



Synoptic Sampling Considerations

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By 'synoptic sampling' we mean collecting multiple samples within a short time frame while river conditions are similar at all sites.

These considerations encompass –

1. Planning
2. Stable river conditions
3. Logistics
4. Example documents

They are based on the experience of twice sampling at 60 sites within four hours from the headwaters of the R. Wharfe to its confluence with the R. Ouse some 100Km downstream. There have also been several projects over shorter distances and fewer sites, such as iWharfe Upper 2021 with 34 samples taken, again within four hours of each other. It is the real data for this project that have been used for the associated examples.

1. Planning

When planning to carry out synoptic sampling over a significant number of sites, especially for the first time, allow plenty of time. Planning considerations include:–

- a) Identifying and finalising the list of suitable sample sites with reference to the section in the protocol 'Where to sample'. This might require on-site visits, or it can be done with for example Google Maps aerial views - which was essential for the project iWharfe '20 when Covid pandemic travel restrictions had been imposed.
- b) Decide a sample day date, if possible with flexibility to allow for inappropriate weather and flow conditions as detailed in the protocol under 'When to sample' and below '2. Stable river conditions'.
- c) Recruit a team of sampling volunteers. For iWharfe '20 (60 sites divided into five zones over 100Km) we used five teams of two or three people who each collected samples in their allocated zones - an average of 12 sites within four hours of starting.
- d) Plan training for the volunteers, best for all of them at the same time choosing a convenient place on the river for all concerned. Allow 1.5 – 2 hours for this and ideally no more than two or three weeks before the planned sample date.
- e) Prepare a spreadsheet database of the sample sites containing at a minimum : Site code, OS grid reference, Latitude and longitude, Site name, a brief description of where to park and any access considerations, and a note of the URL of the nearest upstream river level logger. In the example database 'iWharfe Upper Database and Analysis.xlsx' we also identified each site type as a Crossing, Bank, Recreational, Tributary or STW.



2. Stable river conditions

As explained in the protocol it is important to sample during a range of flows. For synoptic sampling with a large number of sites there will be quite a number of people involved on the day which can take a considerable amount of planning, especially on the first occasion, and of course it's impossible to predict the weather and hence flow levels realistically more than say 5 – 7 days ahead.

Perhaps on the assumption that at least one more day of synoptic sampling will be carried out after the first occasion, decide on a date sufficiently in advance for everyone involved and accept the flow conditions as found on that day.

On subsequent occasions when planning will be easier by reusing documents from previous sample days and hopefully in the main having the same volunteers the planning lead time can be shorter, with perhaps two possible dates pencilled in a couple of weeks apart to be finally decided a few days in advance.

3. Logistics

The time needed to collect all samples within the planned time frame on the day must take into consideration:

- Times to travel between each site.
- Times to walk to the river sites from parked cars, and back.
- Time to collect the sample, take locational photographs and complete record sheets – allow about 15 minutes.
- After totalling these times to ensure they work within the required time frame add say 10% for contingency.

Be aware of any route between the sample sites where in the case of an unexpected road closure that an alternative route will need to be used.

4. Example documents

[Here you will find a folder](#) with:

- a) A spreadsheet database with the data analysis on a second tab. (iWharfe Upper Database and Analysis.xlsx)
- b) An example database template.
- c) An example record sheet 'Example Record.docx'
- d) An example recording sheet (Blank template record sheet.docx) and a version of the same that can be used to create multiple records using Word's mail merge feature (iWharfe Upper Record Sheet Mail Merge.docx and the associated database for it (iWharfe Upper Mail Merge Database.xlsx)
- e) The final report for the project used for these examples. (Wharfe_iWharfe_Upper_Report_Final.pdf) Other examples of iWharfe project reports can found on the Yorkshire Dales River Trust website at <https://www.ydrt.org.uk/what-we-do/projects/current-projects/iwharfe/>

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