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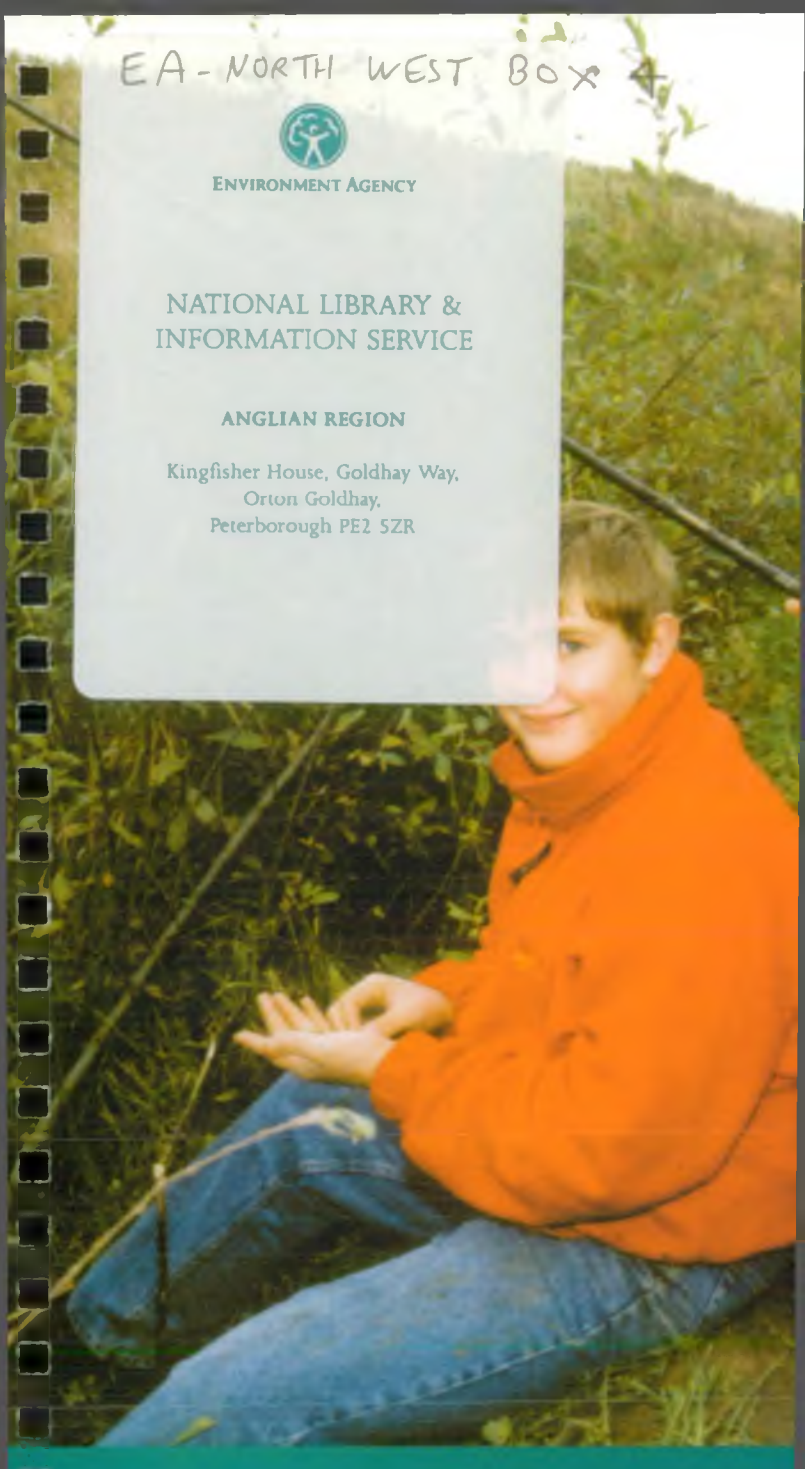

Fisheries annual report 1999

15 FEB 2001

North West

ENVIRONMENT AGENCY

Front Cover
Agencies Fisheries Officer Mark Atherton gives the scout from the 44th Ormskirk scout troop training to achieve his scout angling badge.

ENVIRONMENT AGENCY
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1999 ANNUAL REPORT ON FISHERIES IN THE NORTH WEST INCORPORATING THE ANNUAL SUMMARY OF FISHERY STATISTICS

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INTRODUCTION

This is the fifth Annual Report on fisheries produced by the North West Region of the Environment Agency. The Agency has many customers and anglers comprise, numerically, the largest single group. The Agency in the North West divides along functional lines to deliver the service 'on-the-ground'. The fisheries function. along with ecology and recreation, (FER), is incorporated into Water Management, which comprises water resources, flood defence and FER. Environmental Protection covers water quality, radioactive substances regulation, process industries regulation (PIR), integrated pollution prevention and control (IPPC), waste and land quality.

Fisheries can benefit by work done by other functions. For example, water quality improvements may lead to self-sustaining healthy fish populations. The Agency aims to assist this process by introducing fish on an ongoing basis to regenerated rivers. There have also been schemes that have been managed by other functions that have directly benefited fisheries.

The fisheries service is funded in the main by a mixture of rod licence income and government grant-in-aid. The latter has declined substantially since the mid 1990's and we are increasingly reliant on licence income to fund fisheries work. The good news is that licence income has gone up as a result of promotional campaigns and targeted enforcement in areas of high evasion. In recent years, we have managed to use some of this money to fund our Urban Fisheries Development Programme, (UFDP). This is aimed at delivering new or improved fisheries in areas where demand for fishing is high, but where available fisheries are few in number or of poor quality. This work is dependent on good co-operation with local angling clubs, councils and other interests.

We give many examples of these projects in the report, with the Liverpool Park Lakes being in the forefront.

As well as this improvement work in coarse fisheries, we are also aiming to protect and improve salmon and seatrout fisheries with a mixture of enforcement, regulation and habitat improvement. Again we cite many examples of this in the report, but the reader's attention is drawn particularly at the work on the River Eden to monitor spring salmon movement (North Area projects).

This report has four main aims:

* To inform the Agency's customers of developments within the Agency
* To inform the Agency's customers of the work carried out by the Agency
* To publish information on the performance of fisheries and the Fisheries Department
* To be a source of future reference

We report on fisheries performance for the calendar year 1999 and on fisheries activities for the year 1st April 1999 to 31st March 2000.

This report could not have been written without the help and co-operation of the Area Fisheries staff who provide a unique service direct to the local fishing community.

We hope that you find this report interesting and informative.

The Agency would welcome any comments and suggestions that could be used to further improve the annual report. Comments should be directed to the Fisheries Department at the address below.

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NATIONAL OVERVIEW: MANAGING FRESHWATER FISHERIES

Introduction

Under the Environment Act 1995, the Agency has responsibility for the maintenance, development and improvement of salmon, freshwater fish and eel fisheries in freshwaters, estuaries and coastal waters in England and Wales. This involves both regulatory and operational aspects. In certain areas we act as a Sea Fisheries Committee under the terms of the Sea Fisheries Regulation Act 1966, where we have powers to regulate sea fisheries within three miles of the coast.

We also have a duty to establish and maintain Regional Fisheries, Ecology and Recreation Advisory Committees and to consult these committees as to the manner in which the general duties are performed.

Wider environmental duties also apply to all of our functions, such as taking account of features of special interest, and the need to further their conservation when carrying out water management functions. The Agency's fisheries management function is integrated with wider water management activity including: regulation of discharges into and abstraction from surface waters, flood defence, navigation, recreation and general conservation activities.

Our vision for fisheries is that all waters of England and Wales will be capable of sustaining healthy and thriving fish populations and everyone will have the opportunity to experience a diverse range of good quality fishing.

Review of fisheries legislation

The Government's independent review of salmon and freshwater fisheries in England and Wales provides a unique opportunity to shape future policy. We are looking forward to the prospect of freshwater fisheries management being developed to offer the best possible fishing opportunities while ensuring the sustainability of our natural fish stocks.

The Review Group's report, which contains 195 recommendations, was published in March 2000. The report was well received both externally and within the Agency; many of our aspirations were met, such as support for additional funding.

Funding

Direct expenditure on fisheries management by the Agency is approximately £21 million annually, of which about two-thirds is raised by licence duties from anglers and netsmen. The remaining third is provided in the form of grant-in-aid from Government, a reflection of the wider social benefits that accrue from fisheries management activity.

During the year MAFF announced a plan to reduce the Grant in Aid for Fisheries in England by £1.5 million in 2001. Modelling the impacts of this cut began during the year, as did plans for managing reduced expenditure. We indicated that additional funding is required as opposed to a cut, and our work to conserve salmon stocks will be greatly reduced as a result. Other interested organisations have also lobbied Government in support of our bid to reverse the decision. The Review Group recommended that additional Government funding should be provided for Agency fisheries work.

Rod fishing licence duties were reviewed during 1998/9, and Ministers approved a £1 increase in price for both salmon and coarse and trout licences to take effect from 1 April 2000. The proposals drew only 8 objections from interested parties.

Year-on-year licence sales were similar to 1998/9, (over 1.1 million sold) with a reduction in the number of salmon licences sold.

As part of the 10 year contract awarded to Post Office Counters to sell rod licences, a telephone sales service was available for the first time in 1999. The sales volume was small, but it is anticipated that demand will increase in 2000/1. In anticipation, an automated system of issuing licences was developed to replace the manual system used in 1999. There are also 300 fisheries and other agencies selling licences, most of which have extended hours.

A licence specifically for beginners was developed during the year for introduction in April 2000. For £1, beginners can fish for one day. If they then buy a season licence, the £1 will be refunded.

£1 million fisheries programme to benefit the angler

The increase in rod licence duties helped fund a £1 million national programme of projects to develop and improve fisheries. The programme continued the Agency's work of restoring fish habitats in rivers, including improvements to spawning and nursery areas and was additional to the Agency's routine expenditure on fisheries in England and Wales. The projects aimed to benefit anglers, particularly in urban areas, to encourage youngsters and, wherever possible, cater for the disabled. On many projects we worked in close partnership with angling clubs, local authorities, conservation groups and others to make the most of available resources.

We often follow habitat improvements with a stocking programme. The projects restored fish populations to over 100 km of previously fishless or low value fisheries.

Record decline in salmon catches/new by-laws on salmon fishing

As a result of declining salmon stocks, the contracting parties to the North Atlantic Salmon Conservation Organisation (NASCO), including the EU, not only reduced the quotas in the Greenland and Faroes sea fisheries, but also agreed to examine further measures to protect stocks in their home waters.

Acting upon NASCO advice, MAFF asked us to take forward proposals for possible measures for England and Wales to conserve stocks of spring salmon. Following consultation on what form these national measures should take, new by-laws were advertised that proposed to reduce exploitation of spring salmon.

New byelaws were confirmed by Ministers and applied from 15 April 1999 for 10 years. The byelaws delayed the start to the net and rod fishing season, and introduced mandatory catch and release during the early season. Some net fisheries were granted an exemption to fish for sea trout provided that all salmon caught are returned. A video demonstrating good handling techniques for releasing salmon was provided free of charge to all licence holders on request. In addition, a magazine explaining the new byelaws along with other issues was mailed to all salmon anglers in August.

Close Season on Canals

The coarse fish close season was reviewed nationally by the National Rivers Authority (NRA) in 1994. As a result in 1995 the close season was dispensed with on stillwaters (with the exception of some SSSIs) and retained on rivers, streams and drains. The NRA's proposals for a consistent close season on all canals was not endorsed and the status quo remained.

Following research into the effects of a close season on fish stocks, breeding waterside birds and the wider environment, the Agency consulted on a proposal to dispense with the canal close season. The findings were submitted to the Fisheries Legislative Review Group in January 1999 for consideration in the broader context of close seasons. MAFF subsequently advised the Agency to progress with the byelaw application. Two byelaws were promoted to dispense with the close season on canals in England and Wales respectively. The former received MAFF approval in March.

Informing our Customers

As part of the fisheries marketing strategy, a magazine was produced and mailed to all 1999 licence holders. The mailshot has a range of objectives that include:

- Informing our customers of the work we do for their benefit
- Promoting good practice among anglers
- Prevention of a fall in licence sales by stimulating interest in fishing

The impact of the magazine will be assessed by monitoring licence sales and analysis of the results of a telephone survey.

Also during the year a leaflet was produced promoting good angling practice to protect wildlife. The "Golden Rules" leaflet explains how to minimise the impact of angling on the environment.

Another awareness campaign focussed on informing buyers and sellers of wild salmon and sea trout on the regulations involved. A leaflet "Handling and Sale of Wild Salmon and Sea Trout", and an accompanying letter, were mailed to all fishmongers, hotels, inns and restaurants in England, Wales and the Scottish Borders.

REGIONAL OVERVIEW

The aim of this section is to give an outline of some of the key issues that were dealt with during the past year.

- Communications with anglers

Over recent years we have been working very hard to improve communications with anglers. We want to tell anglers what the Agency is doing to improve fisheries and we want to listen to the views of fishermen on what we should be doing. We have had regular liaison with angling clubs, netsmen and fisheries consultatives for many years; during this year a North West Fisheries Consultative Council was developed with the aim of co-ordinating the views of the various fisheries consultative organisations. The Agency welcomes and supports this development.

We have continued to tell people about our fisheries work through this annual report and its quarterly counter-part, through "Catch" magazine and through articles in the media. This year, for the first time we produced a national magazine "Reel Life" which was sent to a million anglers. This presented the opportunity of replacing the spring edition of "Catch" magazine with a "Catch" guide to angling in the North. Feedback from anglers, both direct and by market research, indicates that Catch magazine is popular and well received.

Finally, the internet has provided us with an ideal opportunity to make a wide range of fisheries information available to the public. This is available through the FISHe page to be found at www.environment-agency.gov.uk.

- Habitat Improvement Work

There are many examples throughout this report of habitat improvement work. This is a major growth area both inside and outside the Agency and reflects a transition in management practices; the importance of stocking as a management tool is diminishing as the use of habitat management is growing. Effective habitat management can only be achieved in partnership with local people particularly landowners, farmers and fisheries owners. We have forged very good working relationships with all of the River Trusts in the North West and assist them in their work. The "Sustainable rivers management project" mentioned elsewhere in this report, has demonstrated how effective it can be to work directly with the farming community to deliver real habitat improvements.

- Lune Net Limitation Order (NLO) and Byelaw Package

Net limitation orders limit the number of nets than can fish for salmon and sea trout in estuarine and coastal fisheries and are normally reviewed every ten years. Their purpose is to limit the number of nets fishing, either for management or conservation purposes. A replacement NLO and byelaw package was recently introduced on the River Lune following extensive consultation with affected parties. Its aim was to reduce exploitation by both rods and nets in order to ensure that sufficient salmon would make it to the spawning grounds. The number of net licences was reduced from 37 to 19 and a catch limit of four fish per year was placed on anglers on the Lune. The effect of these measures on salmon stocks will be monitored and we will review the effectiveness of the measures at the end of a five year period.

NORTH AREA

TEAM REPORTS 1999

- **SOUTH LAKES - John Foster**

CONDITIONS & CATCHES

The year was generally unsettled with July and August being the only drier months and a very wet backend in all the catchments with much localised flooding in December. Runs of salmon were very poor with the best river being the Kent where about 250 fish were caught on rod and line. The poorest results were the Crake and Leven with around16 fish taken by the rods on the latter. The new national salmon bylaws have reduced angling effort. The local anglers on the Leven imposed their own ban on taking salmon which added to the general lack of fishing effort.

The seatrout situation is better with good runs reported in the Kent and Bela. Other rivers were on a par with previous years except for the Leven which again is causing concern.

The still waters generally fished well all year with the most popular rainbow trout fisheries probably being Ghyll Head and Dubbs Reservoir, closely followed by Esthwaite. The main lakes also continued to gain in angler numbers with Windermere obviously the best and most popular, producing the main brown trout catches in the area for both size and quality. Pike fishing continues to be very popular with Windermere and Esthwaite being the main venues but Coniston, Rydal, and Grasmere also fished well.

Char catches on both Windermere and Coniston have been poor this year

Sea fishing activity has been mixed with the drift nets again having a poor year in Morecambe Bay, but rod anglers off Walney and Barrow have done well for all the main species. Other notable catches include excellent flounder fishing on the Kent estuary around Arnside in the run up to Christmas with over 100 anglers seen on some days.

Commercial fishing for salmonids has been poor with conditions unfavourable at times, the lave nets on the Kent produced 34 salmon and 3 seatrout whilst the Leven produced 21 salmon and 13 seatrout.

Elver fishing started well in March but then dwindled as did the price, (down to £34/kilo). A good run of elvers was seen on the Kent during June.

ENFORCEMENT

The new salmon bylaws on the whole were well adhered to and most anglers seem to appreciate their necessity, however one angler was apprehended taking a salmon using shrimp as bait on the R Kent below Force falls. He was duly fined £150. Several other rod and line cases were reported over the year for licence evasion with fines up to £50 plus £50 costs.
In July one of the worst poaching incidents for some years occurred at Force falls on the R Kent when 3 men were caught using a gaff and had taken 10 migratory fish during an afternoons poaching session.

HABITAT WORK

Further habitat improvements were carried out throughout the area. These mostly involved fencing work.
Good partnerships have been developed with other organisations. The National Trust has worked with the bailiffs on the Duddon and Crake to fence areas and on schemes such as Yewdale beck near Coniston. A large section of Gilthwaiterigg Beck, (Kent tributary) was fenced with the help and agreement of the landowner.

SPAWNING

This has been a very difficult year for redd counting due to very high flows. Some good results were found for sea trout especially in the R Bela where sea trout are increasing annually by natural regeneration.

It proved too difficult to undertake redd counts for salmon due to the high flows in December.

NORTH CUMBRIA TEAM - Keith Bell

Rivers where high and flooded as the new season started. Kelts were washed back down into the lower reaches of the river to rest and improve in condition, before making their journey back into the sea to their feeding grounds.

A decent spring run of salmon started the season well and the introduction of the new byelaws in April meant that rod caught salmon had to be returned to the water until the 16th June and haaf netters and driftsmen had to wait until the 1st June to start fishing.

Throughout the season there was a definite increase on the number of fish being voluntarily released with some beats on the Esk returning up to half of their catches for salmon and sea trout.

After the initial spring run catches levelled out somewhat but the usual late run fish entered on the last few weeks of the season. One lower beat on the Eden saw 27 salmon caught in one day and one Carlisle Angling Association angler caught 10 salmon in a week.

The haaf netters had less of a good season with the lack of suitable fishing ground being the main problem.

Fishery Officers helped out their colleagues in Liverpool with licence checking and in South West Cumbria on anti-poaching duties when required.

Anti-poaching operations discovered two cases of illegal drift netting in the Solway Estuary. Successful prosecutions were brought under the Border Rivers Order, a new piece of legislation passed in July 1999. This is an excellent piece of legislation which has removed the need to establish where an offence has been committed in relation to the English / Scottish Border within the Solway Estuary and is seen by Fisheries Officers as a major step forward for enforcement.

Other fishing offences in Scotland involving illegal haaf netting and one case of foul hooking sea trout were reported to the Procurator Fiscal but no prosecutions were taken by that office.

Some of the Eden teams' time was taken up with the Eden salmon tracking project. The first salmon to be tagged was caught in the salmon coops by kind permission from Dr. Haughey of Corby Castle on the 16th March. Anglers from Carlisle and more notably from fishing beats owned by John Garnett, James Carr, Nick Mariner and Yorkshire Fly Fishers Club all donated salmon to be radio tagged and released as part of the project. Local ghillies Charlie Alderson of Warwick Hall and Mike Grimes of Yorkshire Fly Fishers' Club were both very helpful and full of support for the project.

A special dispensation for sanctioned anglers was granted to enable them to fish for salmon after the end of the season as part of the radio tracking project resulting in a total of 106 salmon radio tagged by both the coops and rod and line during the year.

The tagged salmon were tracked throughout the year by fixed listening stations and mobile trackers via canoe, mountain bike, vehicle and good old fashioned walking. Early analysis showed the majority of spring fish spawned in the Lowther system, which is subject to water abstraction, by North West Water. A couple of the tagged fish were caught when electric fishing for broodstock in the main River Lowther in November, they were found to be in very good condition.

40,100 fed salmon fry were planted out on the Lowther system in June. 40,000 salmon ova collected in November were laid down in Warwick Hatchery to be planted out in June 2000.

Trapping continued on the River Caldew with 1022 salmon, 124 sea trout and 247 brown trout passing through in the 1999 season.

A temporary gantry was built at Corby fish counter spanning the River Eden to allow C.C.T.V. cameras to video fish moving over the weir to help validate the counter.

Lord De Ramsey headed the list of VIP's from both within and external to the Agency who visited the North Cumbria area. Site visits included Corby coops, Corby fish counter, Caldew trap, Warwick Bridge hatchery, Solway Firth, electric-fishing surveys, flow regimes on the rivers Caldew and Eamont.

The Cumberland Show in Carlisle was also attended by Fisheries staff showing off various seized poaching items, a well stocked tank of wild fish and a kiddies fishing pond. Despite the heavy rain a good time was had by all.

WEST CUMBRIA - Denis McCartan

Fishing on the River Derwent picked up significantly in 1999 after a number of years of 'doom and gloom'.
Excellent catches of sea trout have caused anglers to speculate that the good old days are returning. The largest sea trout for the year weighing 17.5lb was caught on Cunnah Wath Pool. Sea trout of 13.8lb,

12lb, 12lb, 11lb and 3 x 10lb were reported on other beats. During November large numbers of sea trout were observed in the spawning becks.
This is my 23rd year on the Derwent and I have never before seen such quantities of sea trout.

Salmon catches have improved on previous years although Workington and Cockermouth Anglers would claim otherwise.
The Fitz beat produced over 200 salmon. The largest was a 31lb hen, which was released. Castle Fisheries catches were well up on the previous few years.
The Isel Fishery reported 80 salmon and 100 + sea trout for the year.

Juvenile salmonid surveys indicate that the nursery streams are in good health and production is excellent.

Catch and release is becoming more acceptable on the Derwent and significant numbers of fish are being returned. This is still however a controversial subject and the reduced angling effort mirrors this. More may need to be done to promote this concept.

1999 I hope will be a turning point and that the runs of salmon and sea trout will continue to improve.

SOUTH WEST CUMBRIA - Dave Smith

January brought a very wet and wild start to the year with spate conditions throughout the area. Levels were often 1.5m plus and very rarely dropped below 0.45m. These mild and wet conditions, although a problem for redd counting did prove beneficial to the returning kelts, as they were very well mended and there was little evidence of disease seen or reported to staff. The number of mortalities was also very low.

Although the weather became a lot colder in February the continued drop of well mended kelts was seen throughout the area. Some extremely large salmon and sea trout were observed in the River Esk. This has been one of the best years for some time for kelt survival.

As the fish returned to the river in the early part of the season it was quite evident that this was going to be a difficult year for the anglers because of the water levels and river conditions. This was borne out in practice.. However, low water conditions and warm weather benefited the other recreational river users. We encountered quite a lot of poaching activity throughout the area as the season developed and weather conditions continued to be dry and sunny. Two cases resulted, including a netting incident that brought a conviction and quite a severe fine for the participants.

October began with very wet conditions but this did not seem to bring the large autumn runs of salmon and sea trout we expected. This meant that although fish were caught there were no large numbers or large fish to talk about, and as the levels dropped it became evident that the large fish had not arrived. It was quite an uneventful month until the last week when we had a major fish kill on Pow Beck – St Bees. A pollutant entering the stream from a gutter off Sandwith bank caused this. It was estimated that in excess of 1500 brown trout were killed. There was also some sea trout mortality as well as 200 + eels.

The end of the month saw the arrival of a number of large salmon and sea trout in the River Irt. Several fish were in excess of 20lb.

November started quietly but by the end of the first week torrential rain and localised flooding had occurred. The greatest amount of damage was inflicted on the River Keekle. The flooding totally destroyed the reinstated area of the Keekle between Walkmill and Keekle Village itself. A lot of sea trout and brown trout were also found dead at this time. The devastation made counting the casualties impossible.

The end of the year brought some benefit to the area. The arctic char in Ennerdale, though late migrating into the spawning stream, did seem to have quite a successful run.

The continued topping up of the rivers benefited the spawning but because of the continued high levels made redd counting extremely patchy.

PROJECTS 1999

The Leven Project

Anglers have, for some time, expressed great concern over the decline in salmonid stocks within the River Leven catchment. 1998 had the worst salmon catch recorded for many years and spawning within the river was also very poor. The Leven has failed its egg deposition target every year since 1993 with an average compliance of 40% of the Minimal Biologically Acceptable Level (MBAL).

As a result of the high level of concern raised in response to the River Leven and River Crake Salmon Action Plan (SAP), a Leven Project Officer was employed in April 1999 to implement elements of the plan. Various studies have been conducted and proposed, with help from local Angling Clubs, by the Project Officer to try and identify the reasons for the large decline in salmonids.

Through the SAP a number of issues have been highlighted and each has been addressed individually.

The poor survival of juveniles and eggs at Newby Bridge was highlighted as an area for further work. Different theories for this problem have been examined. Concern was raised as to the possible lethal exposure of eggs and juveniles to Polycyclic Aromatic Hydrocarbons (PAHs) potentially arising from motor engines used on Lake Windermere.

Water and sediment samples were taken at sites around the area and the PAH concentration determined. Values were found to be negligible in the water column but high in sediment samples. These concentrations, however, were significantly lower than those found in previous research (Cranwell and Koul. 1989) in sediment samples pre 1975 taken from Lake Windermere, a time when fish numbers were believed to be considerably better than those of today.

Figure 1. A Silt Trap used in the Leven

It was, therefore, assumed that PAH concentrations found at Newby Bridge are unlikely to play a contributory role in the poor emergence of salmonids. Furthermore, the spawning area at Newby Bridge consists primarily of large gravel and cobbles, substrates that do not readily accumulate PAHs. Work is still underway on this topic.

The work on PAHs lead to other concerns such as siltation of redds and the lack of gravel renewal within the area. Studies are currently underway to assess these theories through methods such as silt traps, freeze core analysis and substrate tracer experiments. In the summer of 1999 a number of silt traps were placed within the riverbed around the catchment. Artificial redds were constructed to simulate the natural gravel cleaning undertaken by salmonids. The silt traps - a wire basket with waterproof skirt, were filled with appropriately sized gravel and placed within the redd. The traps were then left for three months and retrieved for analysis. In the lab. The contents of the traps were separated into different particle sizes and those fractions smaller than 6.4mm were sent to the Agency's laboratory in Exeter for further analysis. This forms part of a National R&D programme where results will be compared with other sites around the country.

To determine sediment transport distances and paths at Newby Bridge a tracer experiment was conducted. Pebbles were randomly collected from the study area and measured. Five representative size categories were found and further pebbles were collected from each category. Each size category was allocated a colour and pattern, which was painted on the corresponding, pebbles. The pebbles were randomly distributed 2m u/s from the weir at Newby Bridge and will be left until spring when their movement will be monitored. From the results we will hopefully be able to determine if there is a lack of sediment reseeding at Newby Bridge leading to poor spawning gravel condition.

The Agency in collaboration with Lancaster University plans to take sediment core samples at Newby Bridge during 2000. The cores will be analysed to help us quantify the level of sedimentation in redds and PAH accumulation and determine remedial actions.

In addition to analytical projects, monitoring studies are also underway to determine the current stock levels. Proposals have been made for the installation of a new smolt trap (to monitor smolt migration population characteristics). In addition an adult trap to monitor returning adults (with specific reference to marine survival rates) and the efficiency of the fish

counter (apportioning species splits) is proposed for construction in 2000.

Throughout the catchment a number of areas have been identified for habitat improvement. In spring, in-house labour will be used to create features within the rivers to enhance fish habitat and stabilise banks.
In addition to freshwater factors it is believed that estuarine factors could play a contributory role in the decline of salmonids within the system.
It is thought that the decline in migratory fish stocks may be a consequence of a number of factors, including possible sub lethal effects of discharges within the estuary, a lack of holding pools and sediment accumulation.

Nationally there has been a growing interest into the effects of endocrine disrupters upon fish. The observed effects from these chemicals include hermaphroditism, increased liver size and reduced gonad size. To determine whether endocrine disrupters are associated with the decline in salmonids in the Leven catchment it has been decided that initial investigations should concentrate on the effects of oestrogens on flounders within the estuary. Histological assessment will be conducted to ascertain if flounders show symptoms and are therefore themselves exposed to endocrine disrupters. Further investigations will depend on the findings of this study.

Additional investigations proposed for the future include toxicity identification evaluations and fish avoidance chambers.
Nationally the Agency is currently working in collaboration with CEFAS on an R & D programme to establish the effects of endocrine disrupters on salmonids, known as the EDMAR Programme (Endocrine Disrupters in the Marine Environment). The programme is currently studying sites and fish from the Tees Catchment. Subject to the findings of the Leven Estuary investigation useful indicators as to the way forward may be forthcoming from the EDMAR Project Group.

Figure 2. An example of fencing at Troutbeck to encourage bank stabilisation.

In addition to the projects conducted throughout the year, the Project Officer has established useful relationships with the angling community and is assisting in some of their own projects.

EDEN SPRING SALMON RADIO-TRACKING PROJECT

Project Update - March 2000

Introduction

Historically, spring salmon made up to 90% of the rod catch from the River Eden, Cumbria. More recently, this figure has dropped to 10% or less of the total rod-catch.

With this in mind, the Agency, in conjunction with various local and national funding bodies[1], initiated a spring salmon tracking project in 1999. The main aim of this project was to identify the spawning grounds of spring-run salmon and to determine whether or not there is potential for the mixing, during spawning, of these fish and later-running salmon.

Method

Adult salmon returning to the River Eden were captured by rod-and-line, using fish traps, and using haaf nets in the Solway Firth, radio-tagged using individually recognisable radio-transmitters and released back into the river. A total of 106 salmon were tagged. Table 1 indicates the number of fish caught by each method and Figure 2 shows the distribution of these captures. These are split into spring fish (caught up to and including 1 June 1999) and later-running fish (tagged after 1 June). Fish traps used were Corby Coops and the Caldew Trap.

[1] Funding bodies for the 1999 study included the Environment Agency, English Nature (Species Recovery Programme), the Atlantic Salmon Trust, the Eden River Trust, the Eden Owners Association, the River Eden and District Fisheries Association, the Carlisle Angling Association, and the Solway Rural Initiative.

Table 1: Sources of salmon radio-tagged in 1999

Capture Method	Spring-Running Fish	Later-Running Fish	Total
Rod-and-Line	28	8	36
Corby Coops	31	33	64
Caldew Trap	2	-	2
Haaf Nets	-	4	4
All methods	61	45	106

Results

Of the 106 salmon tagged, 50 (47%) were tracked to spawning, while a further 12 (11%) moved back to sea and 4 (4%) were found dead. We were unable to determine the fate of the remaining fish either because the tags failed (3 fish, 3%, tags heard deteriorating), the tags appeared to have been regurgitated (10 fish, 9%), or the transmitters were "lost" 27 fish, 25%). The last of these may include other tag failures, fish angled but not reported (only 3 kelt recaptures have been reported, one of which was a "lost" fish), or fish removed illegally.

Table 2: Known fates of all salmon radio-tagged in 1999

Method of Capture	n	Fate		
		Spawning site estimated	Back to sea	Found dead
Rod	22	21 (95%)	1 (5%)	0 (0%)
Coops	42	28 (67%)	10 (24%)	4 (10%)
Haaf Nets	2	1 (50%)	1 (50%)	0 (0%)
Caldew Trap	0	0 (0%)	0 (0%)	0 (0%)
Total	66	50 (76%)	12 (18%)	4 (6%)

Removing those fish that we were unable to account for, the fates of 66 tagged fish were determined (Table 2). Fifty fish were tracked to spawning (76% of known fate), 12 moved back to sea (18%), and 4 were found dead (6%). Encouragingly, of the rod-caught fish of known fate, 95% were tracked to spawning.

Of the 61 salmon tagged in the spring of 1999, the fates of 36 individuals were determined (Table 3). 67% of spring fish of known fate were tracked to spawning. 94% of rod-caught spring fish of known fate were tracked to spawning but only 42% of coops-caught fish were similarly tracked.

Table 3: Known fates of salmon radio-tagged in the spring of 1999

Method of Capture	n	Fate		
		Spawning site estimated	Back to sea	Found dead
Rod	17	16 (94%)	1 (6%)	0 (0%)
Coops	42	8 (42%)	9 (47%)	2 (11%)
Caldew Trap	0	0 (0%)	0 (0%)	0 (0%)
Total	36	24 (67%)	10 (28%)	2 (6%)

For comparison, the fates of later-run salmon are given in Table 4. The fates of 30 of 45 later-running salmon (67%) were determined (Table 4). Of these fish, 87% were tracked to spawning. All rod-caught fish of known fate were tracked to spawning and 87% of coops-caught fish were similarly tracked (antibiotics were administered to coops-caught fish after the spring of 1999, in an attempt to reduce stress from capture).

Table 4: Known fates of later-run salmon radio-tagged in 1999

Method of Capture	n	Fate		
		Spawning site estimated	Back to sea	Found dead
Rod	5	5 (100%)	0 (0%)	0 (0%)
Coops	23	20 (87%)	1 (4%)	2 (9%)
Haaf Nets	2	1 (50%)	1 (50%)	0 (0%)
Total	30	26 (87%)	2 (7%)	2 (7%)

Figure 2 shows the estimated spawning locations of radio-tagged fish in the Eden. At spawning time, tagged fish were distributed throughout much of the Eden catchment. Spring salmon were recorded in the upper Eden (above the Eden-Eamont confluence), throughout the Eamont catchment, in the middle reaches of the River Eden, and in the River Caldew. However, the results from 1999 suggest that the Eamont catchment, and the River Lowther in particular, is important for the reproduction of Eden spring salmon. The greatest concentration of spring salmon was located here but only one later-run fish. Later-running fish were mainly located in the upper and lower Eden.

Discussion

While the results expressed above cover only one year and but a few fish, they are very encouraging for the use of catch-and-release angling as a management tool in the conservation of Spring salmon stocks. Of the fish followed, 94% of known fate (n=17) were tracked to spawning while the remaining fish (1 individual) moved back to sea. This may reflect straying rather than any particular problem associated with either tagging or catch-and-release protocols.

Less encouraging were the results obtained from trap-caught fish. Only 42% of fish of known fate (n=18) were tracked to spawning. A similar proportion moved back to sea while a further two individuals were found dead within the river. It is unlikely that such a high proportion of fish strayed into the River Eden, were tagged and then moved back to sea to return to their natal streams. Given that the tagging procedure was the same as for rod-caught fish, it would appear that the trap used (Corby Coops, an ancient trapping structure) is unsuitable for catch and release of salmon. This information may be of relevance to researchers considering using traps to obtain fish for radio-tracking projects, or where owners would like to use their trap(s) on a catch-and-release basis during the period over which the Spring Salmon Byelaws are in operation.

Fisheries Officer about to radio-tag a spring salmon from the River Eden, Cumbria

The results from this study suggest that the Eamont system and the Lowther in particular are important for the reproduction of spring salmon. However, this part of the Eden catchment is heavily abstracted to provide a public water supply for the city of Manchester. Because of the apparent conflict of interest in this part of the catchment, there is a need to carry out further radio-tracking to ensure that these findings are not an artefact stemming from the number of fish tagged or from year-on-year variation in spawning distribution. Funding has already been obtained to continue this tracking in 2000. Only rod-caught fish will be tagged so that the survival to spawning of rod-caught fish can be further investigated.

Figure 1: Tagging Locations of Radio-Tagged Salmon, 1999

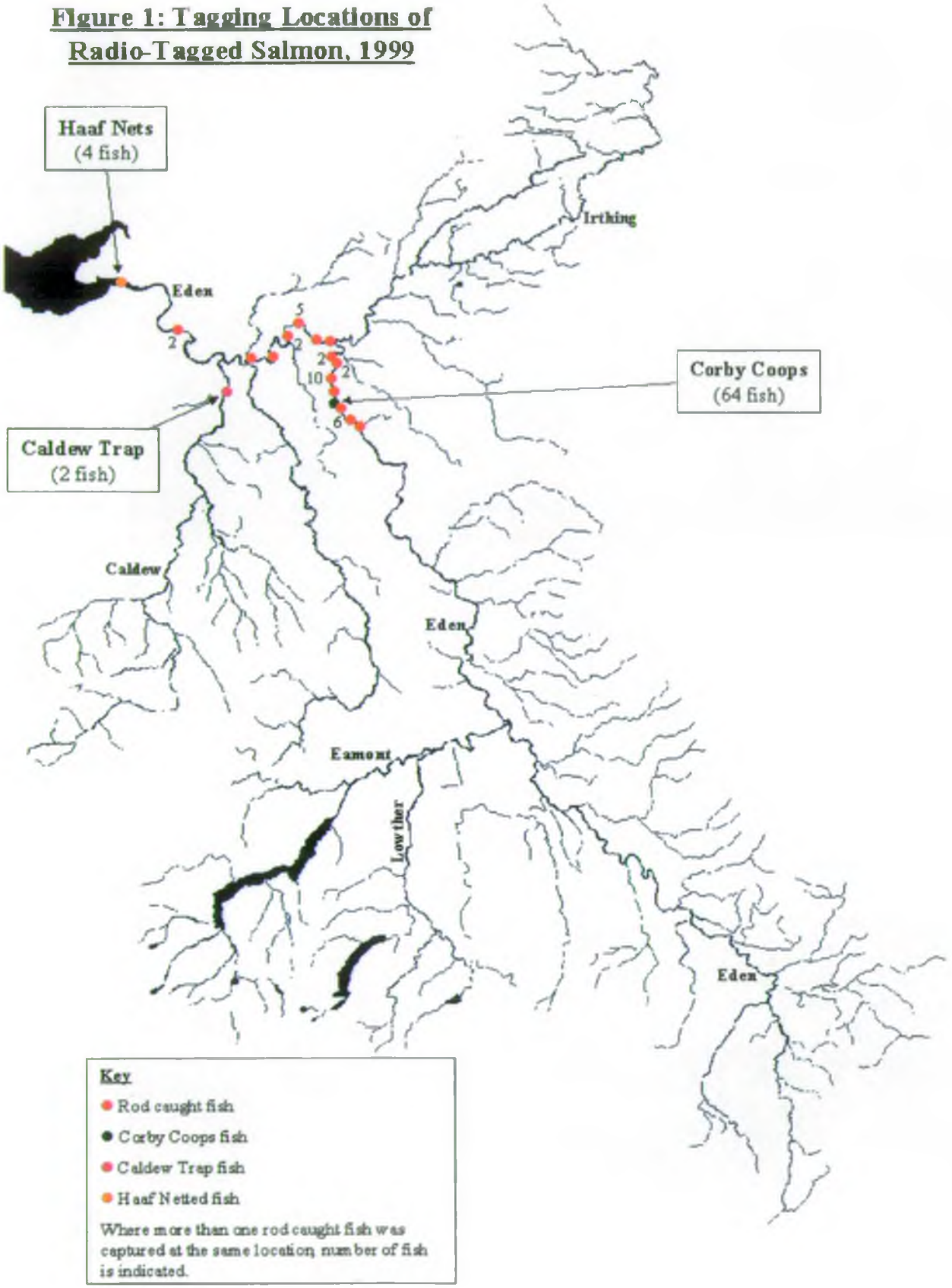
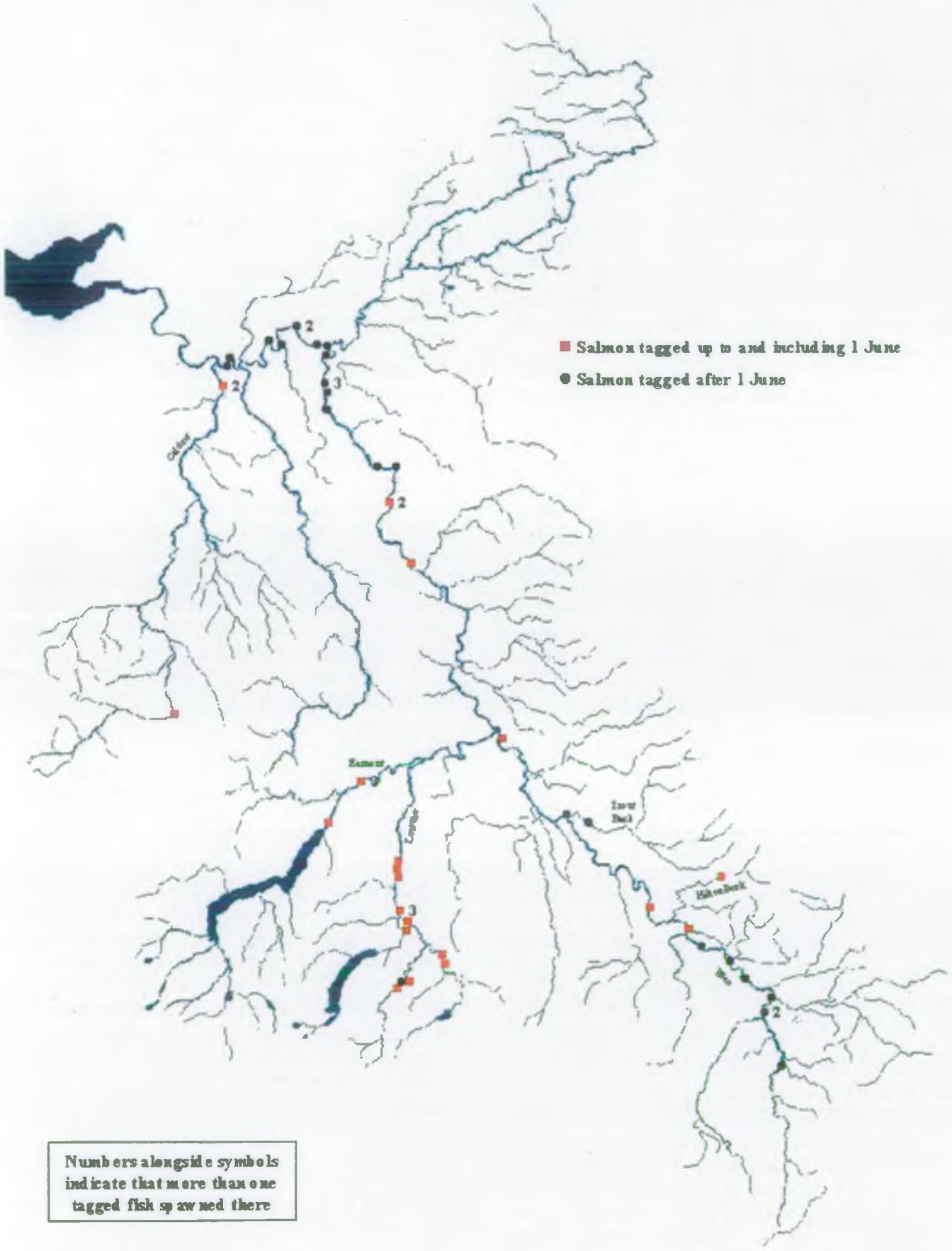


Figure 2: Estimated Spawning Locations of Radio-tagged salmon in the River Eden, 1999



BRUNSTOCK BECK - INSTALLATION OF ARTIFICIAL GRAVELS

One of two gravel riffles installed on Brunstock Beck in 1999

After a visit and advice from our geomorphologist, two artificial gravel riffles were installed on a section of Brunstock Beck. The riffles will provide variability in the stream bed, aeration and serve as potential spawning areas for dace and other fish. They are serving as a trial to see how such structures can be incorporated in maintained channels without causing serious erosion problems or destabilising the banks. If successful, we hope to install more of these in other parts of the beck if landowner permission can be obtained. This work could not have been achieved without the support and help of the farmer at this site.

