

# THE ATLANTIC SALMON RESEARCH TRUST



NEWSLETTER No. 9 — March, 1976

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## SECTION 1 — GENERAL

### Salmon Catches

Although full reports for 1975 are not yet available it seems that most rivers in the United Kingdom and Ireland had about an average year, with the striking exception of the North West of Scotland and the Hebrides where the season was disastrous, e.g. the Grimersta where it was easily the worst for over 100 years. Theories vary as to the cause—foreign seine-netters off the coasts of the Outer Hebrides to the Irish drift-net fishery—and positive evidence is scanty: though one N.W. of Scotland river where smolts are tagged and the return of 4 tags from Ireland out of a total of only 9 recaptures seems to provide a strong pointer.

Reports this year for the early spring rivers are few but suggest the season started with a fair stock of fresh fish present, and that these moved upstream fast; succeeding runs have been conspicuous by their absence, or at best have been small and intermittent, possibly because of lack of water in many rivers.

The work of the ICES/ICNAF Joint Working Party on Atlantic Salmon, set up in the mid sixties to monitor the West Greenland fishery and assess its effects on home water catches, has become less significant now that a ban on high seas fishing has been established; but it still fulfils a very valuable role by continuing to report annual catches of salmon from the home waters of the major salmon-producing countries and from the Greenland and Norwegian Sea fisheries—it is the only source of such statistics at this international level. Based on information contained in the Working Party's reports and on supporting details derived from individual countries the Trust has compiled two Tables showing the N. Atlantic salmon catch for each year from 1960 to 1974, with where possible the proportion of grilse; they are printed at the end of this Section of the Newsletter. Table I gives the aggregates for home waters, Greenland and the Norwegian Sea: Table II breaks down the home water aggregates into the catches for individual countries. The Baltic catch is not included and with this exception and that of Spain the figures cover virtually the whole geographic range of N. Atlantic Salmon: against this perspective the proportions of the total catches from Scottish and Irish sources rank very high.

### High Seas Fishing

Throughout the areas of both ICNAF (International Commission for Northwest Atlantic Fisheries) and NEAFC (North East Atlantic Fisheries Commission) the long sought after total ban on "highseas" fishing for salmon came into effect on 1st January this year: there are exceptions, the Danes having proclaimed their intention to continue long-lining in the Norwegian Sea, and Greenlanders being permitted to catch up to 1190 metric tons of salmon annually in the West Greenland fishery, inside or outside their national fishery limits; drift netting off the coasts of Ireland also seems to have strayed on occasion outside national limits into NEAFC Convention



waters. But by and large, assuming there are adequate means to ensure observance of the rules, we have come a long way from the late sixties/early seventies and their vast catches of salmon on their feeding grounds in the N. Atlantic. There is no room for complacency, however, and further action is needed to bring an end to long-lining by Danish vessels in the Norwegian Sea and to strengthen control of Irish drift-netting: in all of this the Trust is fully engaged.

### **Salmon in Ireland**

Two recent, but entirely separate, reports have put the spotlight in no uncertain fashion on the deplorable plight of salmon in Ireland: not least remarkable for the similarity of the picture they present and the lessons they draw, each in its own way is notable for its scope and depth of detail and both are deserving of the closest study by anyone with the well-being of salmon at heart and who is seeking sensible recommendations and remedies to counter over-exploitation.

The Report of the Irish Inland Fisheries Commission presented to the Minister for Agriculture and Fisheries of Ireland in July, 1975, is a most comprehensive and revealing document. As to be expected from its title it examines all aspects of inland fisheries, (i.e. covering salmon, trout, eels and coarse fish) but it gives pride of place and space to salmon and sea-trout and on their behalf goes beyond fresh-water and takes a very close and critical look at what is happening in the sea, particularly with the growth of commercial exploitation outside estuarial waters; its voluminous appendices and supporting graphs are a mine of information on salmon catches and trends over the years back to 1929, and the effect is to portray a most depressing future for salmon: a monumental rise in drift-netting, mainly off the West and South coasts, has already virtually wiped out some estuarial fisheries and obliterated runs of salmon in certain rivers, while in many others these have been so reduced that it is questionable whether the spawning escapement is sufficient to maintain stocks.

As an example of this, from 1929 to 1962 the yearly catch by drift-nets rarely exceeded 500,000 lbs of fish and averaged about 18% of the total annual Irish catch; it has risen rapidly since 1962 and in 1974 exceeded 3,000,000 lbs equivalent to 72% of the total catch: in contrast the catch by rod and line is now at almost its lowest ebb since 1929 being only 2.9% of the total, this despite a very greatly increased angling effort.

But countering these dismal facts there is a wealth of proposals and recommendations for retrieving the situation: these are mainly hung on the setting up of a national Fishery Authority with complete power and responsibility for the overall management of salmon fisheries, including amongst other measures the close and timely control of the size of catch as between the various methods of commercial fishing, and adequate restrictions on these to ensure larger escapements to the rivers. It is fully recognised that only urgent and positive action, cutting across many vested interests, can prevent further deterioration, let alone start restoration: the expenditure



of vast sums of money is not required and much could be achieved by measures in the fields of organisation and administration. It is only to be hoped that the nettle will be firmly grasped: if not, the outlook is bleak indeed.

Complementary to the Inland Fisheries Report and its general findings a newly published Report entitled "The Foyle Fisheries—a new basis for rational management" and prepared for the Foyle Fisheries Commission by two eminent Canadians, P. F. Elson and A. L. W. Tuomi, focusses a magnifying glass on the particular circumstances affecting salmon of the R. Foyle system. Its 200 pages are divided into 2 Sections, one dealing with environmental factors and the various types of fishing, and the other examining economic aspects; they analyse in great depth and detail the many changes that have occurred since the Foyle Fisheries Commission was formed in 1952, and draw on a wealth of experience in Canada and of knowledge gained from other major salmon-producing countries in support of recommendations for the conservation, management and development of the fisheries of the Foyle area.

If proof were needed of the case presented by the Inland Fisheries Commission's Report this second wide-ranging and searching analysis finds that in what used to be a particularly prolific river system there has been a similar decline of catches, commercial and rod, and that excessive exploitation has now reduced Foyle salmon stocks to a dangerously low ebb; it thus confirms the sorry long term prospects for salmon in Ireland and corroborates the urgent need for effective remedial action, including a drastic and immediate curtailment of all commercial fishing of salmon.

### **Migration and "Homing" of Salmon**

Given impetus by the growth of the Greenland fishery and its possible effects on home-water catches much new knowledge on the movements of salmon has been acquired in recent years from the greater effort put into tagging smolts, with a consequent increase in the return of tags from recaptures, and from the tagging of mature fish on their feeding grounds: for instance many thousands of smolts are now tagged annually in Scottish rivers, principally the Tay, Conon, Dee and N. Esk. Two particular returns invite speculation on whether the fish concerned were "strays", pioneers or from established stocks on hitherto undiscovered feeding grounds or migratory routes; tagged as smolts in the N. Esk in the spring of 1973 one weighing 10 lbs was recaptured two years later in a net off the coast of Newfoundland, the other weighing 5½ lbs was caught in an eel trap in the River Weser in Germany.

