

In my experience, both groups usually work together very well, BUT there is always room for improvement.

“Bridging the Gap” means cavers and scientists understanding each other’s needs and motivations.

What motivates each group?

- Scientists want to study caves or some aspect of them in order to answer questions (some scientists are also cavers);
- Cavers want to explore the “underground wilderness” through physical interaction and discovery (some cavers are also scientists);
- Both groups are curious about some aspect of caves.

Examples of the types of “services” provided by cavers to the scientific community:

- Eyewitness in-cave observations;
- Water quality sampling (collection of physical samples as well as “meter” analytes);
- Sediment and rock sampling;
- Biological observation and sampling;
- Flow measurement;
- Dye tracing assistance;
- Cave surveying & mapping;
- Radio-location assistance;
- Lithostratigraphic, biostratigraphic or hydrostratigraphic mapping or observation;
- UW photographic documentation (stills and video).

Examples of potential “services” provided by researchers to cavers:

- Enhanced understanding of in-cave observations and other aspects of the cave;
- Potential access to otherwise closed caves (some caves are only accessible for scientific data gathering purposes, which almost always includes an exploration and mapping component);
- Recognition of the value of caver participation in the scientific literature;
- Logistical and financial support.

WHAT SCIENTISTS NEED:

- 1) An understanding of when caver / diver services are needed, versus when other options should be pursued;
- 2) Awareness that Mother Nature is in charge: “Stuff” Happens – bad weather, low visibility, other factors which may affect the diver’s ability to perform within acceptable safety parameters;
- 3) A better general understanding of the training, planning and equipment requirements necessary to complete the types of dives needed, and associated risk management procedures;
- 4) Knowledge of basic human diving physiology, including physical stressors, and especially task loading;
- 5) Lead time notification – the proposed dive schedule. This allows time for the research staff to prepare equipment and arrange for on-demand services, such as laboratory analytical services. Additional sample prep may also be required in the field.

WHAT CAVERS NEED:

- 1) Presentation of the project goals and proposed methodology (*Research Project Plan*). This gives the cave team a better understanding of the scientific project underway, and a general idea of what will be required to accomplish the data gathering tasks; [kept in the dark...BS](#)
- 2) An understanding of the value of caver contributions to the overall effort;
- 3) Clear instructions from scientists in the use of any sampling equipment or data gathering devices, or necessary training to carry out the needed work;
- 4) Importance of QA/QC procedures in assuring data integrity;
- 5) Land side logistical support;
- 6) Financial support (depending on the nature of the project);

WHAT BOTH CAVERS AND SCIENTISTS NEED:

- *Pre-Dive Briefing* – time must be reserved at some point prior to the dive(s), so that expedition and support staff understand completely how to collect data / samples, and scientists understand factors which might affect the diver’s ability to perform these functions. Both groups must discuss the feasibility of the data gathering effort, and how it fits in with other dive objectives;
- *Dive Plan Review* – scientists and cavers need to discuss the Dive Plan. Depth, distance and cave configuration will help determine the logistics, equipment configurations, and degree of effort involved (i.e., staged dives, use of scooters, gas mixtures?);
- *Cave Map Access* (if available) – helps the scientist understand the dive(s), and provides a visual reference during planning discussions;

- *Post-Dive Debriefing* – scientists will need to interview members of the team to ascertain details about any issues or irregularities encountered during data collection;
- Follow-up and continued communication from cavers regarding changes in cave conditions, and from scientists, research results and publications.

What's missing from this picture?

- *Role of the cave owner / manager* - without cave access, neither group gets what it wants, so it makes a lot of sense for cavers and scientists to **WORK TOGETHER** in proposing projects which benefit both interests!
- *Educational outreach* - publicity about many cave projects can carry a positive educational message to the public, which benefits all who want to conserve and protect caves. Scientists and cavers, because of their specialized knowledge, should consider devoting time and effort to educating the public about their work ...