Cave Photography - Getting Good Photos

David Wools-Cobb

In this discussion I will assume a basic understanding of photography - at least above ground. The advantage one has in a cave is that YOU control all the light (apart from entrance shots).

SINGLE FLASH

Most people start off with the basic single flash mounted on their camera. This is easy - the camera sets the flash off. Either the flash controls the amount of light, or the camera if it's a dedicated flash BUT this often gives a flat, boring shot.

FLASH AWAY FROM THE CAMERA

- Avoids lighting dust or condensation near the lens.
- May be remotely controlled from the camera by: cable, radio signal or slave unit.
- Can use BULB setting : Shutter opened, flash, shutter closed. This must be done quickly to avoid too much movement of the camera from the subject, but is quick & simple.
- Gives more depth to a shot, with shadows controlled by the flash angle: creates a more interesting shot.

TRIPOD USE

Advantages
- Can compose a shot and leave it set up.
- Can use multi-flashes.
- Can do all the work alone, or with minimal assistance.

Disadvantages
- Takes more time to set up.
- Someone invariably bumps tripod!
- More gear to carry.

Using A Tripod
- Once camera shutter is opened and locked on bulb in total darkness, only the light you provide reaches the film.
- Use a small spirit level to ensure shot is horizontal or vertical.
- Place a small, weak light underneath to assist you to relocate camera if moving away.
- If bracketing, no need to re-compose your shot, just change aperture.
- If multi-flashing, ensure subject remains perfectly still.
- Ensure head lamps of subjects are on low, or if multi-flashing: off.

USING A FLASH EFFECTIVELY

Flash power determines exposure - ie flash to subject distance NOT camera to subject distance.

Flash Synchronisation
Most electronic flashes fire at 1/1000 to 1/20000 of a second. The camera shutter must be fully open. Either use BULB setting or a slow speed of 1/60 sec or less

Guide Number
All flash units have a GUIDE NUMBER- indicates power based on using ISO 100 film. To calculate a new guide number for different film, multiply GN x1.4 for every doubling of film speed. I referred to the advantages & disadvantages of film speeds in my earlier presentation.

Eg GN 30 at 100 ASA = GN 42 at 200ASA = GN 59 at 400ASA

APERTURE = GN/DISTANCE or DISTANCE = GN/APERTURE

The Guide Number is important to determine the Flash to Subject distance & Aperture setting for the camera
Eg GN 30 for 100 ASA
= F4 @ 8metres, F5.6 @ 5metres

BUT a manufacturer's Guide Number is for an ideal situation (reflective walls, and a flash fired from the camera's position).

Caves are far from ideal conditions- minimally reflective surfaces (flash often away from camera's position) ie. often the manufacturer's GN is too high.

Human flesh tones are the easiest way to determine good exposure, so take a few photos in a typical cave situation, bracketing at various apertures and recording each shot. Choose which combination gives the most pleasing exposure of say, facial tones.

Remember GN= AP x Distance WRITE this new Guide Number on the side of your flash, plus a number of combinations for aperture & distance calculated from it: then you will be able to use your flash more accurately. ROUGHLY- in many shots opening your lens 1 or 2 F stops more will give a better shot, but much depends on the situation! FOR EXAMPLE: Lava Tubes have particularly non-reflective walls- they literally soak up light. To get good photos takes a lot of skill, F-Stop adjustment & frankly LUCK!

Flash Position
This has the greatest impact on the final photo.

- Flash must be shielded from the camera, even if not within the photo being taken.
- Caver in picture must NOT look directly at the camera ("red eye problems").
- Avoid other objects near the flash: a hand or cave pack can give a colour cast.
- Flashes from the side or well angled to the subject result in highlights, shadows & good texture.
- Flashes from behind a subject create a silhouette, if high humidity can result in an interesting halo effect.
- Side and back lighting add drama to a shot.
- Electronic flashes are relatively narrow and concentrated so avoid a flash too close to the subject.
- Position the flash for the most even lighting possible- keep flash same distance from each of the main subjects otherwise the closer ones will be overexposed.

