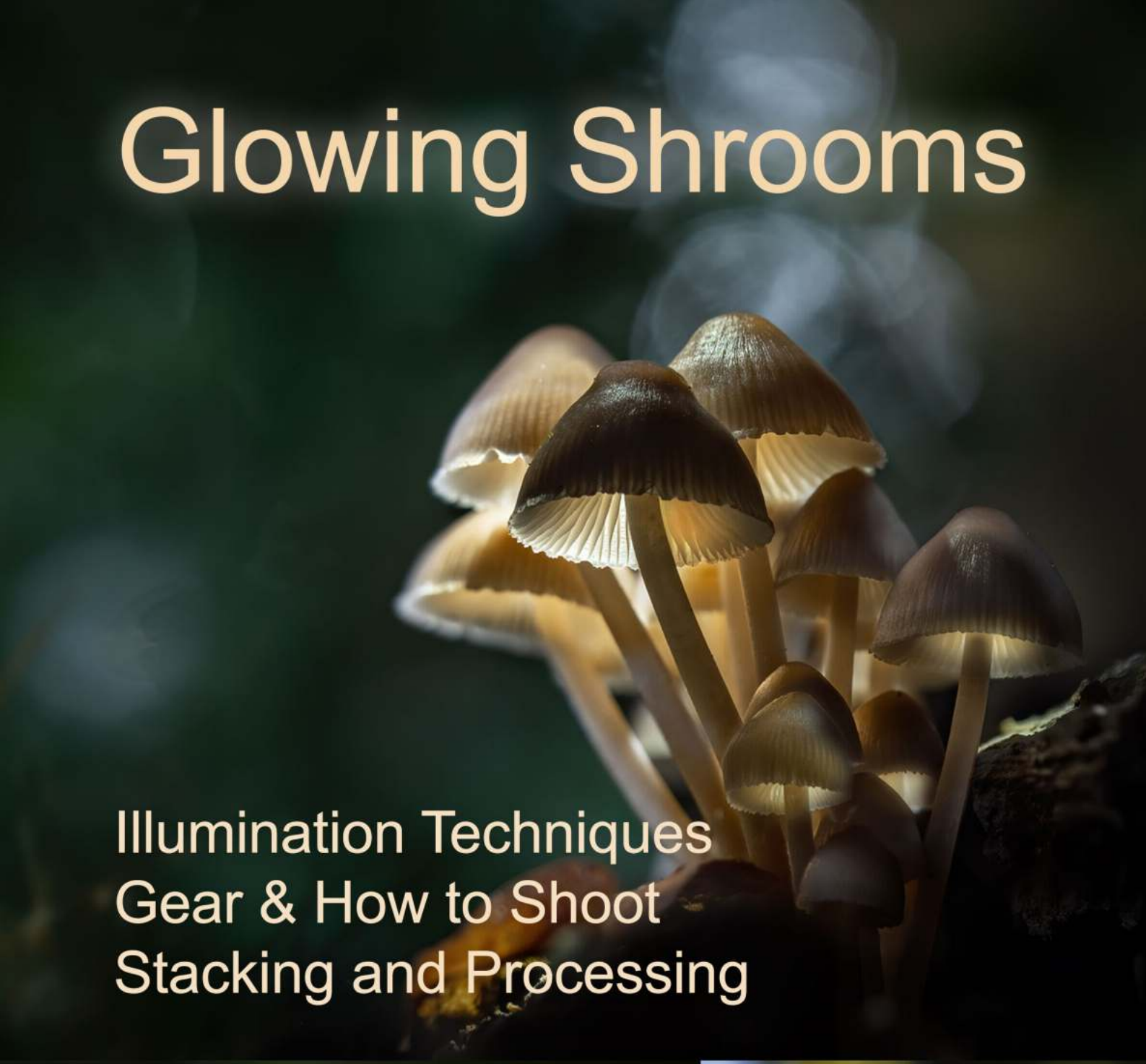
# Glowing Shrooms



Illumination Techniques
Gear & How to Shoot
Stacking and Processing

Phil Norton Photography

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# GLOWING SHROOMS INTRODUCTION

Deep in the forest there is a magical world hidden from prying eyes which comes alive at night. When all is quiet the Shrooms, dormant all year, start to glow.

Why they glow is a mystery, is this how they communicate with each other? Or perhaps it is an ancient skill they evolved from days long ago to help the other inhabitants of the forests at night, the fairies and the creatures of legend long since vanished. Or have they?

Obviously none of the above is real, there are no faires and the forest fungi don't glow at night. But one thing I have learned whilst shooting 'Glowing Shrooms' is you need to have an imagination. Although it is very technical, you'll be crawling around on your knees and shooting multiple images to focus stack and blend whilst illuminating fungi, it is fun and very creative.

# BE CREATIVE

How is it creative? Whilst combining the skills of macro photography you are also creating a mood and telling a story. You will be turning day into twilight, using the characteristics of your macro lens to create wonderful backgrounds and bokeh highlights, using light of course, using colour and white balance to create the mood you want, and creating a magical world to enchant your viewers. And most of this you'll find very local to you. It just takes the time to get out there to your local woods and try.

Through this tutorial I will take you though step by step the gear you need, the technique of shooting Glowing Shrooms and illumination techniques, the processing steps of combining images into a finished shot, and some other examples of my own to help give you inspiration. Read on and I will you every success.

Although I shoot primarily with Olympus cameras (plus a Nikon Z7 and Sigma FP) this guide is suitable for all camera brands. For this reason I've made it very generic for a wider audience. Any camera that can focus bracket will be suitable, however if you do use Olympus you will find a dedicated section under 'Olympus Settings'.

# 1 RECOMMENDED GEAR

All the gear you need, with tips on types of lighting and tripods, plus tips on other essential accessories you probably had not though about to make your shooting experience just a little easier such as brackets for holding torches and a floor mat for your knees, essential if your bones are starting to creak like mine.

# 2 ILLUMINATING SHROOMS

Tips and techniques for how to illuminate shrooms. This is one of the most important aspects of Glowing Shrooms, with different techniques.

# 3 SHOOTING TECHNIQUES

How to shoot the images, focus bracketing and settings, shooting additional sets illuminated, and being creative with backgrounds.

# 4 PROCESSING

Step by step processing your images, from stacking your focus bracketed images to blending them into a final images. Although this is using Lightroom and Photoshop any image processor can be used and other alternatives such as Affinity Photo can be used to blend the images together.

## 5 INSPIRATION

A selection of images with descriptions on how they were taken and illuminated to give you further ideas in your quest for 'Glowing Shrooms'.

## 6 OLYMUS SETTINGS

Although this guide is not specific to any brand, indeed any camera can be used which will focus stack, this section includes tips and tricks for Olympus shooters, including which settings to use and buttons to set. Learn how to enable focus bracketing, which settings to use, how best to focus, plus a few other tricks and advice on how to save settings for your next session.

# RECOMMENDED GEAR

Using the right gear is obviously essential and whilst things like bags are very personal I can at least give a few pointers in what to look for, you may get a few tips or see something you haven't considered. There are tips for tripods, macro lights and a few accessories you may find useful too. These are all items I own and use so I feel qualified being able to recommend them.

## CAMERA

It does seem pretty foolish listing a camera as essential gear, but yes you'll need a camera. Without being specific about brand or requirements there are a few prerequisites that are needed.


*1) Focus Bracketing*

It will need the ability to focus bracket, where the camera will shift the focus over a number of frames you program in. Whilst it is pretty standard these days that are some that do not have the ability so please check. Normally Focus Bracketing is enabled and a number of frames can be set from 3-999, with steps (or distance) set between each frame from 1-10. Frames are saved as RAW as opposed to Jpeg for processing and stacking later. Some cameras have in camera Focus Stacking which will produce a Jpeg image, but we will stick to using RAW for more flexibility.

*2) Articulated Screen*

You really do need an articulated screen, that is a screen that will flip out. As most images are going to be taken at low Leven the ability to flip the screen out when the viewfinder is very hard to access is a must. If your screen only flips out in landscape as with the Nikon Z7 at least you will be able to produce landscape format images.

*3) External Shutter Release Port*

You will also need an external shutter release port so do check. It is important not to touch the camera to avoid camera shake and the best way is to use a cable release. If you don't have a port perhaps you can use a wireless trigger such as the Pluto Trigger. It is worth checking. In many instances you will not be able to use the Self Timer because Focus Bracketing will disable the option to use it.

## MACRO LENS




Macro For Bokeh

Another essential and very important piece of equipment is a good Macro lens. For really small Shrooms it's important to be able to get close with a close focus distance and sometimes 1:1 magnification. What really matters is a fast aperture of f2.8 which will create beautiful background bokeh, those soft round out of focus highlights, and creamy soft out of focus areas which you can use creatively.

I would tend to go with around 100mm focal length as an ideal. It isn't too long, meaning you can still view the screen and hold a flashlight over the subject when needed if you have a larger shroom in the frame. The Olympus has a closest focus of 19cm whilst the Nikon is 29cm and Canon 26cm.

If you don't have a macro lens you can still try although you do need to be able to focus quite close and have a fast aperture to be able to throw the background completely out of focus; good separation between the subject and background really is key. Extension tubes that reduce the closest focus distance may be an option worth a try, as are close focus lenses.

Extension tubes are primarily for shorter lenses and range in quality (Kenko and Fotodiox being amongst the best third party) and they are available with electronic contacts to maintain Auto Focus. Manual extension tubes for our purposes are really not worth trying.

For longer lenses close focus lenses such as the NiSi Macro Lens or Raynox Macro Lens are add on glass elements. If you don't want to invest in a macro lens just yet an extension tube or add-on macro lens may be suitable, but check how close you can focus and check the extension tube will still allow focus stacking with your camera.

## RELEASES AND TRIGGERS



*WIRED CABLE RELEASES*

My preferred option, the image is a Pixel remote from Amazon costing £8. For my Olympus camera an E3 jack which is the same as Canon is all I need. Cheap and cheerful, I have a habit of losing them or sending them swimming when they dangle under the camera. There are plenty available, just get the right connector for your camera. I prefer these because they are nothing but a button on the end of a cable with an electrical contact and have no batteries, so one less thing to have to charge before a trip out.

*HANNEL GIGA T PRO II*

The Giga T Pro has been around a long time now and is half the price it used to be, around £30. Although the built in intervalometer is a little redundant now because so many cameras have it built in, it is a very reliable and easy to set up wireless trigger with a long range too of 100m. The transmitter fits to the hot-shoe and connects to the camera a cable, which can be connected direct to the trigger to use as a standard wired release. Other cables are available for different cameras too. I have one of these but prefer the Pluto because only one battery is needed. Remember to switch the receiver off.

*PLUTO WIRELESS TRIGGER*

The king of wireless triggers, and compatible with a huge range of cameras via suitable cables. The transmitter unit is rechargeable which is very convenient. Operated by a phone App there is little this little thing cannot do which makes it ideal to use for multiple cameras. This device will trigger a shot when it sees lightning, it can exposure bracket up to 19 shots, shoot star trails, trigger a shot by sound, or by the included laser beam, run time-lapses and a host of other features, too many to mention. What it cannot do is Focus Bracket because the settings are in camera, but it can be used to start the sequence off. It isn't cheap at around £120, but it may be worth considering if the other features are appealing.

# TRIPODS

As someone who has owned and still owns too many tripods I'm pretty well qualified to advise. With the amount of image stabilisation in camera bodies these days tripods seem less important, but they are. By all means enjoy the freedom of shooting hand held, I do more and more. But a tripod is still needed for Long Exposures, Bracketing (although it can easily be done hand held too) Panoramic images, and Macro.

The main point of a tripod which is overlooked is to slow you down. Consider the scene and your composition, take your time, make adjustments and wait for the light. There are hundreds to choose from, and an old addage still remains true today, tripods can be cheap, sturdy or light; pick two because you can't have all three.

The main features to look out for on a tripod are maximum height, weight, strength, and Arca Swiss compatibility. Maximum height excluding the centre column is important for flexibility, weight is obvious but going for the lightest is often false economy because a few extra grams really won't matter. Strength doesn't mean load capacity, the more stable and solid it is the more it will resist vibration. Arca Swiss heads give more freedom of accessories such as L Brackets.

*1) VANGUARD ALTA PRO 2*

This is not a bad tripod at all and is very useful for macro. It has a centre column which can be flipped over to use as a boom arm which is handy for getting low and extending reach. One thing to be aware of with tripods such as this is the centre column needs to be level (ish) horizontally or you will not be able to maintain a level horizon because of restrictions in movement of the ball head. A level horizon sometimes doesn't matter if there isn't a horizon, but it's best to be aware. I get around this by swivelling the centre column 180 degrees so it is upside down and using an L bracket. This way I can achieve full control of positioning, I can get right down to the forest floor so it is almost resting on it but with solid support, and I can have the camera the right way up. You could do the same with a standard tripod if the centre column will reverse.

The Alta Pro at around £200 isn't bad value. There is an older version with the same features, the Alta Pro, at around £50 less, and a newer version at around £250, the Alta 3. The new version has an additional bracket which can be clamped onto the centre column for attaching additional accessories such as lights, or another ball head. I am very happy with the Alta Pro 2, it suits all my needs but do check out the options, there will be one to suit you.

*2) K AND F TRIPODS*

For more budget friendly tripods including aluminium and carbon fibre you really cannot beat K&F. I use this model the KF09 aluminium 170cm. Very similar to the Vanguard it has a centre column which will flip over like a boom arm, but be aware annoyingly this arm is an additional column housed inside the centre column, in other words extend the arm and the centre column is still in place which restricts how low you can get. But the column can reverse and extend so it still has considerable flexibility. It is more of a faff to reverse the column, but with different sizes and options from around £100 including the ball head they are very good value and worth checking out.


## GORILLAPOD

There are quite a few bendy tripods available these days but the Joby is still the original and best. Useful because they are so small and light and easily fit into a backpack side pocket, and they are great for getting really low or for wrapping around tree trunks, walls and fences etc.

With the bendy legs you can get very low, and it's useful to support other accessories too such as a torch using an additional clamp or Macro lights like the Adaptalux below.

The 1K is around £30, the 3K £60 but it is worth going for the 5K because the ball-head is far better and it is Arca Swiss so a standard tripod plate will fit as will an L Bracket. I had the 3K but ended up buying the ball-head separately for the Arca compatibility.

Prices of these lately seem to have gone through the roof, so shop around, and alternatively get the legs and a third party ball head, Smallrig produce small ball heads that are very good for around £20.


## L BRACKETS

An L Bracket is one of the most useful accessories you can have and I always use one no matter what I am doing. And as I said above if you need to reverse your tripod centre column using an L bracket will allow to angle the ball head and shoot at ground level in landscape mode without the camera being upside down.

The 3 Legged Thing Ellie is one of the most popular but there are so many, make sure you use one that fits your camera and if your screen is articulated it has a cut out to allow the screen to be angled up. There's also a wide range of prices too so shop around and get one to suit your needs.


