



## Citizen Science

# Water Monitoring Equipment

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### Resources

There are several different types of water monitoring and sampling equipment that have been used in citizen science work. All equipment is specific to the type of data being collected, i.e. macroinvertebrate, water quality parameters, pathogens, etc. A few examples of common citizen science water sampling equipment is below:

**Multiparameter Sonde** – Multiparameter sondes are rugged, customizable water quality instruments that house sensors for surface water monitoring. Sensors are purchased individually based on the data needed. The most common sensors measure temperature, pH, dissolved oxygen, conductivity, and salinity, though others can be purchased as well. These instruments can be used in a variety of field conditions and provide real-time data.

**Bacteriological Monitors** – There are several different types of bacteriological monitors available for the testing of bacteria, which is generally a good indicator of human pollution. Common indicator bacteria include total coliforms, fecal coliforms, *e.coli*, and *enterococci*. Though the monitors are not considered field equipment, they are portable enough to be housed in a temporary location, i.e. a classroom, for use after field sample collection.

**Portable spectrophotometer** – Portable spectrophotometers are durable, handheld instruments that require water samples to be placed in a small vial and inserted into a chamber. The instrument comes pre-programmed with a wide array of commonly tested methods to make testing easy and accurate. Common parameters include iron, nitrate, nitrite, total nitrogen and total phosphorous and turbidity.

**Macroinvertebrate Samplers** – There is a variety of sampling equipment available for collecting macroinvertebrate samples, which are a useful indicator of the health or condition of water bodies. Collection of macroinvertebrates requires considerably simpler equipment compared to the chemical parameters. Common tools include nets of various shapes and sizes, as well as bottles or larger containers to fit sampling needs.

**Handheld GPS units** – Handheld GPS units are supplemental to the other water quality instruments. To collect the most accurate sample and provide for good decision making, every sample location should be logged. Conversely, locations may be plotted before sampling using GPS software, which will then require the navigation feature of a handheld GPS to reach.