Also revealing are tag returns from fish tagged as smolts and subsequently caught in the Irish drift-net fishery, and from mature fish tagged and released in that fishery and then caught elsewhere: rivers in the S.W. and the N.W. of England, in Wales and in Scotland are now known to contribute to the stock of salmon being thus exploited; with a greater effort in tagging on the fishing grounds we should learn much more.



More information on the homing of salmon came to light from ten papers which were presented to the Anadromous and Catadromous (ANACAT) Committee of the International Council for the Exploration of the Sea (ICES) at the latter's 67th statutory annual meeting in Montreal in the autumn of 1975; they dealt mainly with the migration patterns of salmon of Canadian and United Kingdom origin as obtained from tag returns. There was a clear conclusion that each and every salmon-producing river system has developed its own particular strain of salmon and therefore in any re-stocking programme ova indigenous to the river concerned, or from its immediate vicinity, should be used to the maximum extent; to use ova/fry from a source which is geographically distant may well be utterly wasteful.

### **International Advisory Group**

Representatives from Canada, Iceland, Ireland, Sweden and the U.S.A. attended a meeting of this Group held in Montreal on 1st October last, under the Chairmanship of Dr. Went from Ireland. Sponsored equally by the Atlantic Salmon Research Trust and the International Atlantic Salmon Foundation the Group reviews annually the international scene as it affects N. Atlantic salmon and if remedial measures seem necessary for any particular circumstances, e.g. over exploitation, the Group as a whole or its individual members will take such action as is practicable to persuade Governments to institute such measures; the respective directors of the two parent organisations are the joint secretaries to the Group and were in attendance at this meeting.

The main business at the meeting was to examine the efficacy of existing and projected measures for the prevention of salmon fishing at sea, outside national fishery limits: in consequence of decisions taken representations by the International Advisory Group have since been made to Governments or organisations concerned on the following matters:

- (a) Law of the Sea Conference: progress so far achieved for the protection of anadromous fish be consolidated by future sessions of the Conference.
- (b) Norwegian Sea Fishery: all members of NEAFC to persuade Denmark to abandon this long-line fishery.
- (c) Drift netting off Ireland: the Governments of the United Kingdom and Ireland jointly to agree measures for the strict control of this fishery.
- (d) Newfoundland Commercial Fisheries: the Government of Canada to institute measures to prevent these fisheries prejudicing by too intensive netting on the migratory routes the current programme for the restoration of salmon in the rivers of New England.

### **Law of the Sea Conference**

A further session of the Law of the Sea Conference opens in New York this month: progress in earlier sessions has succeeded in producing the draft



of an article governing the catching of anadromous fish (salmon) outside national fishery limits and it can only be hoped that positive action now will see it formally accepted and brought into force as early as practicable. The text of the draft article is given below.

#### ARTICLE 54

1. Coastal States in whose rivers anadromous stocks originate shall have the primary interest in and responsibility for such stocks.
2. The State of origin of anadromous stocks shall ensure their conservation by the establishment of appropriate regulatory measures for fishing in all waters within its exclusive economic zone and for fishing provided for in paragraph 3 (b). The State of origin may, after consultation with other States fishing these stocks, establish total allowable catches for stocks originating in its river.
3. (a) Fisheries for anadromous stocks shall be conducted only in the waters within exclusive economic zones, except in cases where this provision would result in economic dislocation for a State other than the State of origin.  
(b) The State of origin shall co-operate in minimizing economic dislocation in such other States fishing these stocks, taking into account the normal catch and the mode of operations of such States, and all the areas in which such fishing has occurred.  
(c) States referred to in sub-paragraph (b), participating by agreement with the State of origin in measures to renew anadromous stocks, particularly by expenditures for that purpose, shall be given special consideration by the State of origin in the harvesting of stocks originating in its rivers.  
(d) Enforcement of regulations regarding anadromous stocks beyond the exclusive economic zone shall be by agreement between the State of origin and the other States concerned.
4. In cases where anadromous stocks migrate into or through the water within the exclusive economic zone of a State other than the State of origin, such State shall co-operate with the State of origin with regard to the conservation and management of such stocks.
5. The State of origin of anadromous stocks and other States fishing these stocks shall make arrangements for the implementation of the provisions of this article, where appropriate, through regional organisations.

#### **U.D.N.**

The Irish Government has confirmed that from May to October, 1975, the incidence of U.D.N. in Irish waters was low, as to be expected during the warmer months, with only a few rivers being named as affected and even in these there may have been confusion with furunculosis. The same pattern seemed to be applicable generally to the United Kingdom though there were reports of some rivers still being badly infected. It does seem, however, that the disease continues to decline.



Against this more hopeful picture there are disturbing reports of U.D.N. in Sweden, affecting for the first time salmon in the Baltic; whilst not fully confirmed there seems little doubt that two of their biggest rivers are infected. Of particular interest though of no conclusive proof of anything is a form of connection between the rivers and the East coast of Scotland: ports on the two rivers have been exporting over the last two years steel pipes to Scotland for the North Sea oil industry, with the ships returning to their home ports laden with water ballast to the total of 400,000 tons taken on board from the Dee or the Tay estuaries. The Trust is helping with further investigations.

### **21st Birthday Party**

At the end of May this year to celebrate its coming of age the Salmon Research Trust of Ireland is holding a two day conference at Westport, Co. Mayo. The main subject is "Salmon Research in Ireland" and the nine papers to be given will cover all aspects of this.

On conclusion of the conference it is hoped that there will be an opportunity to visit the River Bush in Northern Ireland to see progress and developments at the Government of Northern Ireland's research station on that river.

### **Coho in the Channel**

Escapes from the French experimental programme of "farming" this breed of Pacific salmon in cages in the sea have established themselves indigenously in a river near Dieppe. Should they spread, as may very easily occur, the implications are serious, for they are very prolific and could oust Atlantic salmon from our rivers.

### **A Dane objects to High Seas Fishing**

A Norwegian newspaper reports that at the Nordic Fishing Conference held in Denmark in the summer last year and in opposition to representatives from Sweden and Denmark, the strongest argument against the long-line fishery for salmon in the Norwegian Sea came from the Director of the Danish Association of Fishing Exports, who claimed that fish caught in this fishery were so lean and of such poor quality that they were ruining the market for salmon.

### **Canoeing**

On March 3rd this year the House of Lords delivered its judgment in the case where the Trustees of the Knockando fishing on the River Spey appealed against the finding of the Court of Session in Edinburgh which had declared in favour of canoes having a right to use the Spey. The legal arguments that the Spey was a navigable river and hence there was a public right of passage on its waters were sustained; both sides agreed that having established this position they would work out together a modus vivendi.

### **Fresh Water and Salmon Fisheries (Scotland) Bill**

This Bill is currently wending its way through Parliament. Its title is somewhat misleading as it is mainly concerned with Brown Trout and apart from bringing up to date (much needed) the penalties for offences concerned with salmon it has little to do with the latter. But it steps in the right direction in



giving trout fishing in Scotland some legal standing and protection; unhappily it does not go as far as recommended by the Hunter Report and in some ways seems more designed to be a bureaucrat's bonanza.