## CAPTURE CARD

Using a capture card allows you to turn a mobile phone (Android only) into an external screen, useful if your screen isn't fully articulated and when you have problems viewing the screen and setting up lights. This one was £17 on Amazon.

Your camera needs a video-out port which most have these days, and you'll need an HDMI cable. Check you camera to see what connection you need on the other end.

It will only work with Android because iPhones block video in settings. You'll also need a phone app called USB Camera Pro. The screen won't allow settings to be change but it is still useful to use purely as a viewing monitor. See the Shooting page for more information.


## INIU POWER BANK

A power bank is useful if you intend being out for quite some time feel you may need power on the go. The INIU is compact, 20,000mAh and 22.5w meaning it has plenty of capacity with x2 USB 3 and 1 USB C ports.

It was also reasonably priced at £26. The USB C port is in/out so it can be charged and also charge from the same port. An LCD screen shows power and it also has a torch too. Many cameras can be charged on the go too as long as the power bank is PD rated which this one is.

## ILLUMINATION

It goes without saying a critical part of the Glowing Shrooms image gathering process is illumination. I have used quite a few different techniques and flashlights, some which work well, some not so well. Below are the the items I find most useful. I will nearly always try to illuminate from above when the 'glow' looks more realistic, so a few different lights are useful. Sometimes shrooms are just too dense so a softer light from underneath can work with some care.



*NEBO TORCHY 2K*

My favourite LED torch because its so small at only 10cm long, and it packs power at 2000 lumens. Brightness is adjustable but it doesn't have adjustable beam which for me doesn't matter, being so small works better. It is rechargeable via a usb magnetic cap which clips on the end. My main criticism of this is on full power it will last for 10-20 seconds before dimming to the next power level down to conserve battery, but it's long enough and it will last a full session, so I guess it's actually a good thing.

There are times when low power is enough but also times when the density of a shroom will not transmit any light so a high power blast is needed. It is very good and I love how small it is. At around £30 it isn't the cheapest but I've learned to avoid cheap, they are usually poor quality.

*LED LENSER HEAD TORCH*

LED and rechargeable, handy when you have a battery pack, it will last quite a few uses between charges and my experience is it has never lost charge when not in use. At 220 lumens it's very bright for a head torch, light weight and has an adjustable beam width, adjustable angle and also adjustable brightness levels. A head torch is probably something you already have and they are handy if you want some soft lighting from below.


## NEBO INSPECTOR RC

This is a handy little torch, because the head is only 10mm diameter it's useful for smaller shrooms and the head also has a screw zoom feature so the beam can be controlled. Rechargeable but also accepting AAA batteries just in case, it has different power levels up to 350 lumens so it is ideal.

## PIXEL LED PANEL LIGHT

Small LED panels lights are useful for adding a little glow under larger shrooms, or adding a little background glow. You don't need a large one, just a small 12cm one like the Pixel is enough. There are so many to choose from, I like the Pixel because it has brightness control from 0 to 1500 lux and a full range of colours too. It's also very robust with an aluminium body, easy to use controls, an arm which swivels out and includes hot and cold shoe adapters.

# ADAPTALUX MACRO LIGHTS

Why they glow is a mystery, is this how they communicate with each other? Or perhaps it is an ancient skill they evolved from days long ago to help the other inhabitants of the forests at night, the fairies and the creatures of legend What on earth, you are probably thinking. A friend recommended these to me and they are genius for lighting Macro Images.

Instead of being behind the camera trying to run focus bracketing and stretching trying to hand hold a torch (see 'Focus Bracketing') or using a clamp, these bendy LED arms are powered by a control unit and can accept up to 5 arms. The whole set is controlled by a phone app which just uses Bluetooth so doesn't rely on a mobile signal, or with manual control. Light intensity can be controlled as can the beam angle.

They are not cheap at around £300 for a kit with two lights, but they are worth the investment. A tripod bush on the base allows it to be tripod mounted or used on a GorillaPod.

# CLAMPS

It's surprising just how useful these are for an extra pair of hands holding a torch in position or even a fern leaf in a background when your arms are not long enough. Sometimes you will need to move a torch around a little taking a few shots to blend, other times especially when you have a group of shrooms and you want to illuminate them precisely one at a time being able to hold a torch in position leaving you hands free can be a bonus.


*PULUZ ARTICULATED CLAMP*

A short arm clamp, the Puluz arm is fully articulated. With one of these you'll realise just how useful they are, for example clamp it onto a tripod leg, mount a phone holder to it and then film a video or time lapse leaving your tripod head free for your camera.

*SINVITRON MAGIC MONITOR ARM*

This arm extends by 11" with a fully articulated arm and a clamp which can be screwed onto either end. This particular item includes an extender with a cold shoe mount (the square piece at the top). Unscrew it and a tripod plate can be fitted to mount onto your Gorillapod or other tripod.

*TRIPOD PLATE*

The tripod plate is shown just as a reminder that an extra one is needed if you don't have a spare so that the arm can be fitted to a tripod ball head. Most tripod plates have a treaded section in the slot to allow the bolt to be screwed in, so the arm can simply be screwed into that. If not just use the extender on the arm which is female threaded on both ends. Search on Amazon for these, there are many and they are inexpensive. The short Puluz was £8 when I bought one and the Sinvitron £15.


## KNEE PAD

A folding mat for your knees really is a good idea. This one was £7 on amazon and it really has saved my poor old knees from unnecessary pain and getting soaking wet. It's approx only A3 size and folds up to fit in a camera bag.

## A FEW BITS

Finally, a few bits you may not have thought of which are useful and very easy to obtain just about anywhere. You may already have these at home.


*CAMERA AIR BLOWER*

Those shrooms can get very dirty so an air blower is useful to remove debris. Just a small inexpensive one will do, I also got some small brushes too, but struggled to find them until I realised searching on Amazon for Keyboard Cleaning Brushes did the trick. Just be careful, some really delicate shrooms are easy to damage so you may just have to put up with some of the smaller specks of dirt.

*FLORIST WIRE - GLASS HEAD PINS*

Really useful when you've tried to reposition a shroom and find it is just on the wrong angle, a few pins and a bit of wire can do the trick. I have a small bag in my backpack for bits and pieces where I keep bits like this. Remember to cut a few pieces of wire first, you're unlikely to find any scissors in the forest.

*HAND SANITIZER*

Essential, considering you don't know which shrooms are safe and which are not. Most in the UK are safe and some poisonous if ingested, with the Death Cap being the most deadly. The Death Cap is white and quite common, so after handling any shrooms it's best to sanitize your hands afterwards. A travel size water free bottle is all you need, but make sure you have one with you.

# ILLUMINATING SHROOMS

When creating 'Glowing Shrooms' we are usually setting a mood and creating an image that appears to have a shroom glowing as if it has an internal light source which can be challenging. We need to hold the light, get the right angle and take the images, ensuring it looks natural whilst not moving the camera at all.

## AMBIENT LIGHT

You may not necessarily want to illuminate every image with a glow effect, sometimes just adding a little ambient light creates a wonderful result.

The setup, tripod set at low angle with a panel light.

An LED panel light on a separate tripod was positioned to the side and to the rear of the subjects with the light set to give a warm glow, ensuring that the light did not shine into the lens and create any lens flare. The intensity of the light can be set as desired whilst also using the camera controls to get the exposure as I wanted. Note the out of focus background created by using f2.8 and focus bracketing.

Of course you can mix additional ambient light with additional 'glow' lights. This image again used an external LED panel light to add a little side light set to a warm tone just to open the shadows slightly for the first set of images.
An additional set of images were taken with just one of the shrooms illuminated from above with a hand held torch and the two sets of images once stacked are then blended together to create one image.

Note the K and F tripod with the centre column reversed to get low. An L bracket on the camera means I can get the camera right down to ground level when needed with good support. The slider is a Nisi Macro Slider which can also be useful although I admit I do not often find the need to use it.

## ILLUMINATING FROM ABOVE

Illuminating from above is I feel the best way to create the effect of 'glowing' shrooms. For this image I used the Adaptalux lighting set with two arms mounted onto a Gorillapod. Each arm is positioned to get the glow effect through the top of the shrooms, leaving my hands free to concentrate on gathering the sets of images.

Of course you could also do the same just using one torch, hand holding or by using one of the clamps shown in the gear section. In this case you would need to illuminate one, take a set of images, then illuminate the other and take an additional set of images. It is more work but it is entirely possible to do. I produced two images for this session, a portrait and a landscape and then felt the landscape was preferable.


Adaptalux lights used mounted to a Gorillapd

Illuminating more than one shroom in an image is best done one at a time if you only have one light source. There may be times when you can illuminate both at the same time with just one torch but in this case the shroom on the left overlaps the shroom on the right so there would have been a shadow.

It does result in more images and more processing but if the images are not right the end result will not be right. I find it works best to angle the torch away from the camera to avoid flare, and to make sure some of the front of the stem is illuminated. The Adaptalux lights are not cheap, there are similar lights on arms on Amazon, and another option is two mini tripods and two torches.

Illuminating one shroom at a time.

→ **TIP** Note that the top of the shrooms are often blown out or over exposed which doesn't matter, it is just the underside of the shrooms we need when illuminating them because they will be blended together. Also the ground will be illuminated by light spilling over which again you can ignore, in post when combining images you can easily remove it, or sometimes gently blend in a little to give the effect of light hitting the ground from the shrooms themselves.

# ILLUMINATING DENSE SHROOMS

An Autumnal Shaggy Parasol glowing in a dark wood.

Some shrooms especially larger species like these Olive Shaggy Parasols are quite dense and are harder to illuminate from above because they don't transmit light quite as well. Light transmits better when they are full of moisture but in dry conditions the flesh is quite dense and it becomes harder. The two images below show how the light did pass through and the final image had the torch positioned centrally so light transmitted evenly.

Illuminating a larger dense shroom from above.

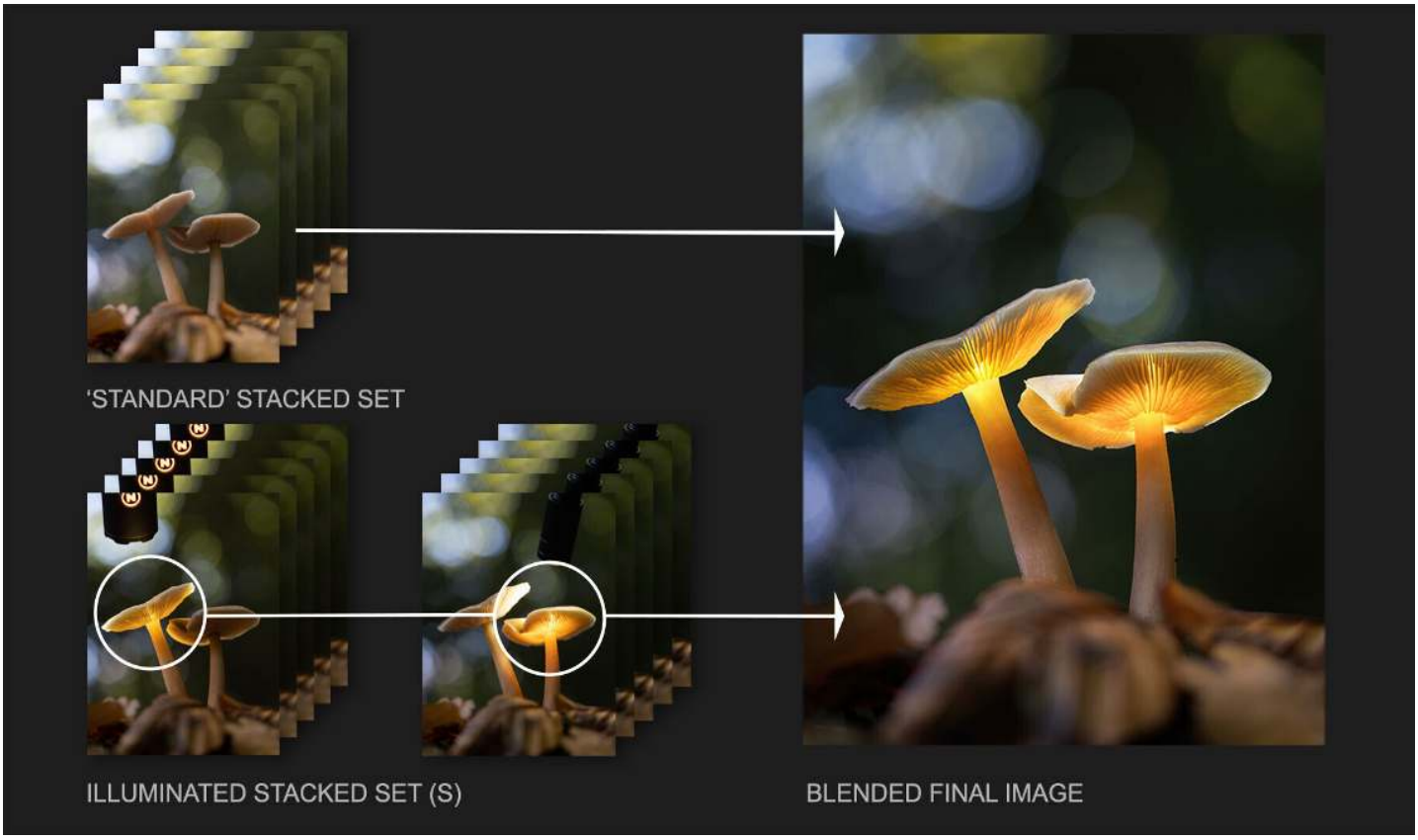
If it is too dense the second image shows an alternative method by bouncing light up into the underside. Shining a light directly into the shroom can work if you are very careful, use lower power and avoid hot spots, and also avoid shadows. A shadow of the stem casting onto the opposite side from the light source is a dead giveaway and looks terrible so try to keep the light fairly even, for this reason a panel light never works, it's better to use a softer narrower beam light.

Also moving the light and taking two or three images to make the light more evenly distributed, and then blending them together can work. If you take a number of images moving the light source you will find it easier narrowing the aperture for depth of field from front to back and shooting it as one image instead of focus bracketing, then merging them to make the light more consistent. When processing I usually try to make the light a little brighter in the centre by using masks and levels adjustments.

# SHOOTING TECHNIQUE

The camera technique for shooting the images is actually quite straight forward once you have decided on the subject, composition and lighting.

## IMAGE SETS




The diagram shows a typical shooting workflow. The sets of images needed will depend on your subject and the number of images you need illuminated. First one set of images are needed that will be Focus Bracketed, or a Standard set. This is the main image and the one that the illuminated set(s) of images will be merged into.

Then a set of illuminated images will be needed, and there may be one, two or even three sets. There are two techniques for shooting the illuminated images, either as a set of focus bracketed images, or as one image with a narrower aperture for greater depth of field and there are pros and cons to each.