COARSE FISH ANGLING SURVEYS

In order to obtain information about coarse fish in the lower River Eden the Environment Agency has organised a coarse fishing permit system. Moorhouse and Yorkshire Fly have opened beats in the lower river to coarse fish anglers during the salmon close season. These surveys have been undertaken during the winters of 1995/6, 1997/8, 1998/9 and 1999/2000.

For a donation, the Eden Rivers Trust anglers can fish providing they have obtained a day permit from the EA in advance and return data about their catch and hours fished etc to us.

The permits have been popular with 212 issued this year, although the weather has let anglers down. Anglers are mainly catching trout and grayling with a few chub. The data on grayling has been of great interest to staff at the Institute of Freshwater Ecology who have been conducting an EA funded research project on grayling and also to the Grayling Society. Numbers of grayling have increased since we started collecting data from the Eden and trout catches have also been good. It is hoped that in October 2000 further data on grayling will be collected when the Grayling Society hold their AGM locally and plan a day fishing on the Eden and Annan.

SURVEY REPORTS 1999

The River Kent

SUMMARY

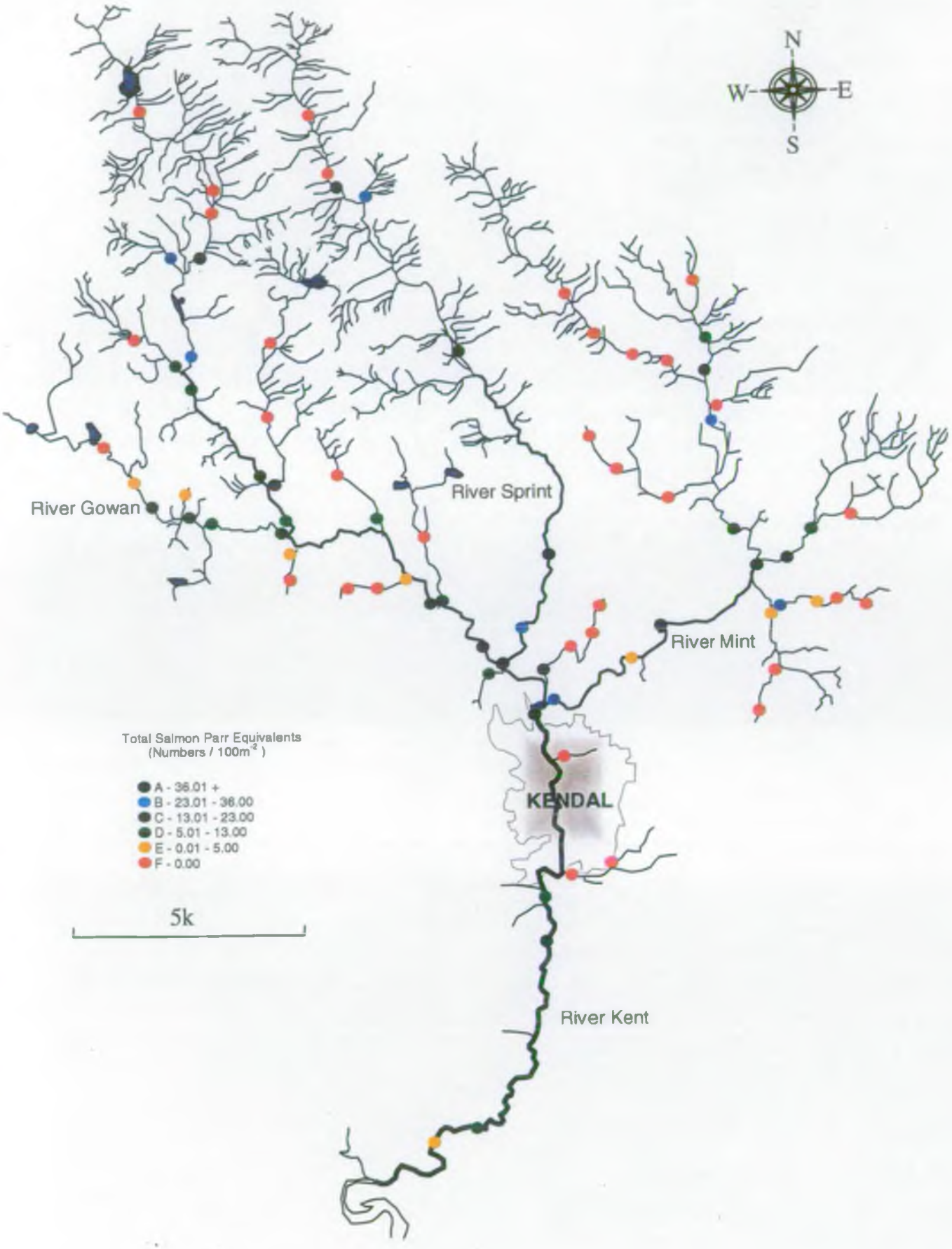
The River Kent catchment is the most productive catchment in South Cumbria for salmon and sea trout. Juvenile salmonid densities are probably close to carrying capacity in many areas of the catchment, suggesting a potentially good return of adult salmon and sea trout in the future. Further management may only be necessary on individual, localised sites, where in-stream and riparian habitat improvement may be beneficial.

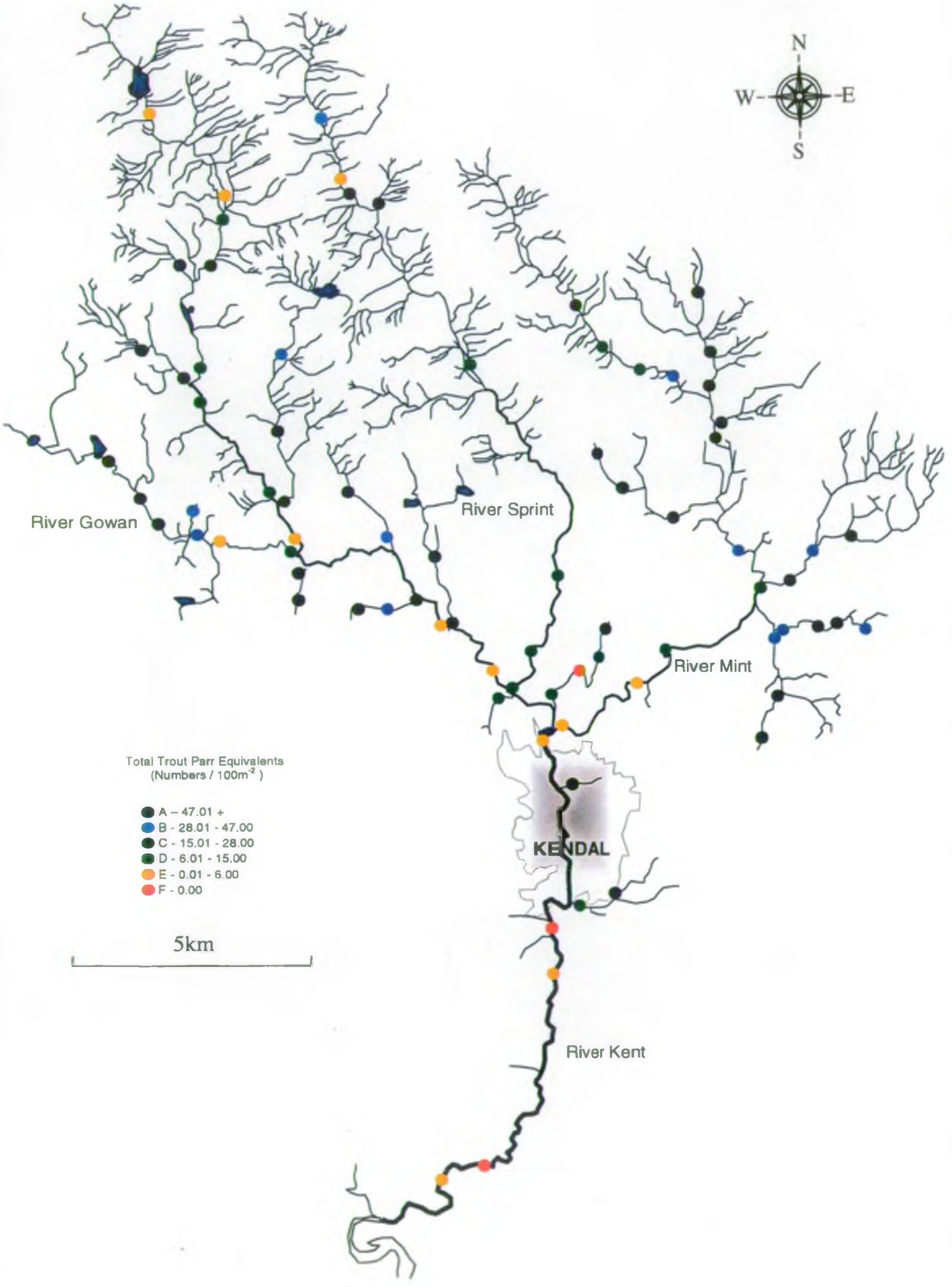
Comparing the 1999 results to the last survey in 1993, salmon fry densities have faired the best, as twenty-four sites have improved, fourteen sites have declined, and thirty-eight sites have not changed. Salmon parr densities showed little significant change as forty-eight of all the sites surveyed have not altered, eighteen sites have declined, and ten sites have improved. Trout fry numbers appeared to have suffered, as thirty-three sites have shown decline, thirty-three sites have not altered, and ten sites have improved. However, the trout parr population has shown a change in distribution, with twenty-five sites showing improved densities and twenty-eight sites showing declining densities.

The results are shown in Figures 1 and 2 in terms of salmon and trout parr equivalents (i.e. the number of fry caught are converted into parr and then added to the parr catch).

The relative importance of each sub-catchment area for each species can be seen. Salmon generally favour the main river areas and some of the lowermost reaches of minor tributaries, whereas trout (including sea trout juveniles) generally favour the tributaries.

The River Kent continues to be a relatively high production system when compared to others regionally and this is reflected in the success of its rod fishery for both salmon and sea trout. The Kent is also home to the White Clawed Crayfish (*Austropotamobius Pallipes*) and Freshwater Pearl Mussel (*Margaritifera margaritifera*) making it one of the ecologically most diverse catchments in the region. To this end SSSI status on certain areas of the catchment is likely to be confirmed by English Nature sometime in 2000.


N
W
E
S
River Gowan
River Sprint
River Mint
KENDAL
River Kent
Total Salmon Parr Equivalents
(Numbers / 100m^2)
A - 36.01 +
B - 23.01 - 36.00
C - 13.01 - 23.00
D - 5.01 - 13.00
E - 0.01 - 5.00
F - 0.00
5k


N
W
E
S
River Gowan
River Sprint
River Mint
KENDAL
River Kent
Total Trout Parr Equivalents
(Numbers / 100m-2)
A – 47.01 +
B - 28.01 - 47.00
C - 15.01 - 28.00
D - 6.01 - 15.00
E - 0.01 - 6.00
F - 0.00
5km

River Caldew

Good densities of salmon fry and parr were found in the main River Caldew from Mosedale down to Holm House, and also in the upper tributaries. However salmon were not found in the River Ive and in Roe Beck upstream of their confluence but after the Roe and Ive join salmon parr densities were high and low numbers of fry were present. Over-enrichment of this area of the sub-catchment may be responsible for the low numbers upstream of the confluence.

Although low densities of trout fry were recorded throughout the catchment generally sites on Caldbeck, Gill Beck and Carrock Beck exhibited very high densities.

A mix of low and average densities of trout parr and older trout were recorded throughout the catchment although this is not thought to be fully representative of the situation due to survey sites being targeted more towards fry habitats.

The ongoing issue of sheep dip pollution on the Caldew is one that the Agency is monitoring closely. However, results of the 1999 survey show the effect of the pollution on the fish populations does not appear to be as severe as we first feared.

Caldew Catchment
Total Salmonid Absolute Classification Survey Sites, 1999

Key:

- A
- B
- C
- D
- E
- F

CENTRAL AREA

ENFORCEMENT AND EMERGENCIES TEAM REPORT 1999 - Steve Whittam

The early months of 1999 were generally wet, cool and miserable and very few anglers were seen even on the heavily stocked stillwaters. Matches on the Leeds Liverpool Canal were poorly attended. There is a general feeling that some areas of the sport are in decline and many clubs are concerned about falling membership levels.
Perhaps the proposed initiatives to bring young anglers into the sport will arrest the perceived decline.
Once again the Ribble produced some excellent specimen fish with bream to 9lb 8oz, barbel to 11lb and chub to 5lb8oz confirmed. There have been numerous other quality fish taken and some catches of smaller fish although the latter remain a little patchy. The migratory fishing was generally good on both the Ribble and Lune and rod catch figures bear this out. The Lune had 1032 salmon and the Ribble 633 - the pleasing aspect being the numbers released, which is now running at almost 50% of the total catch. Anglers should feel they are making a worthwhile gesture when returning the fish. One unfortunate incident last year was the prosecution of an angler for contravention of the new byelaws that prohibit the killing of salmon prior to 16th June. This came at a time when all concerned are trying to conserve early running fish and it is hoped it will prove to be an isolated incident.

The seatrout catches have held up well and appear to be going from strength to strength on the Ribble with 1423 fish landed this year. There were some excellent specimens taken and many fish in the 3 to 5lb class were seen in June and July.
Generally the picture is one of cautious optimism for the future.

On the pollution front 1999 was quiet until May 3rd when a slurry leak caused the deaths of 15000 mixed coarse fish on Woodplumpton Brook. During the next 6 months staff attended a further 21 incidents where fish were killed. Causes ranged from heavy silt loads in Pearl Brook killing 40 trout after in river works, to fire washings entering the canal at Salwick after a boat caught fire killing 300 roach and bream. In the last quarter a further 6 incidents occurred, two of which were serious. In November, farm pollution accounted for a total "wipe out" of a part of a spawning run in Rough Syke on the Hodder where 117 adult seatrout to 7lbs perished. In January, farm run off again killed all fish in lower Calico Brook on the Douglas system killing approximately 200 chub. dace trout and perch. It seems that each year the messages are depressingly similar and lessons are not learned by the wider community.

During 1999, a huge rescue operation for NWW plc on the river Hodder was undertaken. This involved removing trout and salmon adults and juveniles whilst major in river works went ahead. Staff attended 27 individual rescues on the Hodder intake works taking up a large amount of time and resources. Staff also attended a further 7 rescues during the period of June to November at other locations, three of which were on the Lune at Tebay as a result of in river works, and one was on the Hodder due to a stream drying up. In the latter over 800 fish were moved to safety.

Over and above this massive commitment, anti poaching patrols were mounted on Lune and Ribble. Some successes were recorded but for the first time for 3 years an increase in activity was recorded with incidents being witnessed by landowners and anglers. This is an obvious challenge and during the year several new initiatives to combat poaching were introduced. For the first time CCTV equipment was used in the field and over 300 hours of film was recorded before system shortcomings prevented further use. The lessons learned will however make 2000 a more viable prospect. Over 40 reports of illegal fishing were received and attended within target time. Two trammel nets were removed from the Hodder in August and in October staff assisted Settle police with a prosecution for netting on the Ribble at Halton West.

It is apparent that there is still a market for illegally taken salmon and seatrout and without the efforts of Agency staff, backed up by the police, club bailiffs and Landowners, the stocks of salmon would be under serious threat.

Enforcement staff were also involved in attending and contributing to two fisheries seminars in Liverpool on stillwaters and Clitheroe on enforcement liaison. All three consultative meetings: Ribble fisheries, Lune and Wyre and Lancs., were attended to aid the liaison process. Advice was given to South Area on salmon runs into the Mersey in December!

During November. broodstock was collected for the Hodder Catchment Conservation Trust and taken to Witcherwell Hatchery. Section 14 issues were progressed with British Waterways Board on the Condor, NWW on the Hodder and two fish farms at Bentham and Dunsop to ensure compliance.

Over 4000 rod licences were checked and all anglers were dealt with in a courteous and professional manner. Once again we had a busy and eventful year and I wish to go on record as saying thank you to the team both full and part time and the network of eyes and ears generated by the officers themselves.

FISHERIES MANAGEMENT AND SCIENCE TEAM REPORT 1999 - Mark Atherton

- **Alt Catchment Overview**

An increasing number of reports of catches of coarse fish have come to light this year. There is also evidence of an increasing number of anglers present on the banks of the Alt. Reports of roach, chub, dace, bream and pike from Downholland Brook with quality roach from the main River Alt itself in the Formby area. The angling potential is set to improve over the next few years as improvements in water quality feed through during 2000 following improvements to the efficiency of Fazakerley and Hillhouse sewage works. Coarse fish from Leyland Fish Farm that were due to be stocked to the Alt system in November of this year have been held back for introduction to the main Alt when these improvements have become consistently apparent.

- **Crossens Catchment Overview**

Again some good catches have been recorded but the system still does not produce the same consistent form as it once did. The issues contained within the Alt/Crossens LEAP (see later) should hold the potential to address this problem through habitat enhancement, fisheries survey and the development of an Site Plan.

Habitat improvement

The river Alt near Parkstile Lane, Gillmoss, had over the years been straightened and had become virtually featureless. Utilising funds made available by Alt 2000 and using in house expertise the river along this stretch has been greatly altered to reintroduce natural features such as meanders, narrow runs and shallow pools and riffles. A planting scheme was also implemented with the assistance of a local school. This work has helped to create a wider diversity of habitat for the many organisms that contribute to the development of the rivers natural ability to buffer a low level of organic pollution. It is anticipated that the River from this area up into Croxteth Park will soon be able to provide a spawning ground for fish. although the river here is still vulnerable to pollution incidents such as the sewage pollution that occurred in December of this year.

Fisheries service has been provided to a number of sites including:

* White Mans Dam, Knowsley where further advice and a netting operation with the transfer of fish from a nearby pond contributed towards the ongoing fisheries improvement plan for the site.
* Spinney Pond, where a low level pollution to the fishing pond on the site was reported and investigated with a view to avoiding a potential problem.
* Renacres Hall Hospital, where advice and a fish health check was provided to help deal with the problem.
* Springfield Pond, where advice and assistance was provided with removal and storage to allow desilting of the site by North West Water for the benefit of the Maghull and Lydiate Angling Club.
* A site at Mere Brow, where advice was given on an innovative project to develop a salmon "river" fishery on the land locked site.
* Recreational Activity Programme Junior Angling Competition. The event was organised by the Lancashire Constabulary as part of a scheme to introduce and encourage juvenile participation in a wide range of recreational activities. Use of a prime section of the Leeds and Liverpool Canal was provided free of charge by the Wigan and District Angling Association and the Agency provided assistance and support in terms of equipment and tuition.
* Lady Green Farm, where advice was provided on the development of a new fishery.
* North Moss Pit, Formby, where advice was provided regarding potential improvements to the lake and its fish population.

- **Alt/Crossens Local Environment Agency Plan (LEAP) Consultation Report.**

Input to the production of this plan in terms of the Fisheries and Recreation roles of the Agency resulted in the inclusion of the following issues:

Poor in river habitat restricting the survival and distribution of coarse fish species

Poor access to the watercourses for angling and recreational activities

The poor distribution of fish within the Alt catchment and the lack of information regarding the fish populations of the Crossens catchment

The need to realise the recreational and fishery potential of the stillwaters of the Alt/Crossens area.

The issues highlight areas of concern that can potentially be tackled during the next 5 years by the actions outlined in the LEAP document.

Liverpool Park Lakes Fisheries and Recreational Project.
The vision of this project is:
"The Lakes and their immediate environs will be sensitively restored and developed to meet the educational and recreational needs of the local community and the visiting public. They will be visually pleasing and have facilities for a wide range of passive and active leisure activities, according to the nature of the site and the needs of the community."

This year the collaborative partnership between the Agency and the Liverpool City Council has:

- Been strengthened further by working more closely together;
- In conjunction with the Park Lakes Advisory Forum, delivered a range of structural and habitat related improvements, chiefly to Larkhill Gardens and Calderstones Park Lakes;
- Provided expertise and guidance as to the ongoing management and development of all the lakes under the control of the City Council;
- Has supported the successful attraction of European funding to the City Council for the restoration of its Victorian Parks, the focal point of which are, of course, their Victorian lakes;
- Raised awareness of the good works of the Agency and the Liverpool City Council, both locally and nationally, in delivering sustainable and cost effective improvements to facilities for angling and other recreational activities, thereby helping to enhance the park users "Quality of Life";
- Developed a "Project Strategy Document" that, once adopted, will set out the short, medium and long term objectives for individual water bodies and for the project as a whole and provide an organisational framework for the delivery of those objectives within organisational constraints and with a "best value" ethic.

Ongoing activities this year have included:

- Planning and supervising the current and planned improvements on Liverpool Park Lakes;
- A series of promotional visits to Larkhill Gardens and Calderstones Park Lakes by influential Environment Agency and City Council Officers, Managers and Councillors. The "Core Cities" meeting (consisting of Council representatives from cities like Manchester, Newcastle and Leeds) and the North West Regional Fisheries, Ecology and Recreational Advisory Committee also visited these lakes;
- The production of a high quality leaflet promoting the project which was widely circulated throughout the North West with other copies distributed further afield, some within Europe;
- Netting operations were carried out on Larkhill Gardens, Walton Hall Boating Lake, Mullwood Pond, Statute Pond;
- Fish health checks have been carried out on stocks of fish from Larkhill Gardens, Walton Hall Boating Lake and Mull Wood Pond;
- Problems occurring on the lakes such as algae blooms, excessive weed growth and fish kills have been monitored and provisional plans drawn up to reduce future occurrences;
- Regular Park Lakes Advisory Meetings have been held.

- **Douglas, Calder & Darwen Catchment Review**

The general consensus of the River Douglas is now a river that is thriving with wildlife. More people are using the river system for recreation on the Douglas Way footpath and throughout Cuerden Valley Park. 1999 was a good year for the anglers who fish in the Appley Bridge area on the Douglas with good populations of chub, roach and dace present. Fish populations throughout the catchment look to have improved with a large shoal of chub being observed at the Tawd/Douglas confluence. Large chub and roach populations have been seen throughout the lower reaches of the Lostock. A large spate in December has resulted in severe bank erosion on the river Lostock in Leyland. The River Calder saw some very large spates in the latter parts of 1999. The larger fish appear to have survived the events but the juveniles may have suffered.

Stillwater Surveys.
Four major fish stock assessments were carried out in the Douglas Catchment during 1999.

1. The south pond at Longton Brickcroft Nature Reserve was seine netted but the survey encountered net snagging problems so was reduced to establish the species and diversity contained in the lake. It was found to contain a

good bream population together with a diverse population of other coarse species.

2. A seine net survey was carried out at Bellhouse and Hartwell's pond in Westhoughon. This survey showed very good coarse fish populations that have recovered after a number of problems on the water.
3. A seine netting survey was carried out on Cricket Fields pond, Withnell. This was found to have poor fish populations but work on the pond to improve habitat has now resulted in fish being introduced to increase stocks.
4. A seine netting survey was carried out on Cliviger fish ponds, which were found to contain reasonable stocks.

Surveys on the Wigan Flashes had to be abandoned due to the size of the lakes and severe snagging of the seine nets, although a small number of juvenile pike and perch were found.

A hydroacoustic survey was carried out on Lower Rivington reservoir. Preliminary results suggest good populations of fish.

Ten water samples were taken to assess water quality and advice reports submitted as a result.

Drought Monitoring surveys were carried out at several sites on the rivers Douglas and Lostock. All the sites monitored contained fish with many showing improvements over the 1995 survey results.

The River Tawd Post-Stocking Survey report of 1998 was completed. The results show that one of the five sites surveyed now contains a small population of major coarse fish. Extensions to this survey have been identified including habitat improvement and further enhancement stockings. Fish have also been observed in non-survey areas which is in complete contrast to a few years previous.

A comprehensive survey of the River Calder and tributaries was conducted in the summer months. Initial results show that there are isolated populations of fish in the main river on the upper reaches. A good trout population was found in Pendle Water including good juvenile numbers. Salmon parr were found in Sabden Brook following stocking. They had migrated from the stocking site and look to have survived well. Coarse fish populations in the middle to lower reaches of the River Calder were found to be poor with the exception of isolated pockets. However, considering the survey was targeting salmonid habitat and the equipment used is not efficient in deep and wide areas, this cannot be taken as absolute. Good numbers of large chub can be observed at Whalley Bridge and juvenile dace were found in the bridge pool following a seine net survey.

Fish Disease and Mortalities.

Fish samples were taken from Widdows Flash in Wigan after carp were found dying in the margins. Samples were also taken from Slipper Hill reservoir with bream infected with *Argulus Spp* and Pendle Water where trout were found to have *Saprolegnia spp*. Fish were submitted for heath check from Hoddlesdon Reservoir. Darwen following reports of bream and roach with 'lesions'. Croft Fisheries in Brinscall had an outbreak of *Argulus coregoni*. A small number of large carp were found dead on Boylans Lake, Wrightington.

Habitat Improvement.

Two habitat improvement schemes that were initiated in 1998, were completed in the first quarter of 1999 at Eccleston Bridge on the Yarrow and Grimeford on the Douglas. Two more habitat improvement schemes were initiated on the Rivers Tawd and Lostock to be implemented in 2000.

Fish Rescue and Transfers.

A 'pike fish-in' was held in conjunction with the Pike Anglers Society (Preston Branch) and Darwen Loyals Angling Society to remove small pike after problems with high densities of juvenile pike. The day resulted in 13 pike, 10 in the range 2 – 5lb and 3 in the range 10 – 12.5lb. The 10 smaller pike were transferred to Wyreside Fisheries.

A total of 87 Perch, 21 Roach, a Crucian Carp and a Goldfish Hybrid were transferred from Deer Pond Nature Reserve, Towneley Hall to Little Delph Pond, Oswaldtwistle to help protect the 6 species of rare dragon fly and newts which inhabit Deer Pond.

Fisheries Advice.

Fisheries advice ranging from stocking, stock management and species, habitat improvement, creation of new fishing ponds and future management of fisheries were given to 15 angling clubs/owners with numerous site visits made to advise.

- **Lune & Upper Ribble Catchment Report**

General River Conditions/ Fish Movement and catches.

Floods early and late on in the season probably accounted for the fact that there were good catches of salmon in the Tebay area. Over 180 salmon were taken of which many were returned. First salmon taken in the Tebay area was in June, largest reported 30lb. On the downside there appears to have been a greatly reduced number of grilse, but good numbers of multi-sea winter fish.

Sea trout were seen in good numbers throughout the whole of the Lune catchment many being taken on rod and line. Brown trout fishing has been good in the Tebay area with reports of a fish of 5lb and several at 3lb and 4lb.

During low flow conditions in July the River Dee had to be monitored very closely to prevent fish from becoming stressed due to low oxygen levels.

Broodstock Trapping - Broadraine
The Broadraine trap was set during the close season in a joint project between The Environment Agency and the Lune and Wyre Hatchery Group. During November 28 hens and 21 cocks were caught and as fish became ripe they were stripped of their eggs and milt. Having collected over 68,000 ova, the remaining fish from the trap were released to spawn naturally in the Lune and tributaries.

Re-stocking
Pre-smolts introduced into Lune system during spring;
Total of 5,000 into:

R. Greta at Greta Bridge
R. Wenning at Hornby
R. Hindburn at Wray
R. Lune at Sedbergh

Total of 10,000 into:
R. Lune at Rigmaden
R. Lune at Arkholme
R. Lune at Sandbeds.

Total of 5,000into:
R. Lune at Broadraine
and were fed until they migrated.

0+ Salmon fry:
9,000-Borrowdale Beck
3,000- Bowderdale Beck
2,000- Longdale Beck
10,000- Barbon Beck
3,000- Akrigg Beck
3,000- Carling Gill.

Autumn Parr:
5,000- Lune New Course
4,000- Birk Beck
5,000- Lune Yorkshire Bridge.

Spawning Season
Once again constant floods made redd counting very difficult on the Lune, many large floods occurred and it is to be hoped that redds were not totally lost.

Habitat Improvement
The Lune Habitat Group. with Agency support. and groups of volunteers. has completed fencing and planting on:
River Rawthey 660m of stock fencing and 200 deciduous trees planted by the governments New Deal Task Force. with a further 2.6km of buffer strip created on the River Lune at Midfield Farm. Longdale Beck. Cautley Beck. Mill Beck. Leck Beck and Birk Beck. A further 320m on Keld Beck was fenced in collaboration with the Yorkshire Dales National Park.

A small weir was constructed above Old Tebay Bridge in conjunction with Tebay Anglers.

On the River Ribble and Pan Beck at Halton West 1,700m of fencing was carried out in partnership between the Agency, Birse Construction. Yorkshire Water, Mott Macdonald and the Halton West Estate.

Meetings/Planning
Monthly meetings were held with Lune Habitat Group to identify priority areas for targeting future habitat projects, plus fundraising input.

A presentation was given to Sedbergh Boys School at Broadraine weir and Trap and Middleton Hatchery as to the Agency's role and the function of both facilities.

Lower Lune Report
- Austwick beck report completed;
- Moor Hospital Reservoir Lancaster, 8000 fish rescued - Carp, Roach and Rudd transferred to a pond at Middleton;
- Two meetings with elver netsmen;
- ORSU completed, planted and stocked with 4000 roach, 1300 bream and 500 dace. River Lune stocked with 2000 dace at Lansil;
- Pond at Oxcliffe Road, fish in distress, two dead pike, blue green algae bloom. Too many ducks;
- Lansil helped to build two angling platforms;
- Designed elver passes for Skerton and Halton, to be fitted by NWW in year 2000;

- **Ribble Catchment Review**

Habitat Improvement on River Ribble
Due to close liasion with Yorkshire Dales Millennium Trust, funding has been secured for habitat improvement on Long Preston Beck.. This is considered one of the premier salmon spawning becks on the Ribble and hopefully this project can make a real improvement in spawning success within this beck. The funds secured for the project total £10,000 from YDMT for next financial year, the input by the Agency may be as little as 20% due to internal match funding by YDMT. Plans and costings totalling £6500 have already been drawn up. The next step is to gain more interest in the area and possibly present the proposals to Settle anglers who originally set the ball rolling.

Accrington UFDP (Calder Catchment)
Regular meetings have taken between the local council, Groundwork, residents groups and Local angling clubs. Plans have been progressed and work is due to start in January 2000.
The Agencies contribution initially will be to create a functional fishery with good access and sufficient fishing platforms, the second stage will be orientated more towards the aesthetics of the lodge with extensive planting schemes.

National R&D Project On Siltation Of Salmonid Redds
In early November 1999 the Ribble was included in a National R&D project on the siltation of salmonid redds. Six sediment traps were placed in spawning areas in the upper reaches of the Ribble catchment. These were in position for the period 23rd Nov to 22nd Feb, which coincided with the period of development of salmonid eggs (90 days). The traps are to be extracted and the contents analysed. Hopefully this will give an indication of siltation relative to other rivers nationally.

Grindleton Bridge Project
This project started early in the year, with initial contact between the Agency , LCC and Clitheroe Anglers. The problems were associated with erosion on the site and subsequent loss of the Ribble Way. The project is large scale in nature as it is on the main stem of the river. An action plan has been drawn up and work planned may include reinstating the path, large scale willow raddling, re-grading of existing bank and extensive tree planting. The next step is to involve North West Water and secure enough funding to ensure the project will be a success.

Stocking Out Of Salmon Parr Into The River Hodder
During the spring 4500 juvenile salmon parr were introduced into the river Hodder at various main stem sites. The Agency assisted in the actual stocking out of the salmon but they were reared at the Witcherwell hatchery by the Ribble Catchment Conservation Trust. As a result of our assistance the Agency were given 500 juvenile salmon to stock into Sabden Brook on the Calder catchment which was part of an ongoing priming of the Calder system in preparation for new fish passes in the near future. The brook was surveyed in the summer as part of the Calder survey and survival was found to be good.

Fylde Area Report
1999 was a wet year. Late winter floods disturbed spawning gravel and may have had an adverse effect on coarse fish fry numbers. There was an early run of sea trout, and good numbers were seen spawning.

The run of salmon was poor. Only seven were reported caught by anglers. The sea trout catch was also low. There was a large increase in juvenile salmonid numbers, these were seen in this years Wyre survey.

Although large shoals of coarse fish fry were seen in the River Wyre downstream of Churchtown Weir, coarse fishing was poor with no good bags reported. A good population of coarse fish was found in Barton Brook, below the A6. Brown trout fishing was productive in the first half of the season, but declined later.

Large numbers of cormorants are fishing on the Wyre catchment. The goosander population is increasing and there are many mink on the lower Wyre.

A good number of sea trout redds were found. Only a few salmon redds were seen, this was partly due to high water flows stopping an accurate redd count.

Surveys
Electo-fishing surveys were carried out on Camm Beck and Wyre spawning gravels, along with 80 sites on the Wyre catchment. pH levels were also taken at selected upper catchment sites.

An incomplete redd count was affected by high water flow.

Fish rescues and transfers
Over 200 trout / sea trout juveniles were rescued from Marshaw Wyre, 60 small carp were netted from a pond at East View, Kirkham and transferred to a nearby pit.

Perch traps were set in Pump Pit. Freckleton to thin this overpopulated pond. The fish were transferred to Wood Pit.

Eccles Moss Pond was netted and 2500 small bream, roach, rudd and bream/rudd hybrids were removed to thin the population. Over 800 bream were stocked into the River Lune Off River Spawning Unit (O.R.S.U.), while the remaining fish were stocked into Hapton Reservoir. Attempts were made to net catfish from Proctors Farm Pond, Poulton.

Fisheries Advice
Fishery Owners/Angling Clubs received 6 site visits and three others were given by phone or letter.

Habitat work
- Fencing was completed on the River Wyre, Scorton, Park and Street becks.
- Fencing has been supplied to Abbeystead Estate, some 1000m of fencing in total.
- Further limestone has been added to Camm beck. to raise the pH levels and encourage fish spawning.
- Churchtown Weir fish pass boards were replaced.
- All other fish passes were checked and cleaned.
- Abbeystead fish pass was unblocked on several occasions.

Meetings
Agency officers regularly attend meetings of the River Wyre Trust and held a workshop in Scorton to advise on habitat improvement methods, funding opportunities and the work of the Agency.

- Morecambe Bay user group meetings were attended.
- A talk was given to Blackpool Civil Service Angling Association.
- Two scout angling days were held at Wyreside Fishery.

Stockings
- Brown trout were stocked into Barton Brook and Sparrow Gill after fish kills.
- 6000 2+ chub from Leyland were stocked into River Wyre at Churchtown.
- Roach and Chub broodstock collected from the River Wyre.

Microtags
Microtags were read from five returned salmon heads. All were stocked into the River Wyre. Two were caught in the River Lune, Lansil, one in the River Lune estuary, one found dead in the River Hodder and one caught in the River Wyre at Garstang. Three Wyre microtags were returned from the Irish Drift Net Fishery.

Leyland Fish Farm Annual Report.

Broodstock collection and spawning
Broodstock collection started in early March, when fishery officers brought in 100 female and 75 male dace from the Ribble catchment, and continued on through to the end of May for the collection of chub and roach from various catchments around the area. Broodstock were also used from the farms own ongrowing unit.

Dace spawning went well, with good stripping and survival rates from most of the fish spawned. Chub and roach went well eventually, after a partial false start caused by the varying weather and temperature swings during the spring.

Survival rates from all the species was good, and a high number of good quality fry were stocked out into the rearing ponds.

Ongrowing
On the whole the main ongrowing season went well, with good growth rates being recorded throughout the summer. The high summer temperatures caused a few D.O. problems in the ponds. Daily D.O. monitoring and the use of the farms' aeration equipment overcame these problems. As a result of this practice, plans have been drawn up for the installation of constant monitoring equipment for each ongrowing pond, and hopefully this should be installed shortly.

To help us with stock control and monitoring, work was carried out throughout the summer to develop a method of sample weighing of fish from the ponds.

Stocking out
The restocking season started in early November and carried on through to Christmas, with chub, dace and roach being stocked into rivers all around the region.

The total number of fish stocked out was –185,000
- Roach – 100,000
- Chub – 53,000
- Dace – 32,000

HABITAT IMPROVEMENT PROJECTS

INTRODUCTION

Much of the land in the upper reaches of rivers in Central Area is used for farming, pasture for sheep and cattle, silage and hay production. The predominance of stock farming means that significant lengths of riverbank are grazed and the rivers are widely used for watering, which raises a number of concerns relating to riparian habitat conservation, loss of land through erosion and stock health and welfare. On intensively grazed land the grass is continuously cropped short. The grass plants put all their energy into producing new leaves so the roots remain a thin layer just under the surface, and are relatively inefficient at holding the soil together. Once the protective cover has been removed the banks are easily damaged by stock and are prone to erosion.

Habitat quality is reduced when increased bank erosion leads to streams becoming wide and shallow. The added erosion causes siltation, which is detrimental to fish, clogging spawning gravels, filling pools, reducing invertebrate numbers and affecting water quality. In the summer months, water temperatures may rise, leaving fish vulnerable to de-oxygenation.

Several large habitat improvement projects are currently ongoing in Central area – these are detailed below.

THE BOWLAND INITIATIVE

The Forest of Bowland was designated an Area of Outstanding Natural Beauty (AONB) in 1964. It is also a Special Protection Area (SPA) and Site of Special Scientific Interest (SSSI). This area of high moorland incorporates parts of the rivers Ribble and Hodder and their tributaries, the upper reaches of the River Wyre, the southern becks of the River Lune and some of the northern tributaries of the River Calder (Ribble catchment). The Environment Agency's classification of biological and chemical water quality for the area varies from 'Very Good' to 'Good'.

The Forest of Bowland provides an area of intrinsic wildlife value. Its importance for nationally notable species and its status as a salmonid spawning ground emphasise the view that the quality of the area should be maintained and enhanced. There are substantial sections of the rivers within the Area Of Natural Beauty (AONB) where habitat enhancement could easily be achieved and would significantly increase wildlife value by creating riparian buffer strips and stock management.

This is a European Funded project, which has been approved by MAFF, and is backed by Government. Funding for improvements were primarily through Countryside Stewardship together with capital grant schemes. This project targeted habitats related to biodiversity Action Plan species, including salmon. In brief, it aims to manage, develop and improve agricultural land for the benefit of the agricultural business and the environment through training, habitat improvements, land use management and sustainable farming, restoration of traditional landscape features and the promotion of sustainable tourism. Improvement of water quality may be achieved through promotion of good agricultural practice and capital grants for farm improvements, e.g. sheep dipping facilities. The project should deliver £90k worth of capital works towards habitat and environmental improvements on rivers in the Lancashire Upland 5B Area together with a fully funded FWAG officer post for 2.5 years to continue the Agency's Sustainable Rivers Project in Central Area.

This was an opportunity to demonstrate that an integrated approach can bring about changes in rural areas to balance the needs of farm businesses, the environment and the rural community. The Bowland Experiment should show how sustainable rural development may be integrated with conservation and good agricultural practice. This is a high profile project in Lancashire with a wide variety of public and private funding partners (including EN, RSPB, Lancs. County Council, FWAG etc) which advances the Agency's duty to maintain, improve and develop fisheries and general duties to promote recreation and conservation.

LEADER II - HODDER BECKS

LEADER II (Links between Actions for the Development of the Rural Economy) is a community initiative centred on designated fragile rural areas. It aims to encourage model local rural development initiatives, increase exchange of experiences and know-how and support development projects proposed by those active at local level in rural areas and which express their solidarity. In this case it is directed specifically at improving the environment.

For sustainable cost effective riverbank protection the key is riparian vegetation, where the provision of an un-grazed riparian buffer zone can prove extremely beneficial to the river and aquatic life. This involves creating a separation strip between the main field and the watercourse. Where stock are involved this strip will require generally stock-proof

fencing for sheep, single strand wire for cattle, or post and rail fencing for horses. Keeping stock off this area then allows the regeneration of grasses and marginal plants that not only help to absorb excess fertilisers, but will also create an improved environment for wildlife. The buffer zone will provide bank protection by stabilising the banks, cover through overhanging vegetation, shelter for small birds and mammals and shade. The vegetation will help to keep the water cool in the summer and slow the growth of algae, provide food for fish in the form of leaves, invertebrates and organic material which fall into the water. Tree roots provide spawning areas for coarse fish while protecting the fish from predators and floods. Bio-diversity may be greatly increased within the buffer zone, with the benefit extending to the surrounding areas. The addition of new plantings such as deciduous trees and shrubs will assist in this process. The work may also include cattle drinks/crossings and tackling large-scale erosion problems using a variety of bank protection methods such as willow raddling.

