

# THE VALUE OF SMALL EXPEDITIONS TO REGIONAL CAVE RESEARCH: A RECONNAISSANCE TO THE CAYO DISTRICT OF BELIZE

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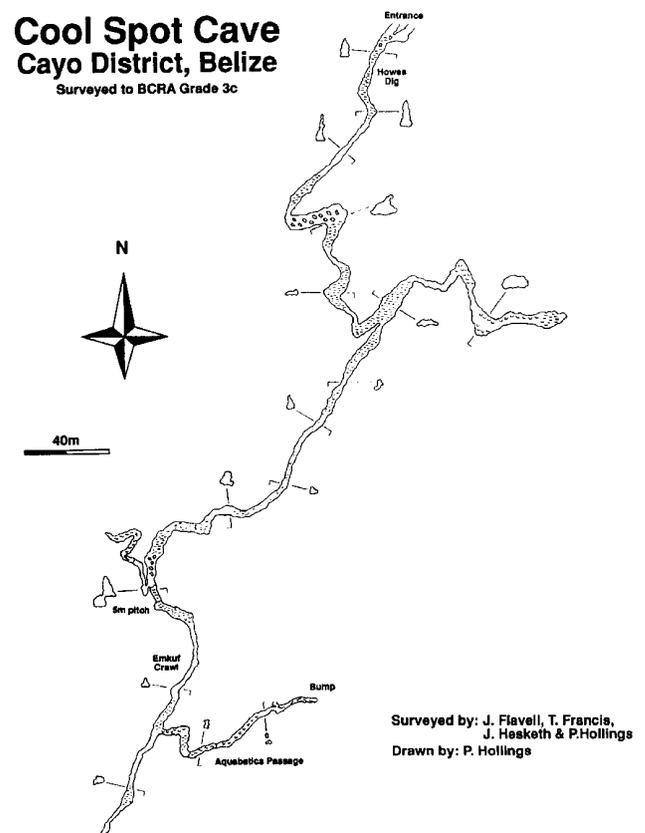
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*During a five week period, 19 caves were explored by a team of four cavers comprising the 1994 Mendip Caving Group (MCG) expedition to Belize. Six sizable caves were identified in the Cretaceous limestone, west of the Maya Mountains, and surveyed a total length of 2.5 km. Time spent in the field is broken down so as to show both the advantages and disadvantages of a small-scale expedition. Suggestions are made as to how future groups could benefit from the experiences of the expedition with regard to conducting significant research with a small team. The MCG expedition is compared to other larger expeditions, with the results showing that lightweight expeditions are more easily financed and organized than larger expeditions; however, they may not be suitable if detailed scientific studies are intended.*

There has over recent years been a trend toward smaller, lightweight expeditions in the caving world, with groups commonly taking only the equipment they can carry on the aircraft, rather than shipping large quantities of equipment out in advance. This paper is intended to provide a detailed analysis of both a lightweight and large scale expedition in order to demonstrate the significant contribution that can be made by the former to regional research, and to help others planning similar expeditions to avoid the mistakes we made. The results and logistics of the Mendip Caving Group (MCG) expedition to Belize will be discussed in order to provide a basis for comparison. The two larger expeditions examined in detail were also based in the United Kingdom (UK) and, consequently, were faced by similar obstacles and expenses.

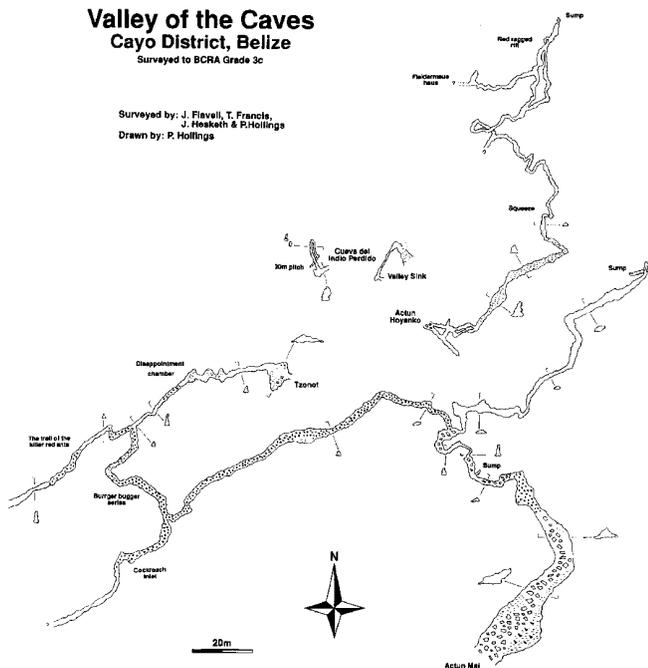
During March and April 1994, four members of the MCG conducted a cave reconnaissance expedition to Belize. The intention was to investigate the area around San Antonio, Cayo District (see location map, page 68) with a view to mounting a larger expedition should the area warrant it. This was the first expedition for all of the team members and proved to be a considerable learning experience.