## 1. STANDARD NON ILLUMINATED

Taken in Raw and Focus Bracketed.
Number of frames depends on depth front to back of subject, and distance to subject.

Taken wide open at f2.8 for foreground blur and background bokeh.

## 2. ILLUMINATED SET

Taken in Raw and Focus Bracketed.

Number of frames the same as the first set at f2.8 and under-exposed slightly.

PRO: Very little disturbance to the camera. Number of sets will depend on how many you want to illuminate and equipment you have.
CON: Number of images can build up quickly and more stacking required.

## 3. ONE SHOT ILLUMINATED

Taken in Raw as one shot with narrow aperture. One frame with greater depth of field. Aperture depends on sensor, perhaps f9-f14.

PRO: Only one shot, less images to deal with and helpful when illuminating one scene multiple times.
CON: More risk of disturbing the camera and more work aligning images.

### STANDARD NON ILLUMINATED

The first set of images are you main set, taken in Raw and at f2.8 and Focus Stacked with your Macro lens. These form the basis for your image.

### ILLUMINATED SET

The second set of images are your illuminated images used to blend into the first set. How many sets will depend on your scene and subject and it will dictate how you decide to shoot them. For instance if your image is one shroom and you are illuminating it just once, shooting this set of images with the same settings means you are not disturbing the camera, and there is a far better chance of them aligning successfully and blending.

You will need to under-expose a little, but you're not going into menus and altering the focus bracketing settings. If you have two shrooms illuminated you may use two light sources at once to cut down on the work, or just accept additional sets are needed, illuminate each one one at a time and shoot the sets. It does mean more images to deal with but it is usually more successful.

### ONE SHOT ILLUMINATED

Another approach is to shoot the illuminated image as one with a smaller aperture for great depth of field. Your camera sensor, distance to the subject and size of the subject will dictate the aperture needed, it may be in the region of f9 or above. This can be easier, especially if you have to illuminate a few shrooms individually, although there are risks.

There is more chance of disturbing the camera because you're altering focus bracketing settings and aperture, and the size of the subject will be different. As focus points move and depth changes, so too does the size of the subject, it may be small but it can lead to alignment issues, ghost edges and more work. I show how to deal with this in the processing tutorial.

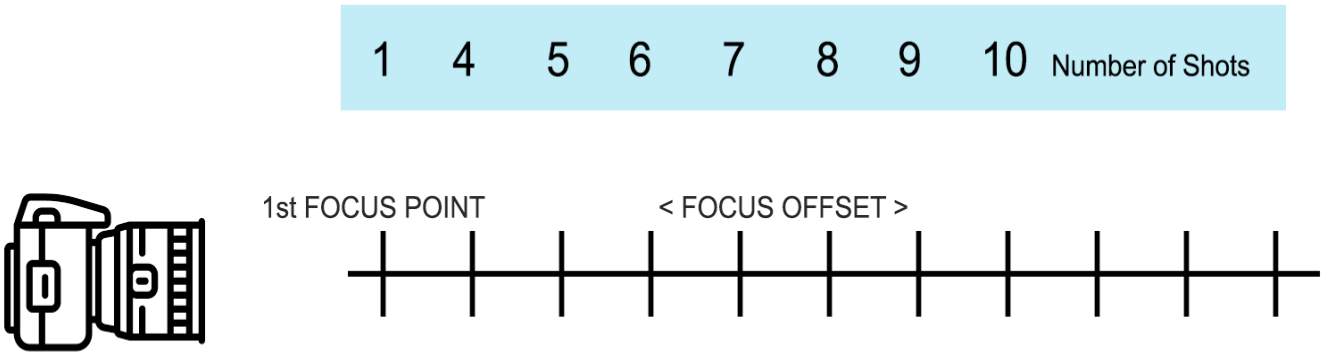
What you absolutely shouldn't do is try to shortcut the number of images with one high depth of field image for the subject at a narrow aperture, another for the illumination, and one for the background taken wide open for background bokeh. It's more trouble trying to align and blend than it is worth.

## THE BASIC STEPS

| | |
|---|---|
| 1 | **Set camera to Manual Mode. Set Aperture and Shutter** |
| 2 | Set Focus to Manual with Peaking enabled |
| 3 | Refine Composition |
| 4 | Set Focus Bracketing (Test number of shots needed) |
| 5 | Take 1st set of non illuminated shots. Review and check |
| 6 | Take sets of illuminated shots as required |

# FOCUS BRACKETING

Obviously you need a camera that has a focus bracketing feature. Once a few parameters are set the camera will automatically move the focus point by a set number of steps to give good depth of field as needed, and still keep the background and foreground out of focus as we want.




This is possibly the hardest part of the shooting process because there are no pre-determined number of shots or focus offsets (the number of steps between) we can use, and it will be different for different lenses too. You will gain more knowledge through experience, and you can set up a simple test shot at home using any small object to get a feel for the process and number of images.

Focus Offset or Steps, (it may be called something different in your camera) determines how much the focus shifts between shots, and the number of images determines how much depth you have in the image. The number depends mainly on the size of the subject, and distance to it. Experimentation here is important, and remember that having too many images is fine, you can delete unwanted images, what you have to avoid is having too few.

I would start off with a Step setting of 1 or 2, and then determine how many images are needed, it may be 10, 20 or even 30 images. You'll need to review them and zoom in to preview, checking sharpness and that you've covered the subject from front to back, which means disturbing the camera. be careful but don't worry too much at this stage, these are the test shots to determine step size and how many are needed.

Once you've identified how many are needed you can reshoot them, knowing you will not disturb the camera.

# COMPOSITION

Composition is key so work on it until you find a composition you are happy with. These two shrooms were growing on a dead tree trunk covered in dead ivy which I had to clear away, but I was not happy with the bottom of the image. Using a little soil around the bottom meant I could gently nudge them a little closer together and hide a piece of rotting wood. I also place a few leaves in the foreground to soften it for the final image.

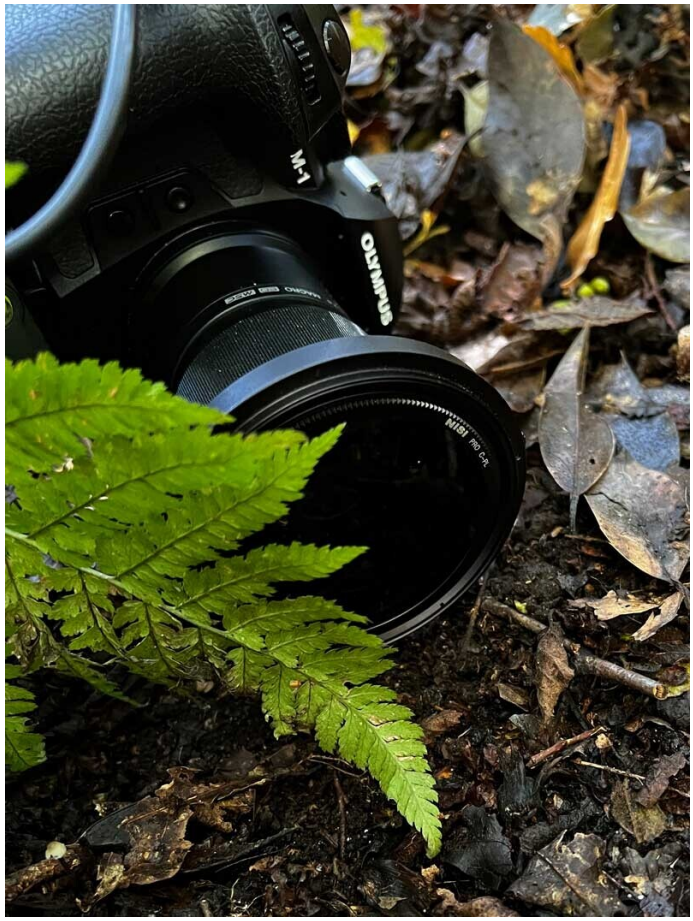
What I am really looking for is interesting bokeh in the background. A few highlights will give really wonderful results so experiment with the position of the camera, move around with it hand held to start off until you determine the best angle. Once you have, tripod mount the camera and lock it all down as solid as possible.

I prefer to shoot the images when the sun is a little lower in the sky rather than mid day when it is higher so that I can get better highlights in the background. A flat grey day can also work if you can get some bokeh in the background, and of course you don't always need highlights, a soft subtle background can work too.


The background here doesn't look too impressive until you understand what a few points of light can look like through the lens wide open.

## USE A TRIPOD

Make sure the camera is stable with a tripod (see the 'Gear' Section. If not you will struggle to get anything to align properly. For this image I inverted the tripod column so it was actually on the forest floor but it was solid.




A way to soften parts of an image is to hand hold a fern leaf in front of the lens, experimenting with the position can really soften parts of the frame, or add a bit of a silhouette to a background.

## VIEWING THE SCREEN

It can be tricky viewing the screen at such low angles, most times I manage to get a composition that will allow me to angle the screen so I can at least see it without being on my belly. In this case the tripod blocked my screen and there was little I could do about it.

Many cameras have phone apps that will share the screen (Olympus has I.O. Share) but not all will. If your camera has a video out port as most do these days a simple solution is to use a video card, an HDMI cable and an Android mobile phone.


The Video card I use is a cheap and compact in-line card I found on Amazon for around £20. It's small and basic but does all I need. Check the ports on your camera and get the right cable, it will be male HDMI one end but different on the camera end. I also had a USB to USB-C adapter to connect to the phone. You'll also need an app on the phone called 'USB Camera Pro'.

The mobile screen view is viewing only, you cannot change any settings, but it is still very useful to compose you image, especially when at a low angle, and when trying to arrange your lights. If you illuminate the shrooms and can't see the screen you're in trouble. Using your mobile as a screen means you can set lights up on a Gorillapod with clamps and view how it looks.

A few notes, The big down side is it only works with Android. Apple block video-in signals to iPhones and there is absolutely no way around it. I use an iPhone so I bought a second hand Android mobile phone just for this.

Additionally some camera functions may be disabled. Using my Olympus OM-1 Focus Bracketing is disabled as it is using IO Share also, but it is much faster just to plug/unplug the phone than connecting/reconnecting IO Share. On my Nikon Z7 Focus Shift still works. It is worth looking into especially if you have an Android mobile or you get get one reasonably cheaply.

# SHOOT IN MANUAL MODE

It is best to set the camera to Manual. You can use Aperture Priority equally well and with many cameras using Exposure Compensation is easy to do just by turning one of the control wheels. Some cameras require an Exposure Compensation button to be pressed first, and the less you need to adjust the better, there is a danger the more you have to press the more chance there is of disturbing the camera.

There is also the possibility of light changing and affecting the exposures. For the first set of images don't under-expose. I often darken the final image for more atmosphere but it is always better to start with a good exposure and dark it to suit rather than a dark image and then have to brighten areas which generates more noise. Do be careful with highlights especially in the background. If they seem to bright and in danger of blowing you can always take one extra shot with Focus Bracketing off to blend the areas you need in later.

## APERTURE AND SHUTTER SPEED

Shoot at f2.8 and make sure the exposure meter is correct by altering the shutter speed. Be aware of the shutter speed too, you do not want a shutter speed that is too slow, for one shooting the sets of images at 1 second shutter speed is going to take 20, 30 seconds to complete the set depending how many frames there are, and secondly there's a high risk of movement with some of the smaller shrooms which can move in just a slight breeze.

This is one reason why it's better to shoot in daylight and then edit the images darker to look like twilight. There isn't a correct shutter speed, just be aware of consequences if it starts getting slow.

Be aware of wind, if it is a windy day you're unlikely to be able to shoot small shrooms unless they are very sheltered. Shutter speed will depend on the subject size, weather conditions etc, and you can always compensate by using a higher ISO, being aware it means more noise. I would start thinking about increasing ISO if my shutter speed gets lower than 1/25th. It doesn't mean you must use shutter speeds in the hundredths of seconds though.

And remember bugs, many times I've been photobombed by a bug and have been lucky enough to have one or two of the frames with the bug sharp enough to include in the image because my shutter speed was reasonable.

## MANUAL FOCUS

Focus on the closest point of the subject to you, whichever point that may be. It will be the closest part of the shroom cap. Your camera will have Focus Peaking (pixels along high contrast edges are highlighted when in focus) which is invaluable when manually focusing, make sure it is set in the menu and select the best colour for you if there is an option (blue, yellow and red are the most common but I prefer white).

I normally auto focus for most of my work, so I will auto-focus on the edge just to quickly set it, then switch to manual focus to check it and fine tune. Many cameras have a 'magnification' function when manual focusing so make sure it is enabled. Your Macro lens may have a focus limiter switch. If it does they are useful to use for limiting the range the lens will focus usually for a small distance for macro, or up to infinity. Macro lenses can 'hunt' in auto-focus when it cannot find the area to focus on so it hunts over the full range. Limit it first to stop this if you auto focus to start off. If light is low as it invariably is use your torch on a low power to illuminate the shrooms to focus.

## TAKE YOUR TEST SHOTS

Take your test shots. Set Focus Bracketing on, set the differential or the steps between each shot, and set the number of shots. As I said there is no fixed number so you will be guessing. A small shroom 1cm diameter you may need 10-20 shots at a step of 1 depending how close you are, a larger shroom you may need more shots, or a larger shroom you may be able to increase the step to 2.

Take a test set, review and see if you have enough images to cover the depth of focus from front to back. Remember to use a cable release. A wireless one can be handy, or just use a simple wired one. Just don't use the shutter button.

→ **TIP** SEPARATE SETS OF IMAGES
You'll end up with quite a few sets of images and it can be hard to identify the sets when you've imported them. At the end of each set put your hand in front of the lens to act as a 'marker' and take another shot. Be careful switching Focus Bracketing off not to disturb the camera. Sometimes I don't switch if off, wasted images but easy to to delete.

## SHOOT THE 'KEEPERS'

You've set everything up, composed the image, focussed it, taken test shots to identify how my frames you need and the steps between them and you have everything locked down. Now do it again after changing the number of frames if needed.. You have been making quite a few changes to the Focus Bracketing and may have disturbed the camera, so as a precaution double check your focus point and shoot the set again just to be sure.

## ILLUMINATE AND REPEAT

Next, illuminate the shrooms and repeat the process. Check how the illumination looks on the camera screen, no easy feat sometimes. Vary the angle, distance and power until it looks evenly illuminated and try to avoid any blown out areas. Blown highlights on the top will not matter because it will be merged with the first shots. I find it works best to angle the torch away from the camera to avoid flare, and to make sure some of the front of the stem is illuminated.

You will want to be able to see the screen because now you will under-expose the image to take account of the brightness of the light. Alter the shutter speed to under expose as much as needed. Using an external screen as shown above might help, as will using an additional tripod and clamps to hold the torch. Arms never seem to be quite long enough.

Illuminating the first shroom.

## ILLUMINATE AND REPEAT...AGAIN

Do the same again for the next shroom. Illuminate it, and shoot another set of images.