Several River Hodder tributaries, (Easington Beck, Croasdale Beck, River Loud, Foulscales Beck and Birkett Beck), were identified as being in need of particular attention. The Ribble Catchment Conservation Trust (RCCT) had expressed an interest in undertaking works to improve the spawning becks in their area, so they became the lead applicant for LEADER II funds. The project has proceeded as a collaboration between RCCT, Lancashire Wildlife Trust (LWT), Ministry of Agriculture Fisheries and Food and EA with considerable support from the riparian landowners and farmers. Each individual project was designed so that there is no long-term liability to the applicant, the funding partners or to Leader II. A legally binding contract was received from each landowner/tenant to maintain any capital structures on their property for a period of ten years, not withstanding natural disasters e.g. floods.

Historical survey data was collated for the becks as a baseline so that any changes could be identified. Electro-fishing surveys were undertaken above and below the proposed improvement sites along with biological samples and Habscore surveys. It is intended that further surveys be undertaken on an annual basis with the aim of identifying improvement in the General Quality Assessment by one over the life of the project, and fisheries classification by one class in 50% of the improved areas.

Croasdale Beck

Fencing works have now been completed on Foulscales Beck, with works agreed on Easington Beck. On surveying Birkett Beck it was found to be of a generally good standard, so the negotiations for further work were concentrated on Croasdale Beck and River Loud.

Easington Ford October 1999

OTHER PROJECTS

Throughout Central Area, 5km of stock-proof fencing were erected and over 3000 trees and shrubs planted. Of these, 1730m of fencing and 900 trees were planted on the River Lune and its tributaries, which is directly attributable to the work of the Lune Habitat Group and its predecessor, the Lune and Wyre Habitat Group. These include work on Mill Beck at Rigmaden (illustrated), Gaisgill at Tebay, Leck Beck, Borrow Beck, Cautley Beck and Birk Beck.

Mill Beck (recently fenced)

Mill Beck 3 months later

Cautley Beck June 1999

Cautley Beck February 2000

FUTURE PROJECTS

Recent applications for LEADER II funding include a £30k project on Cant Beck (Lune catchment), and Upper Lune which involves habitat improvements worth £77k. These are being undertaken in collaboration with the newly-formed Lune Habitat Group, who will be managing the projects. These should start work on the ground in spring 2000. A further large project is the provision of 1500 trees and shrubs for Borrow Beck, below. These are to be planted with the assistance of New Deal.

Throughout these habitat improvement schemes the contribution of various partners has proved to be invaluable and is gratefully acknowledged.

Forest of Bowland AONB

FISHERIES SEMINAR

In February, Central Area held its annual Fisheries seminar which was attended by 140 representatives from angling clubs, fishery owners and conservationists. This years subject was non-migratory trout management, with a variety of speakers, including :

Brian Briggs MBE – Secretary of the Institute of Fisheries Management North West Branch & RFERAC member. He talked about the work of the "Third Angler", the enthusiast working hard behind the scenes to promote sustainable fisheries by representing the angler on the various committees making decisions that might affect you, the angler.

Dr Trevor Crisp –talking about his research into the suspected self-sustaining rainbow trout population in Carl Beck, Yorkshire. His findings indicate that contrary to popular belief, there are resident rainbow trout that are breeding and surviving, with evidence to show that they are not just escapees.

Nigel Hewlett – encouraged minimal intervention techniques for a healthy fishery, i.e. gentle manipulation of stocking numbers and species to achieve a natural balance with natural weed control would promote a sustainable water far more effectively than more radical methods of management.

Ed Mycock – spoke of the dangers of blue-green algae, particularly its toxicity to animals, both 2 and 4 legged.

Rob Horsfall –shared his experiences in running a successful fishery and the experiments that went wrong, including the introduction of huge rainbow trout.

The audience confirmed that they not only found the day interesting and informative but that it was also an extremely worthwhile day.

MANAGEMENT OF AGENCY OWNED FISHERIES

The Agency owns 5 recreation sites primarily used for angling, Halton & Skerton (River Lune), Mitton & Balderstone (River Ribble) and The Sluice (Crossens Drains). Development of these sites has been pursued through the initiation of site management plans. Work on the plans has started and will be completed during 2000. Ongoing management of these sites has included river clean-ups, repairs to footpaths and advertisement of the facilities. The Balderstone fishery was leased to Mitre Anglers for 1 year in March 2000 and a new ticket agent was appointed for the Mitton Fishery in October 1999.

PLATFORMS FOR DISABLED ANGLERS - THE SLUICE, BANKS

This collaborative project with North West Water, West Lancs District Council and Southport Anglers was completed in March. The project set out to build 4 platforms and associated car park and access to the Sluice at Banks, near Southport. A local Councillor will officially open the platforms in July. The Council provided the land for the car park, NWW paid for some of the material costs and the Agency's Flood Defence Dept designed and built the platforms. The total cost of the project was 22k.

Platforms for disabled anglers

SURVEY REPORTS 1999

Stock Assessments
Central Area's five-year rolling program of electrofishing surveys, this year focussed on the Rivers Calder and Wyre. In addition to these routine surveys, reports were also produced for the 1997 survey of the River Lune and the 1998 surveys of the Rivers Ribble and Hodder.

Summary of the River Calder Survey 1999
The River Calder is a major tributary of the Ribble, draining the southern Pennines and flowing through one of the most heavily industrialised areas of Lancashire. As a consequence of this, the middle and lower Calder experience episodes of poor water quality that may limit juvenile salmonid survival. In addition, the presence of a number of impassable weirs – relicts of the industrial heritage of the area, prevent the passage of migratory salmonids to the cleaner, upper reaches of the system.

A total of 36 sites was electrofished throughout the Calder catchment in the summer of 1999, including the main tributaries, Pendle Water and Colne Water. Sites were electrofished semi-quantitatively, i.e. by one single pass through the site. Results presented here therefore represent approximately 50% of the number of fish likely to be present at each site.

Juvenile trout were found throughout the catchment but tended to be most abundant in the upper reaches of the various tributaries including Pendle Water, Colne Water and the upper Calder. However densities of both trout and major coarse fish species were disappointing through the middle and lower reaches of the catchment.

Access for migratory salmonids to the upper reaches of the catchment will shortly be achieved through the installation of a fish pass at Padiham Weir, which is planned for 2001/2002.

Summary of the River Wyre Survey 1999
The River Wyre catchment drains the western Bowland Fells in central Lancashire. Historically, this catchment was relatively heavily industrialised with numerous mill dams obstructing the free passage of migratory fish. Several major obstructions still exist on the catchment including Abbeystead Dam on the upper Wyre at the junction of the two main upper tributaries - Tarnbrook Wyre and Marshaw Wyre.

A total of 79 sites was electrofished by the semi-quantitative method throughout the Wyre catchment in the summer of 1999, including the main tributaries Barton and Woodplumpton Brooks and the Rivers Brock and Calder which had not previously been surveyed.
Juvenile trout were found in relatively high densities in the upper tributaries and also in the upper reaches of the River Brock. However, juvenile salmon were relatively restricted in their distribution and were found at only low densities, mainly through the middle and lower main river Wyre. Densities of both juvenile trout and salmon in 1999 were similar to those results obtained in the last survey of the catchment in 1992.

The lack of juvenile salmon in the upper Wyre could be attributed to a lack of spawning gravel caused by Abbeystead Dam. While salmon can ascend the existing fish pass to spawn upstream of the dam, this obstacle has prevented the natural downstream recruitment of gravel from the upper Wyre tributaries since it's construction in the late 1800's. Unless this gravel seeding problem is addressed, the main river spawning habitat for salmon will continue to contract, continually forcing spawners downstream into lower gradient areas that may not be suitable for successful incubation. Two further obstructions associated with the Lancaster canal aqueduct prevent upstream passage of migratory salmonids into the Rivers Calder and Brock. Juvenile salmon were found immediately downstream of these obstructions in 1999.

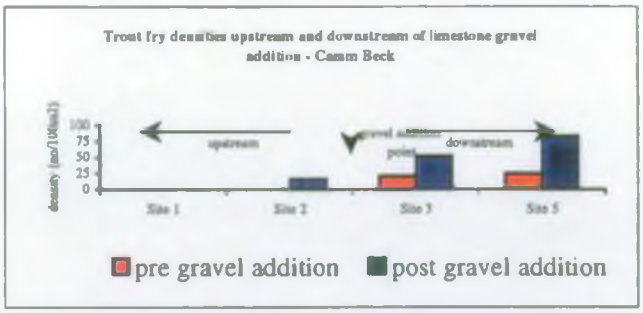
The lower Wyre tributaries, Barton and Woodplumpton Brooks, contained no salmonids but did hold relatively high densities of coarse fish including chub and dace in their lower reaches. The upper reaches of these streams suffered from poor water quality that appeared to limit the production of salmonids and major coarse fish species.

Significant potential therefore exists for improvement of both the salmonid and coarse fisheries on the Wyre, in terms of improving water quality, providing access to currently inaccessible areas and increasing the available spawning habitat. These issues will be highlighted in the Wyre Salmon Action Plan which will be prepared in 2000/2001 and addressed through the Agency's directive to maintain improve and develop fisheries.

Camm Beck - Limestone Gravel Addition
The upper River Wyre is subjected to acid stress through a combination of acid rain, moorland drainage and the poor buffering capacity of the peaty soils and underlying millstone grit. The upper Wyre tributaries are important salmonid spawning areas – particularly for trout, however pH values below 5 are likely to prevent the successful hatching of salmonid eggs in the spring.

A preliminary pH survey in Camm Beck revealed pH values as low as pH 3.6 in a moorland drain during high flows. In the main channel of Camm Beck, the acidity increased to pH 4.6. In order to make the pH of the stream more neutral 20 tonnes of limestone crusher gravel were deposited onto an erosion scar in Camm Beck in August 1998, just above the summer water level. This process meant that the gravel would be gradually washed into the stream in flood flows and would be distributed along the stream bed by the natural flow regime.

Sites upstream and downstream of the gravel addition area were electrofished immediately before and one year following the gravel introduction in order to assess the effects of the gravel on the juvenile trout population. Similarly, pH readings were taken at various times before and after the gravel introduction both upstream and downstream of the addition area, in order to monitor the effects of the limestone gravel on the pH of the stream.



Following the introduction of the limestone gravel, the pH in Camm Beck increased by up to 1 pH unit, making the stream much more hospitable for juvenile trout.

Densities of trout fry were relatively low in 1998 prior to the addition of limestone gravel. In 1999 trout fry densities downstream of the gravel addition site had increased two to three fold. Densities of trout fry upstream of the gravel addition area were markedly lower than downstream in 1999.

The limestone gravel addition has therefore had a significant benefit for the juvenile trout population in Camm Beck by increasing the pH of the stream, particularly during high acid flows. Monitoring will continue to assess the effects of the limestone gravel on pH and trout numbers in the longer term.

Brief Summary of the River Ribble Survey 1998

The 1998 Ribble survey incorporated 50 sites, mostly on Ribble tributaries but also including a small number of upper main river sites. Juvenile salmon were very limited in their distribution through the catchment, being concentrated in the mid-river tributaries (Swainside and Long Preston Becks) and were present in low densities (National Fisheries Classification Grades E). Juvenile trout, on the other hand were generally more abundant and more widespread. In comparison with the last survey of the catchment in 1992 juvenile salmon production was reduced in 1998 while juvenile trout production was very similar.

It is recognised that only limited main river sampling was undertaken in the 1998 survey – main river spawning by salmon is likely to account for a large proportion of salmon production, particularly following relatively dry periods when access to tributary and upper river spawning grounds may be restricted. Nonetheless, the low salmon fry and parr numbers in 1998 suggest that grilse returns in 2000 and 2001 may be reduced.

Brief Summary of the River Hodder Survey 1998

The River Hodder survey examined 37 sites in 1998, the majority of these being located on tributaries rather than main river. As with the Ribble survey, juvenile salmon production was limited in its distribution (upper Hodder, Croasdale and Easington Becks) and densities were low (National Fisheries Classification Grades E). However, juvenile trout production was relatively high throughout the catchment, with the exception of the river Loud system. The lack of coverage of main river sites creates an incomplete view of juvenile salmon production in 1998. However, the limited distribution of salmon fry and parr and the low densities at which they were found suggests potentially low grilse returns in 2000 and 2001.

Brief Summary of the River Lune Survey 1997

A total of 110 sites was electrofished semi-quantitatively on the Lune catchment in 1997, these sites being predominantly located on tributaries and the upper main river. Salmon fry production was concentrated in the Rivers Greta, Dee, lower Rawthey and the upper main river Lune and tributaries upstream of Sedbergh. Fry production was relatively low in 1997 (NFCS grades D & E) and was markedly lower when compared with previous surveys, suggesting potentially reduced returns of grilse in 2000 and two sea winter salmon in 2001. Salmon parr production was relatively high in the 1997 survey (NFCS grades A to C common), being concentrated in the same areas as the fry production and comparing favourably with previous surveys.

Juvenile trout production was relatively high with NFCS grades A to C being common for both fry and parr densities. Trout production was concentrated in the smaller tributaries including Austwick Beck, Rivers Hindburn, Dee, Clough and upper Rawthey and the upper Lune tributaries.

Several streams including Borrow Beck and Chapel Beck (Howgill) were identified as consistently high producing areas for both juvenile salmon and trout. Investigations into what makes these becks so productive will be undertaken in the near future.

Ribble Salmon Action Plan

The Ribble Salmon Action Plan Consultation Document was produced in 1999. Two hundred copies were circulated for consultation. with 12 replies received by the consultation deadline. The comments received were incorporated into the final Action Plan that will be produced in 2000. The Plan sets a minimum target of 8.5 million eggs per year. which equates to an escapement of approximately 2932 salmon. While the river has failed to meet this target in recent years it is very encouraging to see the contribution that is being made by salmon released from the rod fishery. Catch and release is becoming increasingly popular on the Ribble with an estimated 60% of the rod catch being returned in 1999. This practice. combined with the issues and actions identified in the Salmon Action Plan will benefit the Ribble salmon at a time when salmon populations are under continued stresses.

Monitoring of the Ribble salmon population and of the success of the Action Plan will continue. with the Action Plan being reviewed in five years time.

SOUTH AREA

TEAM REPORTS 1999

- **WEST TEAM - Paul Blake**

In 1999 there were higher than average air temperatures but few periods of settled weather. Indeed there were some very stormy conditions from time to time and this led to extended periods when most rivers in the area were unfishable. Pollution incidents attended amounted to 91 in number - an increase of 25% on last year. Aeration equipment was deployed on 33 occasions saving tens of thousands of fish with merely 3,000 mortalities being counted by Fisheries Officers.

There were numerous requests through to June for fish surveys to be carried on still waters as the fishing was so poor. However, we managed to convince anglers that results were purely down to the very changeable weather conditions and the stimulus to start feeding regularly simply was not present.

July and August were the busiest months so far as mortality incidents, with 48 fisheries visited. The principal problem encountered being algae bloom die back resulting in low dissolved oxygen levels.

35 stillwater surveys were carried out for fishery owners and angling clubs and 45,000 fish were transferred from over-stocked waters. 10,000 chub from Leyland Hatchery were stocked into local rivers.

A full programme of 95 strategic survey sites was completed on the Lower Weaver and River Gowy. An additional survey was carried out on the river Mersey between Woolston Weir and Bollin Point and encouragingly seven coarse fish species were found. A more intensive survey of this stretch of the river will be carried out next year.

There were 4,079 rod licence checks with 273 offences reported. A 6.7% evasion rate detected overall with most offences coming from known trouble spots. Additionally, 20 byelaw offences were reported.

Several fyke net patrols were carried out and a number of law infringements encountered leading to a successful prosecution. Set lines and stake nets were also checked at vulnerable times onshore but only one offshore patrol was carried out due to the lack of a coxswain for most of the year. Several salmon and seatrout were spotted and returned to the sea dead.

More and more we hear reports of salmon and seatrout making their way up to Warrington and beyond having negotiated Howley Weir. We had little or no evidence for this until in November this year when what appeared to be both salmon and seatrout were photographed and videoed by fisheries staff attempting to negotiate Heatley Mill Weir on the River Bollin. A remarkable event after some 100 years of decline following the industrial revolution.

- **EAST TEAM - Nigel Taylor**

In 1999 there was the usual patchy weather. There were higher than average temperatures with some severe storms and very little frost.

ENFORCEMENT

4212 Anglers were checked resulting in 146 offences and two bylaw offences being reported. This shows a reduction in the evasion rate from 5.8% in 1998 to 3.5% in 1999.

FISH MORTALITIES

There was a slight increase in fish mortalities to 56 cases with the worse months being July and August because of algal blooms due to the hot weather.

FISH TRANSFERS

13 transfers took place for Angling Clubs, which resulted in 27,000 mixed coarse fish species being moved. Additionally, a further 55,000 mix of Chub, Dace and Roach were stocked out from the Environment Agency's Hatchery at Leyland. Amongst the rivers to receive these fish were stretches of the Mersey, Irk, Medlock and Spodden.

STRATEGIC AND REACTIVE SURVEYS

All strategic surveys due to be carried out on the Rivers Mersey, Etherow and Glaze were successfully completed. These numbered 43 sites in total. 19 reactive surveys were also carried out on behalf of Angling Clubs for fisheries advise.

FISH RESCUES

16 rescues were carried out resulting in 29,000 mixed coarse fish being relocated to new waters.

GENERAL NOTES

Angling on the River Mersey and its tributaries continue to improve with more stretches being fished and angling clubs taking up the option of leasing stretches of the river. Numbers and species of fish being caught are on the increase with bags of up to 20lb and individual fish such as chub to 4lb and barbel to 7lb being caught. This extends the catching season for the still water angler by offering some good winter alternative catches

PROJECTS 1999

BLACK BROOK FLOOD ALLEVIATION SCHEME

Black Brook drains from the catchment area which includes Chapel-on-le-Frith and the villages of Chapel Milton, Chinley and Buxworth. The brook flows in a westerly direction to its confluence with the River Goyt at Whaley Bridge.

There is a history of flooding of properties along Black Brook. The most severe event of recent times took place in 1973 when extensive flooding occurred along the river valley.

In 1994 the Environment Agency appointed Scott Wilson Kirkpatrick Consulting Engineers to investigate the flooding problems associated with Black Brook. A number of locations were identified along Black Brook where the channel is inadequate for the conveyance of high flows and improvement works were identified to alleviate the flooding risk at each of these locations. All proposed works were assessed to ensure that they were economically viable, environmentally acceptable and technically sound.

In 1999 the first phase of construction works to alleviate flooding from Black Brook were completed. This phase (Contract B) consisted of the construction of reinforced concrete flood walls, clad with natural stone, and channel widening works at Chapel Milton and Bowdenhey Mill.

The second phase of the works commenced on site in May 2000. This phase (Contract C) involves work at Chinley, Dorma Works and Bridgeholm Green.

The works at Chinley consist of the construction of approximately 90m of new floodwall and 25m of embankment along the right bank (looking downstream) of Black Brook adjacent to Hunters Green Close. The new floodwall will be constructed of reinforced concrete and clad with natural stone. These works will raise the standard of flood protection to properties on the right bank at this location to 1 in 50 years.

At Dorma Works, stone clad reinforced concrete floodwalls will be constructed along both banks of the watercourse. Due to the limited working area adjacent to the brook, the majority of the works at this location are to be built from within the channel. The temporary works needed to facilitate this involved staking off the watercourse upstream and downstream of the works and diverting the flow down 900mm diameter flume pipes. The permanent works will raise the standard of flood protection at this location to 1 in 50 years.

Photograph taken at Dorma Works, Black Brook during the fish rescue, which took place in June 2000

Dorma Works, Black Brook. Photograph taken (looking upstream) during fish rescue which took place on 12th June 2000.

As the diversion work started at Dorma Works and the water was diverted down a flume pipe, the level in the brook began to drop. A fish rescue operation was therefore carried out by Agency Fisheries staff to ensure fish were not left stranded in the pools that remained.

Almost 50 brown trout and numerous bullhead were rescued and transferred downstream of the works

The works at Bridgeholm Green consist of the construction of approximately 50m of stone clad reinforced concrete wall along the left bank of the watercourse; repairs to approximately 6m of existing right bank wall and the construction of a small earth embankment. These works will raise the standard of flood protection at this location to 1 in 75 years.

The Contract C works are being constructed by Askam Construction Ltd and are expected to be completed by September 2000.

ASSESSING THE FISHERIES POTENTIAL OF THE RIVER MERSEY

Over the past few decades, the River Mersey has suffered from poor water quality due to increased urbanisation and industrialisation.

More recently, however, there has been a general improvement in water quality in both the lower Mersey and the Manchester Ship Canal (MSC). It is also believed that migratory salmonids have returned to the lower reaches of the River Bollin (by entering the lower Mersey and crossing the MSC).

These improving conditions have led to numerous enquiries from the local public, in particularly angling clubs, who are looking at the possibilities of acquiring fishing rights along certain stretches.

To gain more information about the fishery status in the lower reaches of the river, the Agency are currently carrying out investigations on the stretch of the Mersey between Woolston Weir (NGR SJ 655 889) and Bollin Point (NGR SJ 680 889). The project is being managed by Andy Eaves (Fisheries Officer) as an integral part of his IFM (Institute of Fisheries Management) Diploma.

This stretch of river appears to support a diverse habitat with good cover and marginal vegetation, however in the warmer summer months, oxygen sags are dramatic.

Methods used to assess the fishery potential of the lower Mersey include:-

- water quality samples (including dissolved oxygen concentrations (%), water temperature and chemical analysis) – from six sample points
- fyke netting (to quantify species composition) – 9 traps set in May 1999 for one month, 20 traps set in September/October 1999 for five weeks
- seine netting – trial nettings using 45m bag nets (2 sites)
- silt sample analysis
- river corridor surveys
- invertebrate sampling
  hydroacoustic surveys

Photographs of water samples and dissolved oxygen readings being taken by Andy Eaves on the River Mersey (28 June 2000).

The surveys will continue over the next few months. However, results from the fish traps were encouraging with roach, perch, tench, pike and gudgeon being recorded as well as hundreds of sticklebacks.

SUSTAINABLE STILLWATER FISHERIES MANAGEMENT - LESSONS LEARNT

South Area covers Cheshire, Greater Manchester and parts of Merseyside, Staffordshire and Lancashire. There are over 15,000 stillwaters and 80,000 anglers within the area and angling activities are dominated by Stillwater coarse fishing. To help manage the increasing numbers of enquiries by anglers, a Fisheries Advice Form (FAF) was introduced by South Area staff in 1998 (Table 1). These were sent to Clubs in response to all approaches for fisheries advice, with information requested on the characteristics of the pool and fishery, stocking history, the reason for the approach, any perceived problems as well as ownership / membership details. The returned forms were subsequently assessed in order to prioritise work and allocate resources.

This process also provided an opportunity to assess the main issues facing Stillwater fisheries in the area. All forms received from their inception (September 1998) to February 2000 were examined and the reasons why clubs had submitted the forms broken down into the following 10 broad categories:

1) General advice with no specific problem mentioned. 2) Loss of a fishery (e.g. lease terminated).

3) Fishery management (e.g. approaches regarding a management plan, work required as condition of lease, thinning out stocks, fish transfers, stock checks prior to proposed introductions).

4) Health checks.

5) Imbalance in fishery (e.g. too many of one species or poor size-class distribution).

6) Approaches prompted by recent fish kills.

7) The establishment of a new fishery.

8) Taking over an existing fishery.

9) Water 'not fishing' (e.g. poor catches or perceived problems). 1 0) Weed control advice.

134 forms were submitted and the distributions amongst the 10 categories summarised in Figure 1. Encouragingly, over 25 % of approaches to the Environment Agency were for direct assistance with the management of Stillwater fisheries. However, a high proportion of approaches were also responding to significant problems, for example; fish kills, a perceived imbalance in the fishery or poor performance.

The manner in which Area Staff responded to the submitted Fisheries Advice Forms is summarised in Figure 2. Of 134 approaches, 30% were dealt with through a site visit, 25% required the removal or transfer of fish, 12% were satisfied through advice over the telephone or samples being submitted for health checks, and the remaining 33% required a fully quantitative survey before appropriate advice could be given.

44 surveys of stillwaters and canals were conducted and the main issues affecting each water were identified. This process was slightly subjective as occasionally more than one significant problem occurred at a given water (e.g. both overstocked and containing poor habitat). However, it was normally possible to identify the root cause of a problem and these are summarised in Figure 3. Clearly the most significant issue was overstocking, with 43% of surveyed waters having the characteristic signatures of high fish biomasses exceeding recommended levels (250 - 500 kg/ha) and stunted growth of indicator species. Other problems included polluted water, blue-greens, an imbalance in the fishery (typically too many predators or carp take-over), poor habitat, too few fish and avian predation. In 27% of cases, either a problem could not be identified or there did not appear to be significant problem.

On completion of the surveys, the results and appropriate management recommendations were written up in short reports and submitted to the relevant clubs. The management recommendations from the 44 surveys were broadly categorised into the following groups and summed:

1) Increased monitoring of fishery performance.
2) Cropping existing stock.
3) Habitat improvement (e.g. planting of macrophytes).
4) Limited introductions of fish.
5) Development of a fishery management plan.
6) Removal of 'pest' species.
7) Registration of ILFA species.
8) Desilting the Stillwater.
9) Further investigations required.
10) Test water quality.
11) Change the emphasis of the fishery.
12) Increase angling effort.
13) Weed control.

The frequency of use of these recommendations in the reports is presented in Figure 4 and the 'Top 3'are briefly discussed here. The most frequently used recommendation (25 of the 44 surveys) was for increased monitoring of the performance of the fishery. Too often this could not be quantified as information was either anecdotal or fragmented. Clubs were informed that comprehensive details of fishing matches contain a wealth of information and a record of all introductions and removals, including; species, numbers, weights, dates should be kept. Cropping was recommended in 23 reports, which was not surprising given the frequency of overstocked waters. Clubs need to understand the concept of carrying capacity, to have a responsible attitude to stocking and to listen to Agency advice. Habitat improvements were recommended in 21 reports, usually involving the planting of macrophytes to offset the problems of algal blooms.

Finally, compliance with the survey recommendations was considered by examining how clubs responded to the management recommendations in the reports (Figure 5). 32% of clubs did mostly follow the recommendations, 5% partially complied. 11% did not comply and 9% were unable to (e.g. disease problems did not permit the planned cropping programme). In 43% of the cases the response of the clubs was unknown, partly because recommendations made last winter cannot be implemented into later this year and partly because the Agency has not chased the clubs concerned to see how they responded. Having invested a lot of effort in conducting these surveys, it is clear that Area Staff need to pay more attention to developing a follow-up programme to ensure clubs are following the advice provided.

SUMMARY

- Between September 1998 and February 2000, 134 Fisheries Advice Forms were submitted by angling clubs in South Area.

- >25% were submitted because there was interest in proactive fishery management, however >30% were in response to fish kills or poor fishery performance.
- Of the 134 submissions. 44 requests were dealt with through quantitative surveys of stillwaters and canals.
- A high proportion of these surveys (43%) demonstrated the main problem was caused by overstocked conditions. In South Area, considerable time is spent and resources used combating overstocking.
- In survey reports submitted to Clubs, the 3 commonest management recommendations were;
  1) increased monitoring of the performance of the fishery,
  2) cropping the existing stock,
  3) habitat improvements.

- >30% of Clubs complied with the management recommendations, however the response of a larger proportion is currently unknown. Follow-up studies further investigating compliance are therefore recommended.

Figure 1. Requests for Fisheries Advice: Reasons for Submissions (Sep. 98 - Feb. 00)

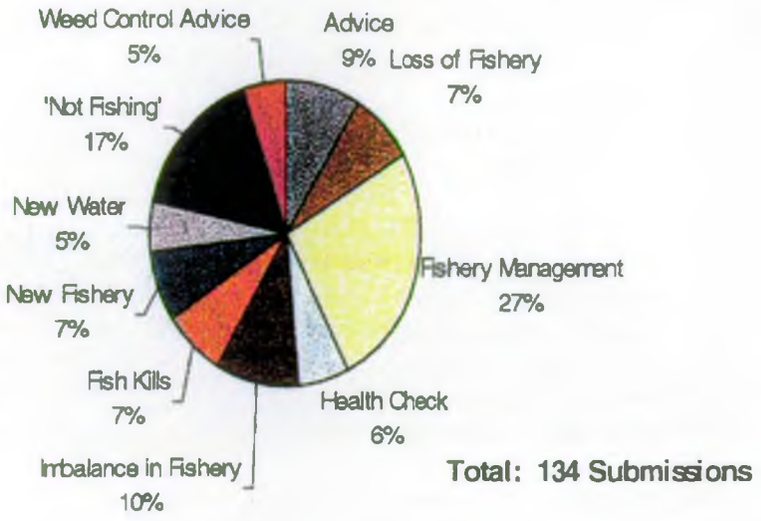


Figure 2. Responses to Fisheries Advice Submissions (Sep. 98 - Feb. 00)

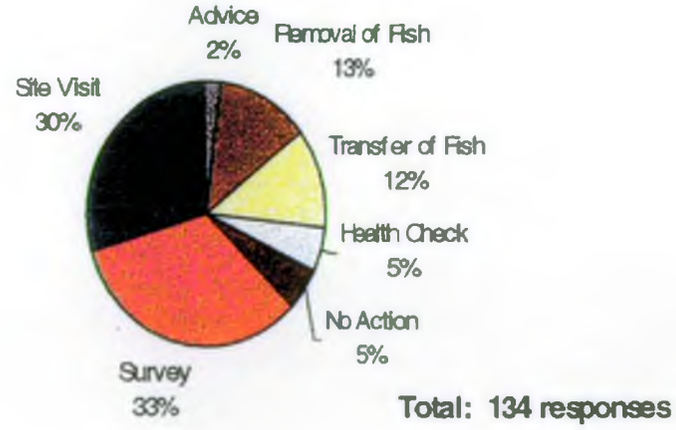


Figure 3. Stillwater Survey Results (Sep. 98 - Feb. 00)

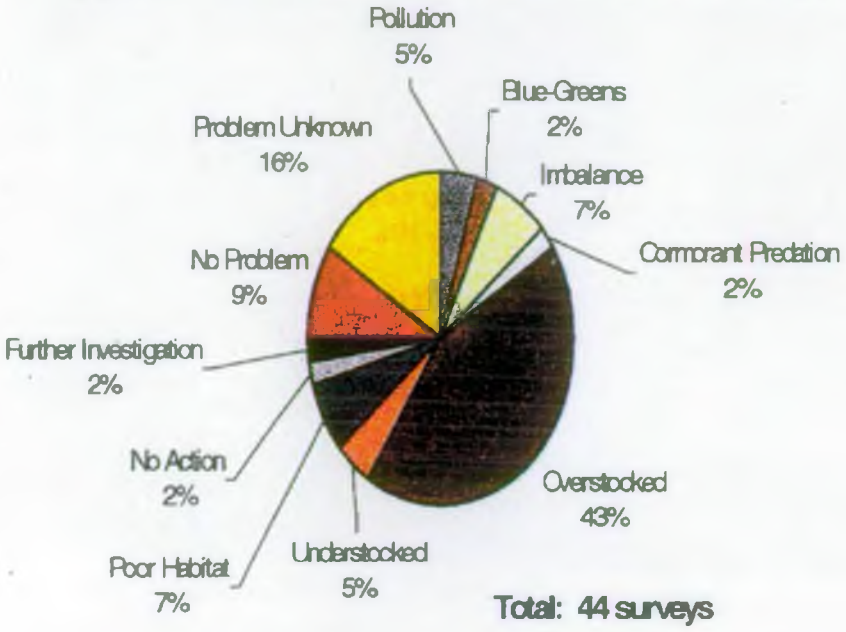


Figure 4. Management Recommendations: Frequency of use (Sep 98 - Feb 00)

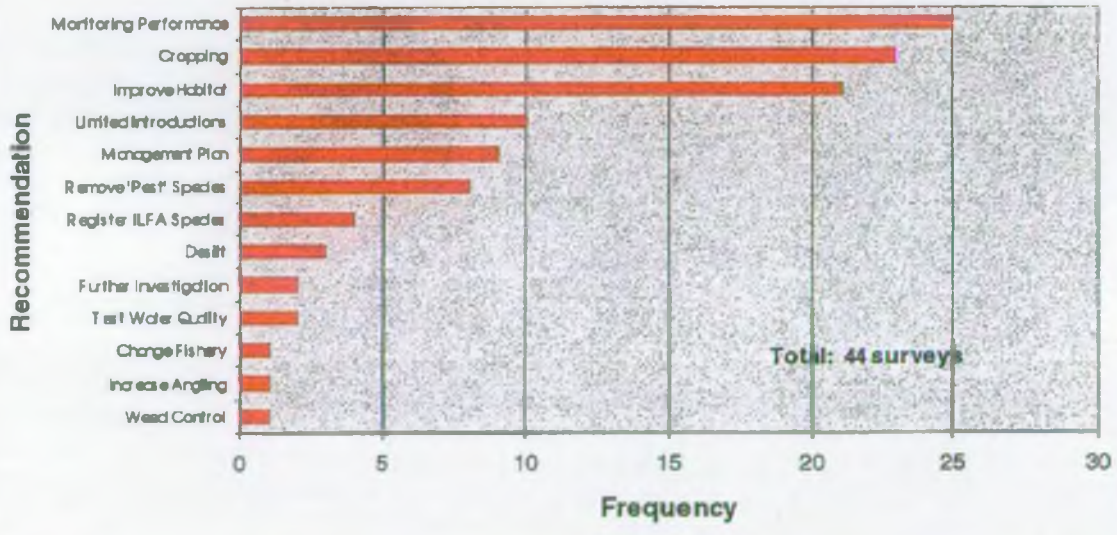
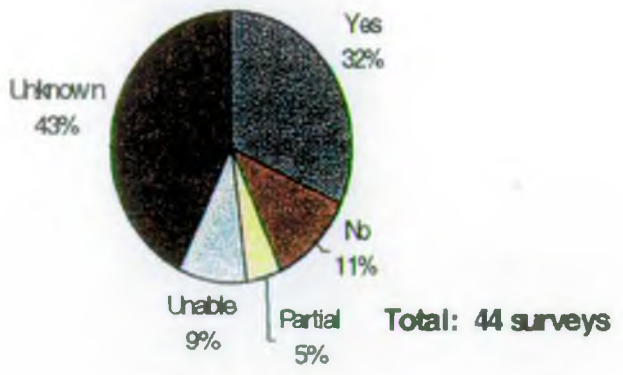


Figure 5. Compliance with Survey Recommendations (Sep. 98 - Feb. 00)



THE EFFECT OF WATER QUALITY ON COARSE FISH MOVEMENT AND PRODUCTION. (With thanks to APEM consultants)

PROGRESS REPORT ABSTRACT

A reduction in riparian industry, storm sewage overflows and improved sewage treatment has produced a gradual improvement in the water quality of the lower River Irwell and upper Manchester Ship Canal (MSC), Manchester, UK. However despite decreasing BOD and ammonia levels, anoxic events still occur during warm, low flow conditions in the MSC. It has been established that fish have recently colonised the area from upstream, and despite organically polluted waters, oxygen levels allow a mixed coarse fish population, dominated by roach and perch, to exist. The invertebrate community is detritus based and dominated by the crustacean Asellus aquaticus, (1998/99 mean population density 1304 (± 761) individuals per litre colonising substrate). A. aquaticus constitutes the basis of both adult perch and roach diets. Roach show high growth rates, and it is proposed that they feed preferentially in the MSC but are excluded during anoxia, escaping upstream. Tracking of fish movements between the river and canal has been attempted with radio telemetry and monthly SONAR surveys. A histological investigation of perch and roach has been undertaken in the MSC and a clean water site (Salford Quays). Fish from the MSC showed widespread hormonal disruption. This was not observed in Salford Quays. The impact of high fish productivity upon population growth may therefore be moderated by estrogenically derived intersex changes within the population since both are associated with high sewage-derived organic loads.

OBJECTIVES

I . To investigate the relationship between organic pollution status, invertebrate productivity and coarse fish community structure and growth.

2. To review the effects of water quality, and in particular oxygen concentrations, on fish movements.

3. To quantify the significance of these movements to the fish population and associated fisheries.

4. To investigate ways to mitigate against the development of water quality barriers.

WATER QUALITY

Monitoring of oxygen/temperature profiles along the waterway has been carried for 24 months between January 1998 and 2000. Mean DO concentrations fell in the R. Irwell between Adelphi Weir and the MSC turning basin. The lowest DO levels occurred in the turning basin during the summer (mean DO saturation 22% during the summer 1999, with anoxia occurring in September). Biochemical Oxygen Demand in the turning basin averaged 5.5 mg 0 1-2 for 1998.

MACRO INVERTEBRATE POPULATION.

Monthly invertebrate samples collected along the survey area since March 1998 are currently being analysed. Approximately 18 species, from 14 families, have been identified. Samples for 1998 and 1999 from the turning basin reveal a population dominated by Asellus aquaticus (Mean monthly population density 1304 (± 776) individuals per litre of colonising media, dry weight biomass 0.94 g per litre). A summer decrease in the number of A. aquaticus in the turning basin was probably due to reduced dissolved oxygen levels, although seasonal variations will also be life cycle driven. A clearer picture of Assellus population dynamics will emerge as upstream samples are analysed.

Quarterly grabs and wall scrapes are being taken from the canal and turning basin. These samples are dominated by oligochaetes (mean density 139,366 per square metre, dry weight biomass approximately 48 g per square metre), whilst A. aquaticus are relatively infrequent (60 per metre square).

FISH COMMUNITY

Determination of fish diversity and biomass are based primarily upon sonar surveys, netting and angling returns. Species caught are roach, perch, chub, dace, bream, rudd, carp, tench, gudgeon, pike and trout .

A one-month survey of angling returns was made prior to the start of the 1998 close season. This produced an average CPUE of 291 g per angling hour (± 495). The large degree of variation between individual catches can be ascribed to expertise and fish availability, and makes this data inappropriate for robust statistical analysis. In addition, Ordsall Angling Club have hosted two angling matches in the River Irwell, in September and October 1999. Catches were generally low and consisted mainly of roach and perch. A single bream and dace were also caught. The winning catches weighed 679 g (1 lb. 8 oz) and 1 166 g (2 lb. 9oz), and respective overall catch per unit efforts for the two matches, were 70 and 49 g per angler hour.

Reduced diversity of fish and an increased dominance by roach was progressively seen downstream of the Adelphi Weir. All fish were in good condition, with an average condition factor of 1.6 (SD + 0.2) and 1.6 (SD + 0.5) for roach and perch respectively. Length frequency histograms for roach and perch show a range of age classes. This suggests successful spawning, survival and recruitment into the adult population. Therefore the roach and perch populations are sustainable. The 4 and 5 year old classes are particularly strong. Spawning sites have been observed in the upper reaches of the survey area, downstream of Adelphi weir. It is in this area that the waterway is most shallow, least depositional and supportive of macrophytes. In addition spawning bundles were placed along the survey area to determine if fish spawned in other reaches. Low flow conditions lead to the disruption of these sites, but not before it was established that perch spawned in the turning basin and cyprinids in the River Irwell opposite Granada Studios.

Roach growth rates are calculated from backdated scale readings and mean body lengths of successive age groups. In both instances a high rate of growth is indicated. Stomach analyses of adult roach caught in the MSC and adult perch in the River Irwell both reveal a diet dominated by A. aquaticus, although roach show greater feeding diversity. The stomach contents of juvenile roach and perch have also been analysed. The young roach showed a wide- degree of variability between individuals, but most commonly feed on tubificid worms, rotifers and A. aquaticus. The perch fed exclusively on A. aquaticus.

Pollution associated with urban areas, and in particular sewage outfalls has been shown to produce hormonal disruption in fish. This condition can present itself in the form of male feminisation and the development of female eggs in the male gonads. Unlike most lowland water bodies, Salford Quays receives no sewage inputs (verifiable from coliform counts). Thus, this water body should support a valuable, fish population whose reproductive development is natural. A study of hormonal disruption in roach and perch has been carried out in the MSC and Salford Quays. The incidence of structural disruption in males from Salford Quays was found to be low in roach and non-existent in perch. 90 % of males in MSC showed the development of female eggs in their gonads. This compares with 0 % for, the Quays. A similar trend was found in the roach population, with disruption occurring in 13 and 71 % of males in Salford Quays and MSC respectively.

Four boom boat electrofishing surveys were undertaken over the last year. Water depth in the canal system exceeds that suitable for this technique, but shallow regions around the edges of the system have been fished with some success. The lowest catches were recorded in March. This corresponds with monthly gill net catches and sonar surveys, which suggest that fish left the turning basin in the spring. This would be consistent with upstream spawning migration into the River Irwell. A small enclosed dock on the River Irwell was also surveyed and produced large catches, associated with submerged macrophyte habitat, on all occasions.

Horizontal SONAR surveys of the Manchester Ship Canal have been carried out on a monthly basis. Fish densities for the MSC turning basin show summer peaks of approximately 30-40 fish per $10m^2$. This figure is thought to be an over estimate and reflects the high degree of bubbling seen in the MSC during this period. Winter densities are in the region of 5-10 fish per 10 m^2. All figures are based upon daytime surveys.

Of particular interest is the movement of fish in relation to water quality and subsequent oxygen content of the water. SONAR data will now be analysed through a filter (based on echo return/target strength) to remove all fish up to 3+ years and equivalent sized bubbles. It is hoped that the removal of bubbles from the analysis will allow a more accurate estimate of fish position throughout the survey area relative to temporal changes in water quality. The removal of the first three year classes from the analysis is possible since the current 5+ year class is particularly strong.

The use of SONAR as a fixed station recorder of net fish movements up and down the canal is also being investigated. This will involve the ability of the SIMRAD system to track target movements within transducer range. Reactive surveys will be undertaken in response to deteriorating water quality in the Turning basin, with an aim to identifying upstream movements.