### **Restoration of Salmon in New England**

A large smolt stocking programme was again carried out in the spring of 1975 in the Connecticut River basin and progress is being made with providing fish passage facilities around dams on the main river: the hand of the International Atlantic Salmon Foundation has been very evident in all of this and it is gratifying to learn that last year provided confirmation that mature salmon were indeed returning to the Connecticut.

The State of Maine now has seven rivers with significant salmon runs and in Massachusetts and New Hampshire it is hoped to restore the Merrimack River System. Selective breeding research is helping to develop strains of salmon which should be particularly adaptable to these rivers of New England where restoration is under way.

### **New Centre for Salmon Research in Canada**

At the end of June last year a significant step forward was taken in the continuing search for more knowledge about salmon: the occasion was the formal opening of the North American Salmon Research Centre which has been built by the International Atlantic Salmon Foundation at St. Andrews in New Brunswick, at a cost approaching 1½ million dollars; the ceremony was performed by the Canadian Minister of State for Fisheries before a distinguished gathering which included the Premier and Ministers of Fisheries and of Health of New Brunswick and the United States Ambassador to Canada.

The Centre has been planned to rear large numbers of young salmon of known genetic strains in accordance with selective breeding practices, making use of warmed water. The Centre will also incorporate an Aquaculture Training School which will be run in co-operation with the New Brunswick Department of Education and Community Colleges; it is planned to run one year courses in basic aquaculture methods, with the Centre's hatchery providing for practical aspects of the syllabus; the training programme should begin this year with, hopefully, 15 students from Canada, the United States and Europe.

The Canadian Government has agreed to make an annual grant to the International Atlantic Salmon Foundation to cover administrative and operational expenses and the Huntsman Marine Laboratory at St. Andrews will look after the day-to-day running of the Centre and provide the staff and direct the Research Programme. With this Government support the future of the Centre is assured, but its concept and construction are entirely the work of the International Atlantic Salmon Foundation and it is a tribute to the latter's standing in North America that over one million dollars has been raised towards the capital cost by voluntary subscription to the Foundation.



## **The Trust's Support for Research and Education**

Despite inflation and all the attendant difficulties—rising costs and declining subscriptions—the Trust has succeeded in maintaining in 1976 the same level of financial support for the major research and education projects to which it was committed last year.

The Salmon Research Trust of Ireland continues its investigation into the rearing of young salmon in warmed water: it is too early to assess conclusively the effects on smolts and the production of these in 1 year instead of the more normal 2 years, let alone the effects on their return as mature fish, but an interim report indicates that there are considerable benefits. (For further details see Section II).

A Research Fellowship studying diseases of young salmon is now in its second year and should complete in 1977. Work is mainly centred in the Salmon Research Trust of Ireland's research and rearing station in Co. Mayo and is supervised by the Unit of Aquatic Pathobiology of the University of Stirling.

A Research Assistantship with Liverpool University for the study of rearing young salmon in mountain tarns in Wales has been completed. The Trust has received a copy of the Thesis written on the subject which, as well as qualifying the author for her Ph.D., provides ample evidence that the Trust's funds have not been wasted and that a major work of much scientific value has resulted from this grant. (For further details of the Thesis see Section II).

Three students selected through the Institute of Fisheries Management are at present taking the training course in salmon hatchery and rearing techniques and practices and in management of a salmon fishery which is conducted annually by the Salmon Research Trust of Ireland. The value of these courses to those wishing to follow a career with salmon fisheries has been fully vindicated.

The Trust is making financial grants this year and next to Portsmouth Polytechnic in support of a study which will identify and evaluate the various economic factors generated by a fishery where "grilse" are the main crop, with the season thus a short one, and which will compare these with corresponding factors derived from a "salmon" fishery, with a season that is consequently that much longer. A survey on the River Tamar as a pilot scheme is in progress and on its completion the study will be extended to selected rivers in England and Wales and in Scotland.

The third annual payment towards the capital cost of a new laboratory for the Salmon Research Trust of Ireland has been made; the laboratory is now complete and in full use: it is a valuable addition to the only salmon rearing and research station in the whole of the British Isles which has virtually 100% ability to monitor the results of its rearing and experimental programmes. This in part explains why this Research Station features so largely in work sponsored by the Atlantic Salmon Research Trust; additionally it is a long-established and very experienced non-governmental establishment, with the best facilities in the British Isles for carrying out practical work on salmon.



By joining the International Atlantic Salmon Foundation of N. America and the Sport Fishing Institute of the United States in making a grant to the Food and Agriculture Organisation (F.A.O.) of the United Nations the Trust has helped towards filling a long-felt want in the field of research on salmon, by thus providing funds for a start being made in the preparation of an international Synopsis of Biological Data on Salmon.

ANNUAL CATCHES OF N. ATLANTIC SALMON

TABLE I

(In Metric Tons)

| Year        | 1960  | 1961 | 1962 | 1963 | 1964  | 1965 | 1966  | 1967  | 1968  | 1969  | 1970  | 1971  | 1972  | 1973  | 1974  | Remarks  |
|-------------|---|------|------|------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
|             | (1) Aggregate of Home Water Catches from Major Salmon-Producing Countries             |      |      |      |       |      |       |       |       |       |       |       |       |       |       |  |
| Salmon      | 5115  | 4485 | 5341 | 5346 | 5876  | 5552 | 5528  | 6634  | 5330  | 4552  | 4491  | 4194  | 4460  | 5096  | 4638  | Canada    England & Wales<br>Scotland    Ireland<br>Norway    France<br>Iceland    U.S.S.R.<br>See Table II          |
| Grilse      | 2218  | 2046 | 3265 | 2959 | 3559  | 3230 | 3142  | 4040  | 3132  | 3867  | 3752  | 3471  | 3720  | 4185  | 4160  |  |
| Total       | 7333  | 6531 | 8606 | 8305 | 9435  | 8782 | 8670  | 10674 | 8462  | 8419  | 8243  | 7665  | 8180  | 9281  | 8798  |  |
|             | (2) Greenland "Inshore" Fishery - i.e. By Native Greenland Fishermen                  |      |      |      |       |      |       |       |       |       |       |       |       |       |       |  |
| Salmon      | 60  | 127  | 244  | 466  | 1539  | 825  | 1251  | 1283  | 579   | 1360  | 1244  | 1449  | 1320  | 1585  | 1162  | Gill net only to 1968, thereafter<br>gill net + drift net extending<br>beyond national fishery limits.               |
|             | (3) Greenland "Offshore" Fishery - i.e. Mainly by Danish, Faroese & Norwegian Vessels |      |      |      |       |      |       |       |       |       |       |       |       |       |       |  |
| Salmon      | —   | —    | —    | —    | —     | 36   | 119   | 318   | 548   | 850   | 902*  | 1240  | 720   | 771   | 760   | Drift nets - outside Greenland's<br>national fishery limits.<br>* includes 7 tons from long line<br>in Labrador Sea. |
|             | (4) Norwegian Sea Fishery - By Long Line  |      |      |      |       |      |       |       |       |       |       |       |       |       |       |  |
| Salmon      | —   | —    | —    | —    | —     | —    | —     | 77    | 408   | 918   | 958   | 488   | 515   | 561   | 393   | Outside Norwegian national<br>fishery limits.  |
|             | (5) Norwegian Sea Fishery - By Drift Net  |      |      |      |       |      |       |       |       |       |       |       |       |       |       |  |
| Salmon      | —   | —    | —    | —    | —     | 283  | 312   | 333   | 228   | 234   | 183   | 263   | 404   | 375   | 393   | Not classed as Home Waters but<br>within Norwegian fishery limits.   |
|             | (6) Aggregate of Fisheries Outside Home Waters - i.e. (2) - (5) Above                 |      |      |      |       |      |       |       |       |       |       |       |       |       |       |  |
| Salmon      | 60  | 127  | 244  | 466  | 1539  | 1144 | 1682  | 2011  | 1763  | 3362  | 3287  | 3440  | 2959  | 3292  | 2708  |  |
|             | (7) Overall N. Atlantic Catch - i.e. (1) Plus (6) Above                               |      |      |      |       |      |       |       |       |       |       |       |       |       |       |  |
| Salmon      | 5175  | 4612 | 5585 | 5812 | 7415  | 6696 | 7210  | 8645  | 7093  | 7914  | 7778  | 7634  | 7419  | 8388  | 7346  |  |
| Grilse      | 2218  | 2046 | 3265 | 2959 | 3559  | 3230 | 3142  | 4040  | 3132  | 3867  | 3752  | 3471  | 3720  | 4185  | 4160  |  |
| Grand Total | 7393  | 6658 | 8850 | 8771 | 10974 | 9926 | 10352 | 12685 | 10225 | 11781 | 11530 | 11105 | 11139 | 12573 | 11506 |  |
| Year        | 1960  | 1961 | 1962 | 1963 | 1964  | 1965 | 1966  | 1967  | 1968  | 1969  | 1970  | 1971  | 1972  | 1973  | 1974  |  |