I shot another set that were focus stacked so that I didn't have to change any settings, only the shutter speed if some under exposure is needed. As I already under-exposed the first illuminated set I didn't need to change anything, so I can just set the light and press the shutter.

There is another way that can be faster if you are going to need quite a few sets of images. I took another image with the aperture set to f9 which gave me just enough depth of field for this shroom front to back and used that for the processing. The advantage is less shots to deal with, the disadvantage is you are handing the camera more, risking moving it, and there will be more work aligning them.

As long as you are aware of what can happen it is another way to shoot the images, although I would recommend just shooting another focussed stacked set.

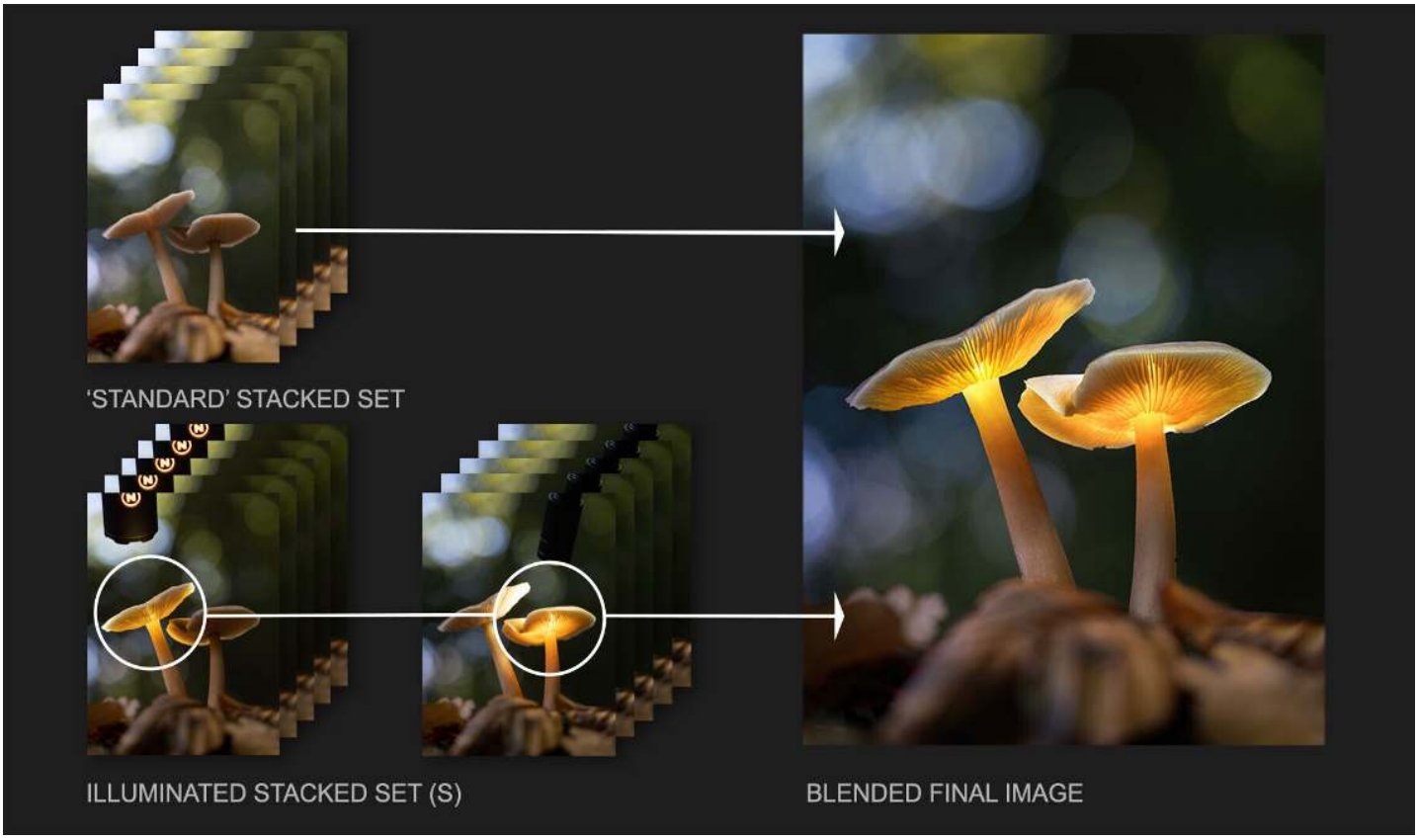
## AND THAT'S IT

We have taken all the images needed, all Focus Bracketed. An illuminated set is also captured, again focus bracketed, and additional sets taken as required. You can try this step as one if you prefer. The next step is to process and merge them into a finished image.

# PROCESSING TECHNIQUE

Inspecting the images, sorting them, stacking the focus bracketed images into sets, fixing issues, then merging and blending into one final image.

## IMAGE SETS




We explored how to shoot the sets of images required, now we need to process the shots and stack them together, then merge the images produced into one final image. We will use this image above for the tutorial which were taken specifically for this.

A first standard set of focus bracketed images were captured, along with a second set that were then illuminated by hand using a torch. As another shroom is also illuminated, another image was taken but instead of focus stacking it was taken in one shot with a smaller aperture to show both techniques of shooting the illuminated sets. Both ways have advantages and disadvantages, being aware of both techniques will allow more flexibility when out shooting. It also allows me to show what to do the you run into problems such as the things don't quite align.

## SOFTWARE

For this step-by-step guide I will be using Lightroom and Photoshop. Lightroom as you probably know is a 'Raw Image Processor' and Photoshop is an 'Image Editor', and the differences are important. As a Raw Processor LR has more flexibility for processing raw files and importantly a Catalogue for sorting, rating, managing and synchronising processing settings.

Photoshop, whilst it can process Raw files using Camera Raw doesn't have a Catalogue so it is less flexible for batch processing many files. What it can do which LR cannot is Focus Stack images, and importantly, allow images to be layered and blended with masks. In truth there are other options if you haven't subscribed to Adobe, all you need is a way to focus stack images, and a way to blend images as layers.

### HELICON

Helicon is a dedicated App for stacking focus bracketed images. It is easy to use and is probably one of the best available. It has great tools for fixing issue too. You would still need another App for layering and blending different sets of stacked images together.

### AFFINITY PHOTO

Affinity is probably the best alternative to Photoshop available right now. It will process Raws, focus stack images and also has layers with plenty of tools for masking and blending. I would personally use it along with a Raw processor such as DXO for all my Raw work and sorting images, using Affinity just for the power of stacking and layering images.

### ON1 PHOTO RAW 2022

On1 One does have layers, it will focus stack images and also has masking for blending layered images together. Not being an expert with it I found it not quite as easy or flexible to use, but it may be worth a look if you want to avoid the Adobe eco-system.

→ **TIP** USING OTHER SOFTWARE
If you are not using Lightroom and Photoshop I would highly recommend Affinity Photo. It is fully featured and at just under £50 it is very good value. Although all the steps below are for LR and PS you can still produce the same with a very similar Workflow. In Affinity you would use Focus Merge, select all the images to open which opens them in a stack of focus merged images. Affinity has a slightly different way of fixing issues using the Clone tool and it is very easy to do. Images can be layered and masks can be used to blend parts of images together, in a remarkably similar way to Photoshop (even the mask icon is the same). You will need to export your Raw image sets first from your Raw processor unless it has the facility to export direct to Affinity, whereas in LR we can simply select the images and send them to PS as Edit in Photoshop As Layers. The main point here is don't be put off using other software, you can still follow the steps below and apply the same workflow. There are some great tutorials available, check out these two on Affinity's website which are very relevant, FOCUS MERGING and using MASK LAYERS.

# PROCESSING

## STEP 1 - ORGANISE IMAGES

Download your images from your memory card to a folder you've set up and named on your hard drive. I tend to add subfolders to this folder so I can start to separate sets of images if I have quite a few, but do this from within Lightroom. Once images are imported to LR never move them externally or LR will lose the path (location) to them.

Standard Image Set

Illuminated Image Set

Start to review images checking which are suitable to be stacked into a Focus Stacked Set. Here I organised both the standard non-illuminated image set and the illuminated image set. I actually had two sets illuminated, but we will get that step. Check they are in focus and that the depth of focus extended from the front to the back of the subject across the set and remove any that extend too far back.

For this set I shot 30 images with a step of 1, as it turned out I only needed 21. From 21 to 30 the subject became out of focus so ensure you remove these or Photoshop will create 'ghosting' or a halo which looks like a double image.

Focus Breathing is created by the size of the subject actually changing in the frame as the focal plane moves when the focus point changes. . Normally it isn't an issue, but have the bracketing steps too wide, or have too many redundant images where the focus is too far forwards or backwards and parts of the image can be merged creating the 'halo'.

Sort the images by simply adding a colour rating, hit 6 on your keyboard to use yellow, applying to the first and the last image in each set to separate them from images not needed. You may even find it easier to create new folders or even Collections.

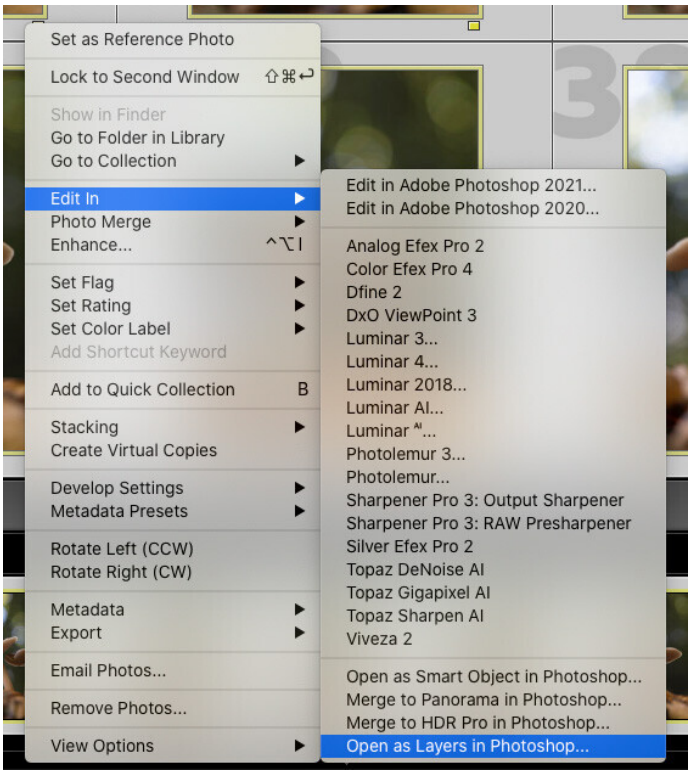
Apply any processing you may want but there is no need to do too much at this stage. You may want to make adjustments to exposure, shadows and highlights and white balance. On the illuminated set I had over exposed the right edge a little so I recovered it and then synchronised it across the image set. Then select the first image, press Shift and select the last image, then click Sync on the bottom right. The colour coding and adjustments will be synchronised across all the images.

## STEP 2 - STACK FIRST SET

Now we will create the first Focus Stacked image from the first set of images. Make sure you have Photoshop open in another window first for ease of use.

Select the first set of duplicated images again. Select the first image, click and hold Alt and then click the last image to select the complete set.

Right click and in the menu which appears select *Edit In > Open As Layers in Photoshop*. Wait a few moments and Lightroom will export each image to PS, adding them as layers in one new document.



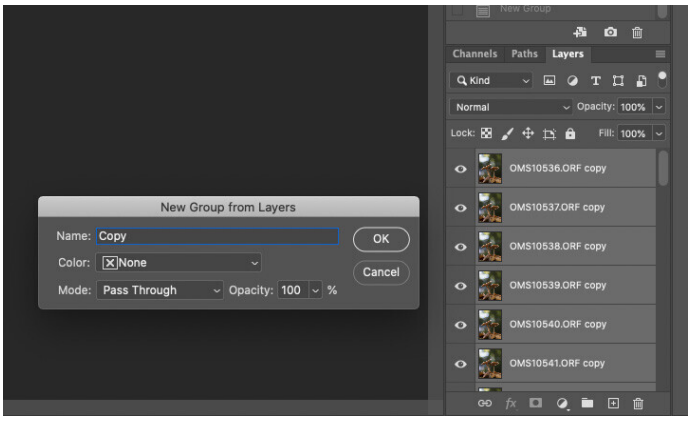
Open As Layers...

→ **TIP** You may want to save this new Photoshop File on your hard drive for future reference. Make sure you save it as a Photoshop PSD so that you can open it again with all layers and masks preserved. Note there is a limit of 2GB, larger files may need to be saved as a PSB instead.

Before going to the next step we need to copy the images and preserve the originals just in case they are needed later.

In the Layers pallet on the right select all the images by clicking the first layer, hold down *Shift* and select the last image.

Then *click and hold* (do not release), and drag the whole set of images over the Plus+ icon at the bottom which will create copies of the images.



Duplicate the Layers

Now if you wish you can add the images to a group for easier management. With the images still selected click on the shortcut menu icon (three horizontal lines next to the word 'Layers'). Go down the list and click New Group from Layers. A dialogue will appear allowing you to give the group a name. 'Copy' is as good a name as any. Click ok, and now you can show or hide the whole set by clicking the eye next to the Group.

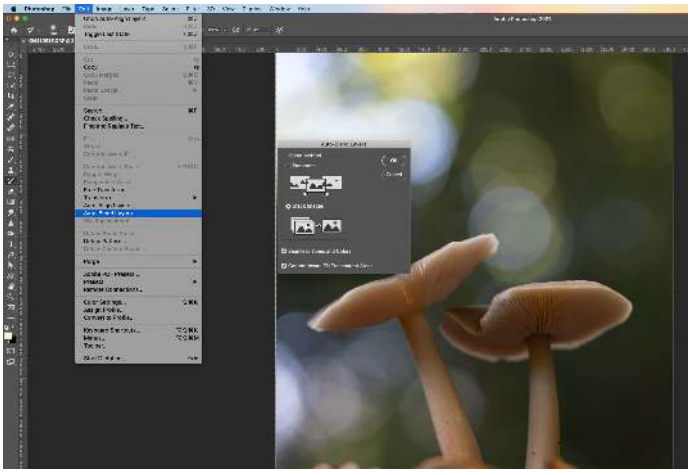
→ **TIP** A note on Layers and other Pallets. Pallets are simply dialogue boxes housed or 'docked' into the right hand column. If you don't see 'Layers' go to the top menu bar, 'Window', click 'Layers' to make it visible, then click and hold the tab to drag and position anywhere you want in the Dock. You absolutely need to have Layers and History visible.

## STEP 3 - ALIGN & FOCUS STACK

Next we need to merge all the images into one focus stacked image. Before this they need to be aligned in Photoshop.

Select the first set of duplicated images again in the layers pallet. Select the first image, *click and hold Alt* and then click the last image to select the complete set.