The team spent five weeks in the field and in that time investigated 19 sites. While 13 of these proved to be small fossil caves or shallow choked pits, six sizable caves were also found. Descriptions and surveys of these caves have been published elsewhere (Francis et al., 1995; Hesketh, 1995; Hollings, 1994). In total 2.5 km of passage were surveyed, the longest single cave being the 840-m-long Cool Spot Cave (Figure 1). Perhaps the most interesting area was the Valley of the Caves where Actun Mai was connected to Tzonot, with further potential for connecting Actun Hoyanko and Cueva del Indio Perdido into the system (Figure 2). As far as the team was aware, we were the first to map any caves in this area, although archaeological evidence proved that we were by no means the first to enter the caves. On returning to the UK we learned that Cocohil Cave (also known as Gibnut Cave) had



**Figure 1. Cool Spot Cave.**

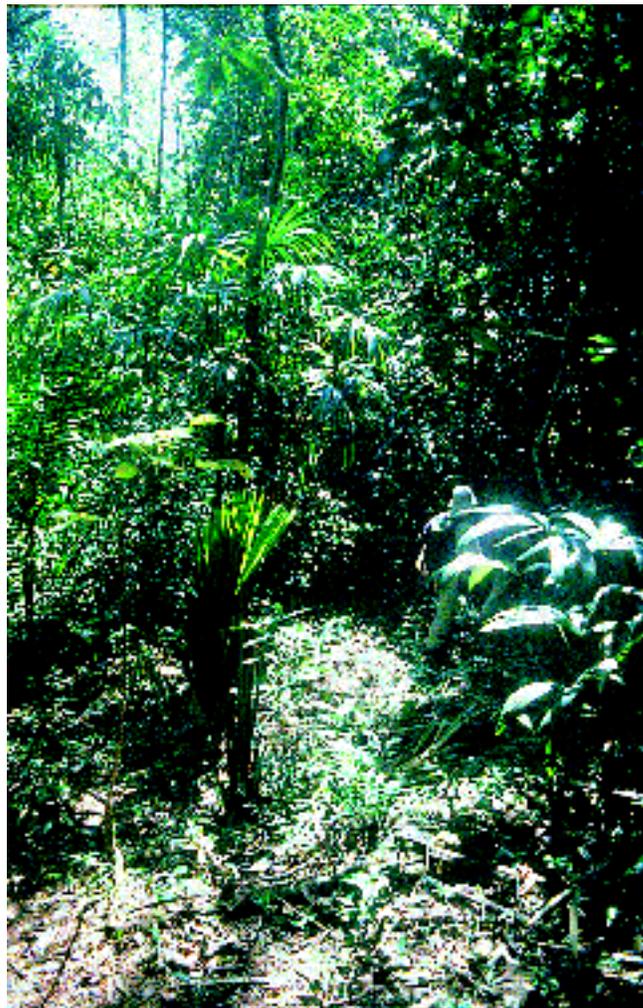
been previously mapped both by Tom Miller in 1970 and Carol Vesely and Bill Farr in 1986 (Miller, pers. comm., 1995). Some of the smaller caves were shown to the team by local farmers who provide this service to tourists as a means of supplementing their income. The seven caves surveyed had not been used in this way and represent 95% of the cave passage the expedition explored in the region.



**Figure 2. Valley of the Caves.**

ANALYSIS OF LOGISTICS AND FIELD RESULTS

The expedition was intended as a reconnaissance which, as defined by White (1986), would imply only superficial examination of the area and rough surveys. However, the nature of the area and the assistance of local hunters meant that far more was achieved than was originally hoped, with six caves being fully explored and surveyed. The area around San Antonio was thoroughly investigated, but many leads were left unexplored due to a lack of time. This highlights one of the principal problems of an expedition of this scale, that the expedition had limited manpower and we were unable to do everything we would have liked. The expedition log book shows that 122 person-days were spent in Belize; of these 46% were spent caving, 23% as rest days, 21% in administration, and 10% for illness. This is comparable to the 1992 Caves of Thunder expedition to Irian Jaya, which spent 27% of it's time on administration, 25% accessing the area and caving, and lost 6% to illness (Boothroyd et al., 1993). Our general lack of experience meant that we carried out most activities as a group. By splitting the team into smaller groups we could have reduced the number of days spent on administration. Also the contacts we made would reduce the time a follow-up expedition would be required to spend in this way. With a small team rest days were unavoidable, as after five days of exploration and surveying it was difficult to summon up the energy or enthusiasm to continue, particularly toward the end of the expedition. The days lost to illness were generally caused by stomach problems. One member had arrived via Mexico and