(N.B. Sweden and Baltic Excluded)



ANNUAL CATCHES OF N. ATLANTIC SALMON

TABLE II

Home-Waters of Major Salmon Producing Countries (Sweden & Baltic excluded)

(In Metric Tons – Figures in Italics are Estimated)

| Year            | 1960    | 1961        | 1962        | 1963        | 1964        | 1965        | 1966        | 1967        | 1968        | 1969        | 1970 | 1971 | 1972       | 1973       | 1974       | Remarks     |   |
|-----------------|---------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------|------|------------|------------|------------|-------------|---|
| England & Wales | Total   | 283         | 232         | 318         | 325         | 307         | 320         | 387         | 420         | 282         | 377  | 527  | 426        | 442        | 453        | 373         | Increases post 1970 reflect Northumbrian Drift net fishery.                 |
|                 | Salmon  | 221         | <i>181</i>  | <i>248</i>  | <i>254</i>  | <i>240</i>  | <i>250</i>  | <i>302</i>  | <i>327</i>  | 220         | 264  | 313  | 299        | 323        | 327        | <i>261</i>  |   |
|                 | Grilse  | 62          | <i>51</i>   | 70          | 71          | 67          | 70          | 85          | 93          | 62          | 113  | 214  | 127        | 119        | 126        | <i>112</i>  |   |
|                 | %Grilse | 22          | 22          | 22          | 22          | 22          | 22          | 22          | 22          | 22          | 30   | 39   | 30         | 35         | 28         | 30          |   |
| Scotland        | Total   | 1436†       | 1196†       | 1740†       | 1698        | 1914        | 1602        | 1624        | 2133        | 1563        | 1941 | 1424 | 1419       | 1693       | 1964       | 1444        | † Scottish Drift net catch, 1960-1962, NOT included.                        |
|                 | Salmon  | 960†        | 820†        | 1015†       | 1286        | 1216        | 1042        | 1069        | 1245        | 1020        | 987  | 802  | 715        | 987        | 1120       | 813         |   |
|                 | Grilse  | 476†        | 376†        | 725†        | 412         | 698         | 560         | 555         | 888         | 543         | 954  | 622  | 704        | 706        | 844        | 631         |   |
|                 | %Grilse | 33          | 31          | 42          | 24          | 36          | 35          | 34          | 42          | 35          | 49   | 44   | 48         | 42         | 57         | 56          |   |
| Ireland         | Total   | 882         | 839         | 1815        | 1764        | 1994        | 1738        | 1525        | 1912        | 1725        | 1997 | 2084 | 1873       | 2036       | 2112       | 2328        | Recent increases reflect expansion of Drift net fishery mainly off W.Coast. |
|                 | Salmon  | 221         | <i>210</i>  | <i>454</i>  | <i>441</i>  | <i>499</i>  | <i>435</i>  | <i>381</i>  | <i>478</i>  | <i>431</i>  | 300  | 313  | 201        | 226        | 268        | 186         |   |
|                 | Grilse  | 661         | 629         | 1361        | 1323        | 1495        | 1303        | 1144        | 1434        | 1294        | 1697 | 1771 | 1672       | 1810       | 1844       | 2142        |   |
|                 | %Grilse | 75          | 75          | 75          | 75          | 75          | 75          | 75          | 75          | 75          | 85   | 85   | 89         | 89         | 87         | 92          |   |
| Canada          | Total   | 1798        | 1739        | 1888        | 2032        | 2273        | 2324        | 2692        | 3145        | 2314        | 2153 | 2307 | 2017       | 1677       | 2381       | 2496        |   |
|                 | Salmon  | <i>1078</i> | <i>1043</i> | <i>1132</i> | <i>1220</i> | <i>1364</i> | <i>1394</i> | <i>1556</i> | <i>1887</i> | <i>1389</i> | 1700 | 1615 | 1586       | 1218       | 1616       | <i>1746</i> |   |
|                 | Grilse  | 720         | 696         | 756         | 812         | 909         | 930         | 1036        | 1258        | 925         | 453  | 692  | 431        | 459        | 765        | 750         |   |
|                 | %Grilse | 40          | 40          | 40          | 40          | 40          | 40          | 40          | 40          | 40          | 21   | 30   | 21         | 27         | 32         | 30          |   |
| Norway          | Total   | 1659        | 1533        | 1935        | 1786        | 2147        | 2000        | 1791        | 1960        | 1514        | 1383 | 1171 | 1208       | 1568       | 1726       | 1517        | See Table I for Norwegian Drift net fishery.                                |
|                 | Salmon  | <i>1410</i> | <i>1303</i> | <i>1645</i> | <i>1518</i> | <i>1825</i> | <i>1700</i> | <i>1522</i> | <i>1666</i> | <i>1287</i> | 801  | 816  | 793        | 1054       | 1220       | 1092        |   |
|                 | Grilse  | 249         | 230         | 290         | 268         | 322         | 300         | 269         | 294         | 227         | 582  | 355  | 435        | 514        | 506        | 425         |   |
|                 | %Grilse | 15          | 15          | 15          | 15          | 15          | 15          | 15          | 15          | 15          | 42   | 30   | 36         | 33         | 30         | 28          |   |
| Iceland         | Total   | 100         | 127         | 125         | 145         | 135         | 133         | 106         | 146         | 162         | 133  | 195  | 204        | 224        | 200        | 200         |   |
|                 | Salmon  | <i>50</i>   | <i>63</i>   | <i>62</i>   | <i>72</i>   | <i>67</i>   | <i>66</i>   | <i>53</i>   | <i>73</i>   | <i>81</i>   | 65   | 97   | <i>102</i> | <i>112</i> | <i>100</i> | <i>100</i>  |   |
|                 | Grilse  | <i>50</i>   | <i>64</i>   | <i>63</i>   | <i>73</i>   | <i>68</i>   | <i>67</i>   | <i>53</i>   | <i>73</i>   | <i>81</i>   | 68   | 98   | <i>102</i> | <i>112</i> | <i>100</i> | <i>100</i>  |   |
|                 | %Grilse | 50          | 50          | 50          | 50          | 50          | 50          | 50          | 50          | 50          | 53   | 50   | 50         | 50         | 50         | 50          |   |
| U.S.S.R.        | Total   | 1100        | 790         | 710         | 480         | 590         | 590         | 570         | 883         | 827         | 360  | 460  | 443        | 465        | 400        | 400         | Mainly Salmon   |
|                 | Salmon  |             |             |             |             |             |             |             |             |             |      |      |            |            |            |             |   |
| France          | Total   | 75          | 75          | 75          | 75          | 75          | 75          | 75          | 75          | 75          | 75   | 75   | 75         | 75         | 45         | 40          | No differentiation between Salmon and Grilse.                               |
|                 | Salmon  |             |             |             |             |             |             |             |             |             |      |      |            |            |            |             |   |
| Overall Total   | Total   | 7333        | 6531        | 8606        | 8305        | 9435        | 8782        | 8670        | 10674       | 8462        | 8419 | 8243 | 7665       | 8180       | 9281       | 8798        |   |
|                 | Salmon  | 5115        | 4485        | 5341        | 5340        | 5876        | 5552        | 5528        | 6634        | 5330        | 4552 | 4491 | 4194       | 4460       | 5096       | 4638        |   |
|                 | Grilse  | 2218        | 2046        | 3265        | 2959        | 3559        | 3230        | 3142        | 4040        | 3132        | 3867 | 3752 | 3471       | 3720       | 4185       | 4160        |   |
|                 | Year    | 1960        | 1961        | 1962        | 1963        | 1964        | 1965        | 1966        | 1967        | 1968        | 1969 | 1970 | 1971       | 1972       | 1973       | 1974        |   |