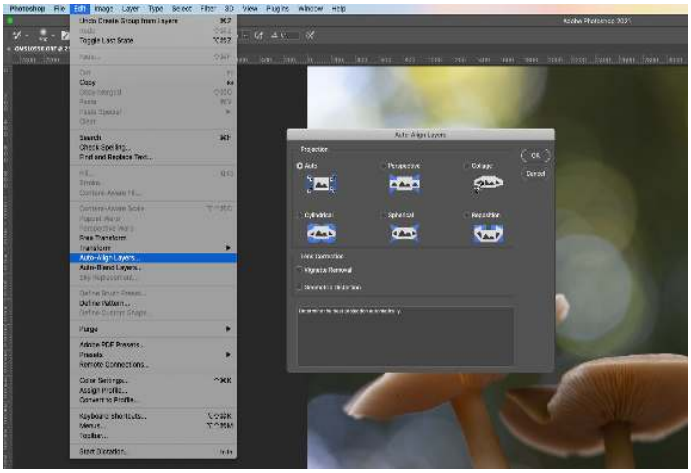
Go to the top menu Bar and select *Edit > Auto-Align Layers*. A dialogue box will open, select *Auto*. Vignette Removal and Geometric Distortion can be ignored.


Auto-Align Layers

Now we need to blend the images into a focus stacked image. Select the first set of duplicated images again (if not still selected) in the layers pallet. Select the first image, *click and hold Alt* and then click the last image to select the complete set.

On the top menu bar go to *Edit > Auto-Blend Layers*. A dialogue box will open, select *Stack Images* and enable Seamless Tones and Colours and Content Aware Fill Transparent Areas.

Content aware fill will fill the edges of the image so that none of the canvas (the document background) will be visible.



Auto-Blend Layers

Once the process is finished if any filled areas are selected and visible with 'marching ants' as they are known, or dotted lines, just deselect them with *Select > Deselect (Option+D keyboard).*

Image Text

Now notice in the layers Pallet each of the images has a mask applied and the top image will have a name appended (merged). PS has analysed each layer deciding which parts of the image are in focus and applied masks to each. An important detail to understand with masks, white will 'reveal' and black will 'hide' parts of the image.

So in each layer parts of the image have been hidden with black to only show the white areas, or the parts in focus. Each of these will show into the layer above it and the set has been made into a new merged image (or a composite if you like) as the top image. I've switched the visibility off ready for the next step.

Photoshop does a great job but it doesn't always get it right. For some reason the left hand edge of the shroom on the left is not in focus but the detail was there so we need to recover it.

## STEP 4 - RECOVERING DETAIL

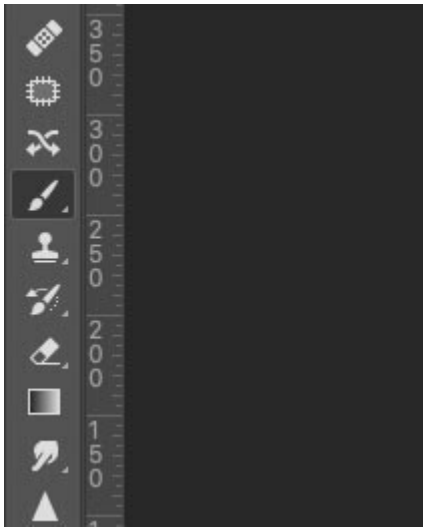
The first step is to ensure that the detail was actually there. On the layer images this may be difficult because masks have been applied which may be hiding the detail so switch off visibility of the entire set using the 'eye' next to the folder icon on the whole group.

You will see the original images (which we duplicated) as layers underneath, and you can switch them off individually to find the right image. Alternatively and usually faster, just go back to Lightroom and go though the images until you find the right one and note the image file number. In LR I found that it was actually the fourth and fifth images that had the edge in focus, noting the image names I can easily find them in the layers.

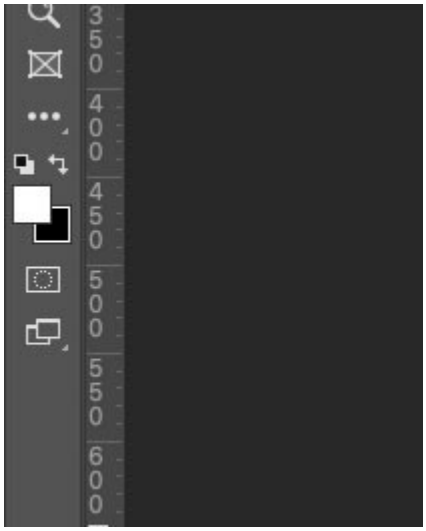
All we need to do is paint the detail back in. Make sure they are visible again if you switched them off, and hide the top merged image by switching the visibility off. We will use the Paint Brush to bring the detail back, just follow the steps below.

## PHOTOSHOP PAINT BRUSH

I'm going to assume you are unfamiliar with PS and have never used the Paint Brush, we need to set some properties for it. If you are familiar you can skip this bit.



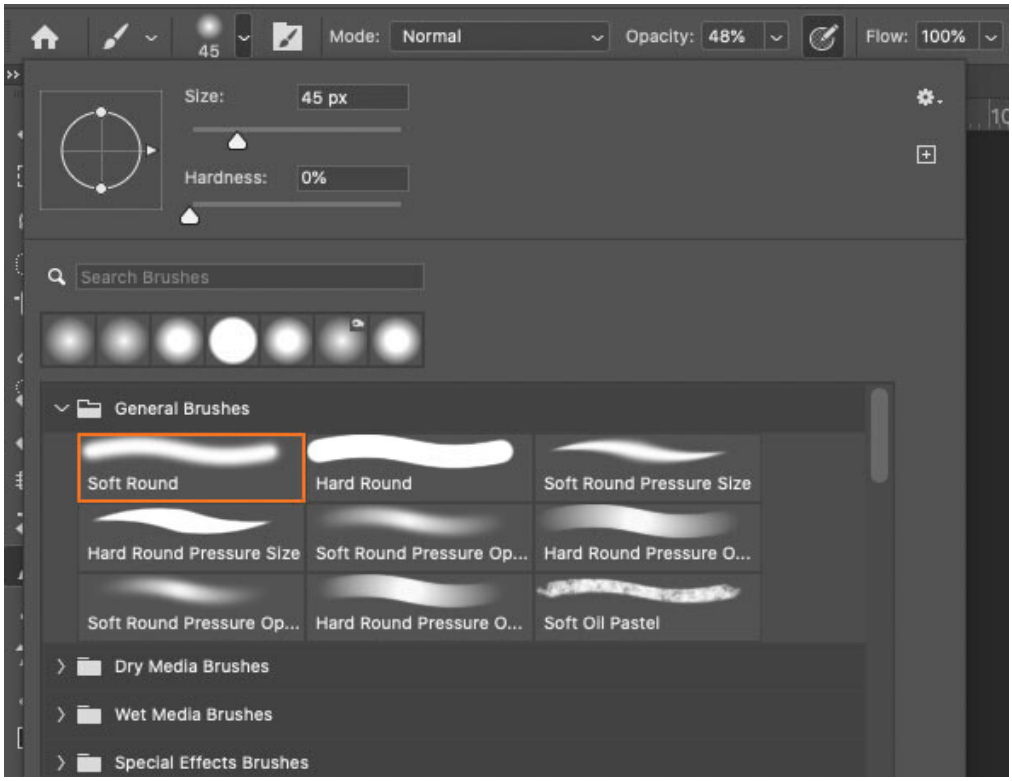
Paint Brush Tool



Paint Brush Colour

Tools in PS are available in the Toolbar on the left hand side of the screen. Many tools are stacked meaning they may be hidden, any tool that has a small triangle on the bottom corner means there are more stacked in that set. Click and hold and they will fly out. The Paint Brush is the 11th from the top, if you see a Paint Bucket instead just click/hold and select the Paint Brush.

At the bottom you'll see the paint colour, two squares with black and white and a double headed arrow. The arrow can be clicked to swap the colour, so click it and set the colour to white.



PS Brush Properties

Now at the top notice the *Tool Bar* has changed. It is context sensitive and will change depending on the tool selected. It has updated to show *Properties* for the Paint Brush. Now click the 3rd icon along to reveal the properties. Select a soft round brush, set hardness to 0% meaning it will have a soft edge, and opacity to 30-40%.

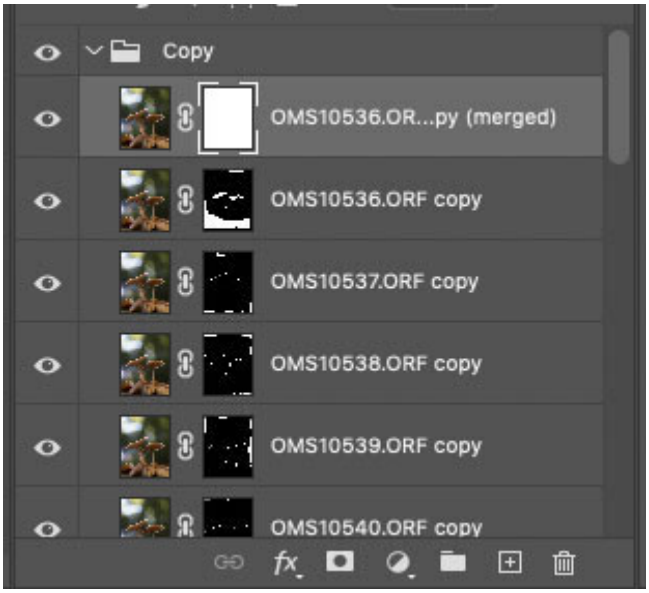
Opacity and Flow sets how much paint is laid down and how visible it is. I tend to ignore flow and use opacity to control how much paint is used. Ignore size for now because it can be set using the keyboard bracket [ ] keys. Now you'll see your cursor is a round circle allowing you to paint, and each stroke you make can be undone if you make an error by clicking back a step on the *History Pallet*.

## SET THE LAYERS

Now set the layers ready to start recovering detail. Important, we need to ensure in each step that the Layer Masks are active by clicking them (as shown below) and not the image. If the image thumbnail is active you will be painting onto the image itself, not the mask. If you make an error just undo it in the History Pallet.

In the Layers Pallet click the top merged image thumbnail and add a white mask to it. The *Mask Tool* is handily placed at the bottom and is a white rectangle with a circle, next to *FX*. Then click the eye icon to hide visibility of the top layer.

Remember this is the composite or merged image of all the others under it, it needs to be invisible so we can see changes made on the images under it.

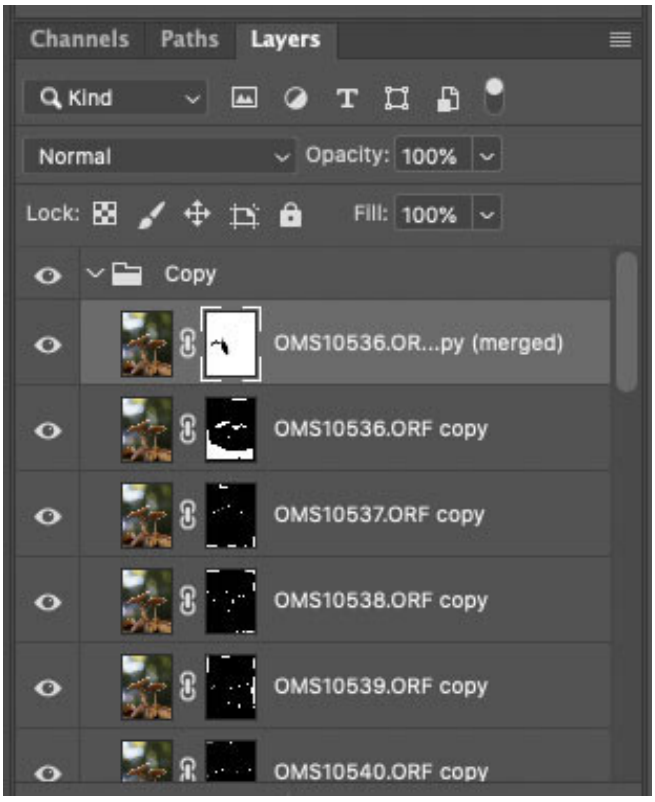


Add a white mask to the top Layer

Now start painting. Go back to the layer you identified as having the 'in-focus detail' (there may be more than one), click *on the mask layer to activate it,* not the image thumbnail, then on the main image in the main window (not the Layers Pallet) start painting over the area where you need detail recovering.
Adjust the Brush size with the [ ] Bracket keys on your keyboard and adjust the opacity to suit. You will see detail start to magically reappear.
When performing tasks like this it's always best to use small strokes so if you make an error you can click back in the History Pallet to undo it. And remember white reveals, black hides, so if you need to, swap paint to black and repaint to re-hide an area again.

Now switch the top layer back on again by clicking the eye icon to reactivate the layer visibility. Notice what happens? The details we recovered vanishes again. This is because the top layer is the merged composite of all the images under it, we changed the images under it but they cannot reflect in the top image. Rather than the long process of copying all the images and making a new merged image there is a simple way to fix this.

We already added a white mask, so click it to activate it, then back on the main image window just paint over the areas you just did again, but with black paint.



Painting on the TOP Layer Mask

We want to show the changes we made on the layers underneath, white reveals and black hides. The white mask is showing all of the top image so black paint will hide part of it. This time the same amount of care is not needed, increase the size of the brush and increase opacity and quickly paint over the area. Notice I also painted over the stem because there was a little detail on one of the masks I also recovered. (You could also stamp the layers into a new layer but I don't want to further complicate it).

That's the first set of images complete, hopefully you managed with this easily enough although if you are completely new to PS it can be daunting.

## SAVING YOUR PROGRESS

There are a few decisions to make now. I would normally just flatten this set of images into one layer ready for the next set, but what if you want to save it for future reference? If you do want to save this step go to the top Menu Bar *File > Save a Copy*. Give it a name that will make sense (eg 'Shrooms First Set'), make sure *Layers* is selected to preserve them, decide where to save it and save as a Photoshop document. If you don't want to save this step with the layers for reference later (I never do) just flatten it and move on to the next step.

## FLATTEN YOUR DOCUMENT

It is going to get quite large with all the layers and we will be moving onto the next step so I normally just flatten this document into one layer. On the top Menu Bar go to *Layer > Flatten Image*. Your document is now one layer. For this tutorial I have left most of the layers intact. We can now move onto the illuminated set of images.

→ **TIP** Notice the keyboard shortcuts that are displayed on menu items which are very handy to learn. There is also a shortcut menu on the History Pallet at the bottom. There is a New Document icon for creating duplicate of the whole document, New Snapshot icon which will create a snapshot of the current history state, and a Trashcan Icon.

# STEP 5 - ILLUMINATED SET

Rinse and Repeat. Yes, start all over with the illuminate images.

