

SUSTAINABLE MANAGEMENT OF THE RIVER ITCHEN SPECIAL AREA OF CONSERVATION

River Itchen Sustainability Study

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Progress Report on the River Itchen Sustainability Study

In September 2001, we circulated the first of a series of newsletters associated with the River Itchen Sustainability Study referred to as 'the Study'. Phase I aspect of the project was completed in December 2001. Phase II continued through 2002. In this issue, we update you on the Phase II project activities and we provide insights into the study's deliverables.

The Study

The Environment Agency, which has responsibility for water resources, fisheries, environmental protection etc under national and European legislation, leads the study. The study is investigating the impact of water company operations on the conservation interests of the river in an holistic manner.

The study is concerned with integrating the Agency's regulatory functions with English Nature's conservation objectives for the Special Area of Conservation in the most efficient manner.

Seminar on Land use, Sediment Dynamics & River Morphology

Steering Group Hosts Seminar on Problem of Sedimentation of Salmon and Trout Spawning Gravels

The River Itchen sustainability study has confirmed that siltation is a major issue for aquatic wildlife in Chalkstreams.

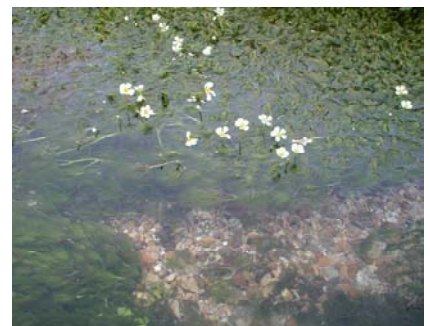
Problems of Spawning Gravels, Siltation and Rehabilitation

A seminar on land use, sediment dynamics and river morphology was held on 3 July 2002 at the Cathedral Refectory, Winchester.

At the seminar, eminent speakers from a range of organisations including Universities, research institutes, consultants and interested members of the public presented papers.

The presentations and discussions at the seminar raised many important issues for stakeholders, including effects of land use and river management on habitat suitability for aquatic wildlife, and the problem of pressures on the farming industry in relation to agricultural practices.

Itchen Study Project Executive Rod Murchie noted that the seminar made substantial contribution to the knowledge of the probable causes and the potential management of the status of aquatic wildlife in Chalkstreams.



Salmon spawning gravels in the lower Itchen

Hydrogeological and Groundwater Modelling Studies

Additional data collection to provide better understanding of river-aquifer interaction processes has involved borehole drilling at Twyford Moors.

“The information collected from the fieldwork would provide a sound basis for interpretation of groundwater model outputs” says Chairperson of the Itchen study’s groundwater Technical Working Group Alison Rennie of the Environment Agency.



Borehole Drilling at Twyford Moors

River Modelling and Fish Movement/Survival Studies

Work has continued on the development and calibration of a catchment-wide river hydraulic model.

River Flow, Water Level, Weed Growth, and Operation of Hydraulic Control Structure Observations

To improve the historical database for river modelling inherited from the Environment Agency at the start of the Itchen study, observations of river flow, water levels, weed growth and operation of hydraulic control structures

were carried out by a team led by Alison Rennie and Tony Burch on 24 October 2002.

The information collected on the ‘calibration day’ will be very important in model calibration and verification says Meyrick Gough of Southern Water and Chairman of the Itchen study’s river modelling Technical Working Group.

Water level measurements and observations of weed growth for river hydraulic modelling will be crucial to water level management planning and implementation says Tony Burch Environment Agency’s strategic flood defence planner and supported by Amanda Newsome of English Nature.

The river model is a valuable tool for the investigation of ‘what-if’ scenarios associated with ‘barriers to fish movement’, physical form of the river such as water depth and dominant substrates says Tim Sykes of the Environment Agency and Chairman of the study’s ecology group.

Consultation with Fishing Interests and River Keepers

Fisheries and other riparian interests were asked to participate in a questionnaire survey looking at fisheries issues throughout the catchment.

It was recognised that those involved in the routine management of the river represent a unique fund of knowledge and experience of factors affecting fisheries. The response has been excellent, both in terms of the number of completed questionnaire forms returned and also the quality of information that was included.

Processing of the returns has now been completed, subject to adding a few “late returns” which are being chased up.

‘A report of the findings is being drafted and will be circulated early in the new year to all those who have submitted completed questionnaires’ says David Solomon Fisheries Adviser with the Halcrow Management Team.

Technical Workshop on Sustainability Study Investigations

Opening the workshop, Rod Murchie – Project Executive emphasised the importance of communication between the various groups working on the different aspects of the Itchen study. Presentations at the workshop included papers from Nigel Holmes on ‘Requirements of a Target Flow Regime for Target Species’, Groundwater modelling assessments by Alison Rennie and Rob Soley of Entec. John West, Christophe Declerck, and Robert Bird described on-going work with respect to water quality, river modelling and hydrometric/hydrological assessments.

