Workshops

A number of workshops were run at Karstaway Konference. Where abstracts were sumitted they are included here and a limited number of more detailed papers written up by the convenors of the workshops. However several workshops did not submit more than a couple of lines of abstract and have not submitted papers from the discussions. The workshops run were on the following topics: Action Figurative Art for Cavers and Non-cavers (June MacLucas), GIS for Cavers (Bob Kershaw), Publishing: a means to give a wider understanding of caves and karst to the community (Susan White), Out of Harm's Way: Best Practice for Risk Management in Caves (Caroline Forrest), Cave and Karst Conservation Forum (Nicholas White) and Documentation and the Karst Index Database (KID) Forum. Out ot the KID and documentation forums came the article by Bob Kershaw.

Armchair caving in the 21st Century or 'GIS for Cavers'

Bob Kershaw

Gregory Karst Research SIG Mapping Coordinator

Introduction

This article is a summary of an impromptu workshop given at the recent ASF conference in Sale and is not an article of a technical nature. The article explores the possible use of a Geographical Information System (GIS) in cave mapping and documentation by cavers in Australia.

Many cavers want to be able to take their GPS waypoints of caves they have located, and with their surveys of those caves, superimpose this information over an aerial photograph. A GIS will allow you to do this task. The *Compass* survey program will allow you to complete this task but with the survey plot line only, not the drawn walls. Numerous cavers use *Adobe Illustrator* to draw maps after importing the plot lines for features such as walls, from other survey software. However, this is not a Geographical Information System! Basically, a GIS is a computer software program that links all the geographic information collected about a place and displays it in map form.

This article briefly outlines the following topics related to GIS and caving: how I became involved in GIS, hardware that may be required, costs associated with this system, time needed to use the system and the minimum programs that you will need to use a GIS.

I became involved in GIS when I tried to do what I mentioned above, that is, overlay cave surveys on an aerial photo and also to digitise and draw maps of the 100 plus kms of the Bullita cave systems that kept changing each year. Historically, Don Glasgo in 1994 placed all the Bullita survey information into the Compass cave survey program. This data was then converted into ESRI shapefile[1] data to draw the plot lines and survey stations in Arcview (the ESRI GIS software). I have now been using the Compass program for 12 years and the ESRI GIS system for 6 years and easily update cave maps and GPS data as new information is added each year.

Hardware

You will need a reasonably good system to run the GIS software. The computer I use is a stand-alone PC with 4Gb of RAM, 2 disks; one is used as a backup. The computer runs a duo core processor and I do not connect it to the internet for the reason of security breaches and possibly crashing. I use a good quality A3 printer to print off the maps produced each each year which are copied and used in the field. Data is distributed to various cavers each year as an offsite backup.

Costs

The costs involved are what you want to spend, but a minimum a club should spend is approx $50 for Compass, $50 for a GPS program, such as GPSU or Ozi-Explorer. If you go to the ESRI Australia web site and download a form for a grant under their Conservation Program, Arcview, that will cost approximatley $275. The alternative to ESRI is MapInfo but I don't think you can get it with a grant, and most government departments use ArcView and other add ons so there is always someone around to assist you. There are free GIS programs but stick to the 2 mentioned as there is a lot of support for beginners.

You may also need to purchase Adobe Photoshop or use the free GIMP, to enhance aerial photos. I also use Adobe Acrobat to produce print quality PDF's of the maps to send around Australia. But you could use free software to achieve similar results. You should build your GPS waypoint databases using Microsoft Access and this data is easily integrated to the GIS program. You can link cave entrance photos to the GIS as well. The purchase of aerial photographs is extra depending on which state you live in.

Time

The time you will put into learning this process and how to complete the tasks is enormous, but once learnt, and after you write yourself a 'How to' manual showing how all the software integrates to produce the plotlines, draw the cave maps etc- the process is easy. (Ed: Contact Bob for one).

Once you have the programs, convert your GPS waypoints to a database and import them to the GIS. Using Compass, export your survey stations, plot lines and wall shapes (this comes from your LRUDs) into shapefiles and load into the GIS. Register your aerial photographs and incorporate into the GIS. You can now draw your cave plans and every cave is located correctly (plus

or minus 3-5m) so you can see how your cave system relates to the geography of the area.

Unfortunately, the whole process could become a one person operation but, if some members do the field work, others the inputing of survey data and others input the information into the GIS, someone else could do the map drawing. Alternatively, various members could look after certain areas of their state.

Conclusion

GIS has the potential to revolutionise cave surveying and data collection for large areas, but if you draw maps of single caves, *Adobe Illustrator* may be the way to go. If you have several caves with surveys and you want them geographically oriented to overlay an aerial photograph, and you also want to include creek lines, contours and data about cave animals or bat specimens found, then a GIS system is the way to integrate your data.

If you explore the countryside with a GPS and take a waypoint reference of caves you find and then undertake cave surveys and use a software program to reduce your data, and later you draw cave maps using software you are three-quarters the way to using a GIS system. So, why aren't you using GIS to do the complete task?

If you want information on Mapinfo contact Susan White or John Webb. The author can be contacted at rkershaw@ozemail.com.au

References

Horrocks, R.D. & Szukalski, B.W. (2002) Using geographic information systems to develop a cave potential map for Wind Cave, South Dakota. *Journal of Cave and Karst Studies* **64(1)**: 63-70.

Florea, L.J. Paylor, R.L. Simpson, L. & Gulley, Jason (2002) Karst GIS advances in Kentucky. *Journal of Cave and Karst Studies* **64(1)**: 58-62.

McNeil, B.E., Jasper, J.D., Luchsinger, J.A. & Rainsmier, M.V. (2002) Implementation and application of GIS at Timpanogos Cave National Monument, Utah. *Journal of Cave and Karst Studies* **64(1)**: 34-37.

Ohms, R. & Reece, M. (2002) Using GIS to manage two large cave systems, Wind and Jewel Caves, South Dakota. J*ournal of Cave and Karst Studies* **64(1)**: 4-8.

Szukalski, B.W. (2002) Introduction to cave and karst GIS. J*ournal of Cave and Karst Studies* **64(1):** 3.

*[1] **ESRI** is the abbreviation for Environmental System Research Institute..Shapefiles are a term used by ESRI and other GIS for points, lines and shapes.*

Out of Harm's Way: Best Practice for Risk Management in Caves

Caroline Forrest [1.2]

[1] ASF Leadership, Safety & Risk Management Commission, [2] NHVSS

Abstract

What do the ASF members want from the Safety, Leadership and Risk Management Committee? I would like to workshop the issue of new members and what would be reasonably expected from an ASF member who "puts themselves out there" as a leader. Risk management should be seen as an opportunity that any true leader would welcome as a challenge.

For effective risk management, the rewards are to be found in the events that do not happen. It is a fact that good risk management results from constant risk assessment, evaluation and monitoring. The lack of risk management can be seen in incident reports and relatives' faces. What can we say when the judge asks "what else could the defendant have done to minimize the harm?" How do you respond when your comrades say "if only we had... done something differently, thought this through, done another cave, stayed at home."

Come to the SLARM workshop to begin the ongoing commitment of ASF to be leaders. Agenda items are as follows:

- What is a leader and what is expected?
- What is Duty of Care?
- When is a beginner not a beginner?
- Risk Perception
- Environmental Risk
- Formal Training and qualifications
- What's the law got to say?
- What do you want from the SLARM Committee?