Now you have done it once you should be able to go through this step fairly quickly. Again in Lightroom sort the images, send them to Photoshop as a layered stack of images, duplicate the set, *Auto-Align* them, *Auto-Blend* them, and you will end up with another document consisting of layered images with masks applied and a top image which has been merged from the full set.

Notice in this set the right hand shroom has some illumination which is from the overspill light on the left shroom. I'm not interested in this because I did another image for it which we will get to.

The advantage of doing another set of focus bracketed images is you have not touched the camera at all so there is little chance of the images not aligning. The disadvantage is obviously the number of images you will have and having to go through the alignment and auto blending again, but it is pretty quick when you've done it a few times.

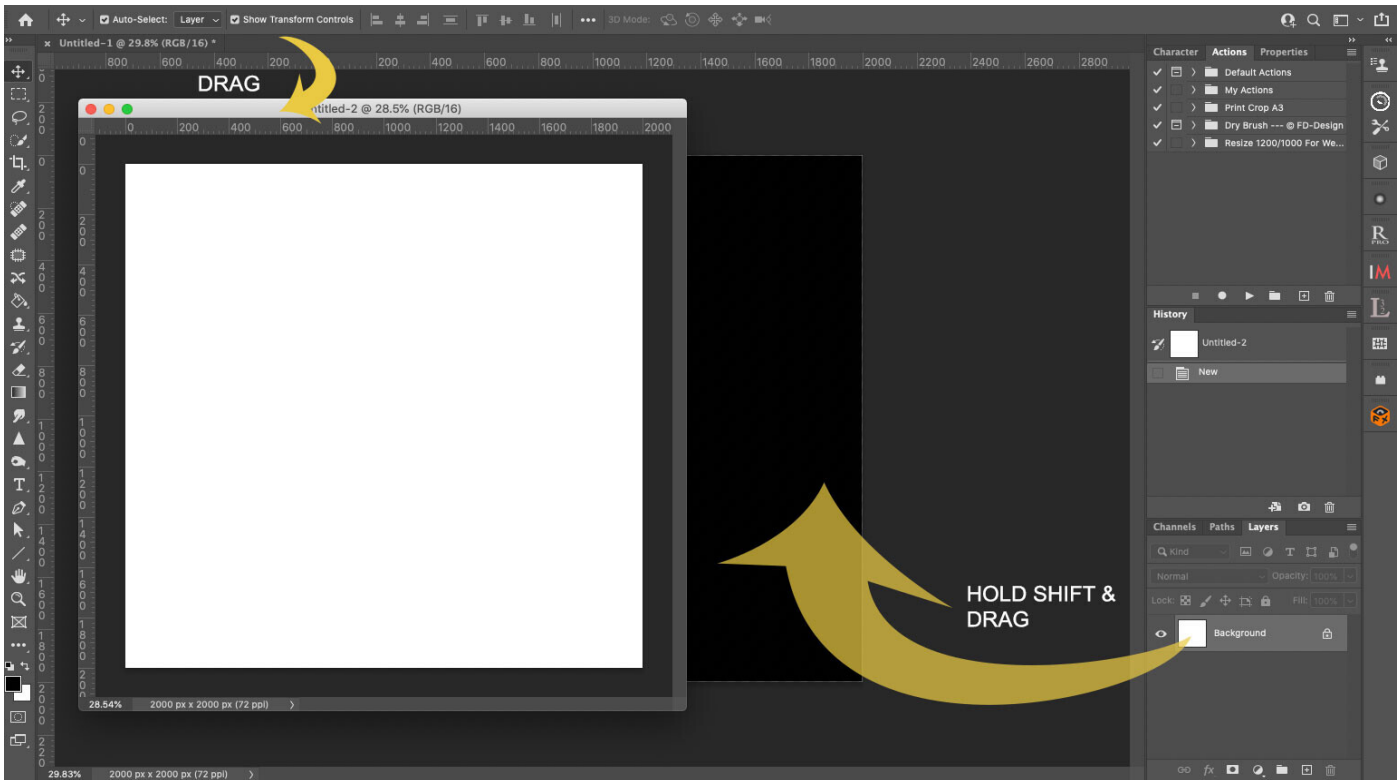
Remember to check if any details need to be recovered, but all we are concerned about is the stem and the underside of the shroom.

Again save this step as a new document if you want to save for future reference *(File > Save a Copy)* or if you're happy with it just flatten it into one.

Illuminated set after Auto Alignment and Auto-Blending

# STEP 6 - BLENDING THE TWO IMAGES

Now we have two images, one standard non-illuminated set which has been focus stacked into one image, and the same again for an illuminated set, which we can start to merge into one document and one image. We need both images from each set layering into one document with the illuminated image on the top. There is a very simply way to do this which is very fast as shown below.




Dragging one layer from one document into another

Both your files will be open and you'll notice they have their own tabs at the top in the document window as shown. Click on the illuminated shroom image tab, then holding down on it drag it out so that it is a 'floating' window over the other image. Make sure you can still see the other image underneath.

Now click the top floating image to make sure it is the active window, click its thumbnail in the *Layers Pallet*, then click/hold and at the same time *press/hold Shift*, then drag the layer over the image behind it and release. Pressing/holding Shift tells PS to register the layer in the same place so they will be aligned, otherwise the layer will be positioned wherever you 'drop' it.

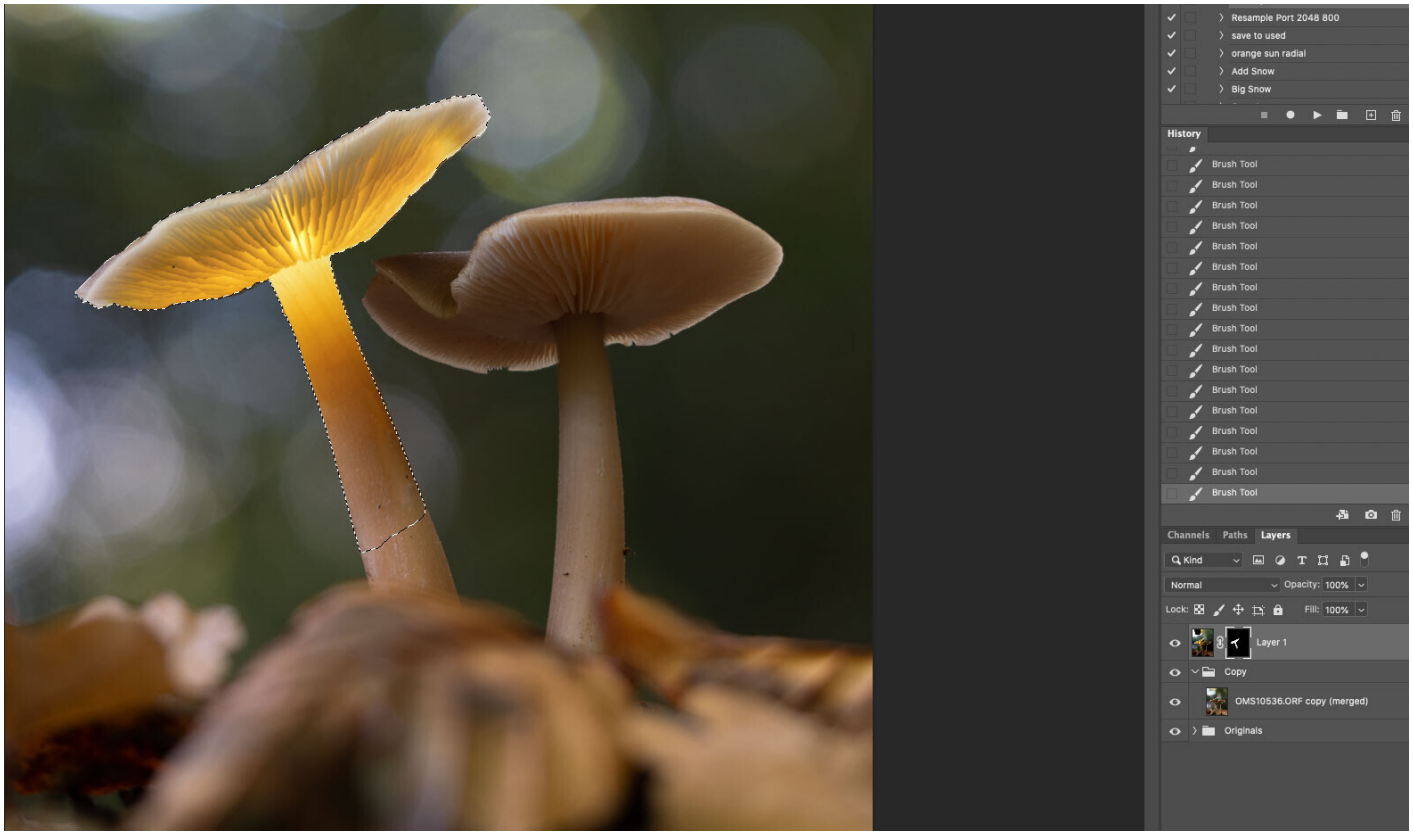
This does seem to take some people a few attempts but its easy and you'll be surprised just often you use this going forward to take one layer out of a document into another without having to mess around saving and importing.
Another way is to click the layer (double click if it is locked), then *File> Copy,* and then *File > Copy and Paste > Paste In Place* into the other document.
Note if you do it this way the image will be pasted above the layer you have 'active', so if it ends up below other layers it's probably because you didn't have the top layer active (click it to activate it).

Make sure they align properly. In the Layers Pallet switch the top layer off and on to check it. If it needs slight adjustment you can alter the opacity of the layer and use the Move tool (four direction arrow icon on the Tool Pallet) to adjust it. Use the keyboard arrow keys for very small adjustment.

→ **TIP** When you have a floating window and click the main PS window to make it the active document, the floating window will disappear. It hasn't, it's simply hidden behind the other windows. Just go to the top menu Window > Scroll down to the bottom list of open documents and click to bring it forward again. I use a Mac trackpad and just swipe up with four fingers to reveal them.

## BLENDING

There are now two images layered over each other, the non-illuminated image and the illuminated image. All we have to do now is apply a mask and then use the Paint Brush to start showing the illuminated layer into first image, but there are a number of ways to do it.



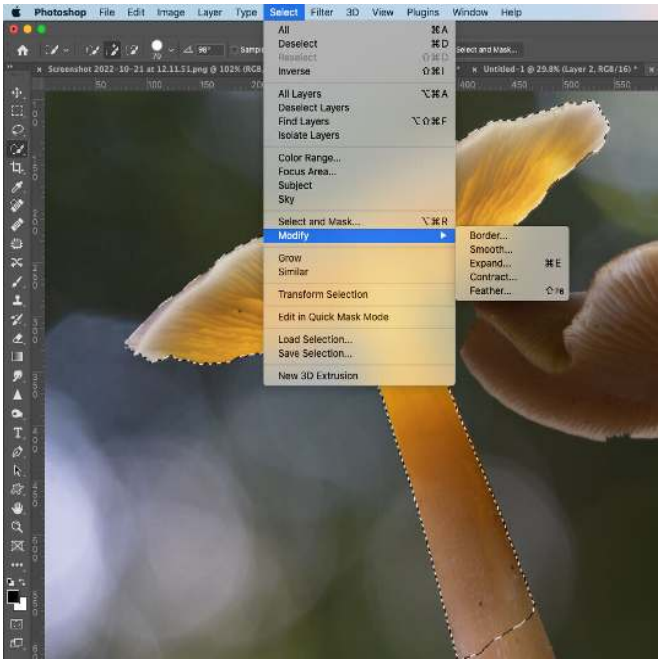

### METHOD 1

Activate the illuminated shroom image layer by clicking it, then *press/hold ALT* and click the Mask tool underneath. Alt tells PS to fill the mask with black, thus hiding the image. Remember black hides, white reveals.

Then with the Paint Brush with a soft brush, low opacity and small brush brush size start painting over the shroom (on the main image) to reveal the illumination back into view. Make sure the mask layer is active, not the image layer or you will be painting on the actual image layer and not the mask.

## METHOD 2

How good were you at colouring in between the lines? This method is a little more involved but gives much more control.
Before adding a mask select the *Selection Tool* in the *Tool Pallet* (a brush icon with dotted circle).
Notice the menu bar changes again to show properties for this tool with *New Selection, Add To, Subtract From,* and *General Properties.* The size of the tool can also be altered with the Bracket [ ] keys.



Modifying Selections in PS

Set Hardness to 100%, Spacing 25%, then alter the size to quite small and start clicking on the image on the illuminated parts. You'll see the area being selected and the area shown with 'marching ants'.
Use the *Add* and *Subtract From* if needed, but an image like this should be very easy with just a few clicks.
Note under *Select > Modify* there are further tools for refining selections by *Expanding, Contracting and Feathering* them.
For this image none of the refinements were needed but it's worth noting because making selections is one of the main skills to learn in PS.

Now click the Mask tool again at the bottom of the Layers Pallet and see what happens; the selected area is filled with white and the non-selected area is filled with black, so the illuminated area is now visible and the rest of the image is now hidden. Magic!
See the layer thumbnails in the image at the start of this section. Sometimes this is all that is needed.
You can now refine it a little by using the Paint Brush alternating between black and white, altering the size and opacity and maybe feathering edges a little to blend in areas more, paying attention to the stem to blend in seamlessly, and also the top of the shroom too.
If you need to activate the selection again go to *Select > Reselect* to reactive the selection.

→ **TIP** Remember black hides and white reveals. You may want to work the other way around to gently blend the illumination in. After making a selection for more control on the illuminated areas, then adding a mask, the selection will be filled white to show, with the background black to hide. There's nothing to stop you using black to paint over the whole mask, hiding it, then using white and slowly bringing the illumination back into the image, working from the centre out towards the edges. Use Select > Reselect to reactivate the last selection if you want to stay inside the edges. Sometimes this way works better if you want light to glow out from the centre.

## PROGRESS SO FAR

We are almost complete, so far you will have a standard non-illuminated image and an illuminated image blended together, so congratulations.

Check the image, make sure it is all good, and if you are happy and have no need to make any more adjustments save it.

If you want to save the layers do as we did before and Save A Copy for future reference. If you are at a point where you are done, save the image after flattening it as a Tiff or a Jpeg. I usually save as both.

We have a few more steps to do with this image, fixing issues and  blending in a second illuminated shroom.

One illuminated shroom blended in.

# FIXING ISSUES

I noticed on this image there is a slight issue on the bottom edge of the shroom, caused by the two sets of images not quite aligning properly. It can happen and it is an easy fix using the *Clone Stamp Tool* which will sample the pixels of the background and replace the pixels of the dark edge.

We are going to make a Selection of the area and clone the edge away. Making a Selection gives us a border which will prevent anything we do going over the edge, so just like painting inside the lines.

First I use the *Quick Selection* tool again, I want an edge to protect the glowing part of the shroom. Selecting the background area didn't select the dark line, and as I want it selecting, to save lots of messing about I just quit it *(Select > Deselect)* then clicked over the bright yellow area to select that instead.