Autoflash
A flash sensor assumes that all the surfaces in a shot reflect light evenly, but most scenes are not very even, especially if some distance from the camera, eg. a column with nothing close by may only occupy a small area within the photo, with most light going into the void beyond. The result will be a very underexposed shot.

To compensate, decide what proportion of the shot will reflect light. If 1/2 then 1/2 the Light is lost, So flash sensor detects less light is reflected, so quenches flash later giving an overexposed shot ANSWER - close aperture by 1 stop and so on.

Auto flash may also pick up the light from another flash unit, so unless it's a very even, straightforward shot, it's better to operate on manual.

COMPOSURE

- Look for scenes that look interesting, not just beautiful formations.
- Look at the scene from different angles.
- Decide how much of the scene to include: controlled by the camera position and how you frame it with a zoom lens.

- Decide how to light the scene, to test for shadow effects shine your headlamp from possible flash positions.
- Especially for large scenes- place a caver in photo for scale.

MORE POWER!!!! - MULTI-FLASH

To light up large areas a flash can be fired several times and/or repositioned to even-out how a scene is illuminated OR several flash units can be located around the scene.

Caution
- All flashes should be shielded from the camera.
- Take care with subjects close to the flash to avoid overexposure.
- Don't try to fit too much into the scene - the photo risks becoming too cluttered and uninteresting.

Set the lens aperture based on the main flash setting. Position other flashes at appropriate distances from each area to be illuminated based on their GN & determined aperture. Remember Dist= GN/AP. Best results come from using a number of small to medium powered flashes. Don't try to light the whole scene- allow some shadows to add to the effect. Avoid over-lap of flashed areas.

Cumulative Flashes
Used to increase the intensity of the light.
- Can improve depth of field (increased aperture).
- Can balance light in one area to compensate for a more powerful flash in another area.
- Often used if you can't get flash closer to the subject.
- Can use over a large area to "paint the scene" with just one narrow electronic flash.

Using Slaves
The term SLAVES does not refer to the assistant to the photographer. A slave unit is an attachment that sets off a flash unit if it detects a pulse of light. I use slaves on all but one of my flashes!!!!
- Enables all flashes to be synchronised, ie. one flash sets off all others.
- Camera can be hand-held, ie. no tripod.
- No need to communicate as long as flashes are fully charged.
- Can do all the work alone or with minimal people.

BEING ORGANISED

Cave photographers generally have a terrible reputation and are sometimes despised by non-photographers. Frankly they often deserve this scorn.

Be Prepared
- Know your equipment and how to use it.
- Decide how you're going to take the shot before you set up.
- If using assistants, ensure they know how to point, shield and fire a flash, and how to ensure it's recharged.
- Explain to them just what you wish to do.
- Let the team decide before-hand: is this a photographic trip, or a quick-few-shots trip or a non-photography trip.

If Working With Other Photographers
- Work as a team, or sub-teams.
- If wanted, all should set up tripods and discuss the shot.
- Get to understand how each other works or just don't bother as they'll continually stuff up your shots anyway.
- Generally best avoided!!!

IDEAS FOR SPECIAL EFFECTS

- Cavers in action - climbing, SRT, bridging.
- Water movement, waterfalls: strobed flashes.
- Weak fill-in flash with most flash behind or to side of subject.
- Large chambers: a special challenge.
- Macro or close-up lens work: crystals.

SUMMARY

- Challenging environment.
- Understand your gear & plan.
- YOU control the light.
- Effective flash use - correct setting, position, angle camera shielding.
- Multiflash & slaves.

Good cave photography can be affordable, only buy gear as you really have the need.

FINALLY

Don't be afraid to experiment - all caver photographers have made heaps of mistakes