

T11050q1/2

Restoration of Riverine Fisheries Habitats

**First Project Report for period
July 1991 - February 1992**

Institute of Freshwater Ecology

February 1992

First Project Report 326/2/A



NRA

National Rivers Authority

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NRA R&D Contract No. DO3.4.90

Research Contractor: Institute of Freshwater Ecology
Project Leader: R.H.K.Mann
Report Date: February 1992
Customer: National Rivers Authority
NRA Report Ref: 326/2/A
IFE Report Ref: ERG/T11050q1/2
TFS Project Ref: T11050q1

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1. TECHNICAL PROGRESS

Details of progress from July 1991 to September 1991 are given in the Progress Report for that period (NRA Report Ref: 326/1/A). Aspects of that report are repeated and updated as appropriate in this report.

The initial phase of this examination of the effectiveness of the restoration of riverine fisheries habitats comprised three parts.

1.1 Initial meeting

Mr R.H.K.Mann (IFE Project Leader) and Dr J.S.Wortley (NRA Project Officer) met at NRA, Norwich on 22.7.91 to clarify details of the project. The NRA requested that information on NRA restoration projects (Strategy, method. Phase 1, point 2) be entered on the database FOXPRO. This database has been purchased by IFE and installed on an Elonex 386 computer; Mr Mann is currently learning details of the program.

Dr Wortley suggested that a short article publicising the project be sent to the editor of the Institute of Fisheries Management's journal 'FISH'. Mr Mann wrote the article, which was seen by Dr Wortley before being submitted on 20.9.91. It appeared in the October 1991 issue (see Appendix A) and included a request for information on restoration projects that had had no NRA/Water Authority involvement; however, no such information has been received to date.

1.2 Compilation and circulation of questionnaire

The questionnaire for circulation to NRA staff in the ten Regions was prepared in two sections.

Section I sought to obtain information on the perceived needs for restoration schemes in the ten NRA Regions, with details for salmon, trout and coarse fish being identified separately.

Section II requested detailed information on individual restoration projects.

The questionnaires (see Appendix B) were sent out on 29-30 August 1991 to 54 NRA Fisheries Managers, Officers and Scientists (list of names provided by Dr Wortley). A request was made that the forms should be completed and returned by 31 October 1991. Not all returns were made by this date and many telephone calls were required to obtain replies. The last reply was received in January 1992.

To date (14.2.92) 12 Section I replies have been received, covering areas in all ten NRA Regions except the Southwest. A request has been sent to the Southwest Region for information regarding Section I.

68 Section II replies have been received from the ten NRA Regions as follows:

Anglian	19	Southern	6	Welsh	4
Northumbrian	2	Severn-Trent	2	Wessex	11
Northwest	1	Southwest	9	Yorkshire	13
Thames	1				

Letters were received from Anglian (Essex), Severn-Trent (Lower Severn and Lower Trent) stating that no restoration work had been carried in those areas.

Only one Section II reply was received from the Thames Region. The Senior Fisheries Officers for the two component areas (West and East) considered that the way that restoration work was carried out in Thames NRA made it impossible to identify specific projects as required by the questionnaire. This is because most restoration work in Thames comprises relatively small scale, day-to day exercises, rather than larger, discrete projects.

Therefore Mr Mann visited the two Senior Fisheries Officers concerned (Mr A.Butterworth, Thames West and Mr J.Reeves, Thames East) and some of their staff on 21.11.91 and 28.11.91, respectively. From the information collected, Mr Mann was able to complete two more Section II forms. However, most of the information provided is not compatible with the questionnaire data, and will require separate treatment in the Final Report.

Table 1 shows a breakdown of the Section II replies into projects concerned with salmon, trout and coarse fish. Note that these total more than 68 (the number of replies) because some fisheries had salmon/trout or trout/coarse fish in equal status.

Table 1. Number of restoration projects with salmon, trout or coarse fish as the principal fisheries, as recorded in the questionnaire (Section II) replies.

	Salmon	Trout	Coarse Fish
Anglian	0	10	12
Northumbrian	0	1	1
Northwest	1	0	0
Severn-Trent	1	0	1
Southern	2	3	2
Southwest	9	3	0
Thames	0	1	2
Welsh	0	4	0
Wessex	0	1	9
Yorkshire	1	7	6

1.3 Literature search and review

A computerised literature search on restoration schemes and procedures in the U.K., Europe and North America. References have been obtained from Aquatic Sciences and Fisheries Abstracts 1979-1990, and from the Freshwater Biological Association's current awareness files 1970-1991. A database has been compiled to include all relevant items from these searches, together with previously known references: this database now contains 250 records. Inter-library loans have been obtained for references not held at the Freshwater Biological Association's library at The Ferry House, Windermere.

A list of the 197 papers examined to date is given in the bibliography in Appendix C. These references comprise details of specific restoration projects, general aspects of restoration work in rivers, and information on methods of assessing the impact of restoration work on fish populations.

The majority of references (144) are from North America and deal with salmonid fisheries or general aspects of the rehabilitation of lotic systems. Considerably fewer references relate to the U.K. (46) and Europe (7), or to coarse fisheries. Many references originally identified in the literature searches were found to deal solely with restoration of rivers in terms of water quality rather than physical restoration. These references are not included in the bibliography.