A radio tagging survey was set up in 1998 to try and record the behaviour of fish to deteriorating water quality. However this work failed to produce any useful results. Released fish were successfully tracked with a handheld receiver until they moved into the turning basin. Only a single perch was recorded at a fixed listening station. This was at the entrance to the turning basin 2 days after release. If the radio-tagged fish remained in the turning basin, the signal would not be detected at any of the fixed stations as they are too far away. However signals were not recorded from a boat, with a portable receiver either. Failure to detect a signal may be due to three factors:

- Loss of tags and/or death of fish.
- Attenuation of signal due to the depth of the turning basin and relatively high conductivity of the water (400-700 µS).
- Drift of tag frequency. Each radio tag transmits at a set frequency and drift can occur upon immersion in the water and over the tags lifetime. Listening stations are pre-programmed to scan for fish signals at the appropriate frequencies, so cannot account for drift.

SURVEY REPORTS 1999

ROUTINE FISHERIES SURVEY OF THE RIVER GOWY, 1999

The Gowy is a lowland river, rising in the sandstone hills to the south east of Chester and flowing north, to discharge into the Mersey estuary via a siphon under the Manchester Ship Canal. Land use within the catchment is predominantly agricultural, however the lower reaches pass through the Stanlow oil refinery. The catchment was previously surveyed in 1996 and this report summarises the results of the fisheries survey conducted during the summer months of 1999.

Fish were sampled at 32 main-river and tributary sites by pulsed-DC electric-fishing. A semi-quantitative methodology was employed: fish were removed from the watercourse during a single run without stop-nets, typically over a 50m stretch. Fish were generally counted and measured, however eel were bulk-weighed and marginal species (stoneloach, bullhead etc.) were head-counted *in situ*.

Excluding the marginal species, a total of 401 fish representing 8 species were captured, with the vast majority caught on the main Gowy (370 fish). Eel (192 fish, 48%), roach (120 fish, 30%) and gudgeon (68 fish, 17%) made up the bulk of the catch in terms of numbers, with eel dominating in terms of biomass (83%). 5 marginal species were also recorded and although abundance of stoneloach, bullhead and 3-spined stickleback was poorly quantified, most specimens were observed or captured on the tributaries. The frequency of occurrence of each species at the 32 sites surveyed was as follows:

Brown trout	1	Eel	21
Dace	2	Stone loach	18
Chub	4	Bullhead	5
Roach	7	Brook lamprey	2
Rudd	1	Flounder	3
Gudgeon	7	3-spined stickleback	24
Perch	5		

Previous fishery surveys of the Gowy have not included estimates of density and biomass and therefore the 1999 survey provides baseline information for future investigations. The main river produced a total mean fish biomass of 7.3 $g.m^{-2}$. Similar routine surveys of Anglian rivers and drains typically produced values between 18 – 30 $g.m^{-2}$, however higher calculated stocking densities would be expected from these highly productive waters and the fully quantitative methods employed. The lower total mean fish biomass of 2.1 $g.m^{-2}$ for the Gowy tributaries is probably an underestimation as the poorly quantified marginal species would have

contributed a significant component. However, inferior habitat, low summer flows, poor water quality and obstacles to fish movement probably have resulted in a lower mean biomass in these watercourses.

Final Level 4 classifications from the Fisheries Classification Scheme are presented in Figure 1. Improvements were recorded at 4 of 9 sites on the main river when compared to the 1996 survey (all class F to E). No reductions in classification at any site were recorded indicating a steady improvement in the quality of the fish community. All tributary sites were classified F in 1999, which included class reductions at 2 of 16 sites (E to F). It is important to note however, that all classifications listed are only *minimum estimates* as a result of the semi-quantitative survey method.

Comparisons with previous surveys indicate the fish community is essentially unchanged in terms of species present and distribution, particularly with respect to coarse and marginal species. Brown trout may be less widely distributed than before as they were only identified at site GO09, probably as a result of stocking activities. In 1992 trout were found at sites GO05 and GO06 and in Ashton Brook in 1996, however it is unclear whether these were native or stocked fish. Large numbers of juvenile fish, including roach, gudgeon, chub, dace, eel and flounder were recorded in the lower Gowy and Milton Brook in 1999. In general these were absent in previous years, however the surveys were not as extensive and may have been conducted at the wrong time to catch juvenile specimens.

The Gowy therefore supports spawning populations of coarse fish and has an important role in the freshwater developmental stages of catadromous species (eel and flounder). The river and the tributaries in particular, also support large populations of marginal species such as stone loach and bullhead. The latter is listed under Annex II of the Habitats Directive, as a fairly widespread distribution within England and Wales is not reflected across Europe.

A number of weirs and man-made structures inhibit upstream movement of fish on the main river, including Folly Gates tidal gate (GO15), a concrete raceway at Hockenhull Platts (GO07), and weirs near Stapleford Mill (GO06), Bridge Trafford (GO10) and Mill Farm (GO04). Clearly, the Folly Gates tidal structure in the Stanlow complex is not a significant barrier to upstream movement of juvenile eel and flounder. However, as no migratory salmonids were recorded within the catchment in any of the surveys, it is likely the large flap valves, the Manchester Ship Canal siphon or other factors are preventing penetration and upstream migration of salmon or sea trout.

In 1995, the National Rivers Authority (North West) commissioned a flood alleviation scheme (FAS) for the lower reaches of the Gowy at Stanlow because of concerns over the integrity of tidal gate structures and the potential for flooding of adjoining industrial areas. Part of the scheme involved the diversion of Thornton Brook and Thornton Main Drain into the River Gowy at the A5117 via a short culvert and flap valves. This occurs at site GO14, which has been demonstrated to be an important nursery area for coarse fish. Environmental impacts during the construction phase (e.g. increased siltation at the confluence) must therefore be minimised and timed to occur outside the spawning season for coarse fish species. Ultimately the FAS should generate opportunities for fish populations, as a matured and accessible diversion channel will provide spawning / feeding habitat and a refuge during high flow events.

River Gowy Catchment

ROUTINE FISHERIES SURVEY OF THE RIVER ETHEROW, 1999

The Etherow catchment flows west from High Peak District and the Moors to join the River Goyt just east of Stockport. A series of five water supply reservoirs are found at the upper end of the River Etherow. They provide some buffering, of the acidic water running off the moorland above, and represent important recreational assets for the area. Water chemistry results for the Etherow have shown that, overall water quality in the catchment is good.

An electric fishing survey of the Etherow catchment was carried out at 22 sites during April and May 1999, as part of the five-year rolling programme of fisheries monitoring. Table 1 summarises the numbers of fish caught during this survey. A single-run electrofishing survey methodology was used; thus all figures are minimum estimates. Survey sites were approximately 50 metres in length.

Table 1.

Species	Total Number of fish	Number of sites
brown trout	335	18
chub	46	8
barbel	9	2
roach	18	3
perch	4	2
gudgeon	63	8
stoneloach	31	3
brook lamprey	5	1
minnow	209	8
3 spined stickleback	8	3

A total of 728 fish representing 10 species were caught during the survey. The catchment was dominated by brown trout, found at 18 of the 22 sites. Coarse fish were present in the main River Etherow with good weights of chub and barbel lower down in the catchment, below Etherow Country Park. None were found at sites on the tributaries. There were two sites where no fish were caught. Both sites were upstream of Woodhead reservoir, on the main River Etherow and Black Clough Brook. These sites are isolated from the rest of the catchment by the reservoirs and by weirs, which are barriers to fish migration.

The 1999 survey showed that numbers of fish in the catchment were similar to 1994 levels apart from a decline in roach numbers in 1999. Scale analysis indicated that the Etherow catchment supports a spawning population of brown trout. Growth of trout was regular but there was comparatively better growth at sites on the main river compared to tributary sites. Chub and roach recruitment had been poor in recent years. Overall the roach and the younger chub displayed poor growth but the older chub showed normal growth.

Results from the Fisheries Classification scheme at Level 4 (all fish) are shown on the attached map. Populations of salmonids and coarse fish are limited except at sites downstream of Etherow Country Park. The populations may be limited to some extent by an impoverished invertebrate fauna and a lack of suitable habitat for the fish.

River Etherow Catchment

APPENDIX

ENVIRONMENT AGENCY - NORTH WEST REGION
REGIONAL FISHERIES ECOLOGY, RECREATION ADVISORY COMMITTEE

(as at May 2000)

MEMBER	MAIN INTEREST	APPOINTMENT UNTIL
JR Carr	Chairman	31.03.2001
FISHERIES		
A. Bielderman	Coarse	31.03.2002
B J Briggs MBE	Coarse	31.03.2001
F Lythgoe	Coarse	31.03.2003
C Bowman	Coarse	31.03.2003
FA French	Coarse & Trout	31.03.2003
Dr K Ohara	Coarse	31.03.2002
J M Castle	Game	31.03.2001
K B Spencer	Game	31.03.2001
M Helliwell	Game	31.03.2003
R Adams	Game	31.03.2003
S Dowson	Netsmen	31.03.2003
ACADEMIC/PROFESSIONAL		
Dr I Winfield	Institute of Freshwater Ecology	31.03.2002
CONSERVATION		
E D Le Cren	The Wildlife Trust	31.03.2001
RECREATION		
J C Selby	Mersey Basin Trust / Royal Yachting Association	31.03.2002
CH Cleaver	British Canoe Union	31.03.2003
NAVIGATION		
MP Payne	Inland Waterways Association	31.03.2003
RIPARIAN INTEREST		
H. Tonge	Carlisle.	31.03.2002
A Rothwell	Lancashire	31.03.2003
CROSS REPRESENTATION		
B Alexander	REPAC Chairman	31.12.2001
W M Wannop OBE	RFDC Chairman	30.06.2000

CONSULTATIVE ASSOCIATION CONTACTS

The Environment Agency, North West Region work closely with the many angling clubs in its area. As mentioned previously, there is a statutory requirement on the Agency to set up and maintain a Regional Fisheries Advisory Committee.

The fisheries Associations aim to protect the interests of all anglers, angling clubs and riparian owners on their river systems and work closely advising the Agency on matters of concern to them. They are asked to nominate members to serve on RFERAC and attend liaison meetings with the Agency.
Local societies and clubs do excellent work on behalf of their members but a united approach can sometimes have greater effect.

Further information on the Consultative Associations can be obtained from the secretaries below:

Mr C Goodlad
Mersey & Weaver Anglers' Consultative Association
161 Scobell Street
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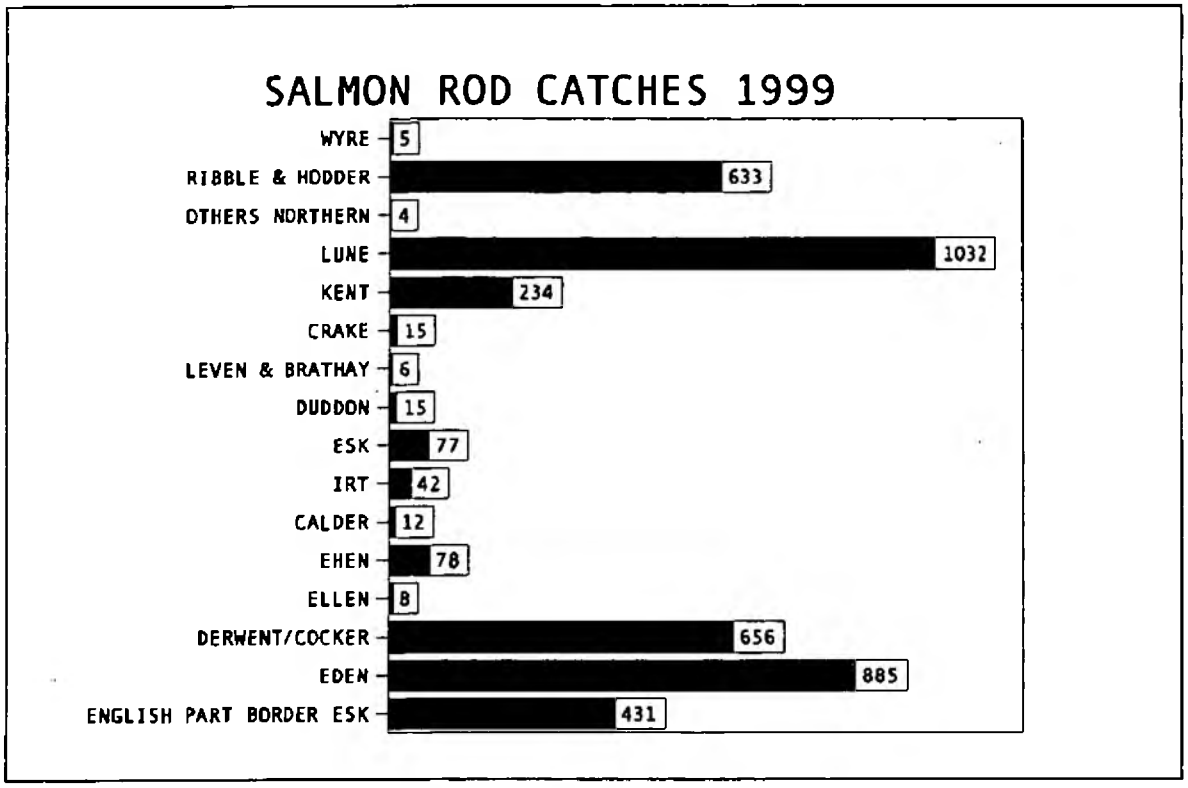
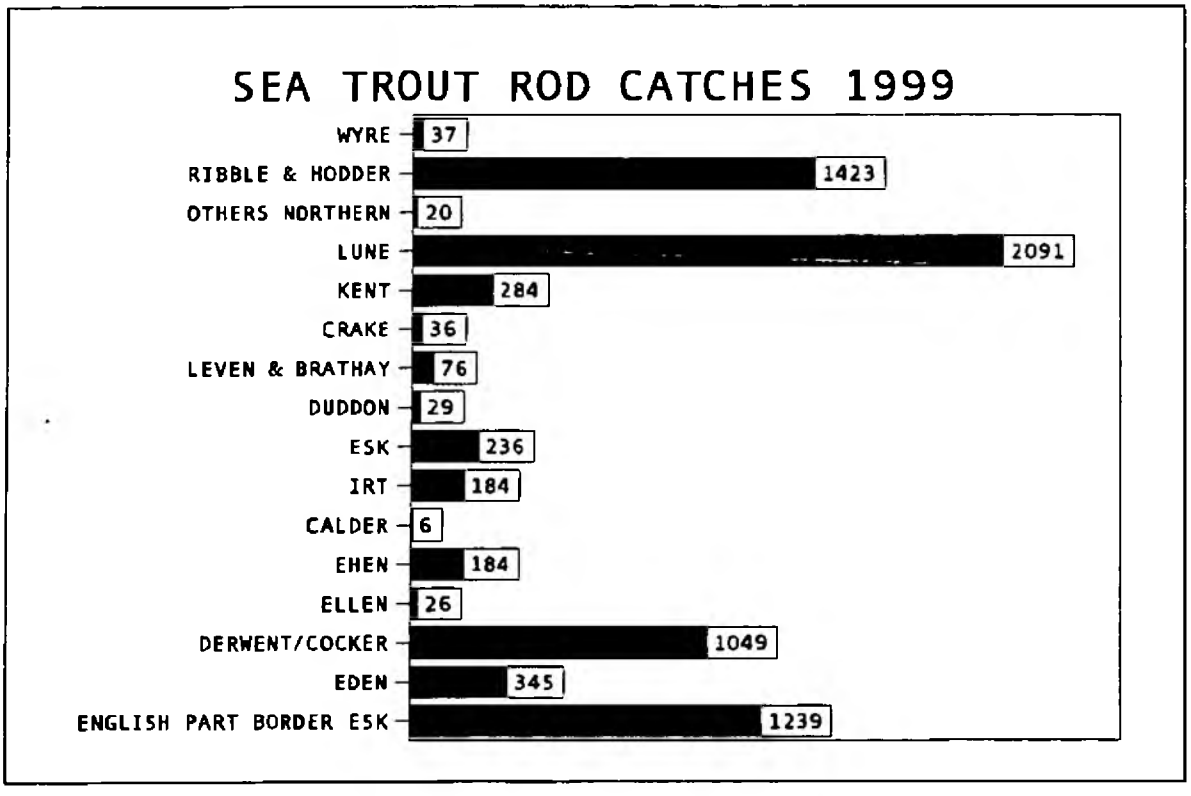
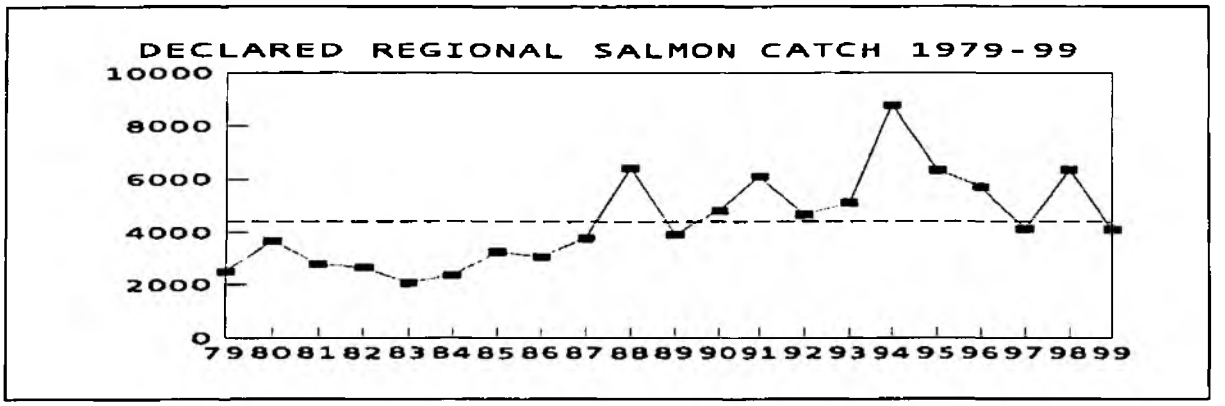
DECLARED SALMON AND SEA TROUT CATCHES





DECLARED ROD AND LINE CATCHES (FROM LICENCE RETURNS) 1979-99

Regional Trends 1979-1999



Catch 1999 season

In 1999 new national byelaws were introduced to protect early-run salmon and this would have affected both fishing effort and the pattern of catches. The new byelaws introduced meant that no net fishing for salmon and migratory trout could take place before June 1st and that all rod caught salmon caught prior to June 16th must be returned. From a national perspective the byelaw has resulted in a major reduction in rod effort on early running MSW salmon, of approximately 40% in the number of days fished prior to June 16th.

The total number of salmon declared caught was 4071 by the rods and 2387 by the nets, for sea trout the catches were 7204 and 1821 fish respectively. Of the total number of salmon caught by the rods 43.3% were released while for sea trout the proportion was 53.8%. The increase in the number of salmon and migratory trout caught by the nets (1778 salmon, 1154 sea trout in 1998) can in part be the result of increasing effort as the number of tides fished in 1999 increased by 16.6% from 5503 tides in 1998 to 6417 tides in 1999.

Compared with the 1998 season a greater proportion of the rod catch was taken in the final two months of the season 80.4% (1999) compared with 63.5% (1998) and a corresponding lower catch during the main grilse months of July and August (Figure 1). This lower catch in July and August probably reflects the dry weather during this period and thus "poorer" angling conditions.
The runs of sea trout appear to be on the increase and though they might not be at the levels of the 1980s there is

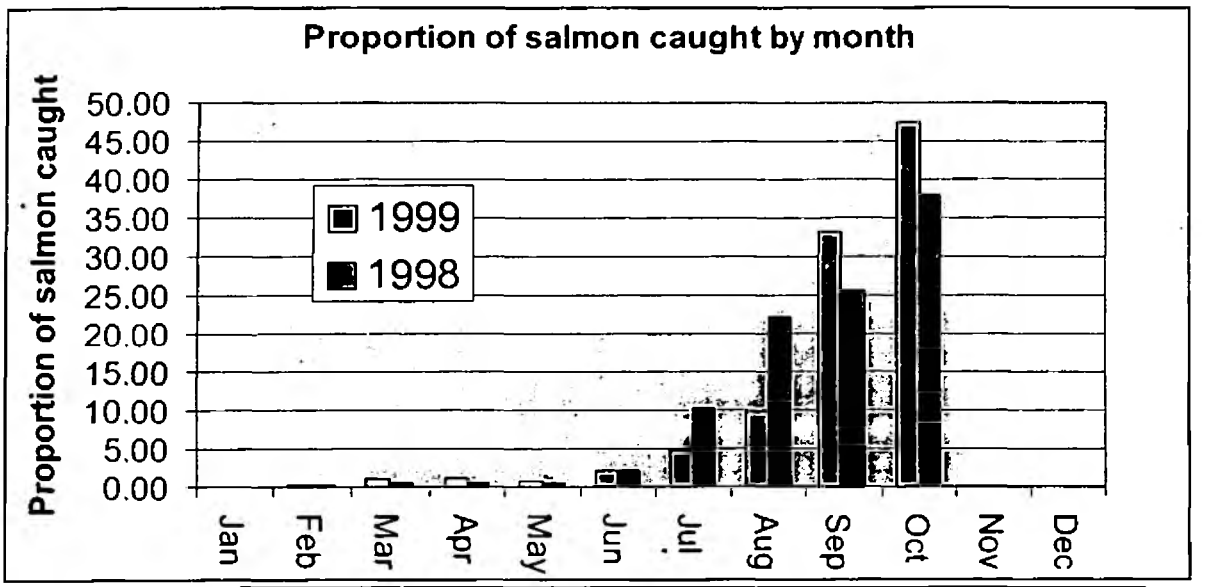


Figure 1. A comparison of the proportion of salmon caught by anglers in 1998 and 1999, by month.

reason for optimism. There were some excellent catches made during 1999 and at times there were good shoals of fish seen in the river.

In 1999 the number of salmon caught per 100 days fishing was 8 which was an increase of 2% over the five year mean (1994-1998) [Figure 2].

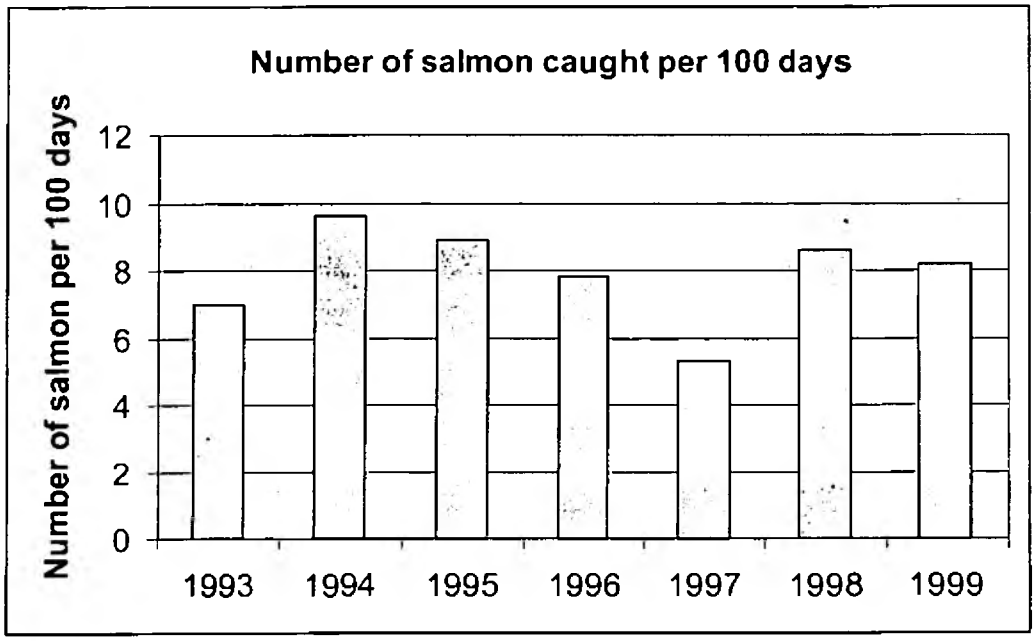
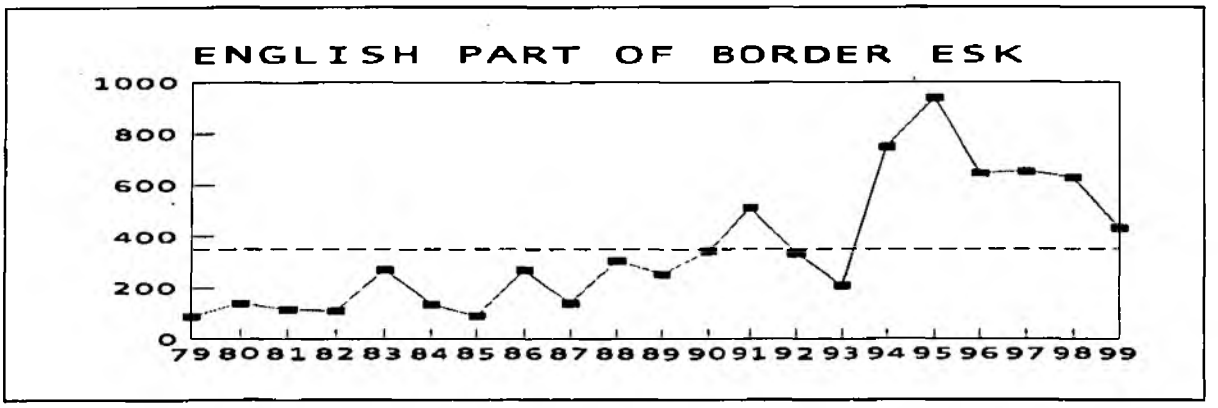
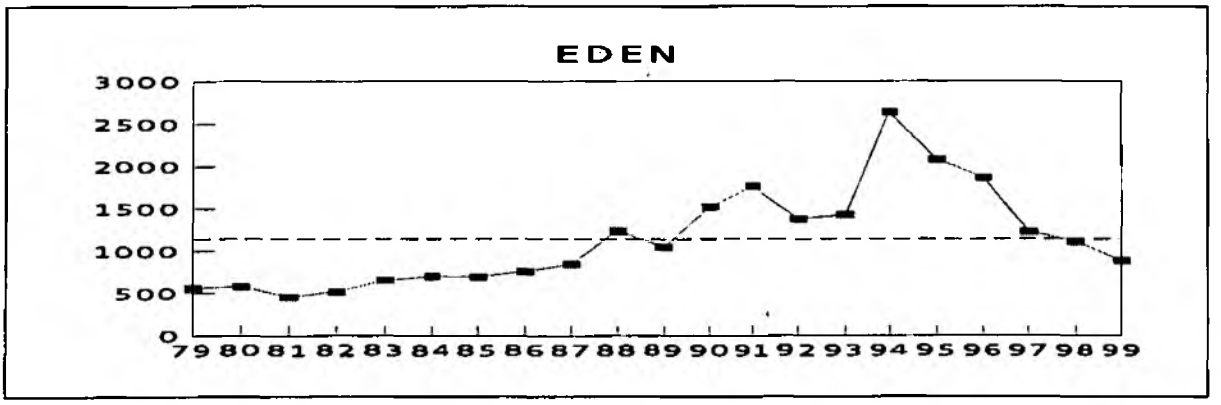


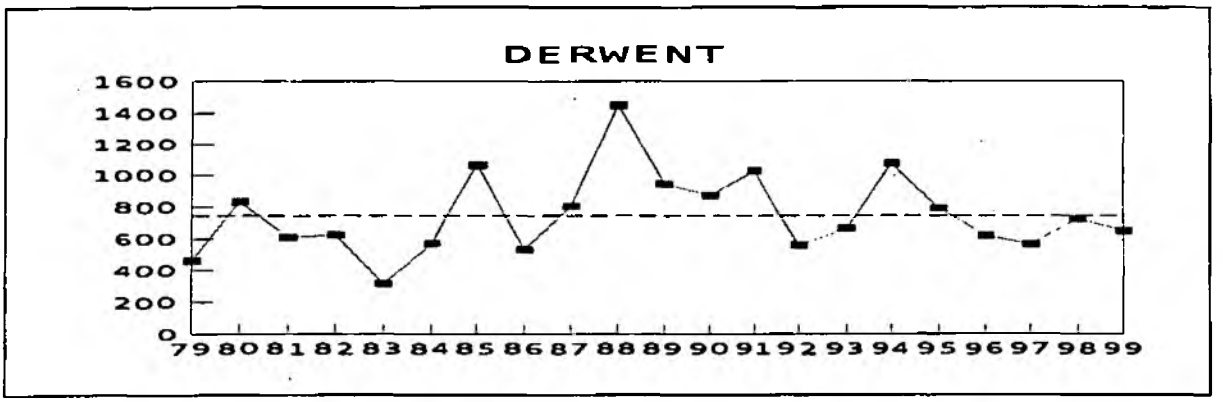
Figure 2. Number of salmon caught per 100 days fishing

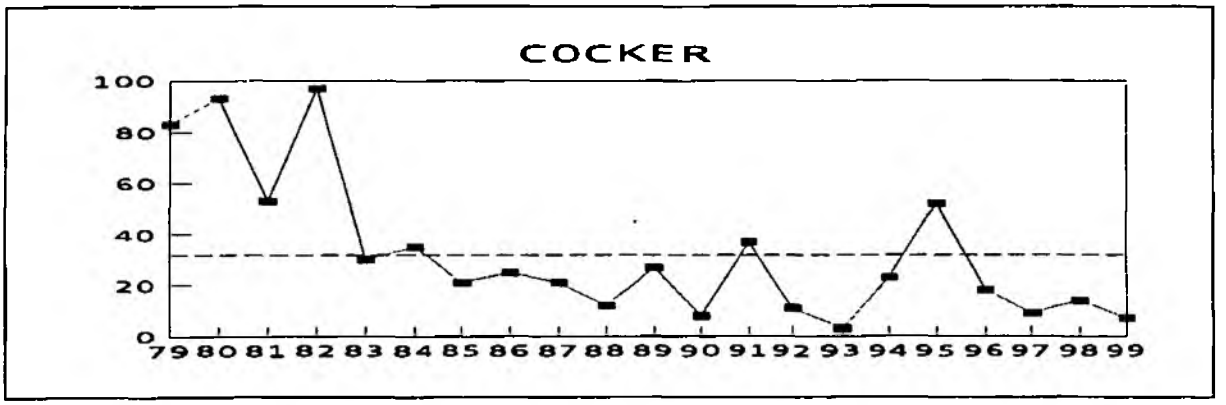
The catch data reported here represents the declared catch only and will thus not be an accurate record of the total number of fish landed. It is important to remember that over the time period there has been a general improvement in the reporting rate. It is estimated that presently 90% of the fish caught are reported compared to less than 50% a decade ago. Complications also exist for sea trout in the interpretation of the time series as in the past many of the smaller sea trout were returned and therefore not recorded in the catch. It is therefore essential great caution in the interpretation of the time series.

