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Report date: November 1989
Report to: National Rivers Authority (Southern Region)
IFE Report Ref: RL/T11053d1/1
TFS Project No: T11053d1

The Hampshire Salmon Project
Summer/Autumn 1989

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INTRODUCTION

This report deals with two periods, 24 July-15 September and 18 September-30 November. IFE were contracted 1) to maintain the salmon counters, probes and loggers collecting environmental data on the rivers Itchen and Test during the transition period of staff involved with the Hampshire Salmon Project (HSP); 2) to begin to process the backlog of data which had accumulated since the transfer of HSP staff.

During the first period, 5 man days effort per week was supplied which included site visits 3 times a week. The effort was cut to 2.5 man days per week for the second period when there was only one site visit per week, two other visits being made by the Southern Water bailiff for that area.

PROCEDURE AT EACH SITE

1. Note counter totals.
2. Test counters.
3. Check cameras and change films when necessary.
4. Clean photographic areas.
5. Download data loggers at 1-2 week intervals.
6. Check BBC at Connegar Bridge.
7. Change video tape.
8. Check IR lamps.
9. Check electric screens and clean when necessary.
10. Note temperature and water levels where appropriate.
11. Clean turbidity probes.

SITE VISITS

Woodmill

The counter and logger at this site presented no problems. The camera, however, intermittently fired multiple shots at times nearly always when no fish were present. A day was spent investigating this by triggering the camera in three ways; from the counter, manually at the camera and by towing

a dummy fish across the electrodes. We could not induce multiple exposures by these means. All electrical connections and wiring were examined. The cause is still unknown. This problem occurs on all cameras at all sites.

Gaters Mill

It had been recommended after a previous site visit and subsequent video recording analysis that structural modifications were needed at this site. This was due to fish swimming high in the water column and being undetected by the fish counter electrodes on the base of the fish pass.

In the absence of permission to carry out the relevant work, the site was maintained in its present configuration. The video was run continuously to provide a permanent record of fish to compare with the known underestimate of fish numbers recorded by the counter. In an attempt to overcome the non-recording of fish high in the water column we temporarily extended the electrodes up the side wall and window of the pass. Stainless steel bars of the same dimensions as the base electrodes were connected to the electrodes by stainless steel wire fastened to the lugs at the window end and to self tapping bolts drilled directly into the electrodes at the wall end. Subsequent video recordings were viewed. Both upstream and downstream LEDs were lighting intermittently and the sensitivity was therefore reduced. The LED flashing stopped and no false counts were produced. Unfortunately no salmon were running at this time so the effect of the modification upon the accuracy of detection could not be tested. Before the salmon run resumed the vertical electrodes stuck to the window were torn out by debris which eventually blocked the pass.

The vertical electrodes on the window were reattached using a stronger, more permanent, adhesive as it had been shown that the these electrodes did not lead to false counts. Fish detection improved and a fish seen on the video swimming at the surface was counted. The reinstalled vertical electrodes had been shortened slightly as it was thought that the proximity

to the surface was causing the LEDs to light. However, this still occurs at high sensitivities although no false counts have resulted.

The downstream LED failed on test on one occasion. This was due to a bad wire connection and as a result the counter electrodes were rewired.

Debris at Gaters Mill was a persistent problem and the pass was totally blocked on arrival several times. On many other occasions debris was removed both from the upstream entrance to the pass and from the Denil baffles. A simple telegraph pole type weed boom would reduce this problem considerably.

The electric fish screen at this site has not caused any problems and was cleaned when necessary.

Bulbs in the infra-red lamps have blown regularly and were replaced as quickly as possible. There was total flash gun failure at this site and there was some delay before an alternative arrangement could be installed as the manufacturer was slow to deal with the problem.

The dehumidifier circuit is faulty and caused a total shutdown of power to the bunker. Power was quickly restored but the dehumidifier is still out of commission.

Nursling Mill

The counter worked well at this site although the sensitivity had to be reduced due to the low water level and subsequent surface effects causing LEDs to light. This year's low clear water and high light intensity caused rapid algal growth on the weirs and this was regularly removed from the photographic area. Again flash gun failures at this site caused problems and no night time photographs were possible for long periods.

There was much floating weed present in the R. Test this year. This was not just confined to the weedcutting period. Massive accumulations occurred on the central pier between the two weirs and on occasions was so great that one weir was completely blocked. This weed was very difficult to remove and highlighted the problems that can occur without a daily check of the counting

sites.

Although confident that the counter was functioning correctly the counts this summer were extremely low and the spare counter was installed at this site as a check for counter malfunction. There was no dramatic change in numbers. As the video was needed permanently at Gaters Mill we attempted to use a borrowed BBC computer to check the accuracy of the counter, but the computer was faulty and this check could not be carried out.

One board malfunctioned at this site and was sent for repair to the manufacturer.

Connegar Bridge

The counter and BBC computer ran reliably throughout this period. The main problem at this site was that the water keeper kept altering the hatches at the top of the Little River where the electric screen is situated. This was done without consultation, resulting in live electrodes in areas of low flow and back eddies. Fish kills resulted. Fish screen electrodes were cleaned at this site. This is a difficult job as they are permanent fixtures and cannot easily be removed for cleaning.

BACKLOG OF DATA

Films

There was a large backlog of films, and 121 were catalogued and we are now up to date. The time recorded on each negative was logged along with details from the print. Notes were made on presence or absence of salmon, sea trout and eels. Fish lengths were recorded on many of the films although this process was very time consuming and was discontinued. It was thought to be secondary to the objective of identifying the causes of counts and assessing the accuracy of the counters. No adipose clipped fish were seen. Environmental changes in turbidity, water height and position of the standing wave were noted where applicable. Multiple counts and multiple exposures were

also noted.

Many films had no identification marks as to time of year and it is recommended that on each visit a test shot is fired with the data back changed from time to date. This would not only identify time of year but help in the cross check between photographs and logger data when a film can span many days in periods of low run of fish.

Batteries in all cameras and data backs were changed.

Records

All records of counter numbers, environmental variables and film numbers were recorded on loose sheets of paper at all sites prior to IFE's takeover. These have all been transferred to the permanent site books and photocopy backups have been filed.

Data loggers

Data was downloaded regularly and information on up and down counts was extracted for confirmation from photographs. All data for this period has been copied to NRA (Southern) and backed up at IFE.

Environmental probes

The turbidity meter at Nursling Mill was out of the water due to the exceptionally low level. This was repositioned.

A turbidity meter was installed at Gaters Mill and wired to the bunker through the fish pass. Although the site for the meter was chosen carefully to avoid weed, weeding up of the probe did occur. In the absence of a weed boom which would protect the probe, it is recommended that the probe is moved above the fish pass to an area of high water velocity, where weed can wash off the probe.

STAFF TRAINING

We visited all sites with Mr A. Fewings (new appointment to the HSP) and explained site configurations and procedures. Mr Fewings also spent time at IFE River Laboratory. Full details of data storage, retrieval and transfer were discussed and explained.

CONCLUSION

All requirements of the contract have been carried out as requested. All information collected for the HSP, together with the worked up backlog, has now been handed over.

Requirements of the contract to audit the information collected by the HSP have been carried out in addition to the above contract. After receiving full details of the data, together with NRA (Southern)'s interpretation, we will be able to complete our audit report for 1989.