## SECTION II — PAPERS AND REPORTS OF SCIENTIFIC INTEREST

### **Biological Studies on the Brown Trout (*Salmo Trutta Fario*) and the Atlantic Salmon (*Salmo Salar L.*) of Llyn Dwythwch, North Wales. By Dr. R. B. Pedley, Ph.D., Freshwater Fisheries Unit, University of Liverpool.**

“ . . . The age, growth, mortality and migration of the Atlantic salmon stocked into Llyn Dwythwch were investigated, and compared both with the trout in the lake and salmon in rivers. Growth rate was superior to river salmon in similar localities, resulting from the greater productivity in lakes, reduction of territorial behaviour, and the earlier start to the growing season. Growth was also faster than found for the lake trout. A significantly higher regression coefficient was obtained for the length-weight relationship of first year fish than any other group, and there was a drop in condition of both male and female smolts. Smolt migration occurred at a younger rate than was usual for the geographical location, because of the faster growth rate, but was similar in other respects. Possible ‘priming’ and ‘releasing’ factors are discussed. Survival to smolt was low, and considered to be the result of heavy predation by brown trout at the time of fry introduction. No evidence of failure to migrate was found. Migration of ripe male parr occurred during the winter, leaving a preponderance of females in the second year fish. This corresponds to the upstream migration of ripe male parr with the spawning adults which occurs in rivers. . . .

. . . The annual and seasonal diets of trout and salmon in Llyn Dwythwch were compared with each other and with river fish. The annual diets of trout  $<15.0\text{cm}$  and  $>15.0\text{cm}$  were significantly different from each other, and also from the salmon diet. Monthly comparisons of diet for the two species showed significant correlation during the summer months only, when food was superabundant. The availability of food items, and their monthly electivity, are discussed. The similarity between the diet of the salmon in the lake and the local river salmon suggests that the feeding habits are inherited from the parent river-dwelling stock, rather than the result of interactive segregation with the lake trout. The only major difference was the increased consumption of aerial food by the lake salmon.

The management implications of rearing salmon smolts in lakes are discussed, and compared with the employment of hatcheries. Suggestions are made for reducing mortality rates.” (Extracts of summary of particular relevance to salmon.)

### **Rearing Young Salmon in Warmed Water—An Assessment by J. P. Lawrie, Salmon Research Trust of Ireland**

An interim report on the operation of the warmed water facilities at the Furnace Hatchery of the Salmon Research Trust of Ireland:

- a) Details of the heated water installation and its running efficiency are given.



- b) Rearing efficiency of the installation for the years 1973-75 is discussed in detail.
- c) In 1975 1-year-old smolt production in a batch of "heated water" fish was estimated at 65% and compares with an estimate of 24% for a batch of fish reared under ambient conditions.
- d) The cost of the heated water in terms of cost/smolt has been estimated at 7.8p.

### **Costs of Production of Artificially Reared Salmon Smolts. By Dr. D. J. Piggins and J. P. Lawrie, Salmon Research Trust of Ireland**

In view of the increasing demand for reared salmon smolts, both for restocking of rivers and for recent developments in mariculture, an attempt has been made to assess a realistic cost per smolt. In the first section, the cost of present-day smolt production by the Salmon Research Trust of Ireland is compared with that worked out in 1967 and in the second section, the costs of setting up a modern rearing station have been estimated, at prices ruling in 1974, assuming a stable economic situation in the future. (Appendix I to the S.R.T.I. Annual Report for 1974.)

### **A Preliminary Study of Fish Segregation in Salmon Spawning Streams. By A. N. Jones**

An electrofishing survey of the fish populations in three streams was carried out to study the different distribution of fish in riffles (shallow fast water), runs (intermediate depth) and pools (deep slow water). Each stream had an average daily flow of about 1.4m<sup>3</sup>/sec. The results indicated partial segregation of fish in the three kinds of habitat and that 0+ salmon, bull-heads and lampreys predominated in riffles; 1+ salmon, 0+ trout and stone-loach predominated in riffles and runs; 1+ trout predominated in runs and pools; and that 2+ and older trout, minnows and gudgeon predominated in pools. The distribution of eels was not markedly different in the three kinds of habitat. The role of adaptation to environment and interactions are briefly discussed. The pectoral fin area of juvenile salmon is shown to be significantly greater than that of juvenile sea trout of known origin and it is suggested that this may be an adaptation to the faster flow of the riffle environment, the larger fins acting as a more efficient hydrofoil to hold the fish in station on the substratum. It is also suggested that the proportion of fish other than salmonids in the three streams is related to stream gradient and that the shallower the gradient the greater is the proportion of non-salmonid fish compared with salmonid fish. (Journal of Fish Biology, Vol. 7, No. 1, January 1975.)

### **Freeze Branding of Juvenile Salmon. By L. M. Laird, R. J. Roberts, W. M. Shearer, J. F. McArdle**

Freeze branding using liquid nitrogen as a coolant was carried out on salmon parr and a sequential histopathological study was carried out for 16



weeks. The initial darkening of the brand area was due to destruction of melanophore control but the later, more diffuse, pattern was related to the invasion of the area of the stratum spongiosum and hypodermis by melanin containing cells such as are commonly found in healing teleost wounds. The traumatic damage was completely resolved well before the end of the experiment, suggesting that freeze branding is a particularly suitable short term batch marking method. (Journal of Fish Biology, Vol. 7, No. 2, March 1975.)