DECLARED SALMON ROD CATCHES 1979-99 AND LONG TERM AVERAGE

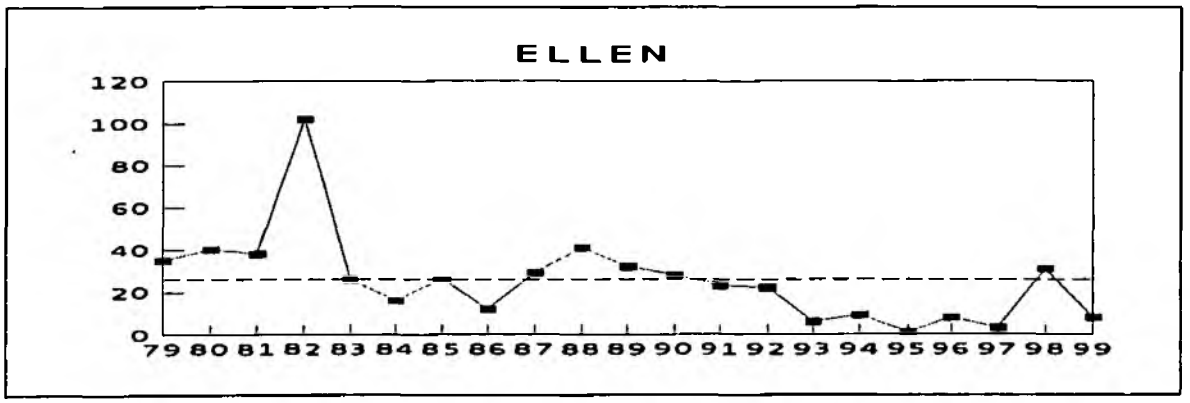


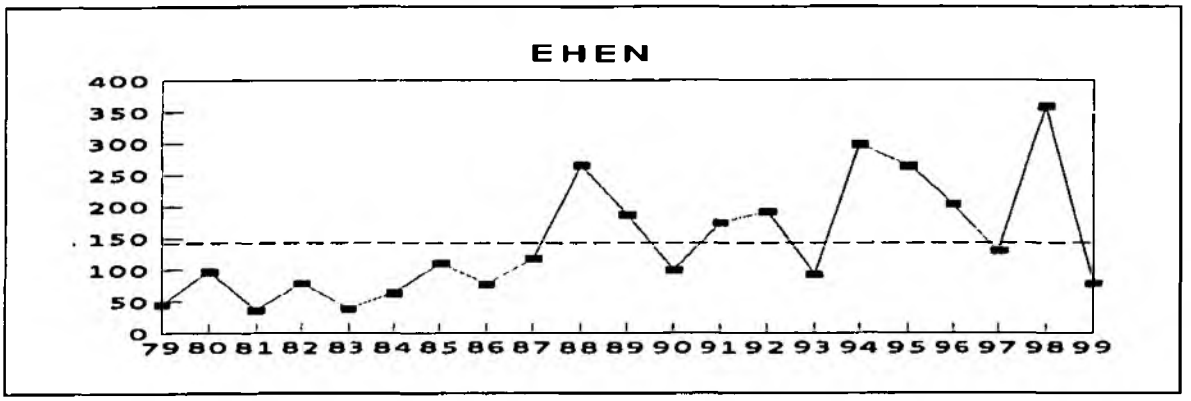


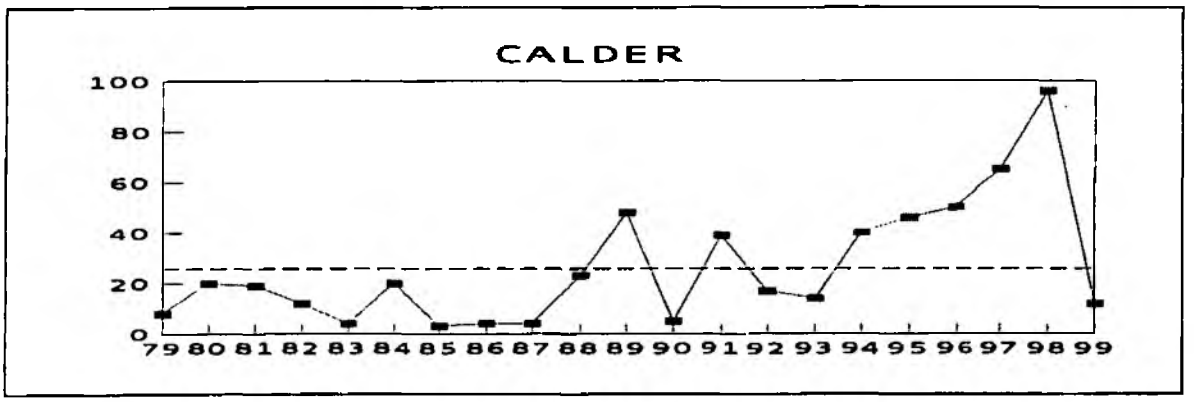


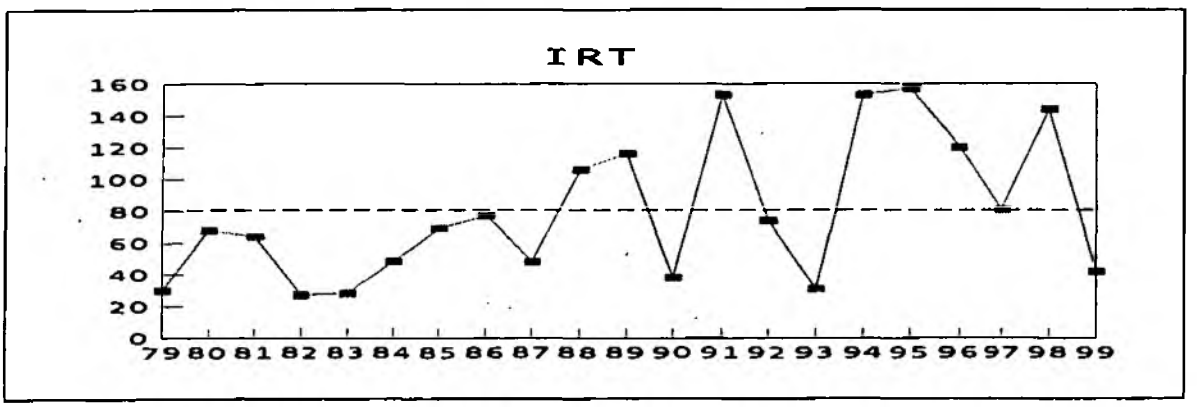


DECLARED SALMON ROD CATCHES 1979-99 AND LONG TERM AVERAGE

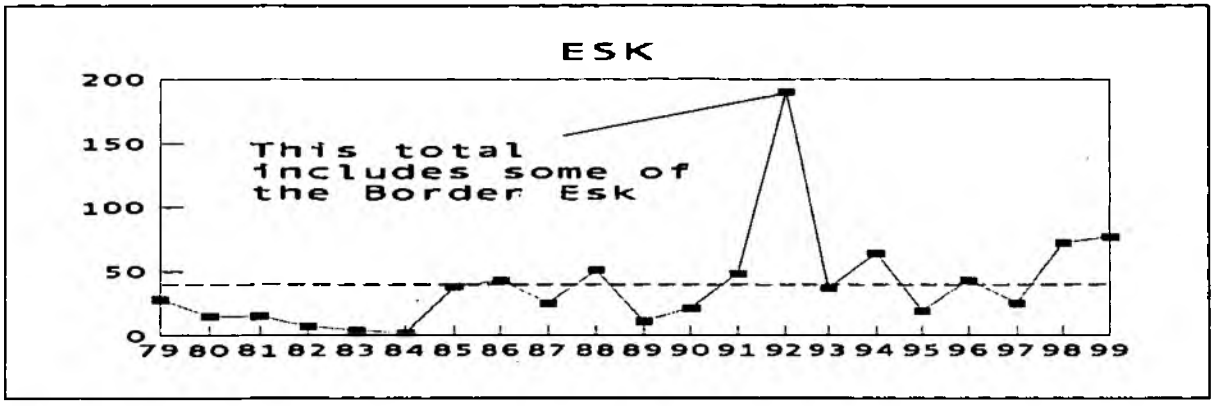


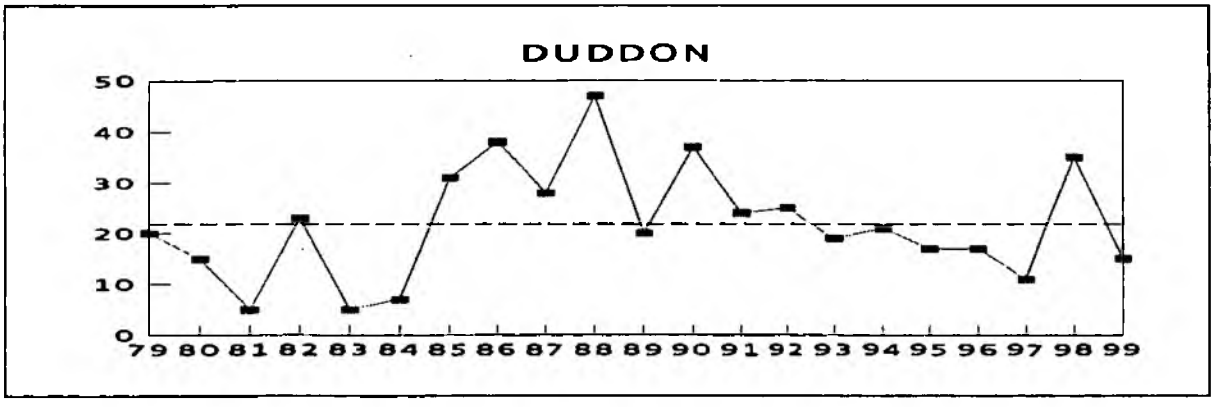


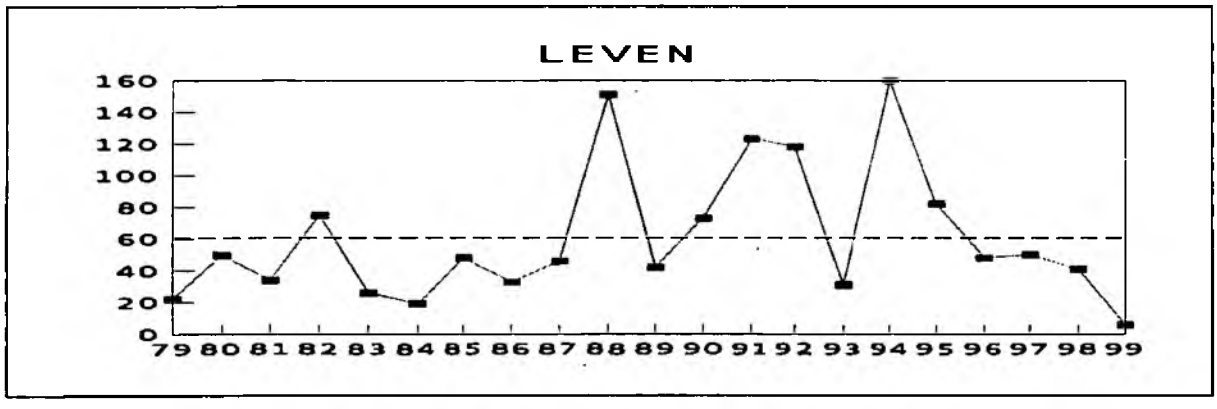


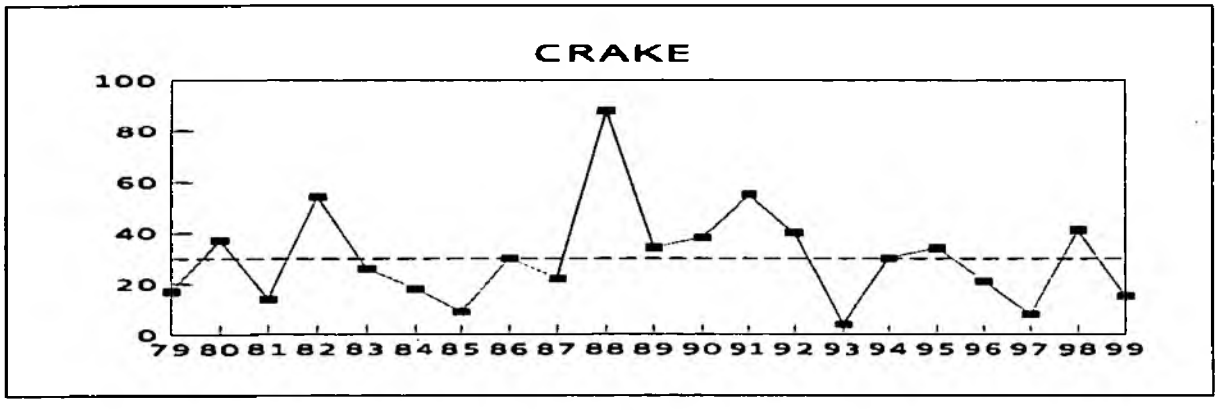


DECLARED SALMON ROD CATCHES 1979-99 AND LONG TERM AVERAGE

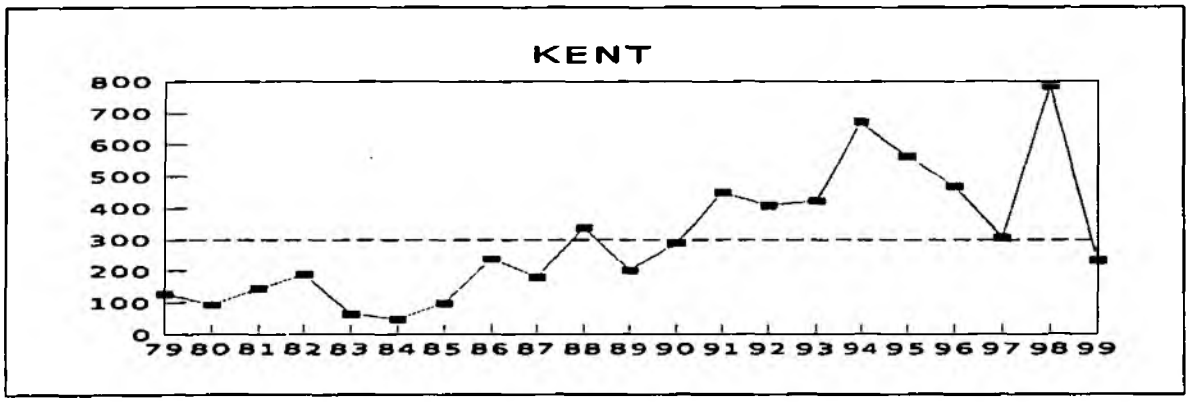


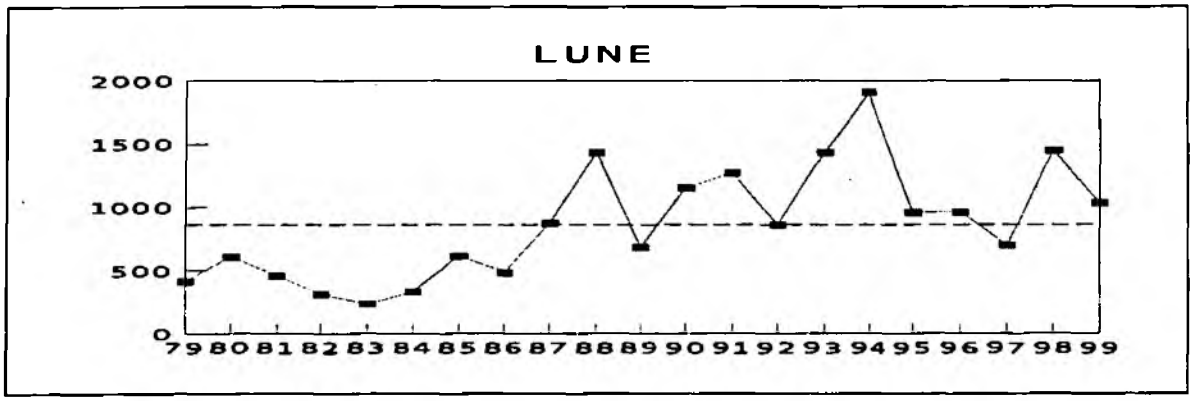


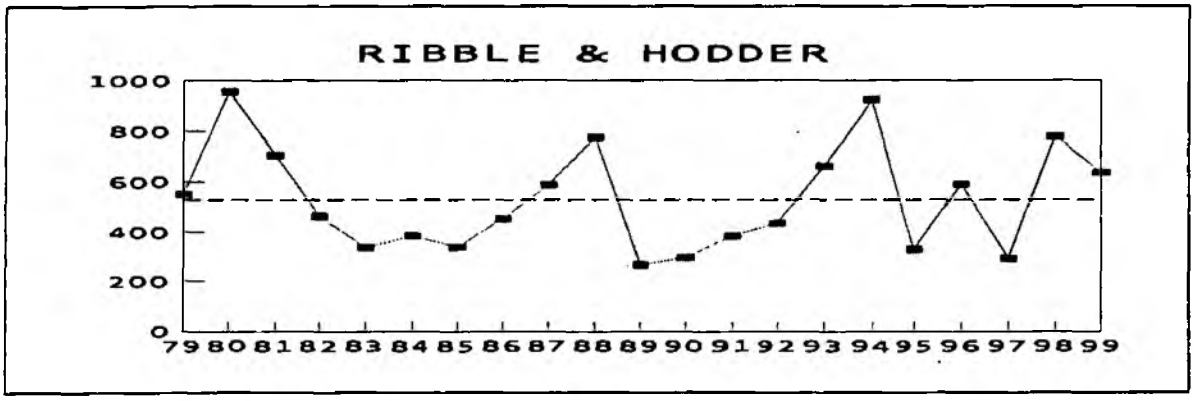


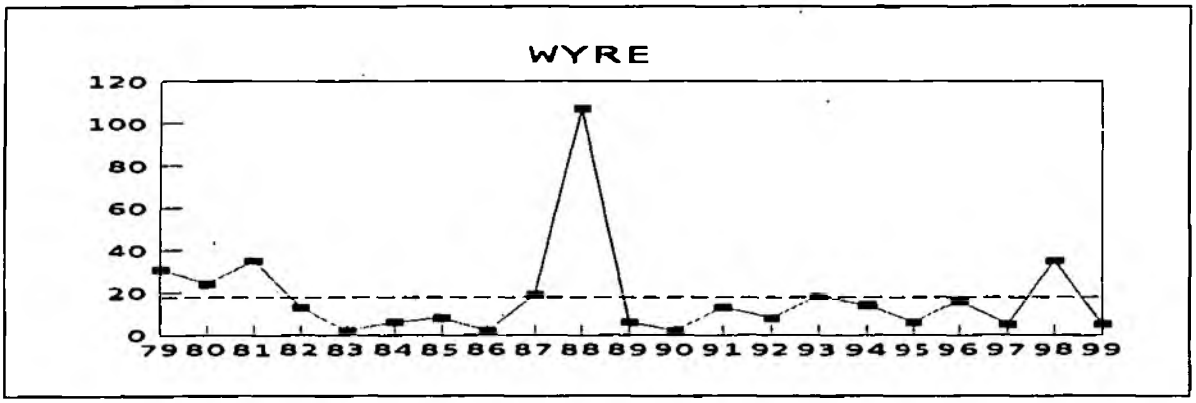


DECLARED SALMON ROD CATCHES 1979-99 AND LONG TERM AVERAGE

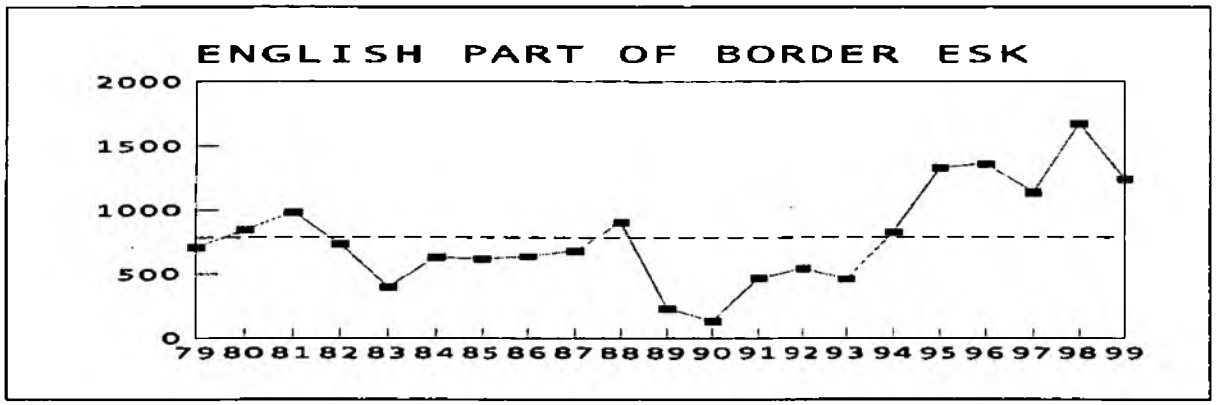


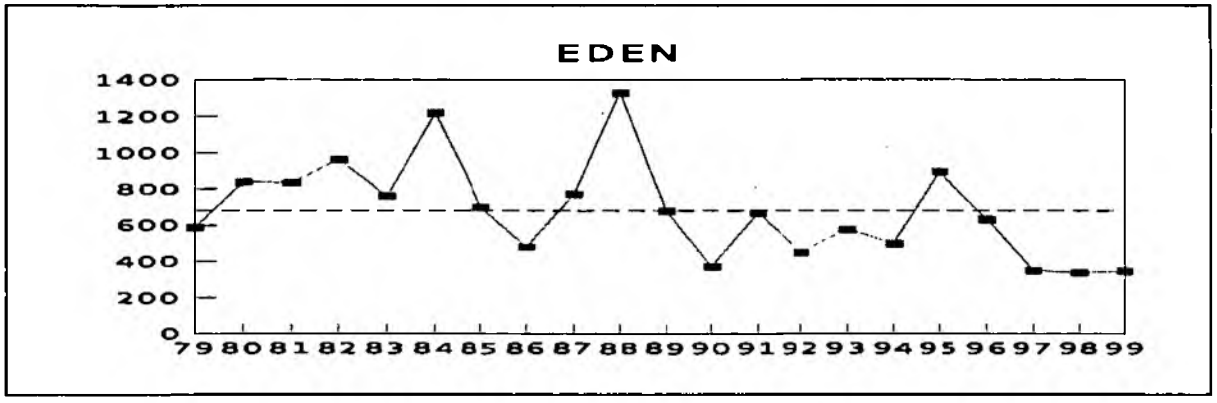


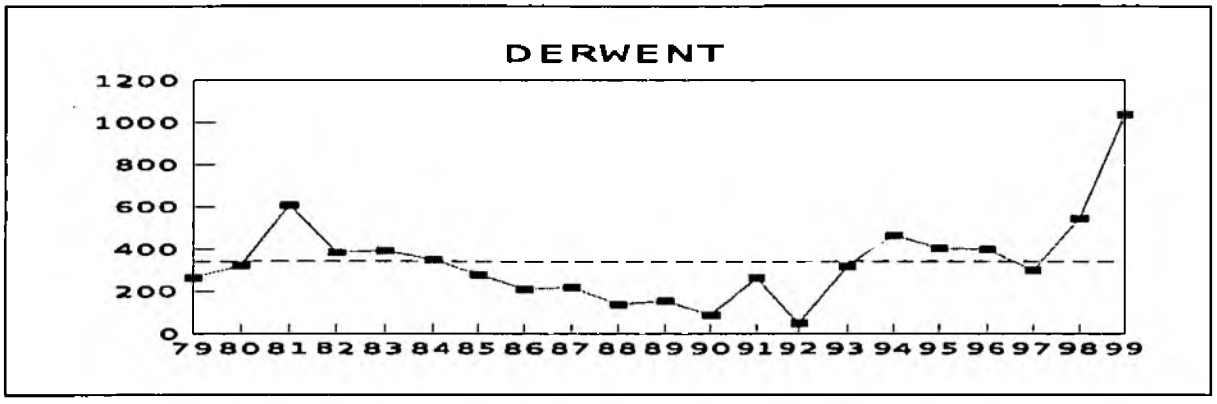


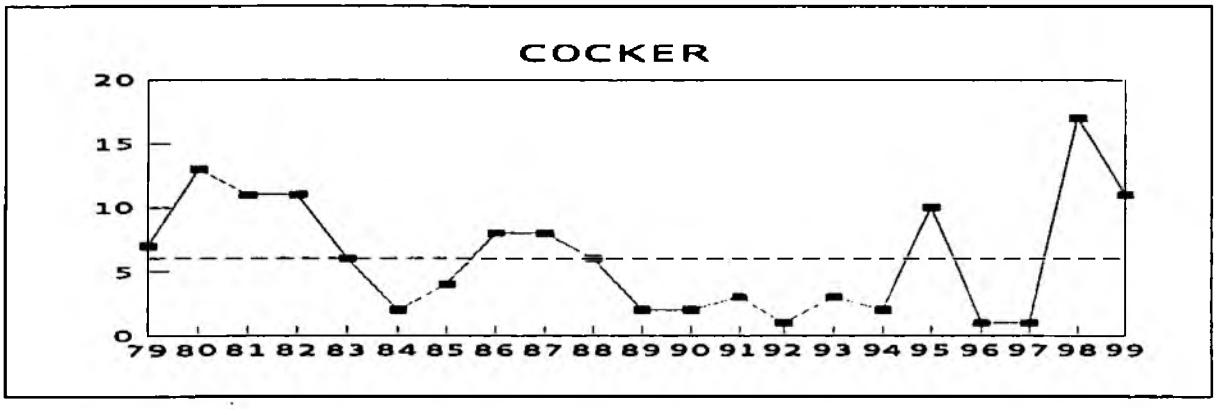


DECLARED SEA TROUT ROD CATCHES 1979-99 AND LONG TERM AVERAGE

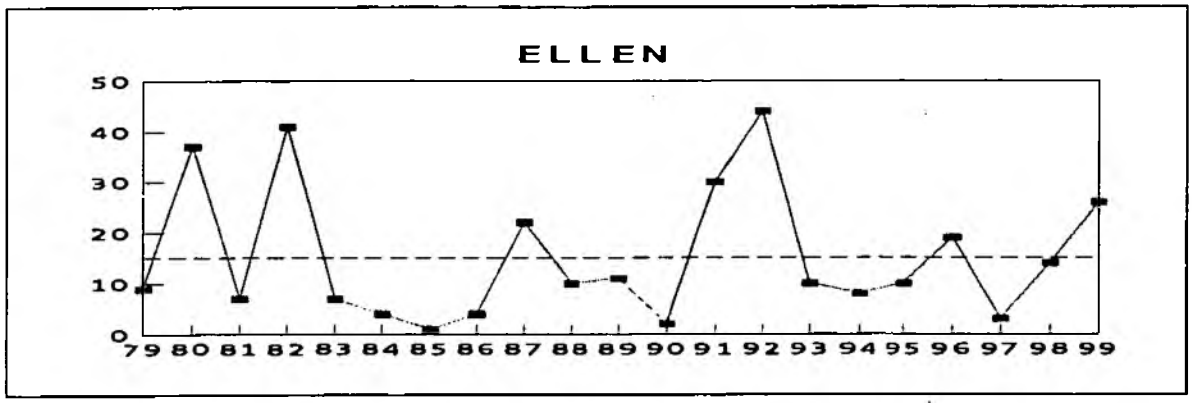


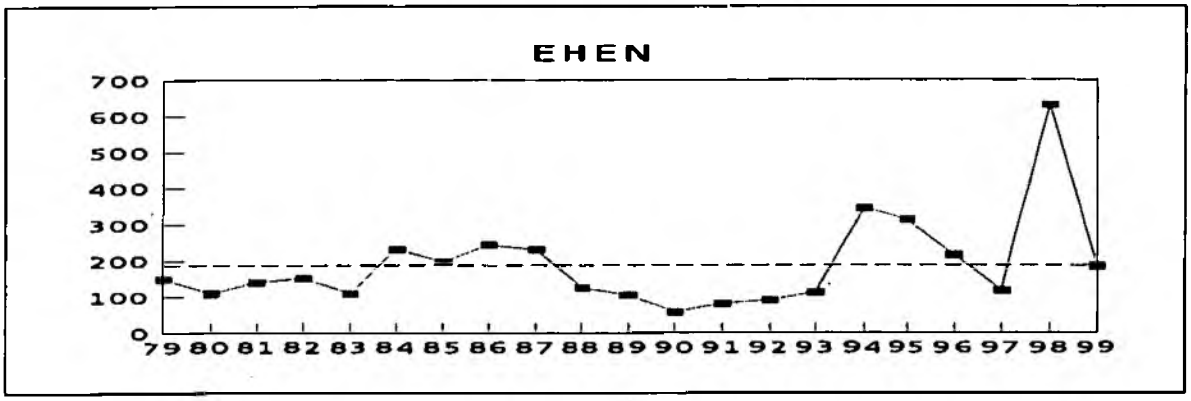


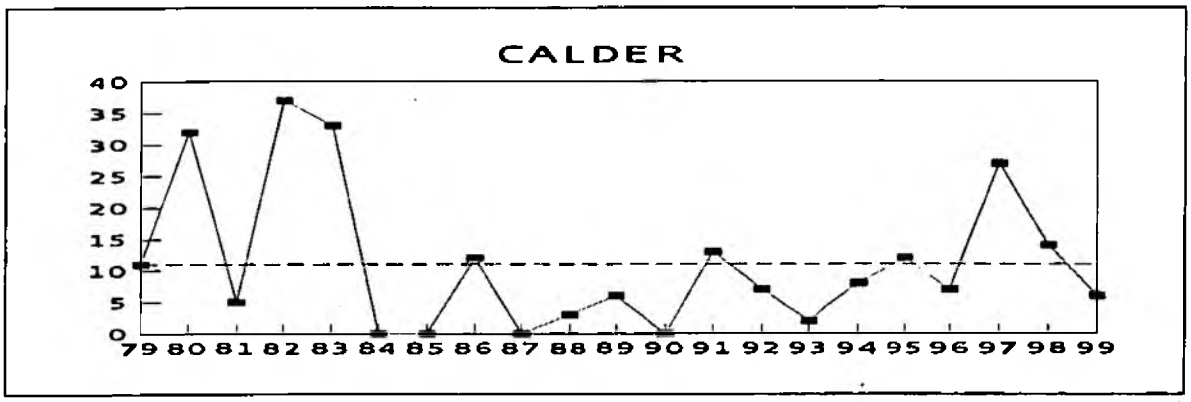


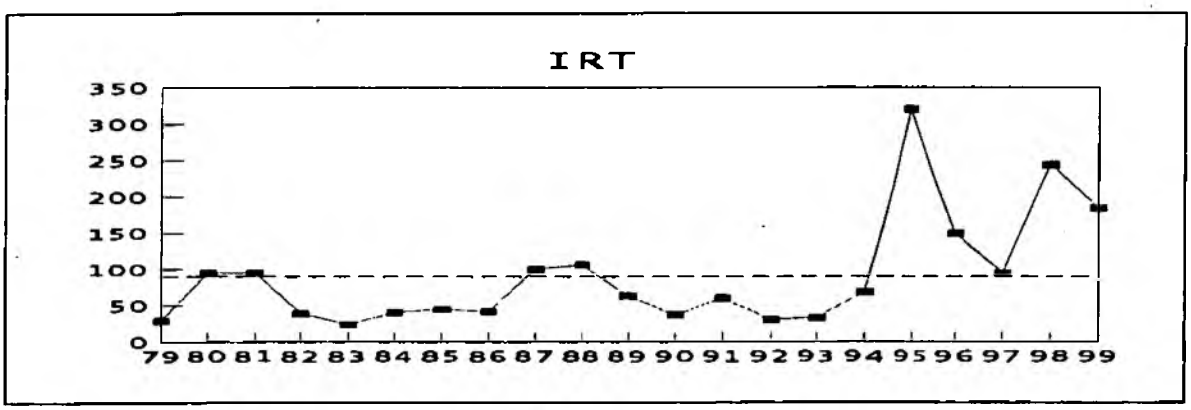


DECLARED SEA TROUT ROD CATCHES 1979-99 AND LONG TERM AVERAGE

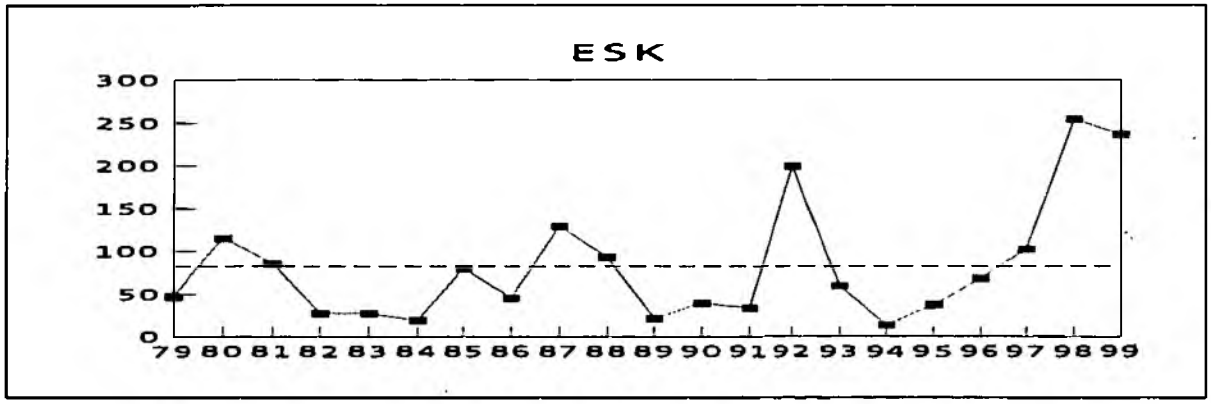


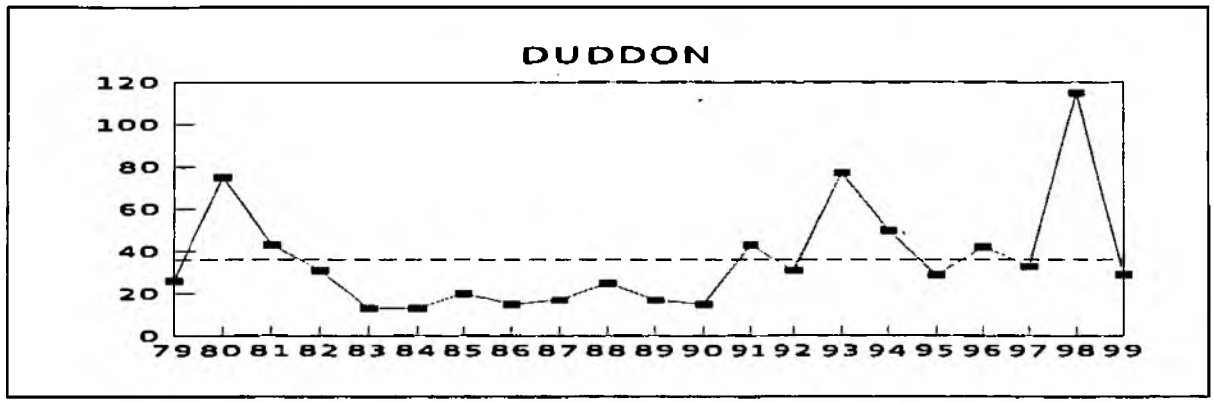


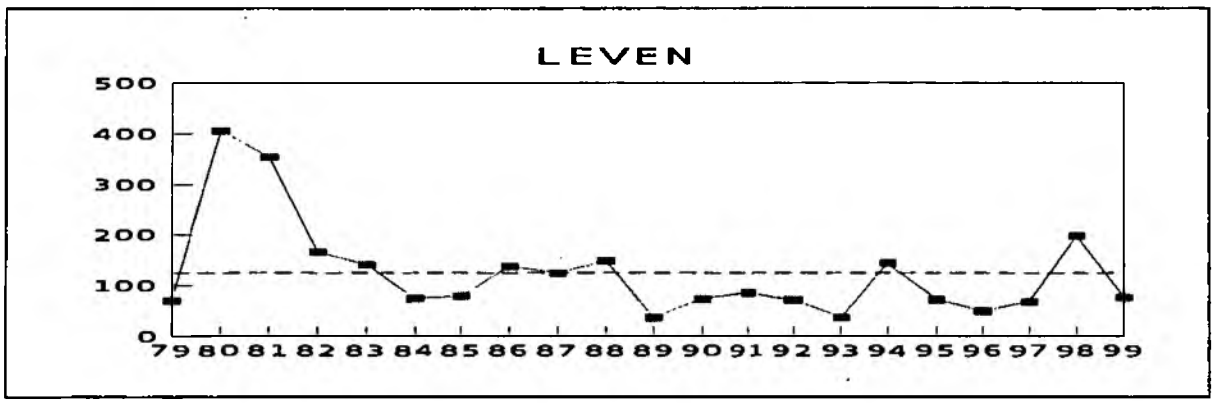


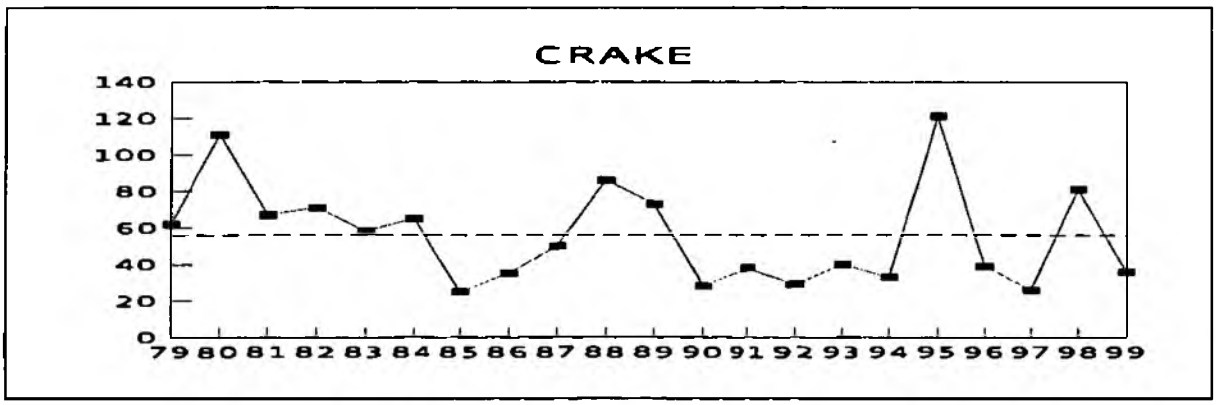


DECLARED SEA TROUT ROD CATCHES 1979-99 AND LONG TERM AVERAGE

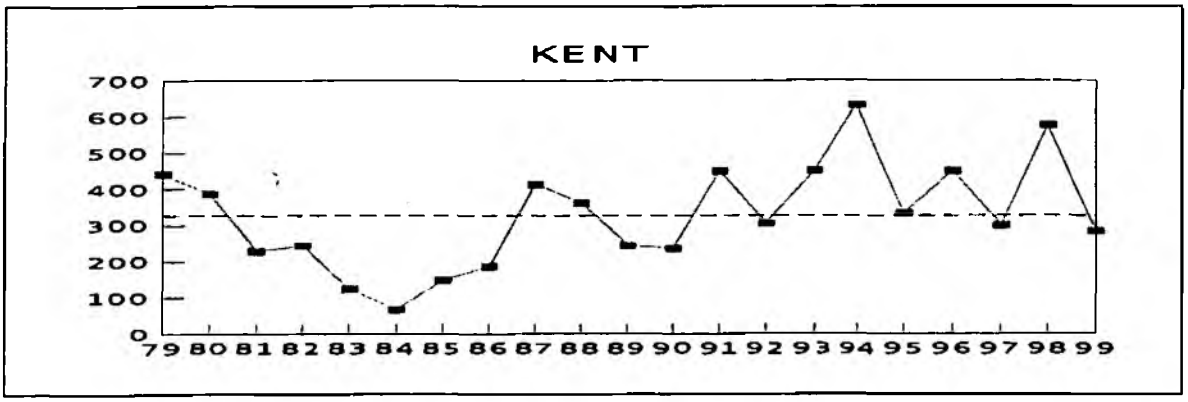


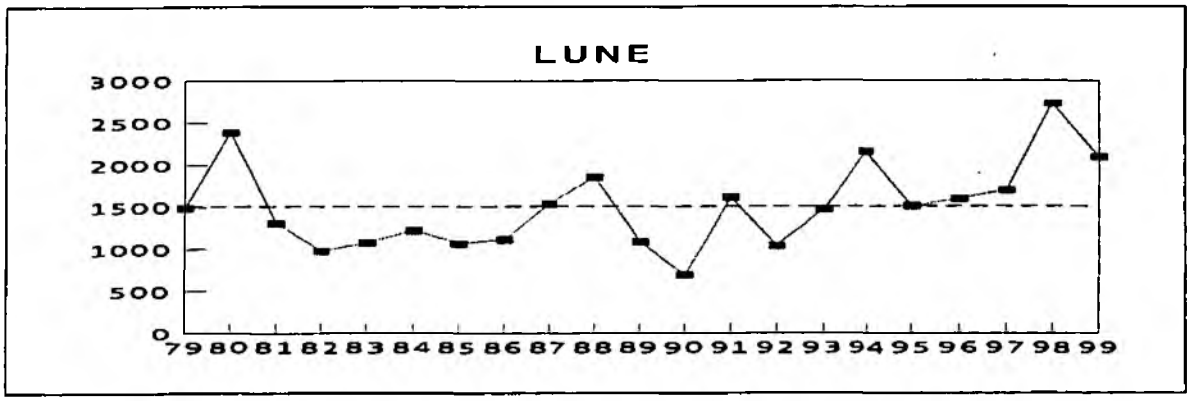


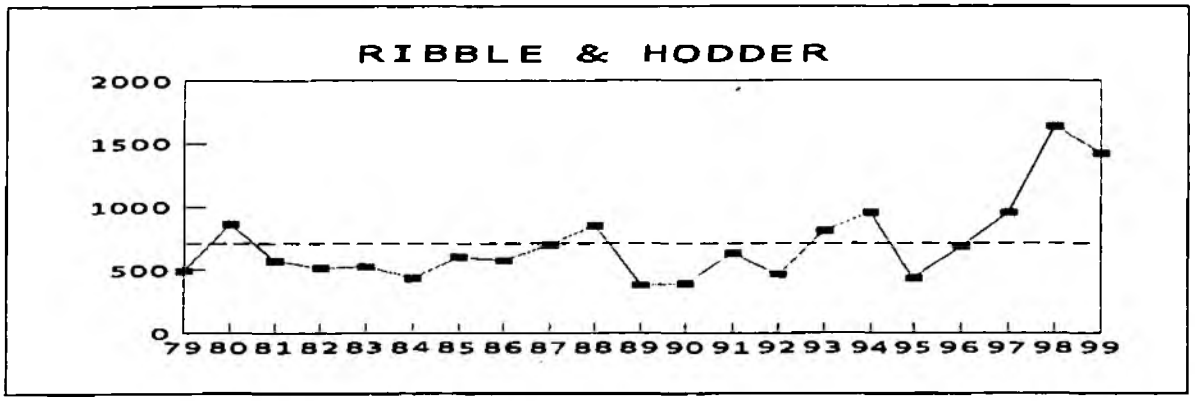


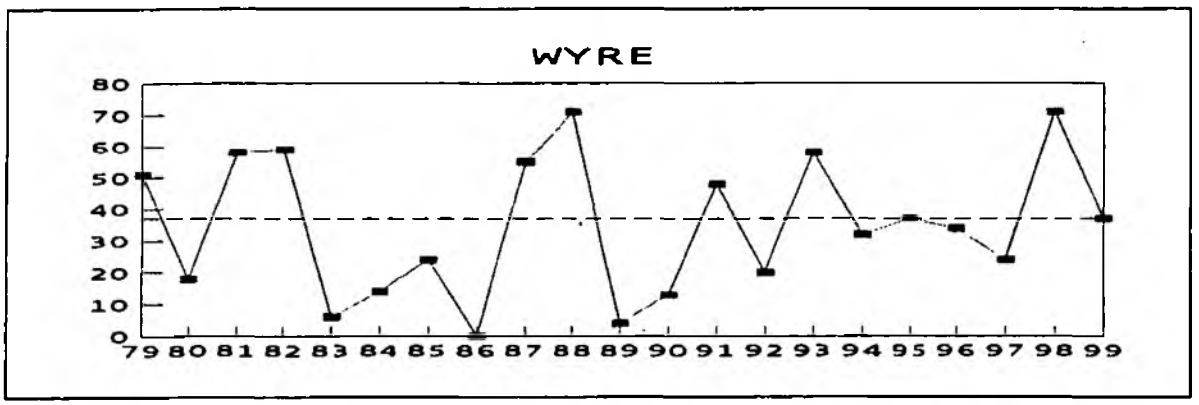


DECLARED SEA TROUT ROD CATCHES 1979-99 AND LONG TERM AVERAGE

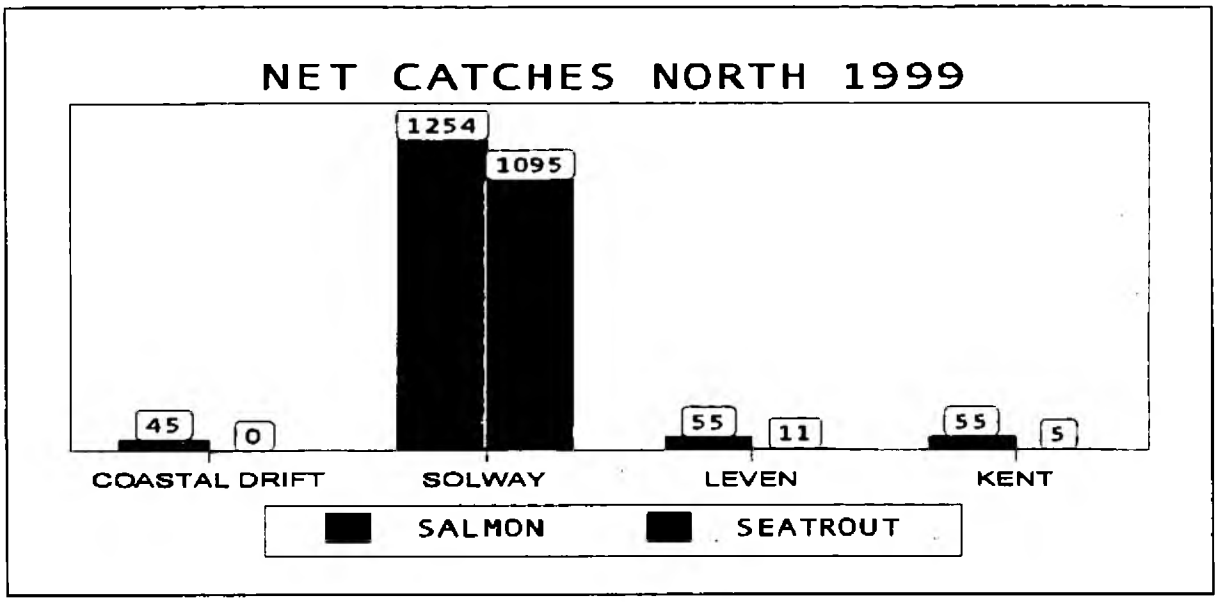


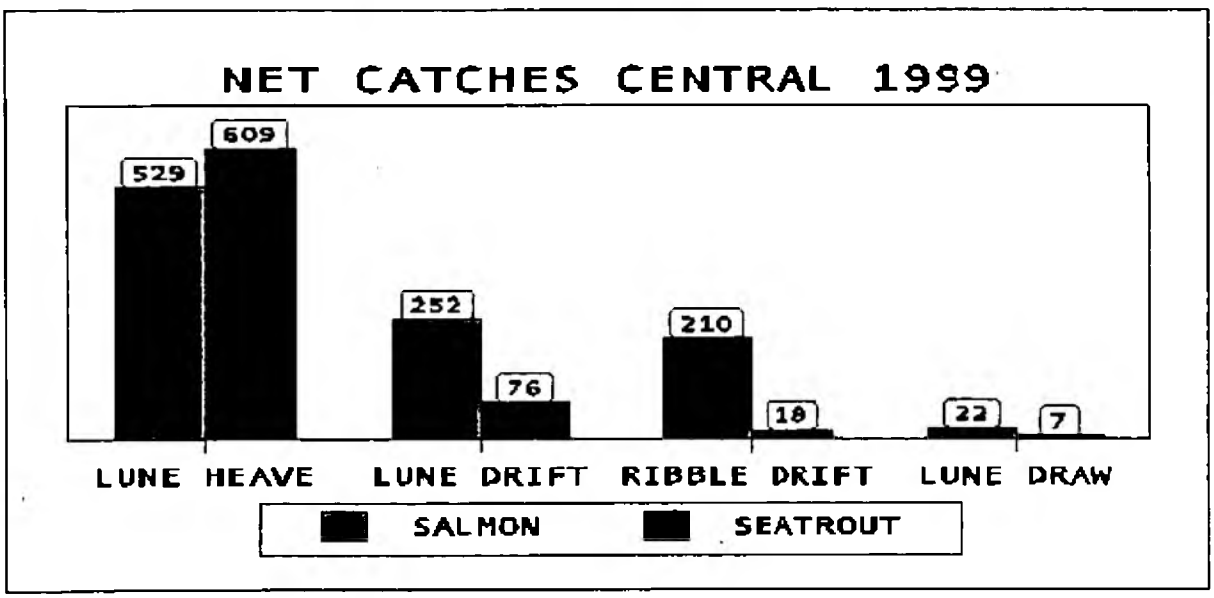




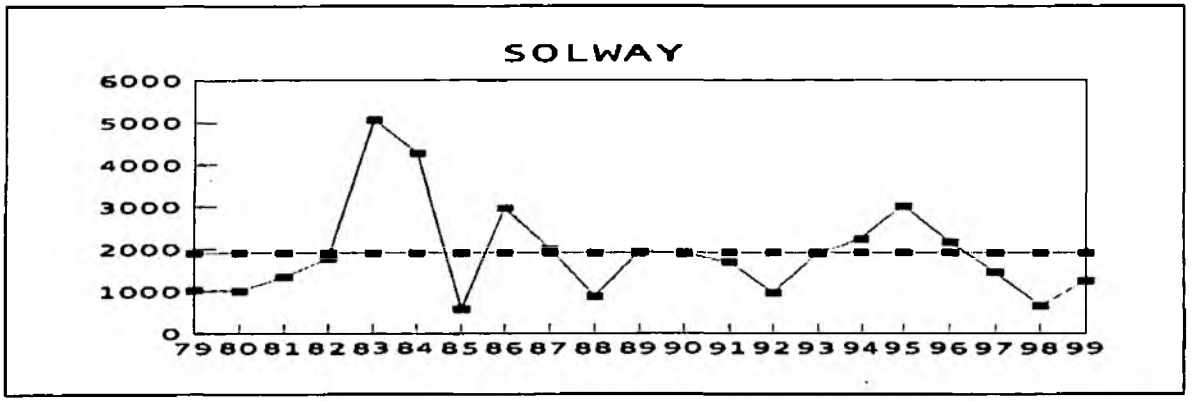


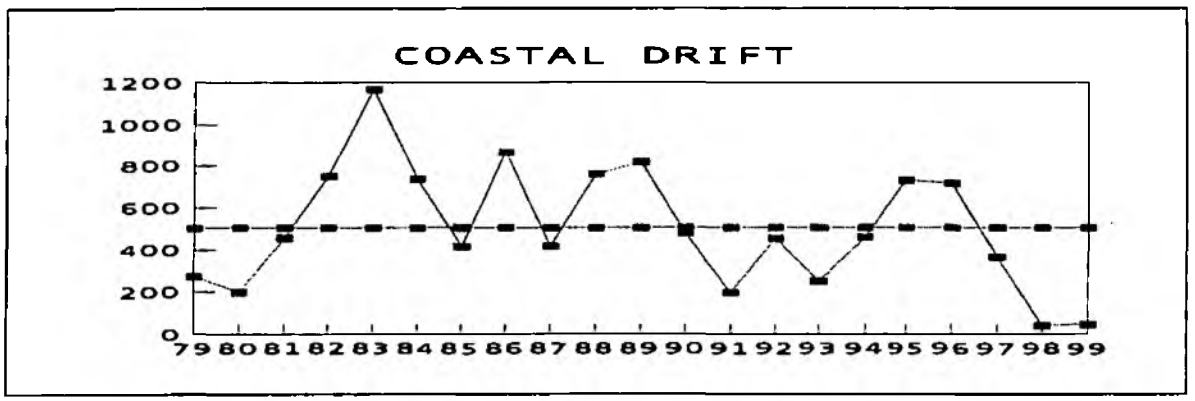
SALMON AND SEA TROUT NET CATCHES 1979-99
NET FISHERIES 1999

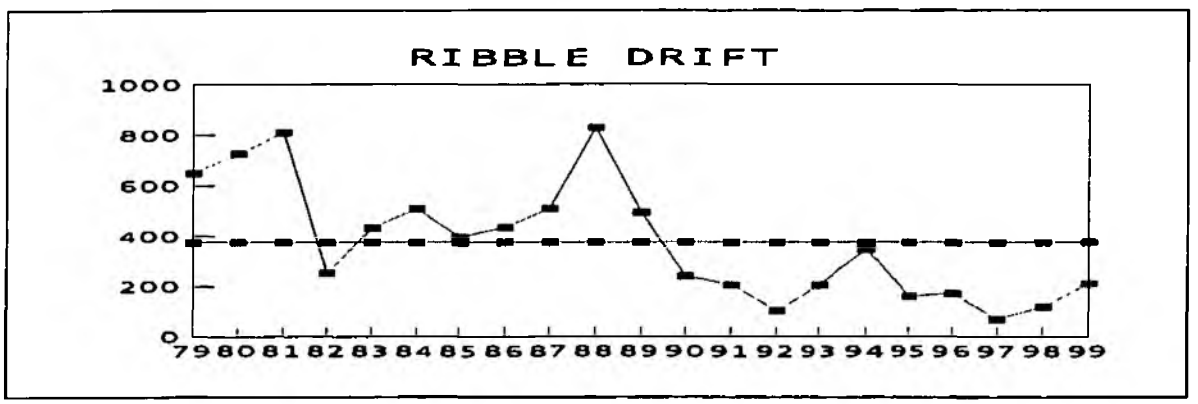


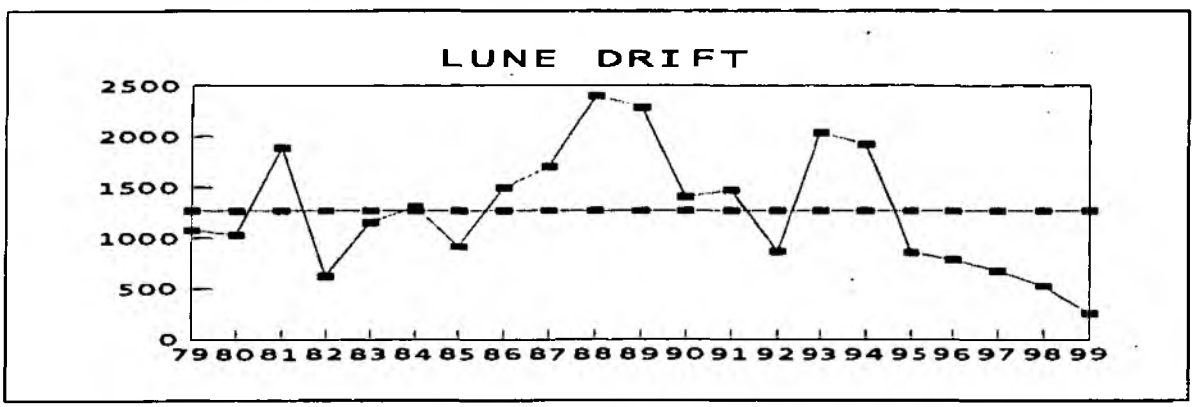


SALMON NET CATCHES 1979-99 INCLUDING LONG TERM AVERAGE

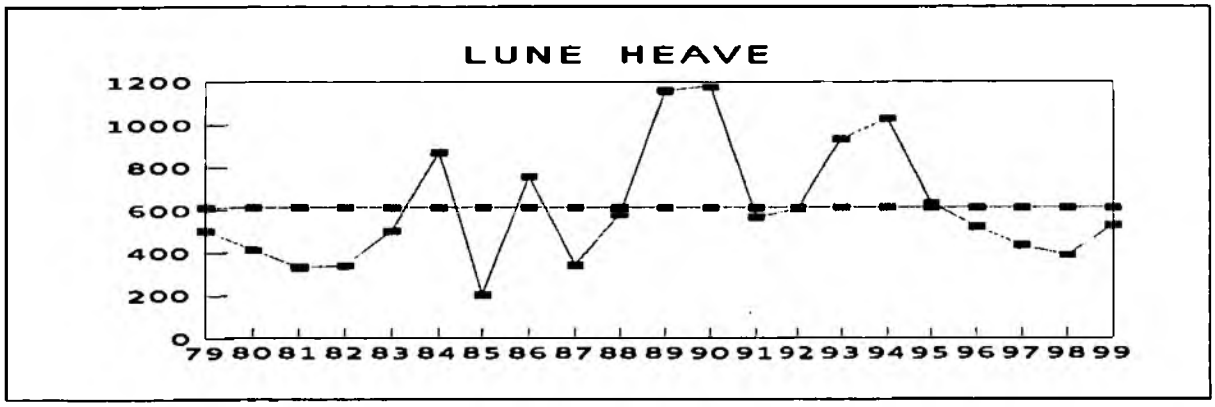


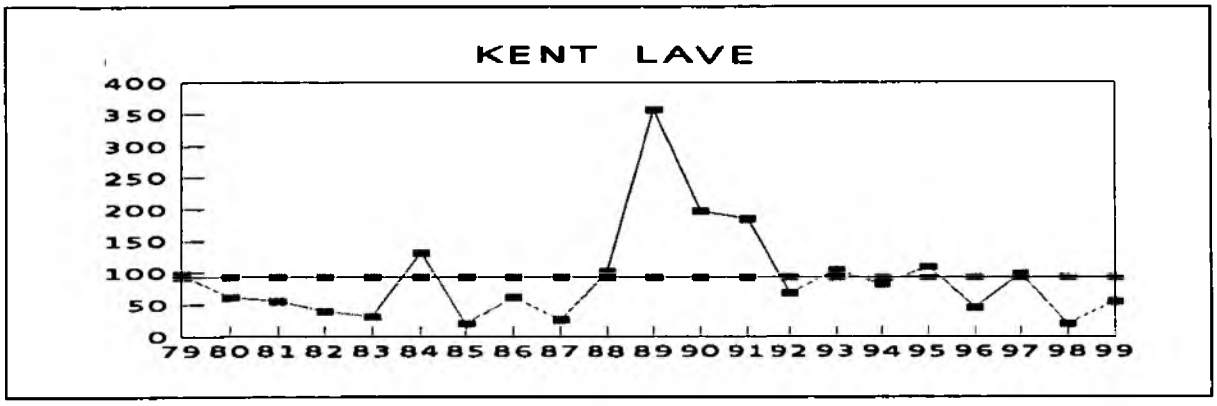


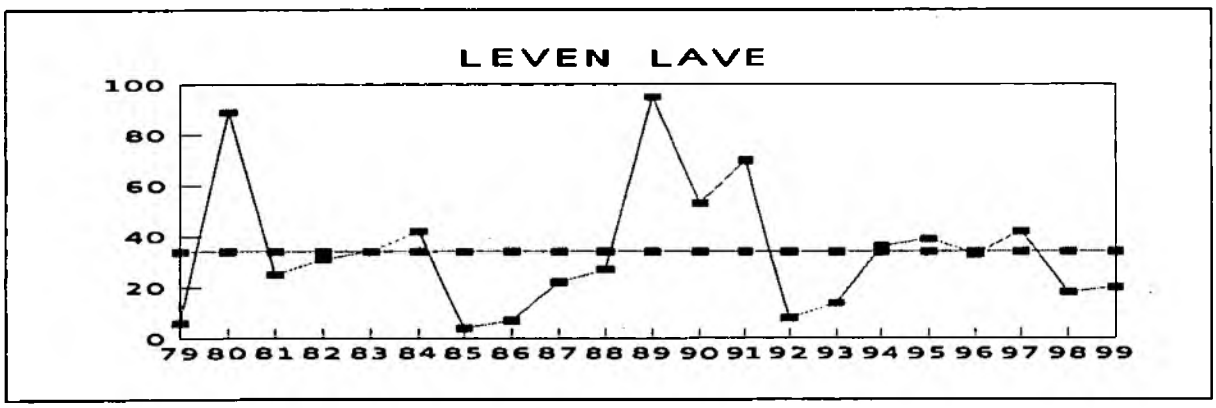


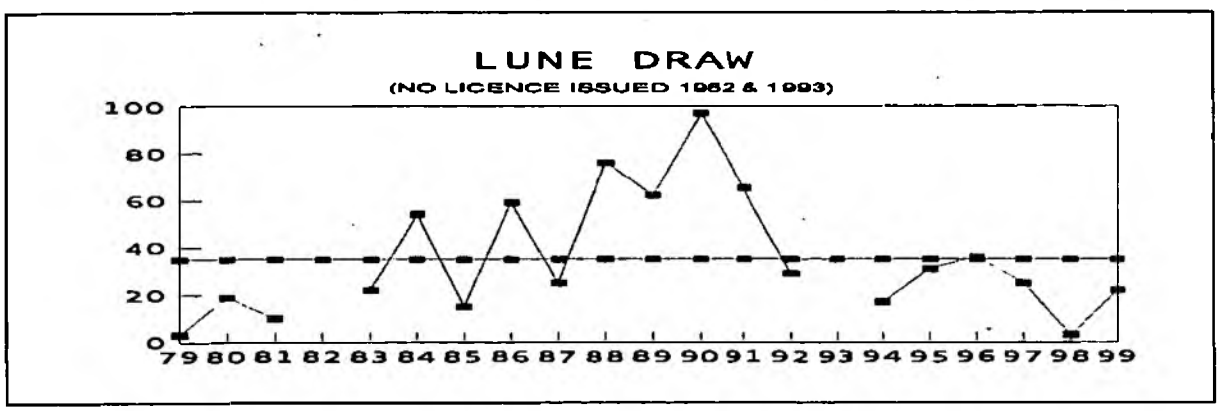