Mike Dunbar of the Centre for Ecology and Hydrology presented a study specific fish habitat modelling protocol, whilst Adrian Fewings highlighted recent developments in the techniques of fish migration modelling. At the end of the workshop, Chairpersons of the study’s Technical Working Groups summarised key points from the workshop for consideration by the study team.

Wet Grassland Species and Local management



Halcrow Geomatics Uses State-of-the-Art Technology for Topographic and Structure Surveys

The on going geomatics survey of the Itchen utilises global positioning systems, inshore hydrology, topographical mapping and geographical intelligence systems.

On completion of the river channel survey, the three-dimensional spatial data will be integrated into the Environment Agency's digital terrain model of the Itchen catchment

Itchen Fish Dispersion Model

Work has continued on the development of a fish dispersion model for the study area. The model incorporates rate of fish movement, and potential numbers of fish available to move as well as fish obstructions in the form of rating factors for fish passes.

Collation and processing of catch records within the study areas has continued. The information will prove very useful in improving our understanding of the relationships between catchability and flow says Adrian Fewings – Technical Specialist in charge of fisheries science at the Environment Agency.

Minimum Residual Flow to Southampton Water

Investigation of probable combinations of effluent loads, freshwater flow and estuary water quality scenarios in relation to the study's assessment of potential minimum residual flow conditions for the lower Itchen has continued.

It is possible that the Itchen estuary's two dimensional depth averaged model would be used to look at a range of management scenarios for this aspect of the work programme.

Water Quality Studies

Monitoring and Modelling

Monitoring

The Easton's continuous monitoring and monthly sampling of key determinands being carried out by Martin Jerome and team from the Environment Agency is progressing well.

"The monitoring was aimed at infilling gaps within the existing routine monitoring information made available for the study" says John West the study's water quality adviser.

Modelling

Water quality modelling and models will be focussed on the requirements for target species as defined in the English Nature's Favourable Conditions Table.

The target species requirements include: governing concentrations of suspended solids at 10 mg/l annual average and less than 10% silt in surface sediments for salmon spawning. Limits on phosphates is 'less than 0.06mg/l' annual average linked to eutrophication and nutrient management.

Other requirements include River Ecosystem Class 1 compliance for salmon through maintaining dissolved oxygen levels at 80% saturation (10 percentile), BOD at 2.5 mg/l (90 percentile), Ammonia at 0.25 mg/l (90 percentile), Copper at 112 µg/l (95 percentile) and Zinc at 500 µg/l (95 percentile).

2002-03 Ecological Surveys

The study's 2002-03 ecological surveys has continued. This has involved survey

Forthcoming Events

Date 10 July 2003

Time, Location: To be announced

CIWEM Central Southern Branch Meeting

Attributes of a Sustainable Management for the River Itchen Special Area of Conservation

CIWEM Young Members Study Tour

Features of a Special Area of Conservation and need for a Sustainable Management Strategy

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of the *Ranunculus community*, bird species, southern damselfly and water voles. Brief details of some of the surveys are described as follows.

Southern Damselfly Population Study

An adult southern damselfly mark-recapture work by Liverpool University has continued. The work is due for completion in May 2003.

Crayfish Surveys. Final confirmatory survey work has continued and this has involved targeted trapping survey in the Abbots Worthy and Easton areas. This work is due for completion in December 2002.

Otter DNA Project. This has involved otter spraint collection by volunteers, DNA extraction and typing work by specialists. The work is due for completion in 2003.

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Invertebrate Assessments. Meso habitat mapping work is complete. Information from the fieldwork will be used to obtain estimates of the total area of meso habitats within each management unit of the study area.

Wet Grasslands Condition Assessments. Wet grassland surveys for condition assessment of communities completed during 2002. Protocol for modelling agreed with specialists. "When the modelling work is complete, interpretation of model outputs against a database of community requirements" would assist in setting targets for

sustainable management" says Bryan Boulton, Environment Group Leader at the Hampshire County Council and study's steering group member.

What the Itchen Study Will Deliver

Halcrow Management Team

The project will make recommendations to the Environment Agency and English Nature on statutory review of discharge consents and abstraction licences.

It would also identify impacts of anthropogenic influences on the target

species/communities/habitats and assemblages associated with the Itchen SAC.

The study will deliver a sustainable management strategy for the River Itchen Special Area of Conservation

In addition, an overall flow management regime, which is measurable and operationally viable for the protection, maintenance or restoration of the Itchen SACs target species/communities/habitats and assemblages will be proposed for consideration by the steering group.

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Web Page Addresses of Competent Authorities:

- <http://www.defra.gov.uk>
- <http://www.hants.gov.uk>
- <http://www.english-nature.org.uk>
- <http://www.southernwater.co.uk>
- <http://www.portsmouthwater.co.uk>
- <http://www.eastleigh.gov.uk>
- <http://www.environment-agency.gov.uk>
- <http://www.winchester.gov.uk>

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