi) large catches, including many specimen sea trout, were reported (anon, 1993).

Sea trout catches in England showed a general improvement in 1992. In the south west region, which suffered severe drought conditions for a three year period prior to July 1992, the rod and line catches for the latter half of the season were excellent. All rivers reported very high catches of sea trout, particularly in the upper reaches where some large fish were taken.

In Scotland sea trout catches showed great variation in 1992. Good sea trout catches were reported from fisheries in the east, northeast and north, while poor sea trout catches were again reported from fisheries along the northwest coast and the inner herbrides.

DISCUSSION

The sea trout stock collapse in the mid-west has been characterised by the following points:

* Premature return of smolts and older sea trout
* Severe infestation by juvenile sea lice (*Lepeoptheirus salmonis)*
* The presence of emaciated fish
* A severe reduction in spawning stock

The problem was initially identified as being present in an area stretching from Clew Bay in the north to Galway Bay in the south. However, in 1992 it was identified from Ballinskellligs Bay in the southwest.

The affected areas closely parallel areas where salmon farms are present and the survival of sea trout appears to follow the presence or absence of salmon farms in specific bays.

For example, in Clew Bay the survival of smolt to finnock in the same year to the Burrishoole Fishery has historically ranged from 11.4% to 32.4%. In 1988 the survival fell below the previous recorded minimum to 8.5% and in 1989 to a minimum of 1.5%. There were increases in 1990 and 1991 to 5.1% and 10.0% respectively. However, in 1992, the survival fell to 3.7%; the second lowest marine survival recorded to date.

These events closely follow the presence or absence of salmon farms in inner Clew Bay. Salmon farming commenced in Clew Bay in the mid-1980's, reaching a peak in 1989, when three farms were in operation. Due to disease problems the bay was fallowed from April 1990 until January 1992 when 50,000, 1kg+, salmon were towed into inner Clew Bay.

The specificity of the collapse zone was well illustrated by a study carried out last year which compared the sea trout population of the Burrishoole with those of the neighbouring Owenmore system.

The Owenmore R. rises in the Nephin Beg mountains just to the north of the Burrishoole catchment. The Owenmore has a history of peat siltation problems, over-grazing due to sheep numbers and also considerable areas of forestry in the Altnabrocky sub-catchment. The geology of the headwaters of the Owenmore and Burrishoole catchments is similar.

16 sites were sampled from August to October. These sites included the Owenmore main channel and the Altnabrocky, Oweninny, Muing, Sheskin and Ogoola rivers. Data from the survey have shown that despite the similarities to the Burrishoole catchment the Owenmore has remained unaffected by the sea trout stock collapse.

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Table 1: Sea Trout Rod Catches From Selected Mid-Western Fisheries 1985 1992

FISHERY	1985	1986	1987	1988	1989	1990*	1991*	1992*
ERRIFF	770	430	450	308	120	60	235	293
DELPHI	2150	1281	832	675	309	112	437	494
BURRISHOOLE	497	614	237	245	41	39	106	25
NEWPORT	1155	1485	783	1049	135	51	268	30
BALLYNAHINCH	2300	2000	1500	850	20	90	200	50
GOWLA	1035	967	266	210	0	0	0	0

N/R = Not Recorded

* 1990 to 1992 - all sea trout taken on a catch and release basis

Table 2 Burrishoole Fishery

Spawning Escapement of Sea Trout

1970-79	1980-84	1985-89	1989	1990	1991	1992
2090	1622	906	224	151	341	151

Smolt Numbers

4176	4038	4119	3179	2063	2530	1936