SALMON NET CATCHES 1979-99 INCLUDING LONG TERM AVERAGE

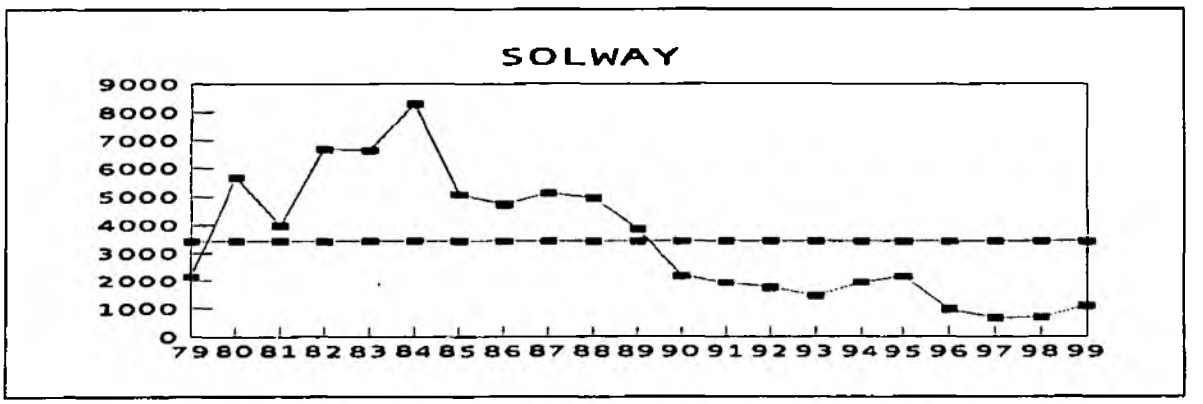


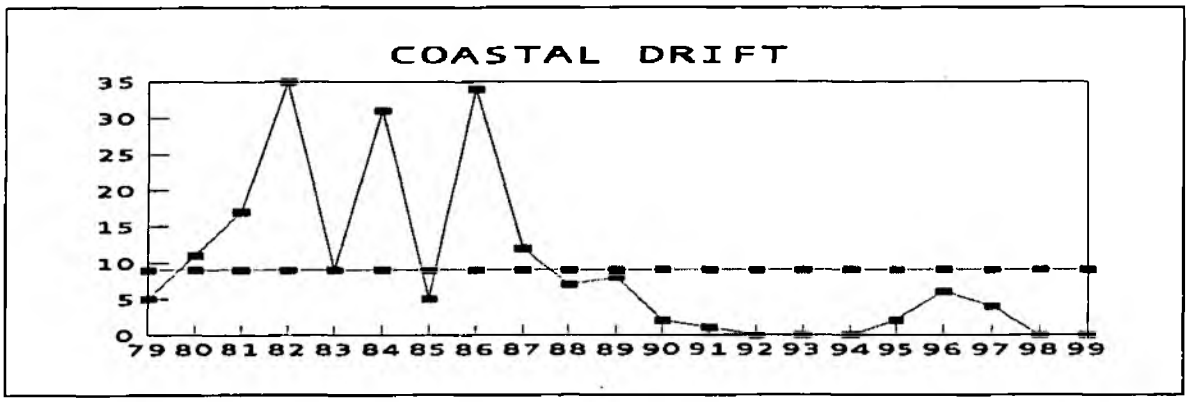


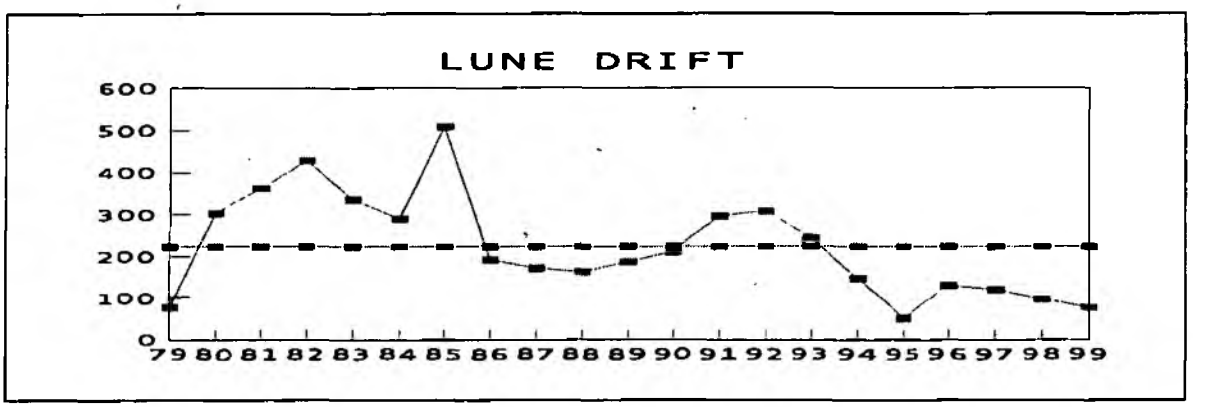


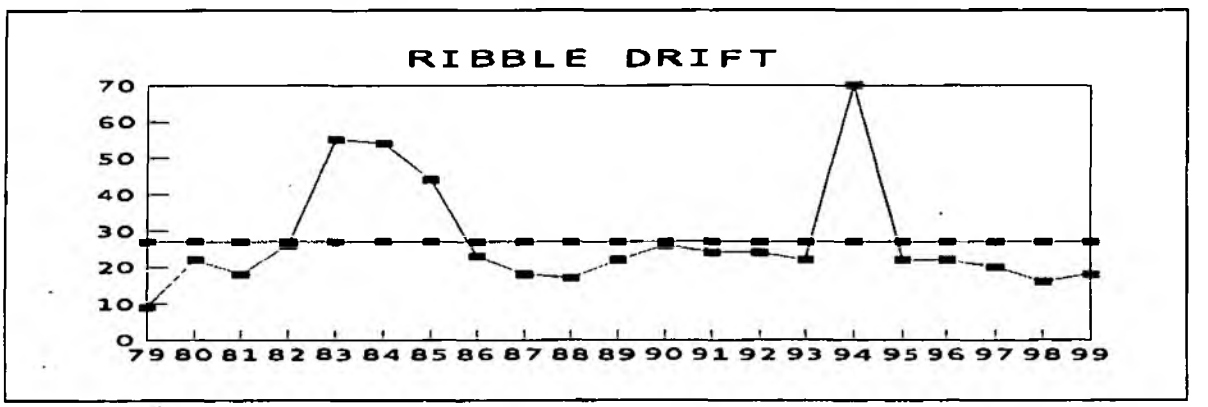


SEA TROUT NET CATCHES 1979-99 INCLUDING LONG TERM AVERAGE

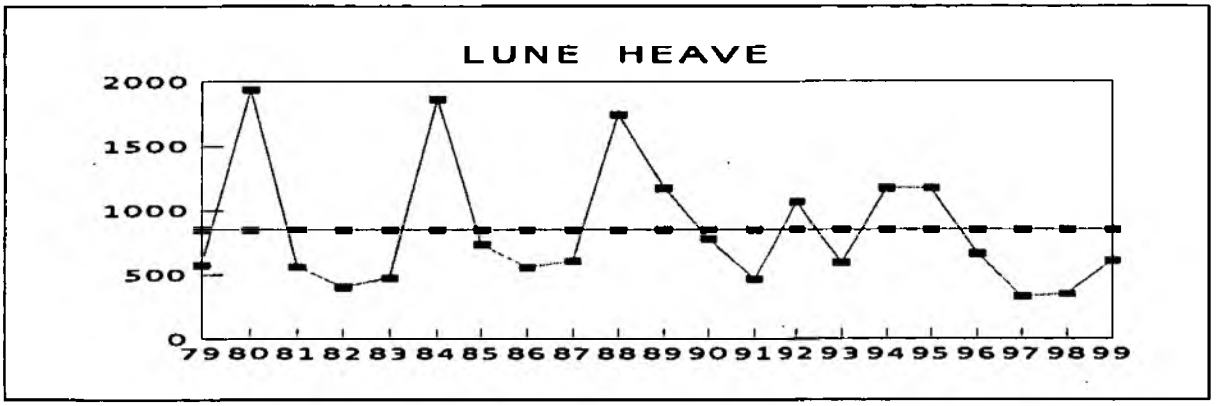


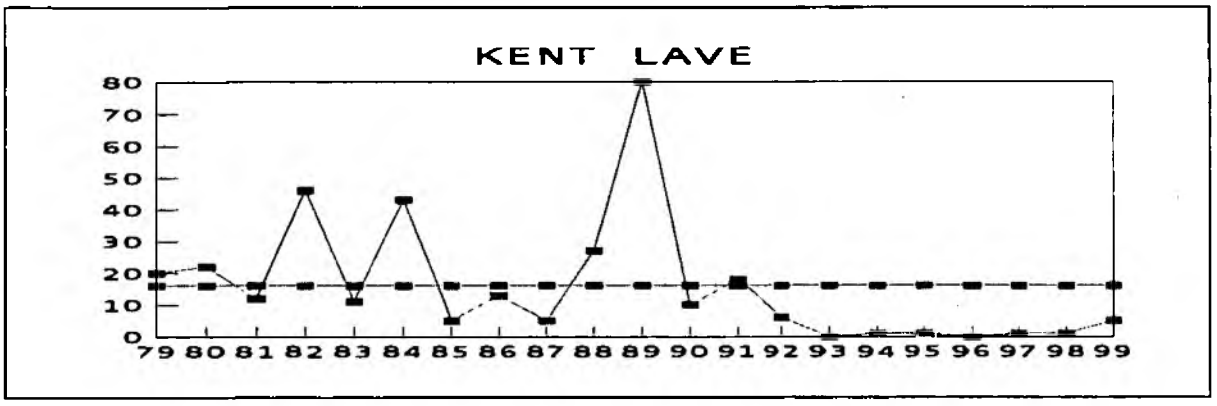


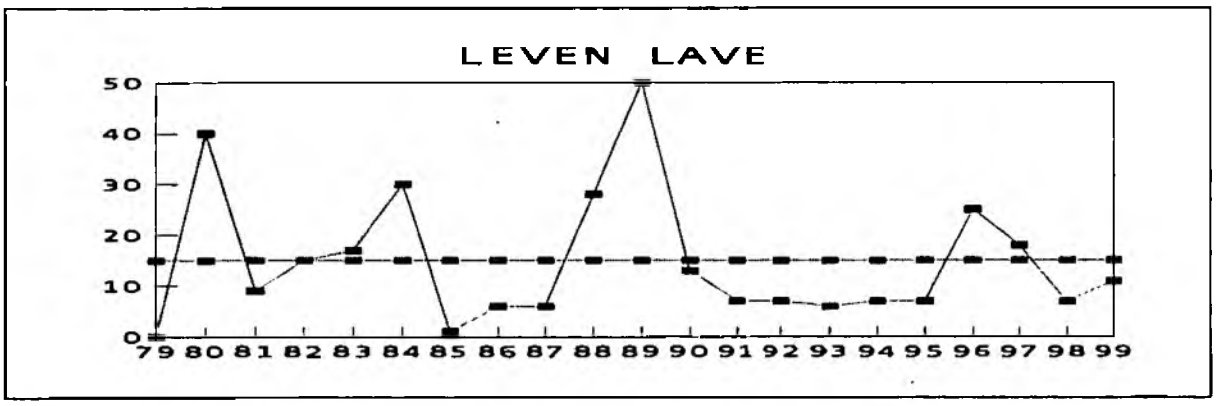


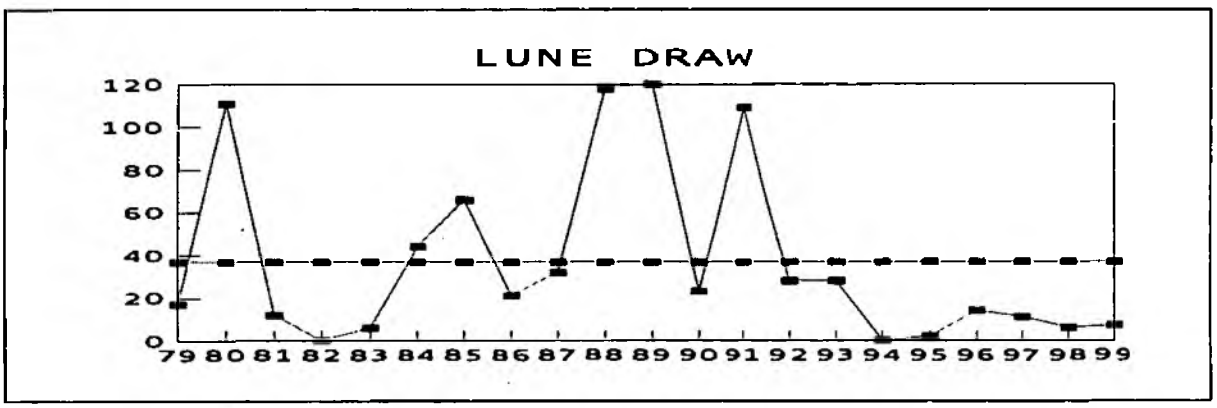


SEA TROUT NET CATCHES 1979-99 INCLUDING LONG TERM AVERAGE

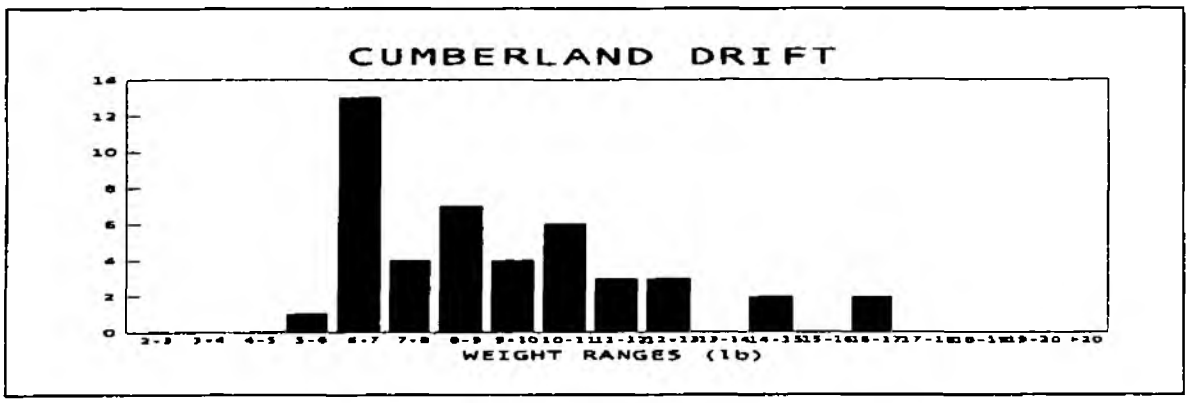


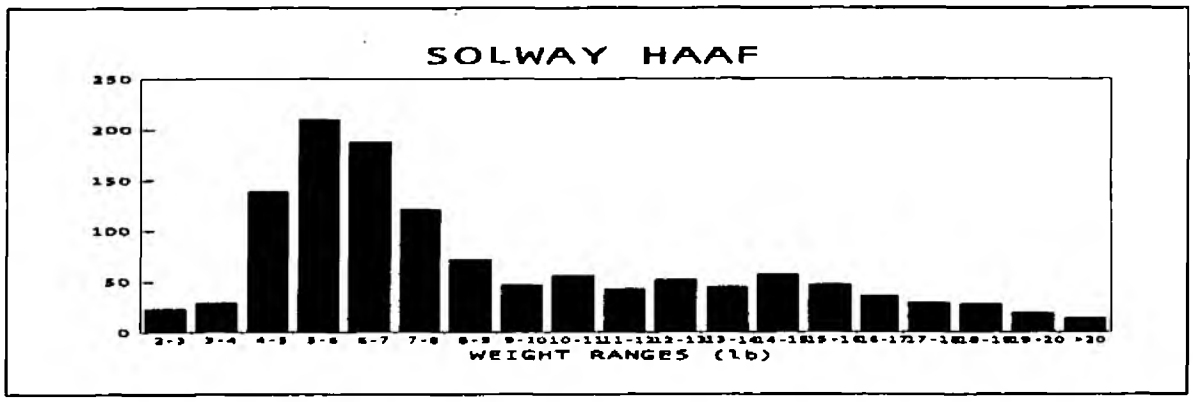


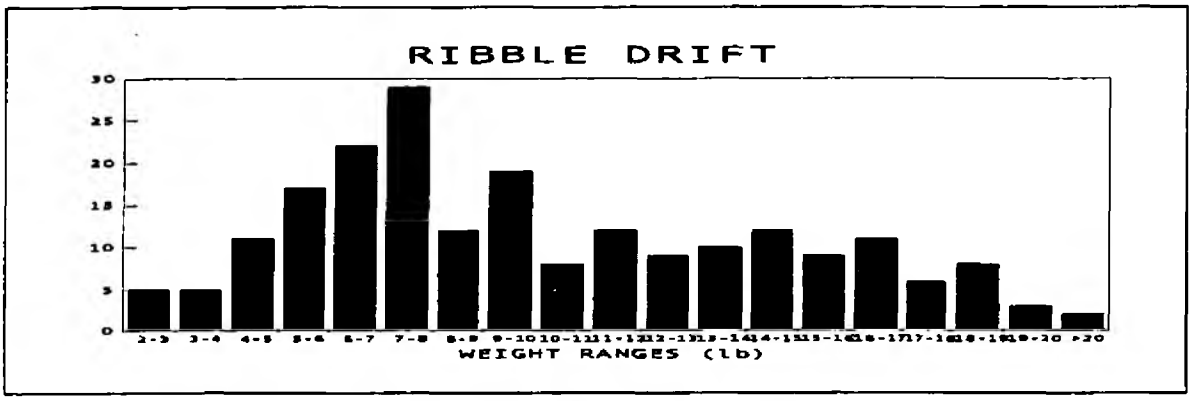


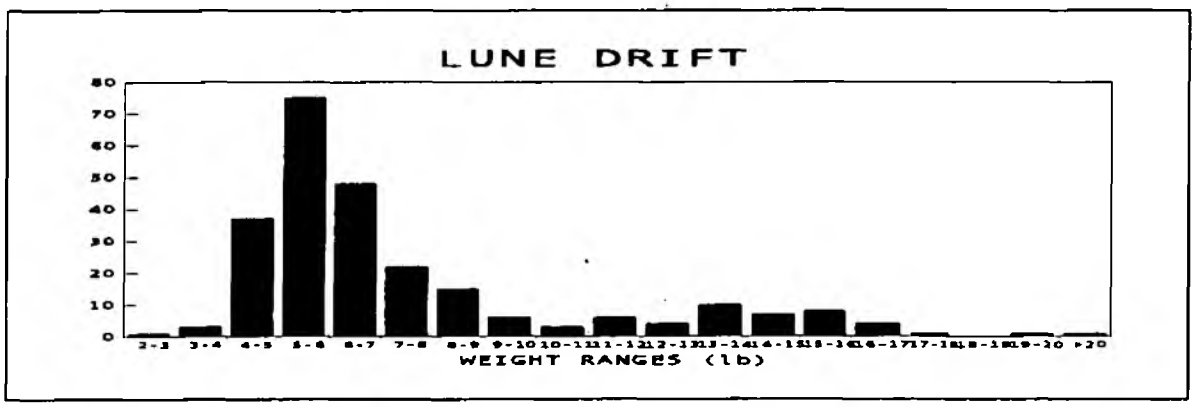


SALMON WEIGHT DISTRIBUTION 1999









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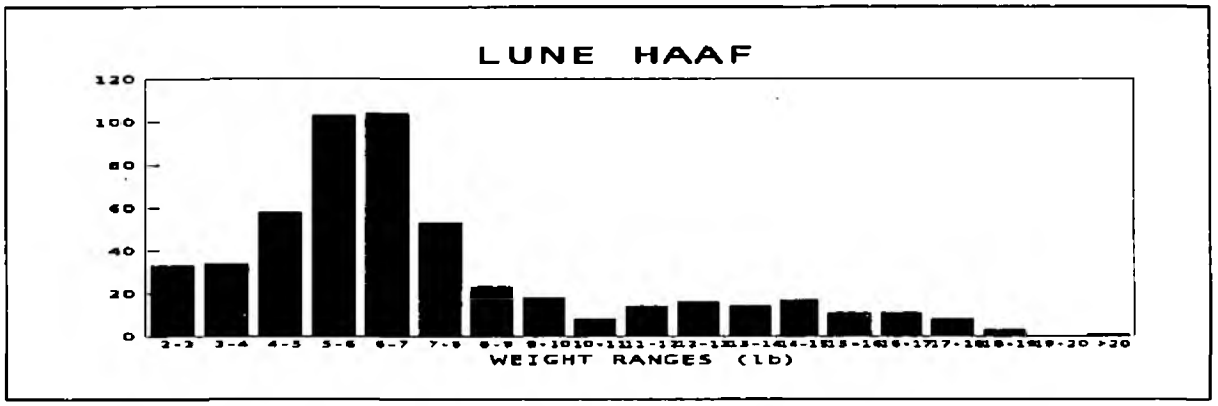
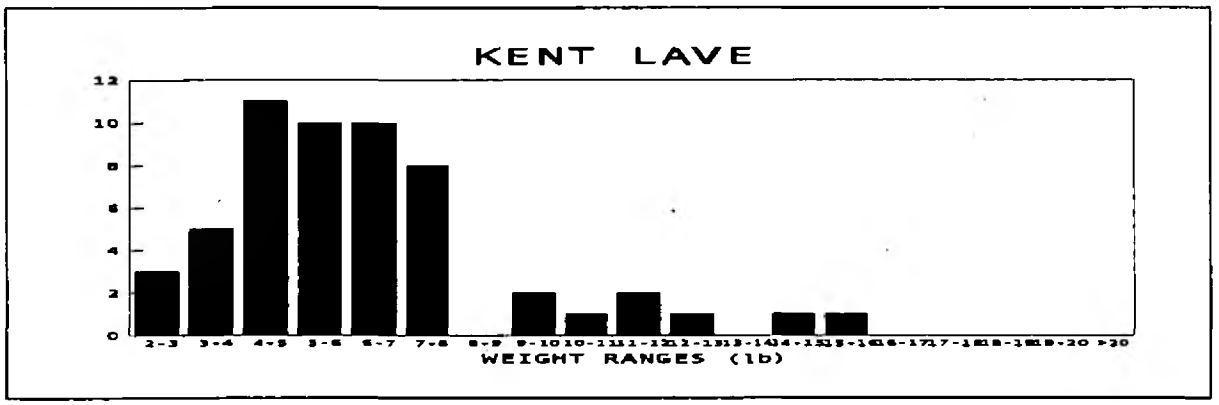
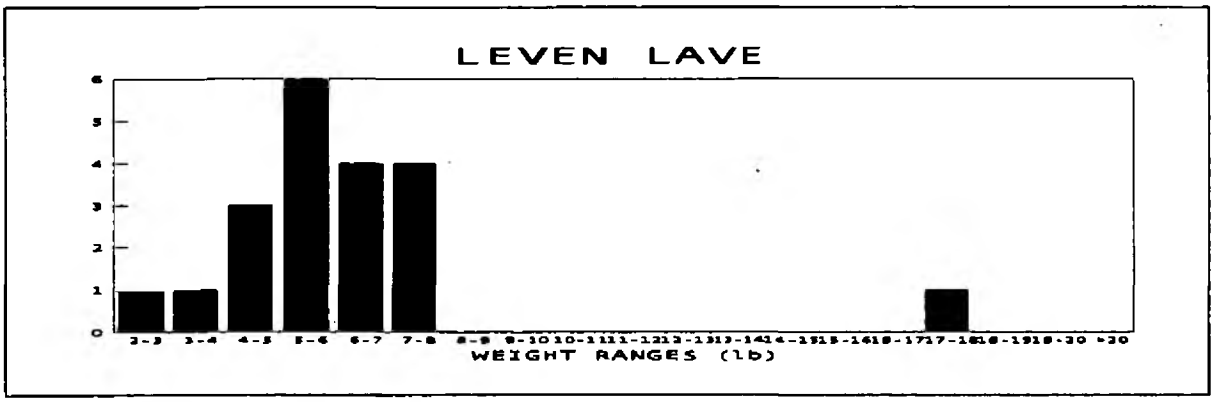
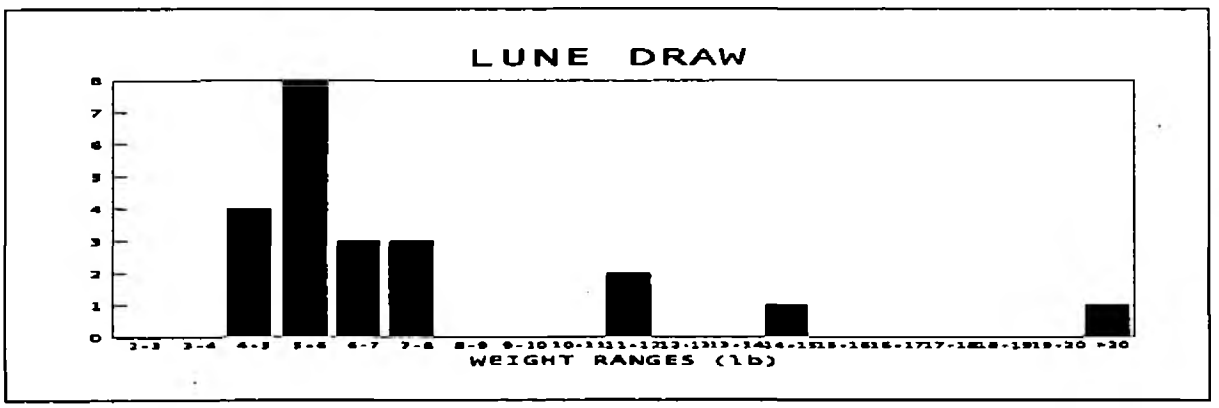
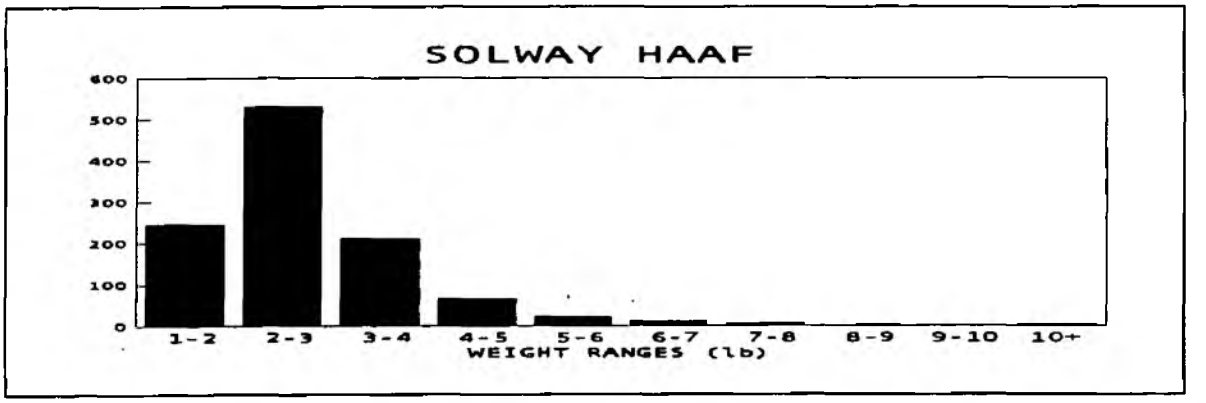


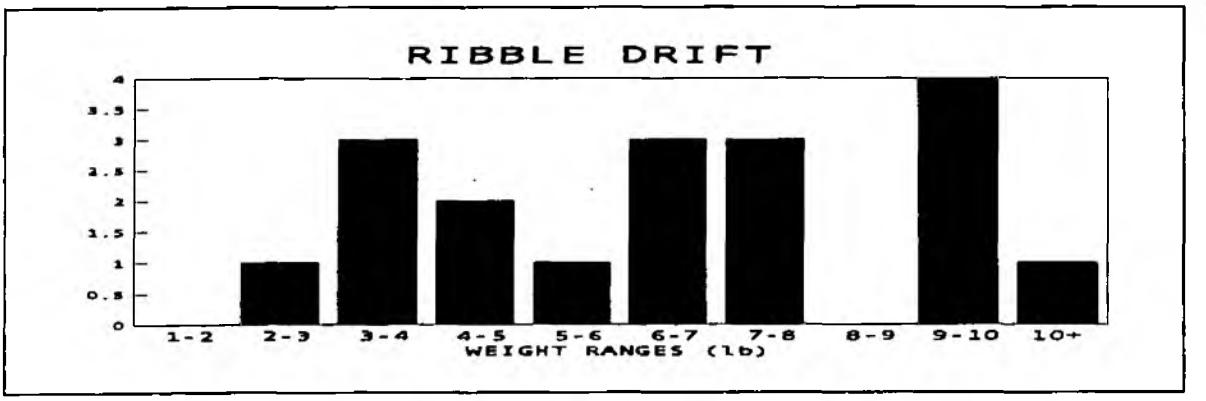


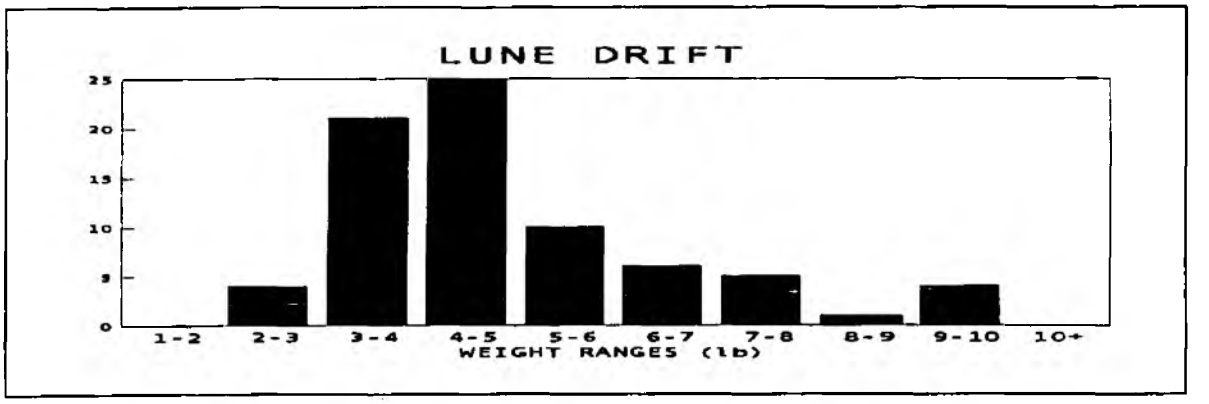


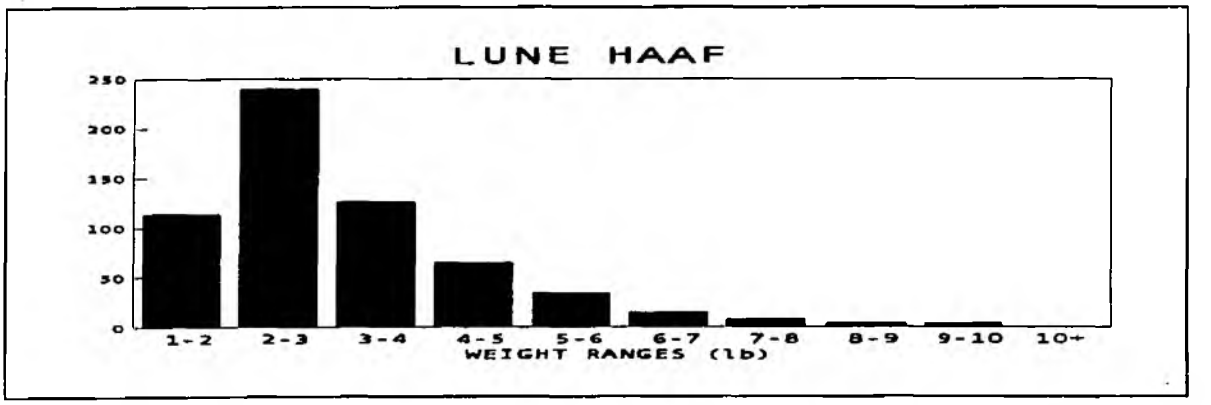


SEA TROUT WEIGHT DISTRIBUTION 1999









SUMMARY OF FISHERIES STATISTICS 1999

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1 CATCH STATISTICS

1.1 Rod and Line - Information from Anglers' returns

1.1.1 Salmon Rod Catches by River and Month 1999

River	Undated	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Total	Av.Weight (lb)
Border Esk (England)	9			1	0	1	7	21	65	132	195	431	8.47
Eden	1	2	5	30	24	19	23	49	140	245	347	885	9.04
Derwent				3	6	4	7	29	41	258	301	649	8.82
Cocker							1	1			5	7	6.2
Ellen											8	8	5.64
Ehen	1						3	9	10	33	22	78	6.22
Calder							1	3		4	4	12	7.61
Irt	1							6	7	13	15	42	6.97
Esk							1	4	8	44	20	77	8.42
Duddon										7	8	15	5.89
Leven & Brathay									1	3	2	6	5.38
Crake										2	13	15	5.05
Kent	1			1	6	1	8	19	23	83	92	234	7.39
Lune	10			1	1	2	21	19	56	382	540	1032	8.71
Ribble	1		1	3	2	6	15	32	47	125	278	510	8.8
Hodder								2	2	25	94	123	3.93
Wyre										1	4	5	7.25
Others*								1	1	1	1	4	2.71
TOTALS	**24**	**2**	**6**	**39**	**39**	**33**	**87**	**195**	**401**	**1358**	**1949**	**4133**	**6.8**