**Typical terrain within the field area. Photo by Pete Hollings.**



**Pete Hollings at the entrance to Mai's Cave. Photo by Julian Flavel.**

was afflicted throughout the expedition by diarrhea he acquired there. The rest of the team were all struck down with diarrhea at some point; however, the one person using an iodine-based water purification tablets ("Aqua Pura") suffered less than those using a chlorine-based product ("Puritabs"). This individual only accounted for one sick day and experienced less severe symptoms. The days lost through illness tended to increase the work load for the others by magnifying the fatigue factor, but there was little else that could have been done to avoid these problems.

While the members of the expedition were either geographers or geologists, the scientific observations were limited. This was partially due to how the group perceived the expedition, as we had no particular scientific goals other than to explore and map caves. However, it is also all that can reasonably be expected of a group without the necessary training to become involved in detailed scientific projects, such as those involved with an archaeological excavation. Instead the MCG expedition concentrated on providing a basic descriptive record of the area through surveys, photographs and published reports, as recommended by Smart (1986). For example the surveys revealed a conjugate northeast/southwest and northwest/southeast trend to the cave passages, similar to that mapped in the Chiquibul River drainage basin of the northern Vaca Plateau (Reeder, 1992, 1993). However, observations as to the general nature of the caves differ from those of Reeder (1993); longer horizontal caves were located in the valley bottoms, while caves higher on the valley sides were characterized by shafts as deep as 20 m.

Five sites of archaeological significance were also identified, the small fossil caves high in the valley sides commonly containing pot and bone fragments. The inclusion of an archaeologist within the team would have allowed a more detailed study of these items; however, it would also have meant that the cave reconnaissance of the area would have been less thorough, as time would have been spent investigating the archaeology rather than locating caves. Future expeditions may wish to investigate the possibility of a closer liaison with the staff of the Department of Archaeology in Belmopan. With the increasing interest in ecotourism in Belize as well as the large number of groups conducting archaeological studies in the area, perhaps this will be possible in the future. Given the limited time available to the expedition, the team concentrated on surveying the larger active caves. The presence of pot sherds, some nearly intact polychrome vessels, and bone fragments found in the fossil cave was reported to the Department of Archaeology, hopefully insuring the preservation of these sites for future study.

The caves that were mapped contained a varied fauna including bats, fish, crabs, and numerous insects. The team did not have the necessary training to identify the biota; however, this is one area where, with a little more planning, some research could easily have been conducted. It is relatively straight forward to collect specimens for later identification.

Simple notes were recorded in survey and log books and this information was passed on to cave biologist James Reddell at the Texas Memorial Museum.

So far I have highlighted the problems faced by a small expedition, yet it is my belief that these are far outweighed by the benefits. To demonstrate this point, I have chosen to examine two other UK-based expeditions, partly because they offer a good base for comparison due to the similar costs involved, and also because they are the only expeditions for which sufficiently detailed statistics were available. The amount of passage surveyed has been chosen as an indicator of the level of success simply because cave exploration was the principal goal of the three expeditions. The Queen Mary's College (QMC) Below Belize '88 expedition represents a large scale expedition, with 18 members and a budget of £35,000, while Below Belize '91 falls somewhere between a large scale and lightweight trip, due mainly to the fact that it was a joint expedition organized with the British Army (which was stationed in Belize), and thus received extensive logistic support.

One of the advantages of a lightweight expedition is shown by the fact that the MCG expedition was organized in under four months, while the QMC Below Belize '88 and Below Belize '91 expeditions took almost two years of planning (Williams, 1990, 1992). There seem to be two main reasons for this: our expedition had no need to raise large sums of money, nor did we have to worry about shipping large volumes of equipment to Belize in advance. Table 1 provides a more detailed comparison of the expeditions. Data from North American expeditions also supports this view; the Chiquibul 1984 expedition, which raised \$13,000 from outside the expedition members, took three months to organize, while the trip to the Indian Creek area took one month and was self-funding (Miller, 1984, 1991).