The edge is much better with the yellow selected, but as I want the background selecting I can just use *Select > Inverse*. The selection is now reversed or swapped and the dark edge is included. It's sometimes faster to do this.

The dark edge half cloned away

Now select the *Clone Stamp Tool*, which looks like a rubber stamp. The Menu Bar changes again, set it to *0% Hardness, Mode: Normal, Opacity 60%*, and size quite small. Position the cursor near the edge and press *ALT*. It now turns to a target icon which is sampling the pixels under it, click to sample the background but not the dark tones of the edge or the yellow. Now just *click/hold* and start brushing over the edge and watch the dark line start to vanish. Photoshop is replacing the dark pixels of the edge with the pixels we sampled. Notice a cross hair which shows the area that is being sampled.

→ ***TIP*** *Ever noticed how sometimes you can end up with an annoying white edge around some elements after processing an image? Usually it's caused by being a little too aggressive with contrast or recovering highlights. It's an easy fix, use the Clone Stamp Tool just as above, but set the Mode to Darken, sample close to the edge and run the brush along the white line. PS will then only find the bright line and replace it with the area sampled. And because it is set to Darken you do not even have to be that careful, there is certainly no need to make any selections. Neat!*

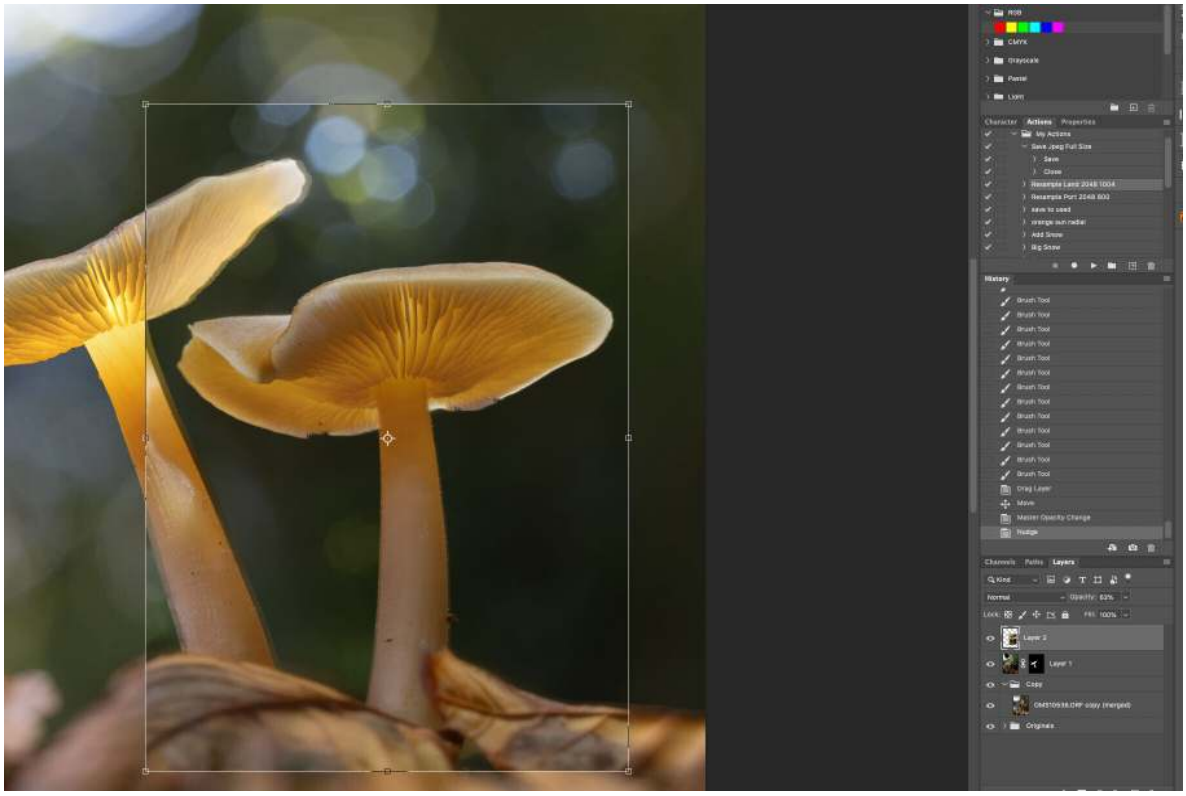
# STEP 7 - BLENDING ANOTHER SHROOM

Blending in another shroom really depends how it was taken. You may have used two lights which means you can blend in the illuminated image as one set, or you may have taken another focus stacked set of images. If so, just follow the steps above and go through the process again. Save a copy of the document for future reference if you wish, then flatten it, produce the next set of images and stack them, drag or copy into the main document as a new layer and blend it again.

Another way is to shoot the additional image with a narrower aperture for depth of field, perhaps f9-f14 depending on the lens and sensor, and not focus stack it. The advantage is obviously less images to process and stack, and if you have a few shots to illuminate in one shot it can be easier.

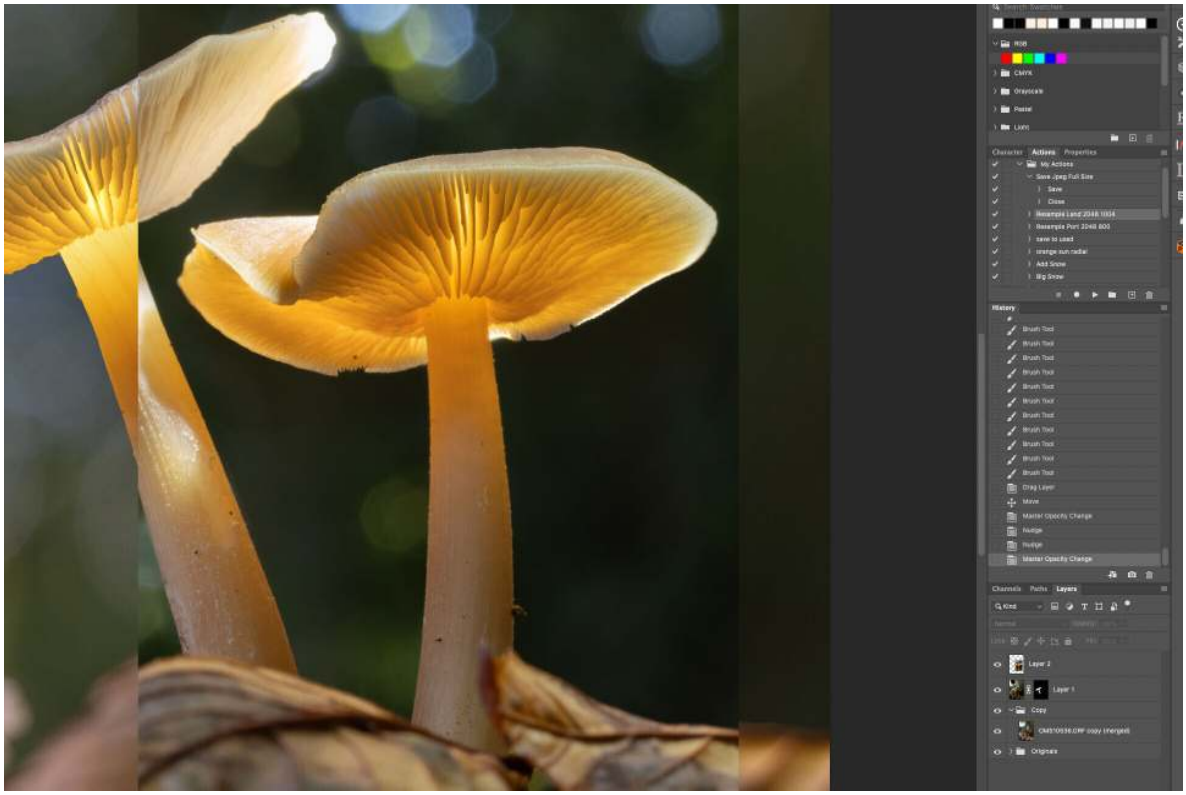
The disadvantage is by altering the aperture you are disturbing the camera and the images are sure not to align. It can also be difficult to get them to align because by altering the depth of field in one image you will effectively alter the overall size of the shroom, possibly not by a great deal, but enough to make it more work to align. It can be done, and the next steps below will show how.

What will not work is taking an image at f2.8 for the out of focus background and the wonderful bokeh, then shooting the main standard set and the illuminated set at a smaller aperture for the depth of field. The main set would have such soft edges around the shrooms because of Focus Breathing and you will end up with halos which will be hard work to remove. Shoot your first set focus stacked and then additional images at a smaller aperture if you prefer.



The second illuminated shroom as another layer in PS after cropping it.

The single shot f9 image is opened in PS from LR after copying the same processing settings to it. Once open in PS instead of loading the full image (dragging or copying), I cropped it first with the crop tool.
Because I will need to do some repositioning and some resizing I crop it, just retaining the main subject and making it easier to see the selection handles (the small dots) around the edge. I lower the opacity of the layer to allow me to see the edges underneath too.



Repositioning the layer as close as I can.

By clicking the layer I can then *click/hold* and drag it into position. Using the *Move* tool and the keyboard arrows means I can finely place it.

By *clicking/holding* I can drag the selection handles on the outside the the image, and by clicking one of the corners and holding *Command (Windows Control)* I can also distort it. Using all these tools means I can after some adjustments get the image matching up pretty close to the image underneath.

The second shroom now blended in.

Just as previous I made a selection of the shroom with the Quick Selection Tool and added a mask, which fills the shroom with white to show, and the background in black to hide.

Now only the illuminated area is visible and the background is hidden, removing the part of the shroom on the left which was not matching up.

Another adjustment is needed because there is a double edge on the bottom. Selecting the layer again with the Move tool to show the handles, I can click on the lower centre handle, press/hold Shift and move it up which alters the height but not the width, in other words compresses it.

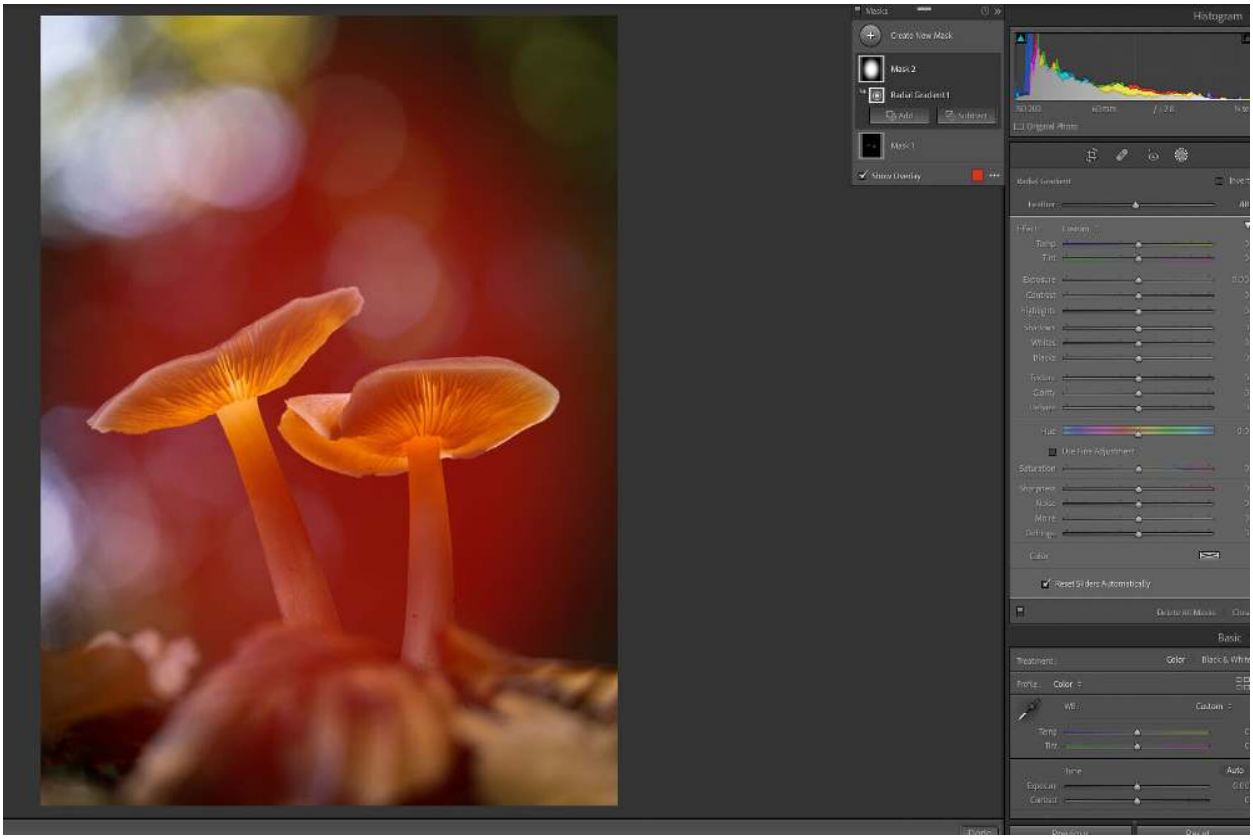
Finally I can use the brush tool just as before to blend in and refine some edges.

## STEP 8 - FINAL STAGES

Thankfully we are almost done. As before save a copy of the document if you wish with the layers, and then flatten it. Next I saved the image because I want it back in LR. Do note if you have renamed the file you cannot save it back to Lightroom, which can be annoying.

If you want the image in LR again for some further work you can save it and import it, or a little trick that saves a whole lot of time, open one of the images from the set in LR into PS (select image, right click and *Edit in Photoshop*), then drag the shroom document layer onto the image you just opened as before and save, it will then appear in LR.
It will be brought back in as a Tiff if you have set Tiff in LR, (*LR > Preferences > External Editing > Edit in Photoshop > File Format > Tiff)* which can bloat your catalogue. Once I'm done with these I delete them from Lightroom because my final image is saved from PS with a meaningful title, so I don't need to keep them.

In LR I will do my last edits which are more creative, I may alter the white balanced tint into blue to make it look more like twilight, alter tones and contrast a little, and use masks to alter the image. Note you could do your final edits in PS, or whichever App you are using



The blended image back in LR for some final edits. Here, adding a Radial Grad for a Vignette.

Here in the Mask section I've used a Radial Grad, then clicking on the icon in the dialogue I reverse it. I can then alter exposure to act as a vignette, and doing it this way means I have much more control over size and positions.

The very last step and one I always do is to open it again in PS, and apply noise and sharpening. I use Topaz DeNoise as a plugin in PS. I copy the layer, run Denoise, and then if needed I can apply a mask and paint anything back in if Denoise has removed any detail. I then Save the final image with a meaningful title to my Hard Drive.

# COMPLETE

Below is the final image after making some adjustments in LR. I wanted the background a little darker and altered the colour of the illumination a fraction, and all in all I'm very happy with the result.