* Includes : Annas,

1.1.1 Salmon Rod Catches, Historical Data

	1994		1995		1996		1997		1998	
River	No.	Av.Wt (lb)	No.	Av.Wt (lb)	No.	Av.Wt (lb)	No.	Av.Wt (lb)	No.	Av.Wt (lb)
Border Esk (England)	747	8.8	938	8.8	645	9.34	651	8.15	628	8.13
Eden	2636	9.4	2082	8.2	1864	8.77	1229	8.45	1110	7.89
Derwent	1094	8.4	792	8	611	8.37	563	7.99	723	7.73
Cocker	23	7.1	52	7.8	18	7.33	9	6.36	14	6.2
Ellen	9	5.1	1	6	8	5.78	3	5.13	31	5.72
Ehen	298	6.9	264	6.7	203	6.45	130	7.01	358	6.47
Calder	40	6.2	46	6.2	50	6.47	65	5.96	96	6.12
Irt	153	6.4	157	6.4	120	6.64	81	6.30	144	6.28
Esk	64	9.1	19	6.1	43	6.96	25	6.25	72	7.21
Duddon	21	6.3	17	6.1	17	6.47	11	6.80	35	6.65
Leven and Brathay	160	7.2	82	7.6	48	7.65	50	6.34	41	6.06
Crake	30	6.7	34	5.3	21	6.39	8	5.23	41	5.63
Kent	673	6.6	562	6.2	469	6.66	306	6.33	786	6.2
Lune	1909	8.8	958	8	963	8.85	702	7.63	1448	7.5
Ribble	819	8.8	319	8.4	517	9.75	232	8.53	594	7.12
Hodder	106	8.5	10	7.5	71	9.14	61	7.83	184	7.32
Wyre	14	5.5	6	4.6	16	5.5	5	6.60	35	5.94
Others*	16	7	9	5.5	36	6	13	5.58	19	5.78
TOTALS & AV.WTS	**8812**	**8.6**	**6348**	**7.9**	**5720**	**8.5**	**4144**	**7.84**	**6359**	**7.3**

* Includes : Annas, Bela, Keer

1.1.1 SALMON ROD CATCHES 1978-98 NUMBERS

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Ave
BORDER ESK	75	89	138	114	108	269	135	88	267	139	304	252	342	511	332	207	747	938	645	651	628	332
EDEN	862	556	578	453	512	653	697	691	756	839	1237	1046	1522	1766	1378	1425	2636	2082	1864	1229	1110	1138
DERWENT	473	462	831	608	623	315	569	1062	532	803	1449	941	871	1028	559	664	1094	792	611	563	723	742
COCKER	79	83	93	53	97	30	35	21	25	21	12	27	8	37	11	3	23	52	18	9	14	36
ELLEN	29	35	40	38	102	26	16	26	12	29	41	32	28	23	22	6	9	1	8	3	31	27
EHEN	75	45	97	36	79	38	63	110	77	117	265	187	100	174	191	92	298	264	203	130	358	143
CALDER	21	8	20	19	12	4	20	3	4	4	23	48	5	39	17	14	40	46	50	65	96	27
IRT	79	30	68	64	27	28	48	69	77	48	106	116	38	153	74	31	153	157	120	81	144	81
ESK	9	28	15	15	7	4	2	38	43	25	51	11	21	48	190	37	64	19	43	25	72	37
DUDDON	7	20	15	5	23	5	7	31	38	28	47	20	37	24	25	19	21	17	17	11	35	22
LEVEN	15	22	50	34	75	26	19	48	33	46	151	42	73	123	118	31	160	82	48	50	41	61
CRAKE	13	17	37	14	54	26	18	9	30	22	88	34	38	55	40	4	30	34	21	8	41	30
KENT	222	128	93	143	189	63	47	97	239	179	338	200	289	448	408	422	673	562	469	306	786	300
LUNE	620	414	607	456	310	235	330	617	485	874	1434	683	1154	1274	860	1434	1909	958	963	702	1448	846
RIBBLE*	370	550	956	704	462	338	384	339	452	586	774	268	298	383	433	660	925	329	588	293	778	518
WYRE	24	31	24	35	13	2	6	8	2	19	107	6	2	13	8	18	14	6	16	5	35	19
OTHERS **	5	8	22	5	2		4	3	8	3	1	14	11	7	3	47	16	9	36	13	19	12
TOTAL REGION	**2978**	**2526**	**3684**	**2796**	**2695**	**2062**	**2400**	**3260**	**3080**	**3782**	**6428**	**3927**	**4837**	**6106**	**4669**	**5114**	**8812**	**6348**	**5720**	**4144**	**6359**	**4368**

* Includes Hodder

** Includes : Annas, Bela, Keer

1.1.1 SALMON ROD CATCHES 1978-98 AVERAGE WEIGHTS IN lb

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Ave
BORDER ESK	8.96	8.62	9.01	11.1	8.65	9.21	9.18	9.32	9.42	8.21	8.32	8.33	9.54	8.3	9.5	8	8.8	8.8	9.34	8.15	8.13	8.90
EDEN	10.2	11.8	10.4	11.3	8.96	8.61	9.14	9.97	10.1	9.49	9.16	8.49	9.41	8.92	8.75	8.9	9.4	8.2	8.77	8.45	7.89	9.35
DERWENT	8.97	8.34	8.38	9.33	7.93	8.12	7.75	8.42	8.89	8.88	8.33	8.41	8.37	8.35	8.5	8.5	8.4	8	8.37	7.99	7.73	8.38
COCKER	7.9	7.5	7.6	8.13	7.03	7.99	6.71	7.38	7.88	7.67	8.2	6.94	9.59	7.01	8.2	8.3	7.1	7.8	7.33	6.36	6.2	7.56
ELLEN	6.09	5.56	7.44	6.67	5.95	5.78	5.14	6.8	6.17	5.83	7.03	6.92	6.16	6.83	6	7	5.1	6	5.78	5.13	5.72	6.15
EHEN	6.71	6.95	6.34	7.5	5.98	5.95	6.37	7.36	7.41	6.95	7.22	6.41	6.9	6.52	6.9	6.9	6.9	6.7	6.45	7.01	6.47	6.76
CALDER	7.13	6.25	6.66	6.67	5.02	7.13	5.86	7.66	9.38	5.12	6.64	6.78	7.55	6.49	6.3	7.7	6.2	6.2	6.47	5.96	6.12	6.63
IRT	7.45	7.01	6.45	7.02	6.23	7.67	6.37	6.4	7.47	7.38	7.32	6.94	6.66	6.83	6.3	6.4	6.4	6.4	6.64	6.30	6.28	6.76
ESK	9.5	7.84	7.37	9.3	5.57	6.25	8	7.66	10.7	11.7	7.64	4.91	5.93	9.7	8.1	8.7	9.1	6.1	6.96	6.25	7.21	7.83
DUDDON	6.75	7.9	8.3	8.25	7.96	6.4	6.96	7.17	6.73	7.34	7.44	7.22	6.64	6.95	6.8	5.3	6.3	6.1	6.47	6.80	6.65	6.97
LEVEN	7.45	6.25	6.12	8.1	5.17	6.38	6.68	6.63	6.83	6.67	6.66	6.54	7.66	7.21	6.7	6.3	7.2	7.6	7.65	6.34	6.06	6.77
CRAKE	7.63	4.72	6.11	6.1	5.29	4.48	6.25	7.36	5.93	5.99	6.26	6.28	6.58	6.51	6.6	6.75	6.7	5.3	6.39	5.23	5.63	6.10
KENT	6.1	6.38	6.21	7.44	5.85	7.12	5.4	6.75	6.31	7.98	6.79	5.59	6.97	6.62	6.5	6.5	6.6	6.2	6.66	6.33	6.2	6.50
LUNE	8.87	9.86	8.48	10.9	7.52	8.13	7.49	9.33	8.77	8.11	8.26	8.15	8.95	8.5	8.7	7.8	8.8	8	8.85	7.63	7.5	8.50
RIBBLE*	9.22	8.84	9	10.8	8.24	8.69	7.68	10.2	9.82	9.14	8.99	8.67	8.52	8.77	9.2	8.22	8.6	8.4	9.68	8.39	8.8	8.95
WYRE	5.38	4.76	4.96	6.42	6.38	5.13	5.13	5	12	6.55	7.74	5.33	4.75	5.63	5.2	6.35	5.5	4.6	5.5	6.6	5.94	5.95
OTHERS **	8.3	2.9	4.52	2.5	1	6.5	6.9	6.92	5.44	6.38	5.25	5.36	5.69	6.39	4	8.3	7	5.5	6	5.58	5.78	5.53

* Includes Hodder

** Includes : Annas, Bela, Keer

1.1.2 Migratory Trout Rod Catches by River and Month - 1999

River	Undated	May	June	July	August	September	October	Total	Average Weight (lb)
Border Esk (England)	22	75	401	454	188	44	55	1239	1.81
Eden	5	22	77	55	76	55	55	345	2.05
Derwent	22	22	104	355	314	171	50	1038	1.48
Cocker		1			6	4		11	0.79
Ellen			3	4	1	2	16	26	1.87
Ehen	1	1	24	70	46	33	9	184	1.57
Calder				1		2	3	6	5.31
Irt			17	35	50	50	32	184	1.5
Esk		2	33	81	62	53	5	236	1.79
Duddon			1	1	12	12	3	29	1.08
Leven, Brathay & Rothay	1		2	13	54	6		76	1.96
Crake			4	12	1	8	11	36	1.76
Kent	5	13	43	58	67	72	26	284	2.32
Lune	10	60	363	551	495	424	188	2091	1.96
Ribble	16	26	142	272	258	106	65	885	1.85
Hodder	6	9	77	181	142	75	48	538	0.9
Wyre					7	11	19	37	1.65
Others*			1		15	2	2	20	2.71
TOTALS	**88**	**231**	**1292**	**2143**	**1794**	**1130**	**587**	**7265**	**1.90**

* Includes : Annas, Bela

1.1.2 Migratory Trout Rod Catches - Historical Data

	1994		1995		1996		1997		1998	
River	No.	Av.Wt(lb)	No.	Av.Wt (lb)	No.	Av.Wt (lb)	No.	Av.Wt (lb)	No.	Av.Wt (lb)
Border Esk (England)	826	1.5	1327	1.4	1357	1.3	1135	1.50	1671	1.54
Eden	497	2	894	1.6	629	1.71	348	1.89	338	1.83
Derwent	465	1.6	403	1.5	399	1.55	299	1.67	544	1.35
Cocker	2	1	10	2.4	1	0.81	1	4.60	17	3.27
Ellen	8	1.1	10	1.4	19	1.05	3	0.77	14	1.54
Ehen	345	1.4	313	1.3	215	1.27	117	1.69	631	1.14
Calder	8	2.5	12	2.1	7	2.83	27	1.53	14	1.99
Irt	68	2.3	320	1.4	149	1.28	94	1.59	244	1.35
Esk	13	1.7	37	2.2	68	1.72	102	1.35	254	1.56
Duddon	50	1.4	29	1.2	42	1.16	33	1.25	115	0.93
Leven	144	2	72	1.7	49	1.63	68	1.08	198	1.43
Crake	33	1.7	121	1.2	39	1.41	26	1.33	81	1.04
Kent	633	1.6	333	1.4	450	1.59	299	1.74	576	1.93
Lune	2161	1.8	1513	1.9	1601	1.92	1701	1.84	2730	1.71
Ribble	708	1.6	276	1.4	455	1.91	534	2.24	909	1.71
Hodder	244	1.9	155	1.5	231	1.91	418	2.13	726	1.9
Wyre	32	1.8	37	1.3	34	1.95	24	1.25	71	1.6
Others *	22	1.8	106	1.1	24	1.64	22	1.57	51	1.77
TOTALS & AV.WTS	**6259**	**1.5**	**5968**	**1.6**	**5769**	**1.64**	**5251**	**1.78**	**9184**	**1.62**

* Includes : Annas, Bela, Keer

1.1.2 SEA TROUT ROD CATCHES 1978-98 NUMBERS

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Ave
BORDER ESK	852	707	845	980	735	398	632	619	639	682	903	230	133	467	544	461	826	1327	1357	1135	1671	769
EDEN	624	586	838	831	961	757	1216	698	478	770	1327	677	370	666	447	575	497	894	629	348	338	692
DERWENT	122	263	320	606	383	391	350	279	210	218	136	155	87	264	49	318	465	403	399	299	544	298
COCKER	2	7	13	11	11	6	2	4	8	8	6	2	2	3	1	3	2	10	1	1	17	6
ELLEN	24	9	37	7	41	7	4	1	4	22	10	11	2	30	44	10	8	10	19	3	14	15
EHEN	137	150	109	140	151	108	231	196	244	230	125	104	58	81	90	112	345	313	215	117	631	185
CALDER	7	11	32	5	37	33			12		3	6		13	7	2	8	12	7	27	14	14
IRT	74	29	95	95	39	24	40	45	41	100	106	63	37	60	30	33	68	320	149	94	244	85
ESK	155	47	115	85	27	27	19	80	45	129	93	21	39	33	199	59	13	37	68	102	254	78
DUDDON	49	26	75	43	31	13	13	20	15	17	25	17	15	43	31	77	50	29	42	33	115	37
LEVEN	87	70	406	353	166	141	74	79	137	124	148	36	73	85	71	37	144	72	49	68	198	125
CRAKE	37	62	111	67	71	58	65	25	35	50	86	73	28	38	29	40	33	121	39	26	81	56
KENT	271	441	386	228	244	124	67	148	186	413	361	244	236	449	305	451	633	333	450	299	576	326
LUNE	1384	1490	2388	1310	981	1080	1220	1069	1115	1538	1855	1083	696	1618	1039	1474	2161	1513	1601	1701	2730	1478
RIBBLE*	334	494	862	571	513	526	433	602	574	699	848	380	391	631	461	810	952	431	686	952		608
WYRE	22	51	18	58	59	6	14	24		55	71	4	13	48	20	58	32	37	34	24	71	36
OTHERS / UNKNOWN **	65	57	50	114	107	113	66	104	31	157	71	33	10	6	14	104	22	106	24	22	51	63
TOTAL REGION	**4246**	**4500**	**6700**	**5504**	**4557**	**3812**	**4446**	**3993**	**3774**	**5212**	**6174**	**3139**	**2190**	**4535**	**3381**	**4624**	**6259**	**5968**	**5769**	**5251**	**9184**	**4915**

*** Includes Hodder**

** Includes : Annas, Bela, Keer

1.1.2 SEA TROUT ROD CATCHES 1978-98 AVERAGE WEIGHTS IN lb

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Ave
BORDER ESK	1.61	1.46	1.77	1.54	1.61	1.73	1.87	1.69	1.74	1.59	1.7	1.82	1.91	2	1.8	1.5	1.5	1.4	1.3	1.5	1.54	1.65
EDEN	1.68	1.75	1.9	2.02	2.01	1.98	1.74	2.2	1.93	1.88	2.07	2.13	2.13	2.15	2.4	1.5	2	1.6	1.71	1.89	1.83	1.93
DERWENT	1.61	1.53	1.91	2.09	1.73	1.4	1.78	2.18	2.82	2.43	2.44	2.2	2.19	2.08	2.1	1.3	1.6	1.5	1.55	1.67	1.35	1.88
COCKER	2.25	3.03	2.17	2.66	1.98	1.71	2.25	2.56	9.75	1.69	2.45	0.99	1.75	1.25	1.3	2	1	2.4	0.81	4.6	3.27	2.47
ELLEN	1.13	1.78	1.8	2.25	1.15	1.79	1.25	2	0.94	2.32	2.8	2.16	3.25	1.66	1.9	0.9	1.1	1.4	1.05	0.77	1.54	1.66
EHEN	1.4	1.37	1.49	1.44	1.8	1.65	1.94	1.67	2.05	1.59	2.8	2.11	2.12	2.13	2.3	1.3	1.4	1.3	1.27	1.69	1.14	1.71
CALDER	2.07	1.23	1.85	3.2	1.98	2.72			1		1.75	2.29		1.52	2.2	4.4	2.5	2.1	2.83	1.53	1.99	2.19
IRT	2.28	1.52	2.34	2.3	2.06	2.57	1.78	2.98	2.99	2.08	2.08	2.44	1.81	2.47	1.5	1.6	2.3	1.4	1.28	1.59	1.35	2.03
ESK	1.61	1.57	1.72	1.8	1.58	2.5	2.09	1.76	1.51	1.93	2.31	3.17	2.44	4.31	2.2	1.3	1.7	2.2	1.72	1.35	1.56	2.02
DUDDON	1.04	1.76	1.81	1.45	1.47	2.38	2.83	2.2	1.57	1.37	2.23	1.47	2.25	1.38	1.4	1.8	1.4	1.2	1.16	1.25	0.93	1.64
LEVEN	1.39	1.27	1.62	2.07	2.26	1.79	1.87	2.38	1.72	1.63	1.87	1.67	2.09	1.76	1.9	1.8	2	1.7	1.63	1.08	1.43	1.76
CRAKE	1.22	1.44	1.46	1.43	1.45	1.32	1.64	2.79	1.23	1.42	1.81	1.89	1.67	1.74	1.3	1.4	1.7	1.2	1.41	1.33	1.04	1.52
KENT	1.73	1.55	2.01	2.05	1.79	1.99	1.98	2.22	1.65	2.09	2.16	1.92	1.74	1.88	2.1	1.6	1.6	1.4	1.59	1.74	1.93	1.84
LUNE	1.75	1.49	1.97	2.14	2.17	1.84	1.94	6.3	1.88	2.25	2.14	2.11	2.29	2.23	2.2	1.6	1.8	1.9	1.92	1.84	1.71	2.17
RIBBLE*	1.91	1.63	2.15	2.36	2.02	2.06	2.02	2.13	2	1.93	2.23	2.19	2.21	2.01	2.55	2	1.8	1.4	1.91	2.19	1.85	2.03
WYRE	1.41	1.32	1.86	1.52	2.06	1.38	1.48	1.58		1.29	2.59	2.87	1.32	1.47	2.1	4.4	1.8	1.3	1.95	1.25	1.6	1.83
OTHERS	1.3	1.17	1.85	1.12	1.6	1.24	2	2.19	2.02	1.38	1.56	2.43	2.25	1.54	1.2	1.4	1.8	1.1	1.64	1.57	1.77	1.63

* Includes Hodder
* Includes : Annas,

1.2 Commercial Catches by Nets and Fixed Engines

1.2.1 Commercial salmon catches by river/district and month - 1999

River/District (Type of Net)	Feb	Mar	April	May	June	July	Aug	Sept	Total	Average Weight (lb)	Effort No. of Tides
Eden & Border Esk (Haaf nets)		0	1		87	274	678	214	1254	9.01	4071
Eden Fixed Engine**											
Coastal Drift							45		45	9.21	18
South&WestCumbria Nets&Fixed Engines*											
Duddon (Draw Nets)*											
Leven (Lave Nets)					1	12	7		20	6.3	298
Kent (Lave Nets)				0	10	36	9		55	6.35	126
Lune (Draw Nets)					1	6	15		22	7.43	53
Lune (Drift Nets)					19	99	134		252	7.5	255
Lune (Heave Nets)					73	175	281		529	7.41	1364
Ribble (Drift Nets)					24	81	105		210	10.16	232
Total Catch - Nets and fixed engines	**0**	**0**	**1**	**0**	**215**	**683**	**1274**	**214**	**2387**	**7.92**	**6417**

* None issued 1999 ** Used for microtagging spring salmon project

1.2.1 Commercial Salmon Catches - Historical Data

	1994		1995		1996		1997		1998	
	No.	Av.Wt (lb)	No.	Av.Wt (lb)	No.	Av.Wt (lb)	No.	Av.Wt (lb)	No.	Av.Wt (lb)
Eden and Border Esk	2221	8.19	3008	7.26	2158	8.27	1449	7.73	650	7.83
Coastal Drift	461	8.2	728	7.2	715	8.3	366	7.64	39	7.94
South & West Cumbria nets and fixed engines	27	6.91	*		*		*		*	
Duddon	-	-	*		*		*		*	
Leven	36	6.36	39	8.19	33	7.05	42	5.62	18	6.5
Kent	82	6.46	109	6.15	45	7.32	99	6.06	20	6.1
Lune Draw Nets	17	7.38	31	7.63	36	6.5	25	7.64	3	7.83
Lune Drift Nets	1924	8.02	859	7.38	783	8.1	676	6.76	525	6.95
Lune Heave Nets	1028	8.53	632	8.05	522	8.19	435	6.62	389	7.15
Ribble	347	9.92	160	9.7	172	10.73	69	8.88	118	8.03
TOTALS & AV.WTS	**6143**	**8.25**	**5566**	**7.42**	**4464**	**8.3**	**3161**	**7.3**	**1778**	**7.45**

* no licences issued 1995 / 1996 / 7/8

1.2.1 WEIGHT FREQUENCY DISTRIBUTION MAJOR SALMON / SEATROUT NET FISHERIES 1999

	SALMON								SEATROUT						
WEIGHT RANGE lb	KENT LAVE	CUMBERLAND DRIFT	LEVEN LAVE	LUNE DRIFT	LUNE DRAW	LUNE HAAF	RIBBLE DRIFT	SOLWAY HAAF	KENT LAVE	LEVEN LAVE	LUNE DRAW	LUNE DRIFT	LUNE HAAF	RIBBLE DRIFT	SOLWAY HAAF
1-1.9									0	1	2	0	114	0	245
2-2.9	3	0	1	1	0	33	5	23	4	6	0	4	240	1	531
3-3.9	5	0	1	3	0	34	5	29	1	0	2	21	126	3	210
4-4.9	11	0	3	37	4	58	11	139	0	0	0	25	65	2	65
5-5.9	10	1	6	75	8	103	17	210	0	0	0	10	34	1	22
6-6.9	10	13	4	48	3	104	22	188	0	2	2	6	14	3	12
7-7.9	8	4	4	22	3	53	29	121	0	1	1	5	8	3	5
8-8.9	0	7	0	15	0	23	12	72	0	1	0	1	4	0	1
9-9.9	2	4	0	6	0	18	19	47	0	0	0	4	4	4	2
10-10.9	1	6	0	3	0	8	8	56	0	0	0	0	0	1	2
11-11.9	2	3	0	6	2	14	12	43							
12-12.9	1	3	0	4	0	16	9	52							
13-13.9	0	0	0	10	0	14	10	45							
14-14.9	1	2	0	7	1	17	12	57							
15-15.9	1	0	0	8	0	11	9	47							
16-16.9	0	2	0	4	0	11	11	35							
17-17.9	0	0	1	1	0	8	6	29							
18-18.9	0	0	0	0	0	3	8	28							
19-19.9	0	0	0	1	0	0	3	19							
>20	0	0	0	1	1	1	2	14							

1.2.1 COMMERCIAL SALMON CATCHES 1978-98

	EDEN & BORDER ESK		LUNE DRIFT		LUNE HEAVE		RIBBLE DRIFT		COASTAL DRIFT		KENT LAVE	
YEAR	TOTAL NO.	AV WT(LB)	TOTAL NO.	AV WT(LB)	TOTAL NO.	AV WT(LB)	TOTAL NO.	AV WT(LB)	TOTAL NO.	AV WT(LB)	TOTAL NO.	AV WT(LB)
78	2015	8.24	2550	7.3	1331	8.7	319	10.04	464	8.24	374	7.76
79	1024	8.26	1074	8.83	503	9.6	649	11.35	275	8.26	97	7.66
80	1010	8.95	1029	8.61	414	8.85	725	12.1	198	8.95	61	7.89
81	1337	9.11	1889	10.68	331	9.83	810	12.22	457	9.11	55	8.2
82	1773	7.39	624	6.94	341	7.2	252	10.29	748	7.16	39	6.1
83	5058	7.3	1152	7.75	503	7.53	432	9.31	1167	7.2	31	6.3
84	4261	7.02	1306	6.79	870	6.25	507	11.25	735	8.24	131	6.65
85	585	8.6	912	7.48	204	8.59	395	12.19	417	7.29	20	10.25
86	2971	9.54	1497	7.59	758	8.7	434	11.09	868	7.6	61	7.16
87	1999	8.81	1703	7.05	344	7.73	508	10.36	416	7.95	26	8.04
88	880	8.19	2402	7.17	580	8.87	829	10.62	760	6.85	102	7.3
89	1950	7.52	2284	7.43	1158	7.42	493	10.89	816	6.81	357	7.1
90	1880	9.03	1405	7.72	1180	8.59	239	11.18	479	8.72	197	9.51
91	1681	8.26	1472	7.92	567	8.12	206	10.24	195	8.13	185	8.26
92	959	8.38	868	7.67	604	8.41	102	10.5	454	7.81	68	7.38
93	1893	8	2038	7.34	931	7.24	205	9.63	250	8.01	104	6.84
94	2221	8.19	1924	8.02	1028	8.53	347	9.92	461	8.2	82	6.4
95	3008	7.26	859	7.38	632	8.05	160	9.7	728	7.2	109	6.15
96	2158	8.27	783	8.10	522	8.19	172	10.73	715	8.30	45	7.32
97	1449	7.73	676	6.76	435	6.62	69	8.88	366	7.64	99	6.06
98	650	7.83	525	6.95	389	7.15	118	8.03	39	7.94	20	6.1
AVERAGE	**1941**	**8.18**	**1380**	7.69	**649**	**8.10**	**380**	**10.50**	**524**	**7.89**	**108**	**7.35**

1.2.2 Commercial Catches of Migratory Trout by Nets and Fixed Engines 1999

River/District (Type of Net)	Feb	Mar	April	May	June	July	Aug	Sept	Total	Average Weight (lb)	Effort No. of Tides
Eden & Border Esk		3	9		905	159	18	1	1095	2.75	4071
Eden Fixed Engine**											
Coastal Drift							0		0	0	18
South&WestCumbria Nets&Fixed Engines*											
Duddon (Draw Nets)*											
Leven (Lave Nets)					5	4	2		11	4.14	298
Kent (Lave Nets)				0	2	3	0		5	2.7	126
Lune (Draw Nets)					7	0	0		7	4.36	53
Lune (Drift Nets)					60	14	2		76	4.92	255
Lune (Heave Nets)					522	70	17		609	3.14	1364
Ribble (Drift Nets)					7	10	1		18	6.64	232
Total catch, nets and fixed engines		**3**	**9**	**0**	**1508**	**260**	**40**	**1**	**1821**	**3.58**	6417

* None issued 1998 **Used for microtagging spring salmon project

1.2.2 Commercial Catches of Migratory Trout - Historical Data

	1994		1995		1996		1997		1998	
	No.	Av.Wt (lb)	No.	Av.Wt (lb)	No.	Av.Wt (lb)	No.	Av.Wt (lb)	No.	Av.Wt (lb)
Eden and Border Esk	1946	2.63	2176	2.9	966	2.81	651	2.84	677	2.77
Coastal Drift	-	-	2	5	6	7.33	4	5.5	0	12
South & West Cumbria nets and fixed engines	-	-	*		*		*		*	
Duddon	-	-	*		*		*		*	
Leven	7	3.79	7	4.21	25	4.7	18	4.44	7	3.79
Kent	1	7.5	1	2.5	0	0	1	4.5	1	7.5
Lune Draw Nets	-	-	2	5	14	2.79	11	3.5	6	4.33
Lune Drift Nets	147	4.96	50	4.84	130	5.61	120	5.79	97	6.06
Lune Heave Nets	1172	3.12	1170	3.45	665	4.01	327	3.69	350	3.51
Ribble	70	5.87	22	6.5	22	5.14	20	6.35	16	10.28
TOTALS & AV.WTS	**3343**	**2.97**	**3430**	**3.15**	**1828**	**3.52**	**1152**	**3.49**	**1154**	**3.39**

* no licences issued 1995 / 1996 /1997

1.2.2 COMMERCIAL SEATROUT CATCHES 1978-98

	EDEN & BORDER ESK		LUNE DRIFT		LUNE HEAVE		RIBBLE DRIFT		COASTAL DRIFT		KENT LAVE	
YEAR	TOTAL NO.	AV WT(LB)	TOTAL NO.	AV WT(LB)	TOTAL NO.	AV WT(LB)	TOTAL NO.	AV WT(LB)	TOTAL NO.	AV WT(LB)	TOTAL NO.	AV WT(LB)
78	4238	2.18	152	4.86	710	3.37	7	6.79	6	4.83	91	4.36
79	2141	2.49	77	4.64	575	3.45	9	5.5	5	4.8	20	2.9
80	5674	2.16	303	4.37	1935	2.93	22	5.29	11	5	22	3.18
81	3955	2.22	362	5	561	3.41	18	5.72	17	4.68	12	4.75
82	6688	2.42	428	4.77	400	3.59	26	4.52	35	4.91	46	4.09
83	6646	2.37	335	5.24	475	3.3	55	5.85	9	4.89	11	3.55
84	8291	2.34	289	4.5	1865	2.89	54	7.47	31	5	43	3.07
85	5062	2.42	508	4.1	738	3.4	44	7.98	5	5	5	4.4
86	4707	2.4	192	5.17	557	3.18	23	7.51	34	5.62	13	4.77
87	5109	2.42	172	4.74	605	3.14	18	8.64	12	4.88	5	5.2
88	4949	2.16	164	4.77	1742	2.86	17	8.2	7	4.35	27	4.4
89	3847	3.08	187	4.78	1172	3.23	22	4.84	8	4.43	80	4.33
90	2193	2.73	210	5.52	778	3.7	26	7.32	2	4.13	10	5.3
91	1923	2.74	296	5.24	464	3.39	24	5.94	1	5.5	18	5.68
92	1732	2.72	308	5.37	1064	3.55	24	7.4	0	0	6	3.67
93	1445	2.62	244	5.71	594	3.27	22	6.89	0	0		
94	1946	2.63	147	4.96	1172	3.12	70	5.87	0	0	1	7.5
95	2176	2.9	50	4.84	1170	3.45	22	6.5	2	5	1	2.5
96	966	2.81	130	5.61	665	4.01	22	5.14	6	7.33	0	0
97	651	2.84	120	5.79	327	3.69	20	6.35	4	5.5	1	4.5
98	677	2.77	97	6.06	350	3.51	16	10.28	0	0	1	7.5
AVERAGE	**3572**	**2.54**	**227**	**5.05**	**853**	**3.35**	**27**	**6.67**	**9**	**4.09**	**21**	**4.28**

2 FISH CULTURE AND HATCHERY OPERATIONS

2.1 Brood fish collection

	SALMON		SEATROUT	
	Male	Female	Male	Female
Northern Area				
Border Esk system				
Eden System	8	7		
West Cumbria	8	6*		
South West Cumbria	0	0	0	0
South Cumbria Rivers	0	0	0	0
Central Area				
Broadraine Trap**	21	28	0	0
Leck Beck	0	0	0	0
R. Hyndburn	0	0	0	0
Ribble	0	0	0	0
Hodder**	12	6	0	0

* 2300ova supplied to Keswick Anglers as support to their hatchery programme
** Broodfish supplied to Hodder Hatchery Group and Middleton Hatchery Group

2.2 Hatchery Operations and Salmon and Sea Trout Stocking

2.2.1 Warwick Bridge Hatchery

2.2.1.1 Numbers of ova laid down

Species	No. of Ova	Source
salmon	40400	Lowther

2.2.1.2 Salmon and seatrout planting

River	Ova	Fed Fry Salmon	Fed Fry Sea Trout	0+ parr Salmon	1+ parr Salmon	Salmon smolts
Cocker	0					
Caldew						
Lowther		40,100				
Derwent				7500+		
Ellen						

2.2.2 Central Area salmon and seatrout stocking

2.2.2.1 Numbers of ova laid down

Species	No. of Ova	Source
Salmon	68000	River Hodder
Salmon	65000	R Lune Broadraine trap

* Ova laid down by Hodder Hatchery and Middleton Hatchery Groups respectively.

3 RESTOCKING WITH TROUT AND FRESHWATER FISH

3.1 Non-Migratory Trout

3.1.1 Stocking by Angling Associations and Fish Farms not excluded under Section 34 of the Salmon Act 1986.

Area	No. of Section 30 Consents Issued	Total No. Brown Trout	Total No. Rainbow Trout
Northern Area	141	34,300	232,760

3.2 Freshwater Fish

3.2.1 Stocking by Angling Associations etc. Numbers stocked of each species

No. of Section 30 Consents Issued	Northern Area 29	Central Area	Southern Area
Mixed Coarse	11,920		

3 RESTOCKING WITH SALMON, TROUT AND FRESHWATER FISH

Northern Area - 2000 fingerling plus 50 adult charr reared at Lakeland Smolts released into Ennerdale Water. These fish had been reared from broodstock originally from the Lake. (See below)

3.1 Non-Migratory Trout

3.1.1 Stocking by Angling Associations and Fish Farms not excluded under Section 34 of the Salmon Act 1986.

Area	No. of Section 30 Consents Issued	Total No. Brown Trout	Total No. Rainbow Trout	Total No. American Brook Trout
Northern Area	111	9528	303020	
Central Area	188	20349	48170	
Southern Area	96	71975	23927	1000

3.1.2 Non-migratory trout stocking carried out by Agency

3.1.2.1 Northern Area (char)

Date	Stocking Location	charr
July 1999	Ennerdale	2000
December 1999	Ennerdale	50

3.1.2.2 Central Area - fish to be restocked in 1999

Date of pollution incident	Stocking Location	Species	Size (cm)	Number
8.9.97	R Brun	Brown trout	15.25	36
			25.4	24
			>40	12
4.2.98	Sparrow Gill	Brown trout	>15	23
	Wyresdale		15.25	4
25.1.98	R Darwen at Houghton Bottoms	Brown trout	<15	69
			15-25	164
			25-40	84
			>40	33
16.7.98	Barton Brook	Brown trout	15.25	3
			25-40	11

3.1.2.3 Southern Area

		Brown	Trout
Date	Stocking Location	Number	(Size inches)

3.1.3 Coarse Fish Planting by Agency ex-Leyland Hatcheries and Fish Farm

3.1.3.1 North

Species	No.	Location	Size(cm)
	0		

3.1.3.2 Central

Species	No.	Location	Size(cm)
Roach	8000	Lostock	
Roach	9500	Douglas	
Roach	4000	Tawd	
Roach	5000	Yarrow	
Chub	8000	Lostcok	
Chub	5000	Yarrow	
Chub	5000	Douglas	
Chub	4000	Tawd	
Dace	6000	Lostock	
Dace	5000	Douglas	
Dace	5000	Yarrow	
Roach	5000	Alt	
Chub	3000	Downholland	
Roach	4000	Lune ORSU	
Dace	2500	Lune Lansil / ORSU	
Roach	6000	R Calder (Ribble)	
Chub	6000	R Calder (Ribble)	
Roach	3000	Darwen	
Roach	5000	Ribble (Lower)	
Roach	1000	Boyces Back (Ribble)	
Dace	5000	Boyces Back (Ribble)	
Chub	10000	Lower Ribble	
Dace	5000	Lower Ribble	

3.1.3.3 South

Species	No.	Location
chub	1000	Adlington Hall
chub	1000	Dean Water Hotel
chub	1000	Brook House Farm
chub	1000	CWS, Handforth
chub	1000	Styal Country Park
chub	5000	Congleton Centre
dace	500	Brookdale Golf Club Droylsden
dace	1000	Behind Chorlton Water Park
dace	2000	d/s Northenden Weir
dace	1000	u/s Northenden Weir
dace	2000	d/s Ashton Weir
dace	1000	u/s Ashton Weir
dace	500	Daisy Nook
chub	1500	Daisy Nook Country Park Ashton u-Lyne
chub	2000	Junction PH Lostock
chub	2000	Old Road Bridge Bolton
chub	2000	Stubley Mill Road, Rochdale
chub	1500	Brookdale Golf Club
chub	2000	Dyehouse Lane, Rochdale

3.2 Salmon and Freshwater Fish

3.2.1 Stocking by Angling Associations etc. Numbers stocked of each species

No. of Section 30 Consents Issued	Northern Area 21	Central Area 537	Southern Area
Mixed Coarse			
Roach	11300	20,850	67090
Rudd		27,000	30525
Bream	40000	14,680	34878
Chub		2,750	18688
Carp	901	41,322	24842
Crucian Carp	25	2,825	7650
Grass Carp			40
Koi Carp			10000
Gold Carp			-
Silver Carp			-
Mirror Carp			26505
Eels		6,000	-
Tench	165	3,863	12465
Barbel		4,730	800
Perch	200	62	6055
Golden Orfe		1,500	550
Silver Orfe			-
Pike			900
Other			-
Gudgeon	3	2,000	110
Wels			-
Char			-
Grayling			-
Skimmer Bream			1100
Dace			500
Roch/Rudd Hybrid			-
Broodstock			-
Ghost Carp			2400
Golden rudd			250
Salmon (juvenile)		44000	
Salmon (adult)		10	
Ide			3100
Sticklebacks			200

3.2.2 Total number of fish transfers carried out by Agency on behalf of Angling Clubs

	Northern Area	Central Area	Southern Area
No. of Transfers	1 (South Cumbria)	2	35
Roach	100		9500
Rudd	1		2500
Bream			
Chub			40
Dace			
Carp		8	1039
Crucian Carp			2500
Mirror Carp			
Trout	2		
Tench			
Gudgeon	3		
Perch		1500	2500
Pike			2
Mixed Coarse		278kg	86380
Grass Carp			
Barbel			50
Rainbow Trout			
Golden Orfe			18
Other			
Eels			

3.2.3 Total number of fish rescues carried out by Agency on behalf of Angling Clubs

	Northern Area	Central Area	Southern Area
Area Rescues	3	53	37
Roach		7112	1022
Rudd	300	627	
Bream		1247	
Chub		8	
Dace			
Carp		100	64
Mirror Carp		250	
Crucian Carp		609	17
Grass Carp			
Trout	50	6595	81
Tench			17
Gudgeon			40
Perch	1	1426	1017
Pike			1
Mixed Coarse			35400
Salmonid	197	1772	
Eels	10	41	
Other minor coarse		2126	82
Brook lamprey			

3.2.4 Fish Grants from Agency Stocks

Area	Assoc.	Receiving Water	Source	Species	No	Size

3.2.5 Fisheries Surveys in connection with Assessment, Improvement and development of Fisheries

Area	Electric Fishing	Netting	Biological	Water Analysis	Advisory Visit	Echo Sounding	Angling	Other
Northern Area (North Cumbria)	3 Caldew 19 St Johns 10 Eamont 16	0	0	0	4	0	1 212 Permits coarse fish Lower eden	
Northern Area (South Cumbria)	Crake - 34 sites Kent - 88 sites Leven - 23 sites	0	0	1	1	0	0	
Central Area	Wyre (80) Calder (37) LEADER II Hodder (16) LEADER II Cant Beck (4) Sustainable Rivers (9)					Lower Rivington reservoir (1)		
Southern Area	192	100	4	22	55	5	1	9

3.2.6 Surveys carried out for Angling Clubs

3.2.6.1 North Area

Water Sampled	**Reason**
Wood End Pond	Post pollution assessment

3.2.6.2 Central Area

Water Sampled	**Reason / Survey Results**
Lower House Mills	Large bream and tench found. No small fish
Barrowford Reservoir	Completed, good quality fish, lower numbers than expected
Cliviger, Burnley	Mainly big fish – advice given on stocking
Cricket fields, Withnell	Mainly big fish – small ones not surviving
Pearsons Flash, Wigan	Few fish and snagged net
Wigan Flashes	Abandoned due to lack of help. Finished report - 1st draft
Burrow Hall Beck	Good population of salmonids
BAE Lostock AC	741kg per hectare –good size range/species range
Longton Brickcroft	All fish in good health – had problems so no density found
Park Beck	Pool, lack of habitat
Rivington Hydroacoustic	Plenty of fish present
Habitat improvement sites on Hodder	Sites with habscore and fully quantitative

3.2.6.3 South Area

Water Body Sampled	Reason
Roadside Pool and Inkspot (NGR 725 820)	Assess the health status of fish. Sample sent to Brampton
Moorside Fishery, Wardle (NGR 897 171).	Two pools netted to assess fish populations
Netting at Booths Mere (NGR 768 785) and Tofts Hall Lake (NGR 755 775	To assess fish health status. Sample sent to Brampton.
Kinder Lodge, Hayfield (NGR 050 870).	Netted to assess fish populations.
Survey on Holts Pool (NGR 737 645	To assess carp stocks in pool.
Sandy Bottoms, St. Helen's (NGR 515 948).	Fish survey.
Netting at Peover Estate (NGR 775 735).	To check health status of fishery.
Sykes Reservoir, Stockport (NGR 887 891).	45 roach collected after fishing match for health check.
Netting survey at Sandbach Moat	To establish numbers of fish (esp. pike) following reductions in angler catches
Netting survey at Atkinson Res. (Eagley Mill), Bolton (NGR 717 133).	To establish status of fishery for future management.
Healey Dell, Rochdale NGR 897 156	Health status sample submitted to Brampton
Carr Lane Pool, Prescot NGR 470910	Stock assessment and health status sample sent to Brampton
Beefold Fishery NGR 670023	Stock assessment
Whirley Mere NGR 882748	Stock assessment particularly for pike
Sandimoor	Assessment of stocks following fish mortality
Crompsall Water, Blackley NGR 838634	Stock assessment
Tricketts Pool NGR 6122719	Stock assessment following fish mortality
Booths Mere, Knutsford NGR 818832	Stock assessment following pollution
Wilton Pool Mobberley NGR 818832	Stock assessment following fish mortality
Billinge Green main lake NGR 681711	Stock and health status survey prior to trout pellet ban
Rydings Dam, Wardle NGR 907162	Stock assessment
Eccleston Dam (Leg of Mutton)	Netted pool for health check
Fish sample taken from Brookside Fishery (NGR 614 817)	Fish showing signs of disease. Fish sent to Brampton for health check.
Goodwins Pool, Congleton (NGR 830 638	Assess fish populations following a fish mortality and possible fish theft.
Fish survey on Haughtons Flash	Fisheries management
Fisheries survey at Eve-a-Lyn at Morton	Health check prior to destocking
Fish Survey at Biddulph Grange	5 year management plan for Group 2 Angling Club (owned by the council).
Haughtons Flash Two	Fish survey to find the abundance of tench.
Fish survey following pollution incident at Lower House Pool	Fisheries management
Sandymoor Pool, Runcorn	Tagging – Carp survey
Irby New Pool	Netting - Fish stock assessment