### **Progress of Migrating Atlantic Salmon (*Salmo Salar*) Along an Estuary, observed by Ultrasonic Tracking. By A. V. Stasko**

Adult Atlantic salmon were captured in the Miramichi estuary, tagged with ultrasonic transmitters, and released. Nine fish were tracked for a total of 425 h, spanning 71 flood and ebb tides. There was drifting with the tidal currents, and holding of position relative to land. Fish that achieved overall upstream progress did so by drifting with flood tidal currents and by stemming the ebb currents. Fish which did not achieve upstream progress also drifted with flood tidal currents, but these fish did not stem the ebb currents and dropped back downstream during ebb tides. No differences in movement patterns were apparent for different times of day or wind conditions. (Journal of Fish Biology, Vol. 7, No. 3, May 1975.)

### **SALMON RESEARCH INSTITUTE OF SWEDEN**

LIMNOLOGICAL STUDIES IN HYTTODAMMEN—The young salmon: its growth and good. By Rolf Armemo. Report LF1 MEDD 5/1975.

### **Institute of Fisheries Management**

The journal of the Institute has published over the past year the following papers of particular interest to the world of salmon:

Fish Furunculosis—D. H. McCarthy—Vol. 6 No. 1—February 1975.

Columnaris Disease—D. H. McCarthy—Vol. 6 No. 2—May 1975.

A note on the use of Benzocaine (Ethyl P-Aminobenzoate) as a Fish Anaesthetic—Lindsay M. Laird and R. L. Oswald—Vol. 6 No. 4—November 1975.

Some thoughts on Water Abstraction on Migratory Fish Rivers—R. I. Millichamp—Vol. 7 No. 1—February 1976.

### **International Atlantic Salmon Foundation**

The Foundation's Special Publication Series now consists of:

Vol. 1 (1) Genetic Diversity in Atlantic Salmon and Salmon Management in Relation to Genetic Factors—Dag Møller. November 1970.

Vol. 2 (1) Atlantic Salmon Workshop 1971. (Proceedings.) November 1971.

Vol. 3 (1) The State-of-Origin as Guardian of Anadromous Fish: A Proposal—William MacKenzie. May 1972. (Photocopy only.)

Vol. 4 (1) International Atlantic Salmon Symposium 1972. (Proceedings.) September 1972.

Vol. 5 (1) Effects of the Greenland Fishery for Atlantic Salmon on Canadian Stocks—J. E. Paloheimo and P. F. Elson. October 1974.

Number 6\* New England Atlantic Salmon Restoration Conference 1975. (Proceedings.) December 1975.

\*All issues published after 1974 are numbered consecutively.

Copies of all issues of the IASF Special Publication Series can be obtained from:

The International Atlantic Salmon Foundation,  
P.O. Box 429,  
St. Andrews, New Brunswick EOG 2X0,  
Canada.

### **The Anadromous and Catadromous Committee of The International Council for the Exploration of the Sea**

The following list gives the titles of papers on salmon and related subjects, with authors, which have been considered by the ANACAT Committee of ICES at its annual meetings in the years 1969-75.

#### **1969**

- |                                       |   |
|---------------------------------------|---|
| A. E. J. Went                         | The weight division between 'salmon' and 'grilse' in Ireland.   |
| B. Carlin                             | Data processing in Swedish salmon tagging experiments.  |
| A. E. J. Went                         | Report on a meeting called by the Atlantic Salmon Research Trust on 15th and 16th April 1969, to discuss the 'high seas' fishery for the Atlantic salmon. |
| L. Rosseland                          | Salmon tagging in Norway 1968.  |
| P. F. Elson                           | Interim report on international Atlantic salmon smolt tagging test in Canada, May 1968.   |
| —                                     | The exploitation and biology of Baltic salmon in the marine phase.  |
| R. L. Saunders and<br>E. B. Henderson | Influence of photoperiod on smolt development and growth of Atlantic salmon.  |
| P. F. Elson                           | High temperatures and river ascent of Atlantic salmon.  |
| A. von Brandt                         | Mesh measurement in salmon drift-nets.  |
| O. Christensen                        | Progress report on experimental fishery with salmon drift-nets.   |
| Olav Aasen                            | Method of estimating mortality in fish stocks.  |

#### **1970**

- |                 |  |
|-----------------|--|
| Ole Christensen | The Danish salmon fishery in the Norwegian Sea in 1967, 1968 and 1969. |
| F. Chrzan       | Some data on salmon and sea-trout caught off the Polish coasts.        |



- L. Wehrmann  
Th. Gudjonsson  
A. M. Sutterlin  
C. T. Hatfield and  
J. M. Anderson  
M. Kaulin  
W. M. Shearer and  
W. R. Munro  
A. Swain and  
A. S. Champion  
A. S. Champion
- Tagging experiments in fishes with magnetic tags.  
The releases and returns of tagged salmon at Kollafjordur, Iceland.  
Chemoreception in Atlantic Salmon (*Salmo salar*).  
Effect of two insecticides on the vulnerability of Atlantic salmon parr to trout predation.  
German salmon drift-net experiments in the Baltic.  
Observations on Scottish grilse and salmon catches.  
Variations in salmon runs of the River Axe.  
An examination with particular reference to the River Axe project, of the problems involved in isolating the effect of the West Greenland fishery on British stocks of the Atlantic salmon.
- 1971**
- H. Mann  
V. K. Miténeuf  
Eileen Twomey  
J. M. Anderson and  
P. F. Elson  
A. Swain and  
A. S. Champion  
A. S. Champion  
A. Swain  
Director A.S.R.T.  
J. A. Ritter and  
D. B. Lister  
Dag Møller  
O. Christensen  
F. Thurow  
F. Thurow
- The Ulcerative Dermal Necrosis of Salmonids (UDN) in Germany.  
La faune des parasites du saumon atlantique (*Salmo salar* L) peuplant la riviere Ponoï de la peninsule de Kola.  
Length and age composition of Salmon of the Commercial catch from seven of the major centres in Ireland.  
Effect on adult returns of exposure of native wild smolt to sublethal DDT.  
The performance of Darkened Silver Tags on Atlantic Salmon Smolts.  
An evaluation of the utility of a Plastic Strap Tag applied to ascending Salmon Migrants.  
The efficiency of certain types of Smolt Tags and Tagging techniques adopted by the Ministry of Agriculture, Fisheries and Food.  
Some observations on Co-operative Research Report Series A No. 24.  
Preliminary observations on differences in fishery contributions of hatchery-reared Atlantic salmon (*salmo salar*) smolts related to stock selection and release location.  
Genetic Diversity in Salmon.
- 1972**
- The Danish Salmon Fishery in the Norwegian Sea in 1971.  
Growth parameters of Baltic Salmon.  
A tentative approach to off-shore Yield Assessment in Baltic Salmon.