The majority of UK-based expeditions to Belize, prior to that of the MCG, received some level of assistance from the British Army. Below Belize '91 was a joint expedition that included army personnel and consequently had access to extensive logistic support that included helicopter flights into the field area (Williams, 1992). A small expedition has no need of this level of support, although the knowledge that the support was there in case of emergency was comforting. This support was also not available to U.S.-based cavers who have worked extensively in Belize for many years (Williams, this issue); thus, comparisons with North American-based expeditions are not really useful in this context because of the different logistics involved. For example it is possible for North Americans to drive their own vehicles into Belize thus reducing shipping and transport costs while increasing the flexibility of the expedition. This flexibility was possible for the 1988 and 1991 British expeditions because the former shipped two vehicles to Belize while the latter had access to military support. The high cost of vehicle hire in Belize, combined with the poor reliability of these vehicles (Williams, pers. comm., 1995), meant that this was not an option for the MCG expedi-

**Table 1. Comparison of the Mendip Caving Group, Queen Mary's College (Williams, 1990) and Below Belize '91 (Williams, 1992) expeditions.**

<b>Mendip Caving Group, 1994</b>	<b>Queen Mary's College, 1988</b>	<b>Below Belize, 1991</b>
Four month planning period.	Two year planning period.	Two year planning period.
One month spent in the field.	Four months spent in the field.	Two months spent in the field.
2.5km of cave passage surveyed.	20km of cave passage mapped.	900 m of cave passage mapped
A budget of £3,275 of which all but £700 was contributed by expedition members.	A budget of £35,000 of which £18,000 was contributed by expedition members.	A budget of £7,800 of which £6270 was contributed by expedition members.
No shipping of equipment.	Shipped 8 tonnes of equipment, including two Landrovers	No shipping of equipment
No need for logistical support in the field.	Received support from the British Army, including transport of equipment and personnel and the loan of radios. Were also able to arrange helicopter reconnaissance flights.	Joint expedition with the British Army so were able to arrange transport, accommodation and the loan of radios. RAF Puma helicopters were used to transport personnel to the field area.
Four man team with no medical or scientific background.	Eighteen member team with medical experience and the ability to mount two biological projects as well as a number of geographical ones.	Sixteen member team including trained medical personnel.
Relied on local transport which was not always convenient and could have been a problem had an accident occurred.	Supported by two Landrovers shipped from the UK.	Trucks, Landrovers and helicopter support all provided by the British army

tion. In general, the costs incurred by expeditions from North America are lower than from the UK: ~£180-200/person/ expedition month (Miller, pers. comm., 1995), compared to about £500/person/month for Below Belize '88 (Williams, 1990) and £820/person/month for the MCG expedition (Francis et al., 1995).

A small expedition also has the advantage that it can more easily adapt to the community around it. We found that we were quickly accepted by the people of San Antonio, who were at first curious and then enthusiastic about the aims of the expedition. As a result we were informed of more leads than we had time to investigate.

#### CONCLUSIONS

The MCG expedition was able to achieve results comparable, and in some cases superior, to those of much larger efforts (Table 2), with the quantity of cave surveyed being also a reflection of the nature of the caves in the area. This is demonstrated by the Chiquibul 1984 expedition which mapped 23 km in 45 days (Miller, 1984), and is particularly true in the case of

the Below Belize '91 expedition which only surveyed 28 m/person/month, emphasizing the value of small, lightweight expeditions in a reconnaissance role. Had the team been increased to six, possibly by the inclusion of a photographer and an archaeologist, the expedition could probably have achieved even more with little loss of efficiency. As it stands, data were collected that should be of use to others working in the area, as well as increasing the database on Belizean caves and locating an area for further exploration.

#### ACKNOWLEDGMENTS

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**Table 2. Comparison of the results of the Mendip Caving Group, Queen Mary's College (Williams, 1990) and Below Belize '91 (Williams, 1992) expeditions.**

<b>Mendip Caving Group, 1994</b>	<b>Queen Mary's College, 1988</b>	<b>Below Belize, 1991</b>
Cost of expedition per kilometer of survey.		
<i>£1310 per kilometer.</i>	<i>£1750 per kilometer.</i>	<i>£8670 per kilometer.</i>
Quantity of survey.		
<i>625m/person/month.</i>	<i>277m/person/month.</i>	<i>28m/person/month</i>
Time spent in planning versus time in the field.		
<i>4:1</i>	<i>6:1</i>	<i>12:1</i>
Number of scientific projects.		
<i>Zero</i>	<i>Four</i>	<i>Zero</i>

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