Bridgewater Canal	Netting - Fish stock assessment
Bridgewater Canal at Dane Road, Sale. Bridgewater Canal at Kendal Sports & Social Club	Netting – To assess whether there is a pike problem
Sykes No. 2 Lodge, Edgeley, Stockport.	Netting - Population survey (stocking densities & species abundance)
Hack Green Pool	Netting - Fish stock assessment. Obvious signs of cormorant predation.
Pennington Flash, Wigan.	Netting – Fish stock assessment
Hatchmere	Hydro-acoustic survey
Tetton Flash	Netting – Fish stock assessment. Good mixed catch.
Windacre Pond, Bury	Possibly diseased fish. No fish sent to Brampton as few fish caught or too big.
Parklands Pool, Wirral (330 790)	Health check
Sandbach Moat (730 613)	Health check
Sandgate Lodge, near Nantwich (695 485)	Fisheries advice
Madeley Manor NGR 773 447	Stock assessment
Six Hole Pool	Health check sample
Benty Farm Pool	Health check sample
Brookside Fishery	Water sample taken
Lodge Pool and Long Meadow Pool, Byley	Stock assessment (NGR 692 716)
Marton Heath	Health check sample
Dormer Mill Lodge, Atherton	Health check sample (NGR 630 480) prior to fish rescue.
Meadow View	Health check sample
Moore Pool, High Legh	
Wall Pool, Gawsworth	Water sample
Dairy House Farm, Winsford	Water sample
Boggart Hole Clough, Blackley	Fish Stock assessment
Sandimoor Pool, Runcorn	DO Readings
Bottoms Lodge Walmingham	Fish Stock assessment
Croft Head, Littleborough	Fish Stock assessment
Meadow View Fishery	Water sample
Little Mere, Mere	Water sample
Saltworks Farm	Water samples
Bottom Lodge, Trows Lane, Castleton, Rochdale	Fish Stock assessment
Raby Hall Farm	Water samples
Ashley Hall Pool, Ashley	Fish stock assessment
Acresfield Pond, Timperley	Fish stock assessment
Healey Dell, Rochdale	Fish stock assessment
Meadow View Fishery	
Elton Vale Reservoir, Bury	Fish stock assessment

3.2.6.4 Other visits / works

Central Area

VISIT	REASON
Old Engine Ln lodge, Lathom	Net and remove 20000 roach
Oakenclough, Calder Vale	Visit lodge for fish rescue and transfer
Rawthey at Sedbergh.	Fence 700metres
Kelleth	Visit site of proposed smolt release pond.
Stanley Park	Lake leak investigation
Grimeford Bridge	Habitat Improvement
South Ribble BC	Urban Fisheries Development
Caton	Habitat Improvement
Scorton	Checked new fencing
Barrowford Resevoir	Netting survey
Swanside Beck at Sawley	Fence 400metres
Withnell	Advice on Fisheries
Cautley Beck at Sedbergh	Possible Habitat Enhancement
Lark Hill Park Lake	Net lake for health check sample
Keld Beck at Dent	Possible Habitat Enhancement
Street	Fed coarse fish
Lansil	ORSU Meetings LCC surveyed
Stanley Park	Investigating leak in lake
Mill Beck (R Lune)	Site visit re fencing
Chapel Beck (Howgill)	Visit farm re fencing
Lune ORSU	Planning consent progressed
Eccleston Bridge	Contractor – show sites for habitat work
Mill Beck (R Hindburn)	Site visit re NWW pipe crossing
Kirkham	Netting survey
Bentham	Trees provided (200)
Austwick Beck	On-going habitat work
Keld Beck, Dent	Possible habitat enhancement
Cricket Field Lodge, Withnell	Netting survey
Cliviger	Netting survey
Lathom, Nr Skelmersdale	Took water sample
Oswaldtwistle	Fisheries management advice
Wigan, Pearsons Flash	Netting survey
Waterside Farm	Visit farm re photos
Pearsons Flash, Wigan	Netting survey
Oakenclough Lodge	Fish rescue
Birkett Beck, Whitewell	Possible habitat enhancement
Lune	Fencing
Hindburn & Roeburn	Estate habitat work – future funding from 5B.
Street	Fed coarse fish
Horwich (Georges Lane)	Advice given on his lake
Lathom	Advice on WQ in his pond/stocking
Little Thornton	Removal of catfish
Kirkham, East View	Fish survey
Killington	Possible fencing
Borrow Bridge	Canoe access
Borrowdale	Possible fencing
Barrowford	Water samples as part of disease report
Renacres Hall Pond	Diseased fish dying
Wood Moss Lane	Advice on carp mortality
Rawthey at Sedbergh	Fence and then tree planting with Lancaster City Council's New Deal Group
Eccleston/Grimeford Bridge	Tree planting/Douglas Habitat Improvement

Leyland, Centurion Way	WQ as part of disease report
Withnell	Water samples as part of management plan
Oakenclough, Preston	Fish rescue, Oakenclough
Ribble above Settle	Future habitat work
Moor Hospital	Fish rescue
Longton Brick Croft	Water sample & fisheries advice
Renacres Hall, Halsall	Collect and send sample for Brampton
Bashall Brook	Site visit with Trust for future habitat work
Street	Fed coarse fish
Lansil	Digging ORSU
River Lune, Skerton Weir	Review eel fishery on Agency owned site
Lansil	Building Off River Spawning Unit for coarse fish
Scorton	Advice on coarse fishery
Kirkham, East View Farm	Survey of pond
Haggs Lodge, Accrington	Netted for fish health check
Hoddlesdon Res. Hoddlesdon	Water sample taken
Cow Ark, Whitwell	Future grant funding of habitat works, Ribble and Hodder
Widdows Flash Wigan	Investigation of dead fish found.
Borrowdale Beck	Possible fencing sites.
Widdows Flash Wigan	Netted for health check
Rawthey, Sedbergh	Fencing for 250meters of Rawthey
Upper Lune	Visit Farms re weed control
River Lune – Caton	Progress erosion control work with Flood Defence and Lancs CC
Claughton	Habitat restoration work planned
Overton	Promote Lune NLO
River Ribble	Netting and electrofishing for sample of coarse fish
Sabden Brook	Stocking of 500 salmon Parr in Sabden Brook
Caton R Lune	Restoration advice
Site visit Hurst Green, Dene Brook	Consent passed with recommendations
Horton-in-Ribblesdale	On going habitat work
Croxteth	View UDFP improvement work
ORSU, Lansil	Planting aquatic plants
Freckleton Pond	Set perch traps
Fenwick Arms, Claughton	Discuss future work
Newton	Broodstock-Collect Grayling
Old Tebay	Select site for boulder weir
Greta at Ingleton	Take photos of past habitat work
Site visit Sandbeck	
R Loud	Fence and trees
Mymott HM Prison	WQ Sample and advice given
Site visit Grimsargh reservoir	Gave advice with regard to algae bloom
Morecambe	Delivered and collected net under net loan scheme
Hodder Bridge	In river works site visit
Cautley Beck	
Street	Looking after coarse fish
Gubberford Bridge	Talked to farmers about fencing
Off river spawning unit	Repairs and planting
Liverpool Park Lakes	Recommend barley straw and weed removal
Cricket Fields Lodge	Ecology survey
Sun Paper Mill	Site visit / water sample
Swan pool, Magull	Fisheries advice
Lune at Kelleth	Works agreed
Lansil	Creation of fishing platforms
Stock Beck	Site visit advice green
Slyne/Lancaster	On going habitat information

Mill Dam Kirby	Fisheries habitat advice
Swan Pool, Maghull	Water sample (algae ID)
White Mans Dam	Fisheries advice
Keld Beck, Dent	
Borrowdale Beck	On going
Chapel Beck, Orton	Weed spraying
Upper Lune	Weed spraying
Keld Beck Dent	Agree fencing
Haigh	Took WQ and advised on stocks
Site visit Calder confluence	Assess clean up operation
Lune Catchment	Toured all habitat improvement sites in Lune catchment to review
Croft Lodges, Brinscall	Examined fish – diseased ID
Wymott AC prison	Discussed WQ and stocking
Site visit Horns Lake	Water sample taken and advice
Trapping at Waddow	Trap set up and processed
Barrett and Jays, Leyland	Discussed stocking/future
Mere Brow	Advice on construction of still water
Meeting with John Cavin, Alston	Discussion re bank erosion/photos taken
Upper Ribble	Future habitat work
Widdows flash	Checked and advised on diseased fish
Leck Beck	Fencing
Birk Beck	Fencing
R Brun Darwen	Stocked brown trout
River Darwen / Brun	Stocking out of Trout
Lodge Hall, R. Ribble	Ongoing habitat improvements
R Keer	Habitat restoration scheme
Off River Supplement Unit	Checking water levels
Hodder Becks	Ongoing Leader II project work
Singleton Pond	Fisheries advice
Ribble	Ongoing habitat improvement work
Newbiggin-Birkbeck Area	Check for fencing and weed
Newsham Park	Advice on algae bloom
Park Beck	Fencing agreement
Various	Site visit for ILFA regulations
Dent	Check for low flows
Freckleton	Collecting Perch Traps
G Done Tackle Blackburn	WQ sample and advice on future
R. Whitendale, R. Hodder	Fish rescue
Oxcliffe Road Pond	Blue Green Algae Bloom
Pond in Lathom, Nr Ormskirk	WQ and advice on habitat
Various	Site visit for ILFA
Ormskirk	Advice on algae/de-silting
Slippery Hill reservoir Barrowford	Fish health check and advice
Sabden Village	Fish Man. advice given and WQ sample
Chappel Pool, Tarleton	Barbel in stillwater - advice
Waddow	Setting & processing of Waddow trap
Tebay Gill Beck	Habitat restoration
Dent	Low flow check re: restoration scheme
Abbeystead	Fencing agreement
Bottom of R. Calder	Mitton Fishery, rubbish clearance
Grindleton Bridge	Draw up action plan liase with FD
R Keer Swarth Beck	Proposed tree blockage clearance
Scorton	Fencing park beck
Slipper Hill Res	Netting fish for health check sample
Abbeystead	500m fencing agreed
Upper Ribble	Future habitat work discussions

Hambleton	Investigate disease report
Slipper Hill	Repeat netting for health check sample
Hambleton Fishery	Fish sent to for health check
Borrowdale and Crookdale Becks	Discuss proposed fencing
Calderstones park	Discussed park lake development with public
Walton Hall Park	Investigate fish kill report
Bannister farm mere brow	Site visit. Discuss fish stocking
Hatchery beck	Increased flow provision
Lady Green Farm	Site visit. Discuss development
Tebay	In river work being carried out over 2 days
Longton Brickcroft Nature Reserve	Advice on "water soldier" pond weed
Halton West, R. Ribble	Habitat work to be taken on by Birse construction.
Kemp Delph, Oswaldtwistle	Advice on planting and stocking
Ribble at Halton West	Agree enhancement work on Ribble and Pan Beck
Colt Park	Look for possible joint habitat work on the Upper Ribble
Burrows Hall	Discuss outlet and fish pass from lake
Lancaster Moor	Fish rescue, reservoir drained
Fir Tree pond, Aughton	Advice given on silt problem
Barton irrigation pond	Advice on stocking policy
Cheshire lines/Down Holland Brook	Look for potential enhancement sites
Slipper Hill, Barrowford	Collect fish for health check
Thornton, netted pond for catfish	Trying to remove catfish (none caught)
Coronation Park/Ormskirk	Advice given on site plans
Spookeys Wood/Knowsley	Advice given on old and new pond
Longton Brickcroft, Longton	Fisheries Management Advice
West Houghton	Fisheries Management Advice on company lodge
Hodder Becks, Long Preston Beck	Drawing up of plans for enhancement work
Boylands Lake, Standish	Checked water following a report of distressed fish
Orchard Working Men's Club, Blackburn	Gave advice on stocking policy
Inglewhite	Fish rescue and transfer
River Alt	Check possible coarse fish stocking sites
Boylands Lake	Took water sample for laboratory analysis
Leyland Fish Farm	Health check of fish prior to stocking out
River Wyre	Check fish passes for blockages
Scorton - Park Beck	Check new fencing
Singleton	Took water sample for laboratory analysis
Lune	Fencing and planting
Broadraine Trap	Clean and repair trap
Hatchery Beck, Middleton	Halt erosion with volunteers
Abbeystead	Clean fish pass
River Wyre	Check fish passes
Keld Beck, Dent	Fence erected as part of Habitat Improvement Work
Springfield Pond	Pre netting site visit
Long Preston Beck	Identification of sites for improvement
Horwich, River Douglas	Identified trees for relocation
Hodder Beck	Identification of sites at Croasdale
Scorton	Checked new fencing
Camm Beck	Limestone gravel delivered. Started limestone gravel addition
Springfield Pond	Water level check
Cliviger Fish Ponds	Discussed weed problem and fish predation
Broadraine Weir	Advice on the operation of salmon trap
River Tawd, Hoscar	Agreed tree planting regime
Pendle Water, Barrowford	Discussed disease/fish kill and cause
Top Ribble	Siltation of redds exp.
Springfield Pond	Netting and fish transfer
Camm Beck	Limestone gravel delivered. Started limestone gravel addition.

Shuttleworth Farm, Hapton	Water Quality sample taken and pond assessed for netting survey
Habitat improvement, Hodder	Identification of sites on Easington Beck
Springfield Pond	Completed fish rescue in preparation for desilting
Hatchery Beck Middleton	Restore bank to enable good water flow to hatchery
Redd counting - Hodder Becks	Continue redd counting
Fowler Lane, R Lostock	Discussed habitat improvements
Firswood Lane Fishery, Lathom	Discussed remedial action for poor water quality
Sedbergh school	Future habitat work on R. Rawthey agreed
Broadraine Weir	Health check on Broodstock
Fenwick at Claughton	Future habitat enhancement works
Queen St Mill Lodge Burnley	Water quality sample taken for laboratory analysis
Lutra	Designing elver passes
Birk Beck	Trees planted
Hodder becks	Identification of suitable sites for enhancement works
Lansil	Checked ORSU
Mullwood, Croxteth Park & Walton Hall Park model boating lake	Netting for health check sample
Copthorne Fishing lakes	Advice on fish farming
Knowsley Park Liverpool	Stock assessment and fish transfer

South Area

Meeting / Advice Given

Advice given to: (name of AC or association)	**Location**	**Advice on: (eg. weed control, habitat improvement etc)**
	Site visit to River Medlock at Clayton Vale	To view proposed habitat Improvement works
	Mirlees Fishing Club at Hazel Grove	Weed control advice. Problem plants – white lily and broad leaved pondweed
Limehurst AC	Croft End Pond, Ashton under Lyne	Advice on development of a new fishery
Limehurst AC	Perch Pond Ashton under Lyne	Advice on extending a fishing pond
Oldham Owls Disabled AC, Boggart Hole Clough Junior Club and dayticket water	Boggart Hole Clough, Blackley	Advice on general fisheries issues
	Water sample taken from Ink Spot (NGR 725 820)	
	Grange Farm Pool, Winsford (NGR 648 640).	Water sample taken
	Pikelow NGR 858688	Water quality check
Lymm AC	Lymm Dam	Water quality check
	North West Water at Hindley Green	Discuss draining down the reservoir
Mr T Goldthorpe	Priory Mill, Droylsden (NGR 905 987)	General fisheries advice on establishing marginal plants
	Water storage lagoon on Wigg Island, Runcorn (NGR 545 844)	General fisheries advice.. Planting and suitable fish species.
for Lymm AC	Grimsditch pool	Water sample taken

	Brookside Fishery	Water sample taken from following investigation of diseased fish
Newton le Willows AC	Sankey St. Helen's Canal at Newton le Willows	Weed Control Advice . Problem plants – Yellow Lily, Broad Leaved Pondweed and Water Soldier
	Grey Mist Mere (NGR 640 889)	Water sample taken.
Mr & Mrs Kershaw, Moorside Farm,	Moorside Farm, Whitworth, Rochdale	Weed Control Advice. 2 small pools to be developed as a trout fishery and coarse fishery. Problem weeds: reedmace and marestail.
Mr Ken Pimlott, Mereside Farm	Mereside Farm, Chester Road, Millington, Altrincham	Weed Control Advice. Problem weed: variegated reed sweet grass
Mr A Finney	Ditton, Widnes	Weed Control Advice. Problem weed: common reed.
	Pool in Middlewich	General fisheries advice. Angler did not turn up.
	Kinder Lodge, Hayfield	General fisheries advice
	Little Woolden Hall Farm, Culcheth	Potential Urban Fisheries Development site.
	Vauxhall works ETW plant reservoir	Weed control – Problem with Duckweed
Altrincham & District AC	Brickworks pool, Mobberley	Pool to be extended and de-silted
	Poplar Farm Pool, Daresbury	General fisheries advice (with L Cooper-Bagley)
	Haughton Dale, Tameside	Creation of a new fishery. Potential Urban Fisheries Development site.
	Pond at Sycamore Ave, Golborne	(with Wigan MBC)
British Waterways	British Waterways	Weed control advice, regarding weed control programme issues and application licence
Brindley Lea Hall, Burland, Nantwich	Mr David Latham	Wishes to construct lake approximately 3 acres in size
Farm Pool	Mr Mountfield, Whitley House Farm, Antrobus	Weed control (Elodea sp.) and fish stocking advice for BT pool
Thornton Brook		Re: F.A.S
Battersea Road, Burnage		General fisheries
Pool off Ingles Lane	Catholic AC, Rochdale	Weed control advice – Yellow Fringed Water Lily
Firs Park Lake, Leigh	Leigh Council Leisure Services Dept. (Andrew Howarth)	Weed control – Phragmites sp. and Canary Sweet Grass
Grimsditch		Water sample taken
Whitley Pool		Water sample taken
Meadow View Match Pool		Water sample taken
Manley Spring Trout Lake, Frodsham		Weed control advice – blue green algae
Pond on Our Lady of Lourds R C Church	Wirral Groundwork (Suzanne Carr), Leasowe	Creating 3 acre lake in grounds
Riversdale College pond	Mr Beren, Aigbirth, Liverpool	Weed control – Elodea sp. And assist with draindown in Sept.
Hill Top Farm		Water sample taken
Rixton Clay Pit		Health check of fish to Brampton for Section 30
Pool in Mobberley	Mr Jimmy Branchett (private land owner)	Creating a 1.5 acre commercial coarse fishery

Winterley Pool		3 carp electrofished for health check
Acresfield Pond, Park Road, Timperley	Mrs Mandy Flude – representing local housing group which surround a pond	Weed control/fisheries advise. Problem weed – *Lemna* sp.
Mr Clegg	Mr Clegg, Warburton	General fisheries advice.
Collins Green AC	Collins Green AC, St. Helens	Weed control – problem weed *Phragmites* sp.
Acresfield Pond, Park Road, Timperley		Habitat and algal control advice
Heesom's Pool, Whitley		WQ sample taken
Pools, off Raby Road	Wirral AC (Mr. Mark Lewis)	Weed control and fisheries advice. Cattle poaching.
Turners Pool, Swythamley		Water sample taken
Demesne House, Doddington		
Rixton Clay Pit	Rangers	Trapping fish
Whitebottom Farm, Compstall	Mr Ken Hancock	Weed control. Problem weed – Yellow Fringed Water Lily
Alexandra Park, Duck Pond.	Oldham MBC (Glen Dale – Education & Leisure Services)	Blue-green algae in duck pond. And re-instating the duck pond and boating lake with Heritage Lottery Funding
Madeley Manor	Madeley	
Old Hall Mill Pond, Atherton		Habitat enhancement for project
Partridge Lakes, Culcheth		Weed control advice. Problem weeds include Elodea and Yellow Fringed Water Lily.
Haymans Farm	Chorlton AC	Water sample and general fisheries advise
Dairy House Farm, Winsford	Ron Navelli	Stocking rates, species, habitat and construction of angling pegs for new pond
Clowes Park, Broughton, Salford	Salford Inter Clubs and Salford Council	De-silting
Old Hall Mill Pond		Habitat improvement
Goodwins Pool	Congleton AC	Boundary dispute
New Farm Pond, Glazebrook	Trevor Lancashire	Stocking & habitat improvement (NB: Poss. Great Crested Newts)
Pennington Flash, Leigh	Rangers	Proposed reventment
Sandhole Fishery, Walkden	Salford AC	Weed control advice
British Waterways, Church Lawton Depot		Weed control advice
Danebridge Fishery		Crayfish Project
Healey Dell	Rangers	Habitat improvements

4. FISH MOVEMENT RECORDED AT AUTHORITY FISH COUNTERS

4.1 River Lune

	FORGE WEIR				BROADRAINE WEIR			
Month	<35.0 cm	35.1- 50.0 cm	50.1- 65.0 cm	>65.0 cm	<35.0 cm	35.1- 50.0 cm	50.1- 65.0 cm	>65.0 cm
Jan	2	3	0	4	28	0	5	1
Feb	0	0	0	4	5	2	2	0
Mar	0	0	1	1	5	4	1	0
Apr		36	total		0	47	2	3
May	284	348	155	100	13	29	11	18
Jun	2078	2329	818	512	68	101	82	78
Jul	627	785	394	292	56	155	82	55
Aug		911	total		24	57	36	43
Sep	105	460	629	1011		786	total	
Oct	54	173	167	289		data	corrupted	
Nov	26	60	115	424	0	3	2	43
Dec	7	15	20	47	4	15	2	49
Total	3183	4173	2299	2684	203	413	225	290

NB All counts are estimates subject to trace validation

4.2 River Kent - Basinghyll

Month	<35.0 cm	35.1- 50.0 cm	50.1- 65.0 cm	>65.0 cm
January*	6	25	3	1
February*	5	6	2	5
March*	12	14	5	5
April*	5	16	5	2
May*	7	148	68	14
June8	48	673	185	47
July*	43	615	209	43
August*	110	266	273	165
September	117	537	175	78
October	118	546	103	12
November**	36	228	82	10
December**	6	16	6	3
Total	613	3090	1116	385

* Only 3 of the 4 channels were fully operational during the period January - August and therefore counts for these months will be an underestimate of the total run

** Corrupt data 17.11.99 to 10.12.99

4.3 River Leven Backbarrow

Month	<35.0 cm	35.1- 50.0 cm	50.1- 65.0 cm	>65.0 cm
January[1]	0	0	0	0
February	2	1	0	0
March[2]	14	4	0	2
April	10	10	2	3
May	29	14	1	0
June[3]	40	16	5	5
July[4]	231	99	26	9
August	94	40	21	19
September	75	18	12	4
October[5]	17	5	2	0
November[6]	49	21	5	8
December	34	15	2	2
Total	595	243	76	52

1. Corrupt data 16.1.99 - 27.1.99
2. Corrupt data 29.6.99 - 30.6.99
3. Corrupt data 1.7.99 - 6.7.99
4. Corrupt data 5.10.99 - 28.10.99
5. Corrupt data 4.11.99 - 17.11.99

4.4 River Calder - Calder Hall - This counter has been removed from this site due to data quality and resource issues

4.5 River Ribble Catchment

	WADDOW WEIR				LOCKS WEIR			
Month	<35.0 cm	35.1- 50.0 cm	50.1- 65.0 cm	>65.0 cm	<35.0 cm	35.1- 50.0 cm	50.1- 65.0 cm	>65.0 cm
Jan	27	0	5	3	28	25	0	0
Feb	7	1	0	0	2	0	0	0
Mar	0	1	3	1	2	5	0	0
Apr	39	7	5	7	0	20	2	3
May	70	28	9	0	0	15	0	16
Jun	666	180	88	34	16	29	4	52
Jul	312	66	29	0	no data			
Aug	70	38	21	12				
Sep	158	157	63	58	6	23	26	150
Oct	220	86	30	10	13	51	29	80
Nov	34	13	14	2	0	25	5	51
Dec	6	0	0	0	45	0	0	0
Total	1609	577	267	127	112	193	66	352

NB Fish can bypass Waddow Counter under a narrow range of flows
Possible fish sizing inconsistencies between Waddow and Locks to be addressed in 2000/2001
Counts are estimates subject to trace validation

4.6 River Hodder

WINKLEY WEIR				
Month	<35.0 cm	35.1- 50.0 cm	50.1- 65.0 cm	>65.0 cm
Jan	0	0	0	0
Feb	0	1	0	2
Mar	6	6	6	8
Apr	48	37	22	15
May	47	67	36	46
Jun	304	543	321	270
Jul	321	324	227	197
Aug	83	57	24	21
Sep	55	47	56	56
Oct	32	44	35	64
Nov	11	29	8	28
Dec	2	4	3	11
Total	909	1159	738	718

NB Possible inconsistency in fish sizing through the year due to channel disturbance
Counts are estimates subject to trace validation

4.7 Yearl Counter R Derwent and Corby Hill R Eden

	YEARL*		CORBY HILL**	
Month	Up	Down	Up	Down
Jan	192	150	37	16
Feb	773	472	136	117
Mar	1132	1387	139	138
Apr	867	1193	44	17
May	2130	1070	995	312
Jun	4662	1039	408	124
Jul	3884	1323	549	166
Aug	2113	551	245	28
Sep	2450	843	934	89
Oct	876	420	440	41
Nov	691	1193	492	57
Dec	270	378	252	43

*These are unedited counts only and will alter when data are processed further. Early and late in the year down counts exceed up counts due to kelts and sea trout dropping downstream. Some down counts will be due to fish moving up and then down over the counter and some may be due to eels. It is likely that counts in May and June are predominantly sea trout. 1999 was a poor year for grilse.

** These are unedited counts only and will alter when data are processed further. Preliminary work on validating the counter indicates that the above data will be an underestimate. Early and late in the year down counts are likely to be primarily due to kelts and sea trout dropping downstream. Some down counts will be due to fish moving up and then down over the counter and some may be due to eels. It is likely that counts in May and June are predominantly sea trout. 1999 was a poor year for grilse.

5. COUNTS OF SALMON AND SEA TROUT SPAWNING REDDS

RIVER/AREA	1995		1996		1997		1998		1999	
	Salmon	S/Trout	Salmon	S/Trout	Salmon	S/Trout	Salmon	S/Trout	Salmon	S/Trout
Eden d/s Eden Grove	No	Count	See	Below					Not	Counted
Eden d/s Eden Brow	No	Count	See	Below					Not	Counted
Eden u/s Temple Sowerby	532	-	535	-	165		179	0	Not	Counted
Eden d/s Temple Sowerby	-	-	193**	-	2 (tribs only)		13	0	Not	Counted
Eamont	330	-	230	-	35 (tribs only)		24 (tribs only)	0	Not	Counted
Lowther	214	-	149	-	73		131	0	Not	Counted
Irthing	176	-	43*				21	6 brown	Not	Counted
Gelt	No	Count	-*	-			31	0	Not	Counted
Border Esk	288	227	243	143	197	37	55	12	Not	Counted
Caldew	201	-	169	-	182	5 trout	129	2 trout	Not	Counted
Liddel	157	62	308	84	29	115	16	11	Not	Counted
Wampool/Waver	7	11							Not	Counted
Lyne			36	153	4	74			Not	Counted

Note: In all these years high and turbid river conditions made redd counting difficult or impossible and the figures given above are undoubtedly incomplete. 1993/4 particularly poor weather. Only limited count possible. 1995 Good year North & West Cumbria due to low flows: redds easy to see

* very limited count

** Includes all d/s Eden counts

1999 = No counts due to high and turbid river conditions

5. COUNTS OF SALMON AND SEA TROUT SPAWNING REDDS

RIVER/AREA	1995		1996		1997		1998		1999	
	Salmon	S/Trout	Salmon	S/Trout	Salmon	S/Trout	Salmon	S/Trout	Salmon	S/Trout
Ellen	76	82	34	12	105				9	53
Derwent	378	-	342	-	22	12*			Not counted	Not counted
-Marron	173	-	30	25	61	2			27	28
Cocker	187	-	94	-	72				Not counted	Not counted
Greta	117	-	14	-	62				25	
Ehen	157	174	114	61	18	43+	12++/+	0	18++	Not counted
Keekle	0	7	not	counted	0	6+	0+	3		Not counted
Dub Beck	0	34	not	counted	0	9+	not	counted	Not counted	Not counted
Calder	37	11	32	16	7	1++	not	counted	Not counted	Not counted
Irt	284	95	213	156	88	70+	108+	101	56	98
Bleng	(See	Irt)	(See	Irt)	(See	Irt)	(See	Irt)	7	5
Esk	99	91	27	181	0	31++	3++	7	55	242
Mite	34	43	19	16	18	10+	35+	10	11	11
Annas	35	25	not	counted	4	27++	13+	1	Not counted	Not counted

* Main river not all done
** In divert channel . High water hampered all counts in 1994
+ High flows hampered counts
++Incompletecounts
1999 Many rivers not counted due to high flows

5. COUNTS OF SALMON AND SEA TROUT SPAWNING REDDS

RIVER/AREA	1995		1996		1997		1998		1999	
	Salmon	S/Trout	Salmon	S/Trout	Salmon	S/Trout	Salmon	S/Trout	Salmon	S/Trout
Duddon	125	323	121	295	34	107*	81*	201	71	265
Crake	222	441	141	229	25	220*	72*	209	33	200
Leven & tribs	275	743	299	450	8	93**	115*	54	30	50
Eea	**	13**	58*	55	0	91*	51*	139	9	104
Winster	97	214	47	113	15	75**	6*	59	4	112
Gilpin	60	134	32	159	4	49**	9*	70	2	78
Kent & Tribs	1693	1060	1040	586	137	400**	613*	434	36	386
Bela	63	285	68	217	64	119**	60*	238	35	375
Kirkby Pool & Tribs							34	171	(See R Duddon)	(See R Duddon)
Rusland Pool							30*	331	40	288
Keer	-	56	5	62	0	72				
Lune	793	7	931	10	197**	24**	472**	301		
Rawthey	205	127	-	-	47	160	1*	25		
Dee	130	93	-	-	72	87				
Greta	22	28	-	-	101	153	50*	15		
Wenning	279	271	-	-	79	233	62*	149		
Other Lune tribs	71	564	370	302	41	249	34*	41		
Ribble	309	380	250	142	164*	289*	250**	205		
Hodder	449	479	288	507	31	408	53**	426		
Wyre	25	55	19	31	25	85	27**	44		
Conder		7	3	41	2	26	3**	23		

No Reliable counts Due to Very high water

- High water hampered counts High water hampered counts 1994 Many rivers incomplete ** Incomplete count

6. FISH MORTALITIES

The tables below illustrate the main fish kill incidents (Greater than 20 fish). The causes have been split into four categories : pollution (sewage effluent and industrial discharges), environmental (low dissolved oxygen, algal bloom, low flow etc.,) disease and unknown

6.1 NORTH AREA

LOCATION	DATE	NO.	SPECIES	CAUSE
River Keekle	5 November 1999	5000	0+ brown trout (<10cm)	Combination of flood event and pollution
		37	1+ brown trout (10-20cm)	
		98	Adult brown trout (20-30cm)	
		6	Adult brown trout (30-40cm)	
		38	Seatrout	
		250	Eels	
		100+	Stoneloach	
		0	Salmon	
Pow Beck	21 October 1999	118	0+ brown trout (<10cm)	pollution
		169	1+ brown trout (10-20cm)	
		119	Adult brown trout (20-30cm)	
		26	Adult brown trout (30-40cm)	
		3	Seatrout	
		0	Salmon	
		2	Roach	
		200+	Eels	
		84+	Flounders	
		18	sticklebacks	

6.2 CENTRAL AREA

LOCATION	DATE	NO.	SPECIES	CAUSE
Castle Clough Beck	9 April 1999	26	trout	Slurry pollution
		59	Stoneloach	
Woodplumpton Brook	3 May 1999	40	Roach	Pollution
		7568	Stoneloach	
		8160	Stickleback	
		32	Gudgeon	
		40	Chub	
		28	Eel	
R Crossens	9 May 1999	35	Roach	Environmental
Showley Brook	16 May 1999	42	trout	pollution
Pearl Brook	26 May 1999	40	Trout	Pollution
Grizedale Reservoir	4 September 1999	111	Trout	Environmental
Bikacre Lodge	2 May 1999	40-50	Roach	Unknown
Orrell water Park	11 May 1999	11	Bream	Disease
		120	Roach	
		19	Carp	
Pochard Place Cleveleys	9 August 1999	240	Perch	Environmental
		86	Bream	
Rough Syke Hodder	23 November 1999	117	seatrout	Pollution

6.3 SOUTHERN AREA

LOCATION	DATE	NO.	SPECIES	CAUSE
Shropshire Union Canal Llangollen Branch, Hurleston	15 February 1999	49	bream	Environmental
		48	roach	Environmental
Brookside Fishery (Snake Fishery) Stretton Warrington	23 March 1999	30	Chub	Environmental
		20	Perch	
		100	Roach	
Bradford Lodge Melville Street, Bolton	23 March 1999	13	Tench	Disease
Brookside Fishery (Snake Fishery) Stretton Warrington	23 March 1999	50	Carp	Environmental
		10	Carp	
		100	Perch	
Denton Arm Gorton	30 March 1999	100	roach	Environmental
King George IV Altrincham	06 May 1999	50	roach	Environmental
River Dane Rushton	08 May 1999	30	roach	Unknown
Hancocks Flash Sandbach	09 May 1999	1	carp	Pollution
Farm Pond, Holly Hedge Lane Walton, Warrington	31 May 1999	46	Bream	Environmental
		9	Perch	
Van Tana Lodge Farnworth	25 June 1999	50	stickleback	Environmental
		12	roach	
		6	rudd	
Lancashire Sock Company (pond) Newline Road, Bacup	26 June 1999	1	Bream	Environmental
		186	Roach	Environmental
Bessey Brook Lostock Junction	02 July 1999	2	Roach	Unknown pollution
		51	Brown trout	
Lake Benneston Hall Hotel	03 July 1999	20	carp	Pollution
Border Fishery Alsager	05 July 1999	20	carp	Environmental
Kenyon Hall Pool Lowton	10 July 1999	600	Roach	Environmental
		200	Bream	
		50	Tench	
		15	Carp	
River Weaver Saltersford Locks	14 July 1999	60	chub,roach, bream	Unknown
Mellors Pool Windy Arbor Road, Whiston	14 July 1999	500	Mixed coarse	Environmental
Border fisheries Alsager	15 July 1999	2000	Golden Orfe	Environmental

Roadside ponds Willaston, Wirral	24 July 1999	25	Crucian carp	Environmental
River Dean Near Bollington, Macclesfield	26 July 1999	7	roach	Pollution (poss. from factory)
		50	brown trout	
		30	stoneloach	
Small pond Newline road, Bacup	26 July 1999	186	Roach	Environmental
		1	Bream	
R.Dean Near Bollington	27 July 1999	15	Stoneloach	Environmental
		27	Brown trout	Environmental
Meadow View Statham, Lymm	31 July 1999	3	orfe	Environmental
		19	carp	
River Beal Milnrow	02 August 1999	172	Brown trout	Unknown
Turners Pool Swythamley, Near Macclesfield	02 August 1999	30	carp	Environmental
Cicely Mill Pond Bucklow Hill, Mere	04 August 1999	100	Mixed coarse	Environmental
Border Fishery Balterley	04 August 1999	200	Chub	Environmental
		200	Orfe	
Seamans Way Pool Ince	05 August 1999	30	Bream	Unknown
Victoria Park Lake St. Helens	07 August 1999	100	Mixed coarse	Environmental
Clincton Pool Wood Hough Green, Widnes	10 August 1999	20	Roach	Environmental
River Tame Stalybridge	19 August 1999	10	Roach	Unknown
		20	Bullhead	
		15	Dace	
Brookside Fishery Betley	07 September 1999	56	Roach	Pollution
River Weaver d/s Saltersford Lock (Northwich)	09 September 1999	1000	Stickleback	Unknown
Ashton Canal Droylsdon, between Crab Tree lane & Edge lane	29 September 1999	2	Perch	Unknown
		41	Roach	
		9	Roach	
Meadow View Fishery (Match Lake) Statham, Lymm	25 October 1999	300	Mixed coarse	Pollution (poss. toxins)
Kirklees Brook Tottington, Bury	01 November 1999	50	Brown trout	Pollution

7. DETAILS OF FISHERIES PROSECUTIONS (SALMON AND FRESHWATER FISHERIES ACT 1975)

Offence	Section	No of Charges	Dismissed	Withdrawn	Cond disc	Abs Disc	Prob Order	No Sep Pen	Not Proven	Fines	Costs
Prohibited implement	1	8		1						£510.00	£358.33
Unclean/immature fish	2	0									
Fixed engine	6	2	1		1					£0.00	£150.00
Close season salmon	19(2)	0									
Trout	19(4)	7	1							£695.00	£183.33
Freshwater fish	19(6)	8			1					£208.00	£175.82
Rainbow trout	19(7)	2						2		£0.00	£40.00
Unlicensed instrument - coop	27	0									
hands		0									
net		3	2					1		£0.00	£33.33
rod		338		13	7	6		1		£14,130.50	£14,296.66
Eel fork		0									
hand line		0									
Introducing fish	30	0									
Refuse seizure	31	0									
Failing to produce/ to state	35	24						1		£1,087.50	£631.66
Set Lines	27	0									
Total		392	4	14	9	6	0	5	0	£16,631.00	£15,869.13

FISHERY BYELAWS

Offence	Section	No of Charges	Dismissed	Withdrawn	Cond disc	Abs Disc	Prob Order	No Sep Pen	Not Proven	Fines	Costs
	7b	0									
	11	0									
	9	0									
	12(x)	1								£50.00	£25.00
	12(vii)	0									
	13(v)	1								£200.00	£50.00
	17	0									
	18(I)	9						2		£258.00	£177.48
	18(ii)	2								£58.00	£29.16
	19	0									
	20	1								£25.00	£16.66
	22	2								£50.00	£0.00
	23	0									
	24(a)	0									
	25	2								£125.00	£40.00
	26	0									
National Salmon Byelaws											
	5	2								£100.00	£75.00
	6	1								£50.00	£25.00
Sea Fishery Committee Byelaws	7	0									
	11	0									
Totals		21	0	0	0	0	0	2	0	£916.00	£438.30

MISCELLANEOUS LEGISLATION

Offence	Section	No of Charges	Dismissed	Withdrawn	Cond disc	Abs Disc	Prob Order	No Sep Pen	Not Proven	Fines	Costs
Angling in private waters	Theft Act 1968	1								£25.00	£12.50
Salmon Handling	Salmon Act 1986	1		1						£0.00	£0.00
Threatening behaviour	Public Order Act 1986	0									
Obstruction	Police Act 1964	0									
Skerton Weir Byelaw 1		0									
Assault	Offences Against the Person Act 1861	0									
Attempting to pervert the course of justice		0									
Totals		**2**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**£25.00**	**£12.50**

8. NUMBERS OF ROD AND COMMERCIAL FISHING LICENCES ISSUED

8.1 Rod and Line

COARSE LICENCES	North	Central	South	Total.
FULL	4636	17092	40247	61975
CONCESSION	1615	6665	16760	25040
8 - DAY	778	707	1437	2922
1 - DAY	2768	6604	13308	22680
TOTAL COARSE	9797	31068	71752	112617
SALMON LICENCES				
FULL	1046	1003	650	2699
CONCESSION	472	572	375	1419
8 - DAY	240	115	97	452
1 - DAY	667	774	299	1740
UPGRADES				
FULL COARSE TO SALMON	137	154	45	336
CONCESSION COARSE TO SALMON	25	25	13	63
TOTAL SALMON	2587	2643	1479	6709
GRAND TOTAL	**12384**	**33711**	**73231**	**119326**

8.2 Instruments Other Than Rod and Line

Northern Area	No	No Endorsees	Duty £	Amount £ (incl. Endorsees)
Solway - Haaf nets	114		100	11400
R.Eden District -Coops	3	4	257	771.8
South West Cumbria - Garth	0			
Cumbrian Coastal Waters - Drift nets	4	13	408	1634.6
Duddon Estuary - Draw or Seine Nets.	0			
Kent Estuary - Lave Nets	8	0	100	800
Leven Estuary - Lave Nets	6	0	100	600
Derwent Coop	0			
Central Area				
Ribble Estuary - Drift or Hang Nets	6	19	297	1785.8
Lune Estuary - Drift or Hang nets	8	27	408	3269.4
- Draw or Seine Nets	1	5	368	369
- Heave or Haaf Nets	25	0	200	5000
Totals	**175**	**68**		**2563.6**

Eel Fishing Licences - Whole Area

	Duty £	Licences	No. of Nets	Amount £
Fyke Nets	5.5	19	316	1738
Traps/Putcheons/ Baskets	16.6	8	200	132.8
Dip nets	11	44	44	484
Fixed eel traps	83.25	2	3	219.75
Totals				**2604.55**

8.3 Numbers of persons engaged in commercial salmon and trout fishing

TYPE OF NET, etc

AREA	Haaf	Drift	Draw	Lave	Fixed Engine
NORTH					
Licence Holders	114	4	0	14	3
Endorsees		13			
CENTRAL					
Licence Holders	25	14	1	0	0
Endorsees		46	5		

8.4 General Licences Number issued 13 £2259.5

8.5 Temporary Licences (Rod and Line) Number issued 48 £415.5

NORTH WEST REGION ADDRESSES

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Fax: 01925 415 961

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Gillan Way
Penrith 40 Business Park
Penrith
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ENVIRONMENT AGENCY GENERAL ENQUIRY LINE
0845 933 3111

ENVIRONMENT AGENCY FLOODLINE
0845 988 1188

ENVIRONMENT AGENCY EMERGENCY HOTLINE
0800 80 70 60

ENVIRONMENT AGENCY

NW-10/00-500-B-BRD