- A. R. Mitans The Precocious Males in the Populations of Salmon Parrs and Smolts in the Latvian Rivers.
- C. P. Ruggles and G. E. Turner Recent changes in stock composition of Atlantic Salmon (*Salmo Salar*) in the Miramichi River, New Brunswick.
- R. Vibert and M. Laurent Return rate of Atlantic Salmon and Grilse and distance of their Feeding Grounds.
- J. A. Ritter Preliminary observations on the influence of smolt size on tag return rate and age at first maturity of Atlantic Salmon (*Salmo Salar*).
- C. Frantsi, A. Foda and J. A. Ritter Semi-natural rearing of Atlantic Salmon (*Salmo salar*) in a small lake.
- C. E. Wykes Size and age composition of the 1968, 1969 and 1970 commercial salmon landings in New Brunswick, Canada.
- P. F. Elson and Anne M. Williamson International Atlantic Salmon Smolt Tagging Test in Canada, May 1969—Third Interim Report.
- W. H. Lear Scale characteristics of Atlantic Salmon from various areas of the North Atlantic.
- 1973**
- O. Christensen The Danish salmon fishery in the Norwegian Sea in 1972.
- O. Christensen Comparable values of catch per unit effort in the Danish salmon fishery in the Norwegian Sea 1969-1972.
- Working Group on Baltic Salmon Summary of a reference report on Baltic salmon.
- F. Thurow Local movements of salmon in the Baltic Sea.
- R. H. Payne The use of serum transferrin polymorphism to determine the stock composition of Atlantic salmon in the West Greenland fishery.
- A. S. Champion The variation in proportion of the grilse (1 sea winter fish) component of the salmon runs in the River Axe, Devon.
- A. R. Mitans Baltic salmon parr population estimation from change of composition caused by smolt descent.
- A. E. J. Went Recaptures in Ireland of foreign tagged salmon (1972/73).
- J. Wiktor Experiments on breeding of steelhead trout (*Salmo gairdneri*) roe in Baltic Sea water.
- Jorma Toivonen The stock of salmon in the Gulf of Finland.
- P. F. Elson and K. A. Pyefinch Report on the international Atlantic salmon smolt tagging tests, 1959-63 and 1969.
- R. L. Saunders Atlantic herring as a dietary component for culture of Atlantic salmon.



- G. E. Turner Migration route and timing of Miramichi River salmon (*Salmo salar*) as indicated from recaptures of tagged smolt and adult salmon.
- J. A. Ritter Evidence of variable tag loss among nine groups of hatchery-reared Atlantic salmon smolt released in 1973.
- R. W. Gray Preliminary assessment of the contribution of hatchery-reared smolts (*Salmo salar* L.) released in 1970-71 in the Saint John River, New Brunswick, to various fisheries and the spawning escapement.
- A. Isaksson Results of tagging experiments at the Kollafjordur Fish Farm from 1970 through 1972.
- J. Møller Jensen Salmon survey in the Irminger Sea 1973.
- 1974**
- E. Batansky and V. Nesterov The downstream migration of the young Salmon in the Arctic.
- W. H. Lear Evaluation of the transplant of Pacific Pink Salmon (*Oncorhynchus garbuscha*) to Newfoundland.
- V. Hilge On the Relation between Egg Size in Salmon off Norway and subsequent spawning.
- Eileen Twomey and John P. Molloy The occurrence of feeding salmon off the North West Coast of Ireland.
- D. T. McCarthy Movement of salmon from the South Coast of Ireland, 1973/74.
- J. Wiktor The incubation of eggs and rearing of fry of Sea Trout (*Salmon trutta trutta*) in Baltic Sea Water.
- William J. McNeil Private salmon aquaculture on the Pacific Coast of the United States.
- E. L. Bakshtansby, M. Ya. Yakovenko, L. F. Zaguraeva and V. D. Nesterov Results of the Atlantic Salmon Tagging in the Soviet Union.
- T. H. Simpson and A. F. Youngson The transport and mobilisation of Fat Soluble Pollutants in the Rainbow Trout: the effect of changes in physiological status.
- T. H. Simpson, A. F. Youngson and R. Johnstone The effect of starvation on the tissue distribution metabolism and excretion of DDT in the Rainbow Trout.
- T. H. Simpson, R. S. Wright and M. H. Fraser Some observations on the use of anabolic steroids in the culture of Salmonid fish.
- ICES Statistician Statistical Information on Annual Catches of Atlantic Salmon.
- J. A. Ritter and J. R. E. Harger Atlantic salmon life stage terminology—a review of existing usage and proposal for improvement.
- J. A. Ritter Relationships of Smolt Size and Age with Age at first maturity in Atlantic Salmon.

- Jens Smed. Temperature of the Waters off South-west and South Greenland during the International Salmon Tagging Experiment in 1972.
- P. O. Larsson Carlin's model of the Baltic Salmon Population—A recalculation with up-to-date base data.
- P. O. Larsson and K. M. Svensson Studies on the possible influence of early maturity on grilse frequency by means of tagging experiments in the River Lule (Sweden).
- Jens Møller Jensen Salmon Survey in the southern part of the Irminger Sea, 1974.
- Arni Isaksson Returns of Salmon to the Kollafjordur Fish Farm in 1974.
- 1975**
- J. Toivonen and A. Tuhkunen Migration of sea trout along the coastal waters of Finland on the basis of tagging experiments.
- W. H. Lear Trawl-caught Atlantic salmon on the Canadian continental shelf.
- W. H. Lear and R. H. Payne A comparison of scale analysis and serum electrophoresis as methods of determining the stock composition of Atlantic salmon off West Greenland in 1974.
- I. N. Grinyuk The variations in the catches and age structure of salmon (*Salmo salar* L.) in the Ponoy River.
- A. Swain and M. L. Parry The migration of salmon (*Salmo salar* L.) from the River Ure, Yorkshire.
- A. Swain The migrations of salmon (*Salmo salar* L.) from three rivers entering the Severn estuary.
- D. J. Solomon Observations on some factors influencing the migration of smolts of salmon (*Salmo salar* L.) and migratory trout (*Salmo trutta* L.) in a chalkstream.
- B. B. Parrish Notes on salmon catches at West Greenland, Norwegian Sea and home waters in 1974.
- W. M. Shearer Recaptures of salmon tagged as smolts in the River Esk, Scotland, from 1961-1970.
- G. Struthers Recaptures of salmon tagged as smolts in the River Tay, Scotland, from 1967-1973.
- R. J. G. Buck Recaptures of salmon tagged as smolts in the Girnock Burn (River Dee), Scotland, from 1967-1973.
- A. E. J. Went Sven Somme's approach to the high seas fishery for Atlantic salmon.
- S. Basulto Induced sea water tolerance in connection with inorganic salts in the feeding of Atlantic salmon (*Salmo salar* L.).
- S. Knutsson and T. Grav. Seawater adaptation in Atlantic salmon (*Salmo salar*) at different experimental temperatures and photoperiods.



|  |  |
|--|--|
| D. Møller and<br>O. Bjerk                                | Comparative growth studies of salmonids.   |
| G. Nævdal,<br>M. Holm,<br>D. Møller, and<br>O. D. Osthus | Experiments with selective breeding of Atlantic salmon.  |
| G. Nævdal,<br>M. Holm,<br>R. Lerøy and<br>D. Møller      | Variation in age at sexual maturity in rainbow trout.  |
| G. E. Turner   | Timing of migration of Atlantic salmon ( <i>Salmo salar</i> ) within the Miramichi River system, New Brunswick.                                  |
| S. R. Baker  | Cage rearing of Salmonids in coastal areas of Nova Scotia.   |
| J. A. Ritter   | Lower ocean survival rates for hatchery-reared Atlantic salmon ( <i>Salmo salar</i> ) stocks released in rivers other than their native streams. |

### SECTION III — PROGRESS OF APPEAL

During the year 1st January 1975 to 31st December 1975 the Fund was increased by a total of £2,960.31 of which £2,255.29 was by single donations. The remainder was made up by the gross total of seven year Deeds of Covenant and Pledges. The gross total of the Appeal Fund now stands at £122,545.53.