All the papers listed in the bibliography have been examined by Mr Mann and/or Dr Winfield and their contents are being collated for the literature review. Mr Mann is responsible for the review of salmonid studies and Dr Winfield for the coarse fish studies.

APPENDIX A

Contents of the article that appeared in FISH, Issue No. 24, October 1991, page 33.

Restoration of Riverine Fisheries Habitats

Many schemes have been carried out in recent years to improve fisheries by physically restoring riverine habitats. The techniques used include the installation of gabions and low level weirs, increasing river meanders and altering the pool/riffle sequences. But how effective are these and similar remedial measures - and how should their effectiveness be assessed ?

To address these and related questions the NRA has commissioned an R & D Project on fisheries habitat improvement

schemes. The first, one-year, phase started in July 1991, the work being carried out by the NERC Institute of Freshwater Ecology led by Mr Richard Mann, with Dr Jonathon Wortley acting as the NRA co-ordinator. The study seeks to examine current and recent restoration schemes throughout the NRA regions and to quantify future needs in the regions for habitat improvement of rivers. Information will also be collected on the procedures used in other countries.

Fisheries for salmon, trout and coarse fish are being examined separately and an initial questionnaire has been sent already to over 50 NRA Fisheries Managers, Officers and Scientists regarding restoration schemes in their area. By close consultation with the biologists and engineers responsible for designing and carrying out restoration projects, it is hoped to identify the criteria needed to implement successful schemes, and to recommend where they may be more widely applied.

It may be that there are some schemes that have had little or no Water Authority/NRA involvement and Richard Mann would be pleased to receive information about them. His address is: I.F.E., Eastern Rivers Laboratory, c/o Monks Wood Experimental Station, Abbots Ripton, Huntingdon, Cambs. PE17 2LS (tel. 04873-381).

SECTION I

1. NAME:

2. NRA REGION (or subregion)

3. HOW MANY MILES OF RIVER ARE THERE IN YOUR REGION/SUBREGION UNDER THE FOLLOWING CATEGORIES ?

SALMON FISHERY

TROUT/SEA TROUT FISHERY

COARSE FISHERY

In the case of mixed fisheries please fill in more than one category.

4. IN YOUR OPINION HOW MANY MILES OF RIVER IN YOUR REGION/SUBREGION WOULD BENEFIT FROM HABITAT IMPROVEMENT UNDER THE FOLLOWING CATEGORIES:

SALMON FISHERY

TROUT/SEA TROUT FISHERY

COARSE FISHERY

SECTION II (Please use one form per restoration project)

1. NRA REGION:

2. NAME OF RIVER:

3. LOCATION (MAP REF):

4. TYPE OF FISHERY (Please tick: more than one if necessary, but encircle the principal fishery):

SALMON

TROUT/ SEA TROUT

COARSE FISH

5. REASON FOR THE RESTORATION:

6. TYPE OF RESTORATION (i.e. physical modification, including any changes to the river gradient, channel morphology, banks etc.)

7. WHO CARRIED OUT THE RESTORATION (Please tick)

WATER AUTHORITY/N.R.A.

OTHER (Please specify)

14. WAS A FISH SURVEY CARRIED OUT AFTER RESTORATION ?

YES NO (Please tick)

IF YES - HOW MANY SURVEYS:

DATE(S) - MONTH/YEAR:

WHAT TYPE OF SURVEY(S) - Please tick:

POPULATION ESTIMATES }- NETTING
} - ELECTRO-FISHING
} - OTHER (Please specify)

15. WERE ANY OTHER ENVIRONMENTAL IMPACT ASSESSMENTS MADE IN CONJUNCTION WITH THE RESTORATION ? Please tick:

BEFORE AFTER

RIVER CORRIDOR SURVEY

INVERTEBRATE SURVEY (e.g. RIVPACS)

OTHER (Please specify)

16. HOW DID THE FISHERY CHANGE AS A RESULT OF THE RESTORATION ? Please tick:

CONSIDERABLE IMPROVEMENT:

MODERATE IMPROVEMENT:

NO CHANGE:

DETERIORATED:

UNKNOWN:

17. HOW WAS THE CHANGE IN THE FISHERY ASSESSED ?

18. WHAT WAS THE COMMITMENT CONCERNING MAINTENANCE OF THE RESTORATION (Please tick)

RESTORATION IS MAINTENANCE FREE

COMMITMENT BY WATER AUTHORITY/N.R.A.

NO COMMITMENT

OTHER (Please specify)

19. IS A REPORT(S) OR UNPUBLISHED PAPER(S) AVAILABLE CONCERNING THE RESTORATION PROJECT ?

Please tick:

ON THE ENGINEERING ASPECTS:

ON THE FISHERIES ASPECTS:

ON OTHER ASPECTS (please specify):

20. PLEASE GIVE ANY FURTHER DETAILS OR COMMENTS THAT WILL
CONTRIBUTE TO THIS STUDY:

21. NAME OF NRA CONTACT CONCERNING THE ENVIRONMENTAL (FISHERIES)
ASPECTS OF THE RESTORATION PROJECT

NAME:

ADDRESS:

TEL. NO.

FAX NO.

Thank you for your cooperation.

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