The present financial stringencies have affected everyone but no one more so than the Charities who depend solely on the generosity of those who have an interest in the work of a Charity. A disappointing feature of our Appeal has been the fact that no less than 10 of our Covenantors decided during this year that they could no longer continue their support and cancelled all further annual payments. This allied to the loss of eight Deeds of Covenant through the decease of the donors has meant a loss to our gross annual income of £270.93 and a loss of £1,212.02 to the gross total of the fund.

An analysis of all subscriptions is given on the final page. The state of the fund at the end of 1975 was as follows:

|                           | <b>Gross Value</b> |
|---------------------------|--------------------|
| 810 Single Donations      | £36,998.70         |
| 510 Deeds of Covenant     | 75,452.53          |
| 53 Pledges/Bankers Orders | 10,094.30          |
|                           | <hr/>              |
|                           | £122,545.53        |
|                           | <hr/>              |

The gross annual income of the Trust from Deeds of Covenant, Pledges and Bankers Orders plus the interest from Securities etc. is approximately £11,182. The known commitments of the Trust in the fulfilment of our aim

far exceed this sum and it is therefore emphasised that more than ever the Trust needs all the support it can get—further donations or better still a Deed of Covenant (Form on back cover of this issue).

As we are rapidly approaching the time when our original Covenantors will complete their 7 year contract it is of paramount importance that wherever possible a new covenant should replace the old to ensure the income to the Trust and to make certain of the continuity and furtherance of our work.

### CONTRIBUTIONS RECEIVED to 31st DECEMBER, 1975

| <b>COUNTIES</b>      |                      | <b>RIVERS</b>               |          |
|----------------------|----------------------|-----------------------------|----------|
| Beds .....           | £1,544               | Argyll Rivers .....         | £1,834   |
| Berks .....          | 189                  | Beaully .....               | 175      |
| Bucks .....          | 1,019                | Brora .....                 | 1,118    |
| Cheshire .....       | 725                  | Conon .....                 | 1,292    |
| Cornwall .....       | 73                   | Dee .....                   | 6,000    |
| Cumberland .....     | 7,772                | Deveron .....               | 555      |
| Derby & Staffs ..... | 574                  | Forss .....                 | 71       |
| Devon .....          | 1,516                | Findhorn .....              | 1,000    |
| Dorset .....         | 253                  | Eire .....                  | 247      |
| Essex .....          | 871                  | Helmsdale .....             | 869      |
| Glos .....           | 2,066                | Lochy .....                 | 3,163    |
| Hants .....          | 2,861                | Naver .....                 | 1,628    |
| Hunts & Cambs .....  | 887                  | Oykel } .....               | 1,952    |
| Kent .....           | 370                  | Shin } .....                |          |
| Lancs .....          | 344                  | Cassley } .....             |          |
| Leics .....          | 400                  | S. Esk .....                | 336      |
| Lincs .....          | 1,858                | Spey .....                  | 2,220    |
| London & Middx ..... | 935                  | S.W. Wales Rivers .....     | 85       |
| Notts .....          | 1,471                | Tay .....                   | 1,700    |
| Norfolk .....        | 3,870                | Thurso .....                | 297      |
| Northumberland ..... | 916                  | Tweed .....                 | 2,353    |
| Northants .....      | 100                  | Wye .....                   | 2,237    |
| Oxon .....           | 6                    | Usk .....                   | 209      |
| Somerset .....       | 814                  | Ulster .....                | 223      |
| Suffolk .....        | 1,036                |                             |          |
| Surrey .....         | 3,038                | Total Rivers .....          | 29,564   |
| Sussex .....         | 1,700                | Total Counties .....        | 48,842   |
| Warks .....          | 136                  | Business .....              | 33,167   |
| Wilts .....          | 1,328                | Miscellaneous .....         | 11,847   |
| Westmorland .....    | 7,739                |                             |          |
| Wores .....          | 319                  |                             |          |
| Yorks .....          | 2,112                |                             |          |
|                      | Total Counties ..... |                             | 123,420  |
|                      | £48,842              | Less loss on Cov. Inc. .... | 875      |
|                      |                      | Gross Total .....           | £122,545 |



# Banker's Order

To .....  
Name and address of donor's bank

On ..... please pay the sum of £ .....  
Date on which first payment is to be made. This must be on or after the date of signing the Deed below The periodic sum in figures

( ..... )  
The periodic sum in words: to agree with the amount in the Deed below.

to Midland Bank Ltd. (40-02-31) of 20 Eastcheap, London E.C.3M 1ED, for the credit of the Atlantic Salmon Research Trust Ltd's Account and thereafter make like payments on the ..... day of ..... in each of the following 6 years making 7 payments in all Yearly payments (the periodic payments.)

▷ Signature of donor .....

Name ..... Date .....  
Please use block letters and state Mr/Mrs/Miss/Title

# Deed of Covenant

I ..... of .....  
Your name and address. In the case of a firm the names of all partners must be entered and "I" should be altered to "We" as appropriate

..... hereby covenant with Atlantic Salmon Research Trust Limited (hereinafter called the Trust) that for a period of seven years from the ..... day of ..... 19 ..... or during my life whichever period shall be the shorter\* I will pay each Date on which first payment to be made; must be on or after the date of signing this Deed See footnote year to the said Trust such a sum as will after deduction of income tax at the standard rate for the time being in force leave in the hands of the said Trust a net sum of ..... ( ..... )  
The periodic sum in figures The periodic sum in words: to agree with the amount specified above in the Banker's Order

such sum to be paid from my general fund of taxed income so that I shall receive no personal or private benefit in either of the said periods from the said sum or any part thereof

In witness whereof I have hereunto set my hand and seal this ..... day of ..... 19 .....  
To be on or earlier than the dates entered above

Signed sealed and delivered by the said .....  
Your name in block letters. In the case of a firm the full names of all partners must be entered in capitals, additional names being entered on the lower half of the reverse side on this form.

▷ Signature .....  
In the case of a firm all partners must sign, additional names, addresses and signatures being entered on the lower half of the reverse side of this form

in the presence of

Signature of witness ..... Occupation .....  
The witness should not be the spouse of the covenantor. Two witnesses are required in Scotland

Address .....

This complete form should be sent to Appeal Director, Atlantic Salmon Research Trust, Morley House, 29 South Street, Farnham, Surrey, It should NOT be sent to your bankers.

\*Donors wishing the charity to continue to benefit in the event of their death are asked kindly to delete and initial the italicized passage