Another thing to consider is when you are merging in the illuminated layers is to keep some of the illumination on the ground as though the shrooms are illuminating it. It's easy to do by using the masks and the paint brush.

It may seem to be hard work with a lot of steps and there are, but once you have done it a few times many of the steps are very quick and you will speed through them.
The biggest challenge is to have a vision of what you want to achieve and try to stick to it, after all producing a 'Glowing Shrooms' image is creative and you should try to be creative with it.

The finished image.

# ANOTHER EXAMPLE

This image below is an example of one way to deal with multiple shrooms in one image where lighting and stacking is going to get very complicated. As there are so many in one group it would require a focus stacked standard set (non-illuminated) and then multiple sets depending on which you want to illuminate, perhaps 2, 3 or even four sets, so it can quickly start to get complicated.

One way as we saw in the processing steps is to shoot the illuminated set as one image with a narrower aperture for more depth of field, but alignment will be an issue. Sections of the image could be cropped and then aligned individually to get around trying to align one main shot. In this case I decided I would illuminate it twice, thus have one non-illuminated set and two illuminated sets.

This meant I didn't have to change settings other than under-exposing the illuminated set a little. Notice the depth of field is quite narrow and doesn't extend all the way back; this was a conscious decision, having parts of an image out of focus can actually add more visual depth and interest to an image.

Various sets of focus stacked images.

# STEP 1 - THE SHOTS

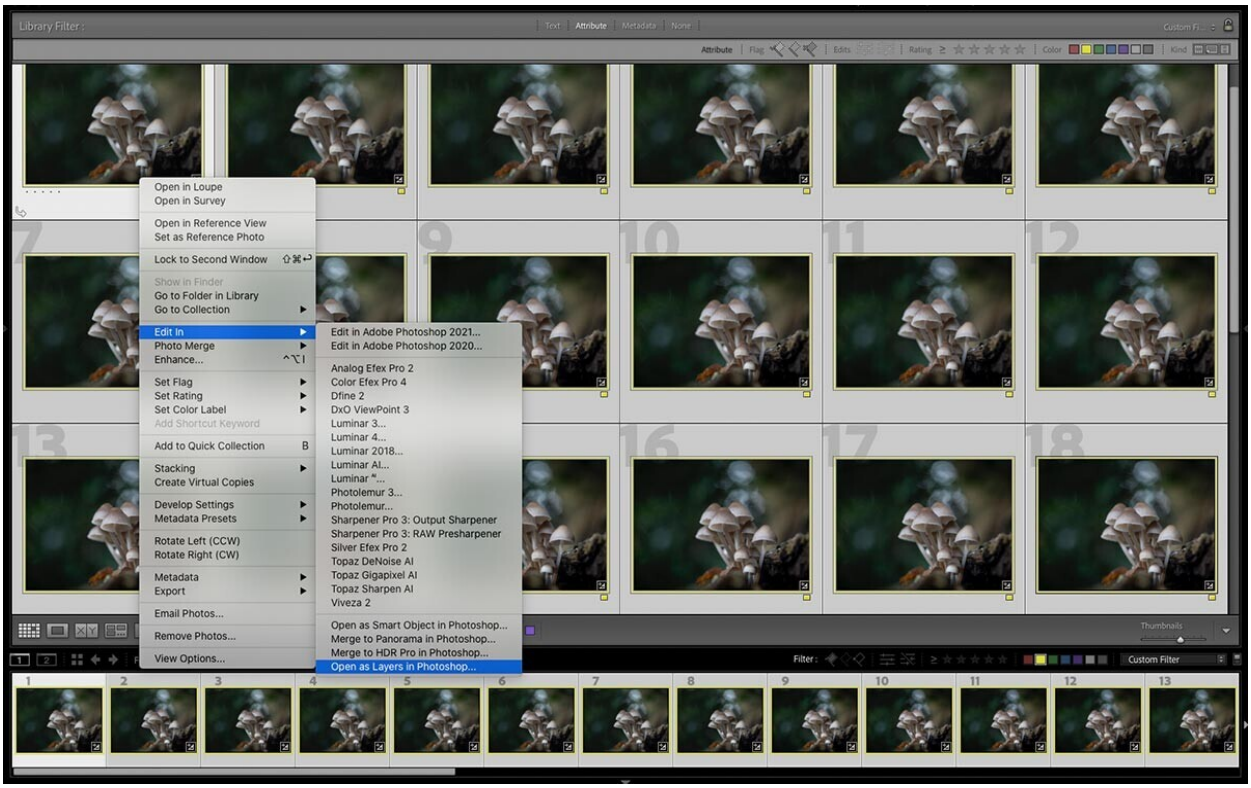
Three sets of shots were taken, the first non illuminated focus bracketed set which form the main image. Another set were taken illuminating the main shroom and some in the rear, and another set illuminating some of the smaller shrooms at the front. They are inspected, sorted into colour coded sets, any processing is applied to the first image of each set and then synchronised across each set ready to merge.

Main set taken 60mm Macro f2.8 - ideal step was Focus Offset 2

Illuminated sets with the same settings, under exposed

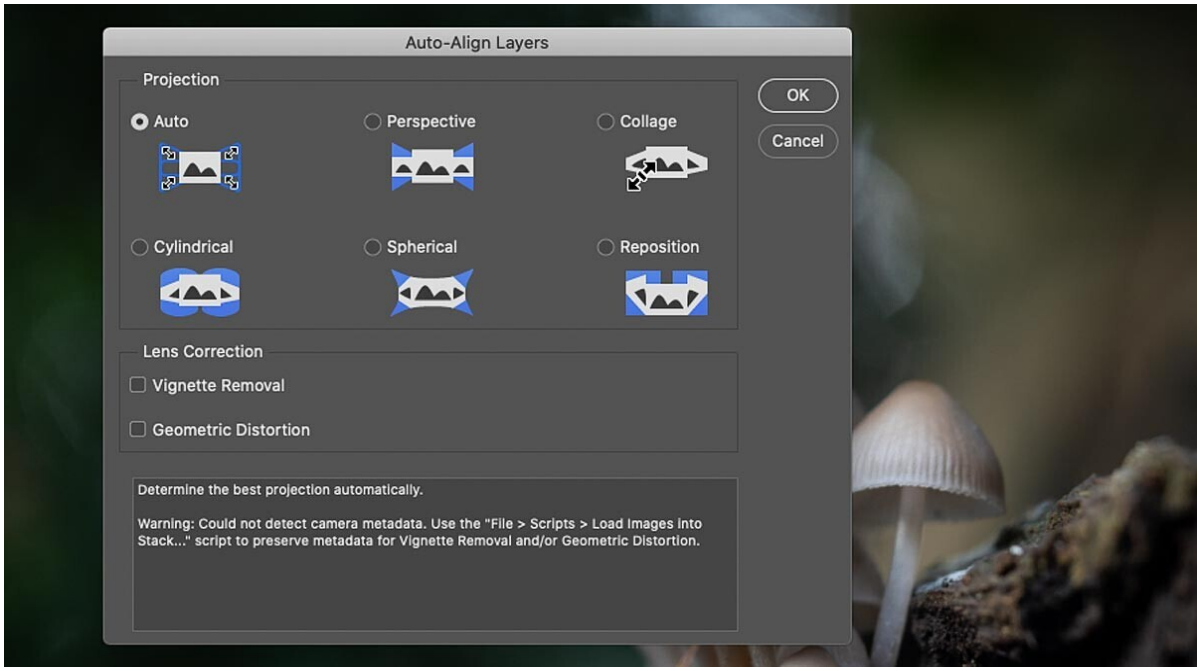
# STEP 2 - LAYER IN PHOTOSHOP

Images are selected and sent to Photoshop as layers, right click and go to *Edit In >Open as Layers in Photoshop*. Duplicate the layers and group one set together.



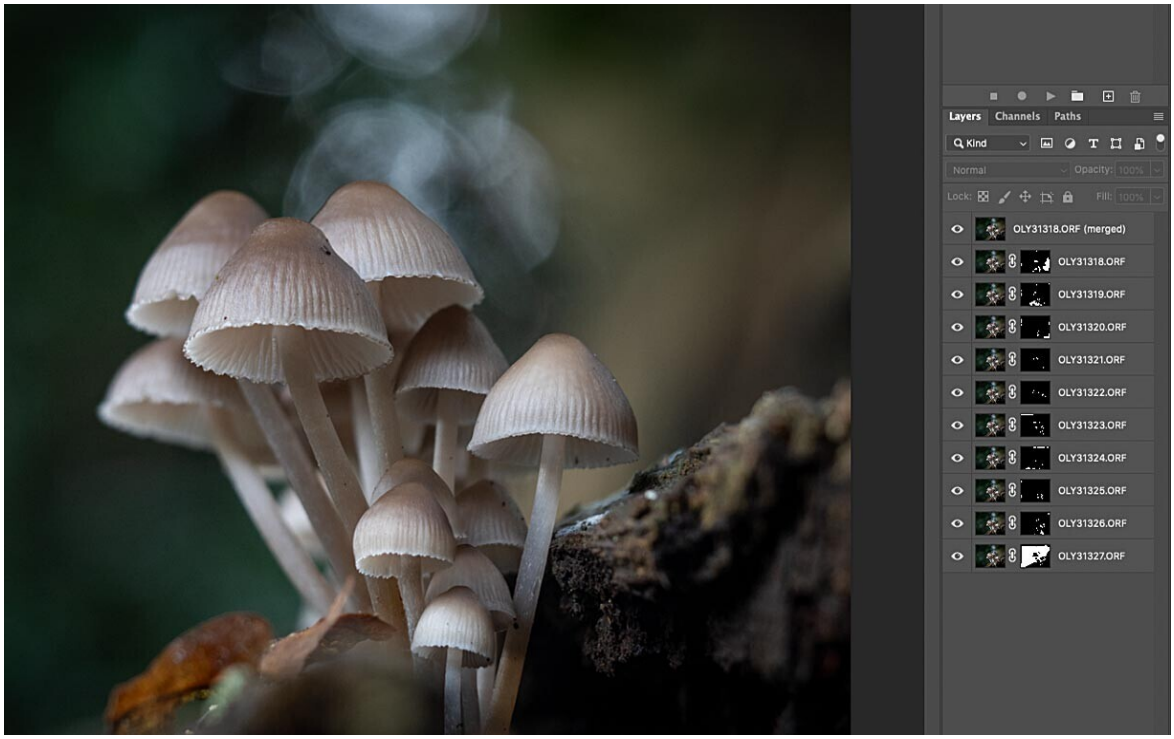
## STEP 3 - AUTO ALIGN

Select the layers and align them just as previous *Edit>Auto Align Layers* and select Auto.



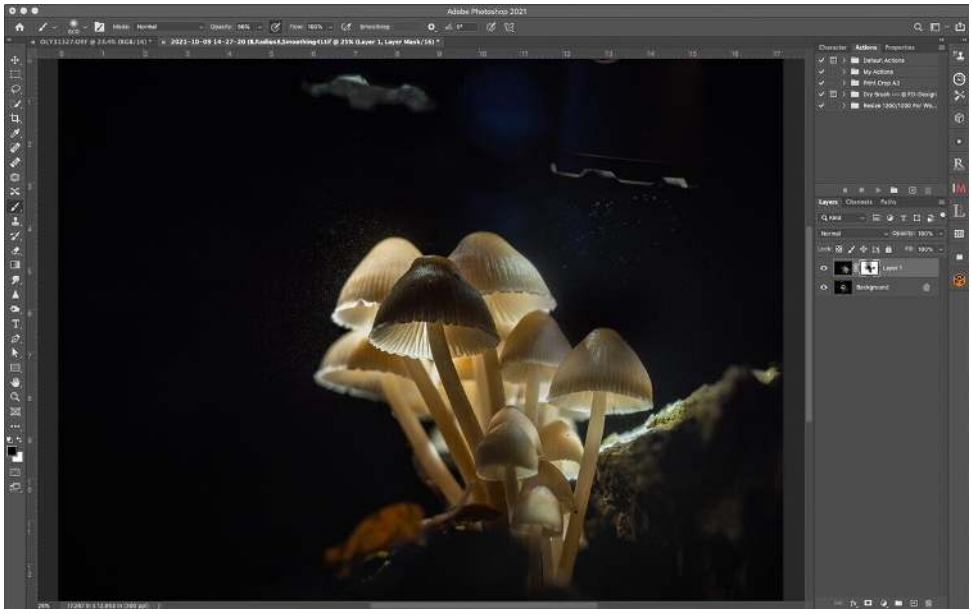

## STEP 4 - AUTO BLEND

Then Auto-Blend the layers so there is one 'merged' image *Edit>Auto Blend Layers* and select Stack Images.



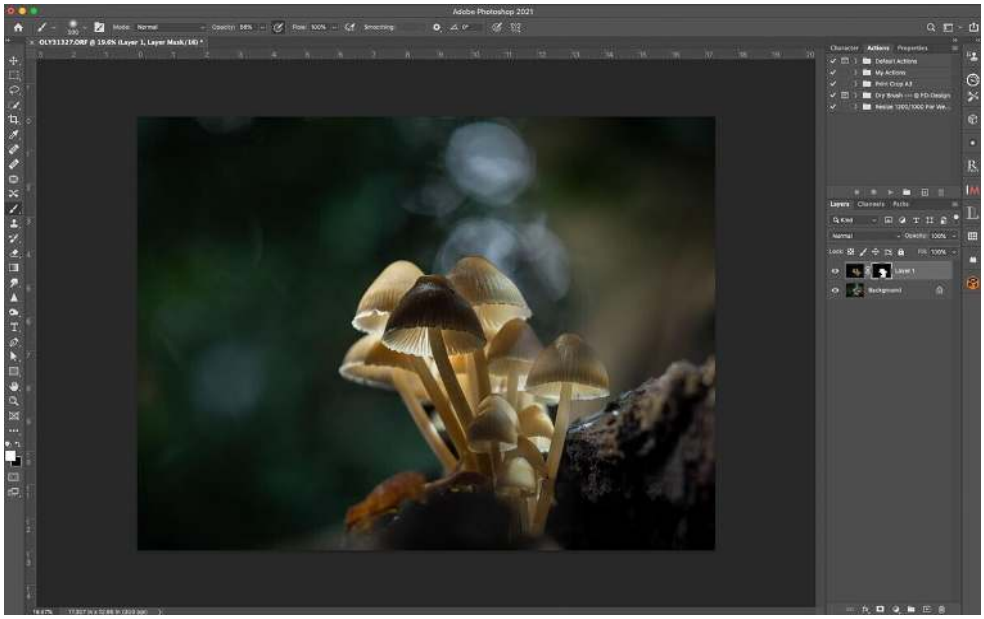
## STEP 5 - RINSE & REPEAT

Send the illuminated set(s) to Photoshop, align and stack them, and fix any issues. In this screen shot I have taken the two illuminated sets after Auto-Blending them, placed them into one document and merged the illumination together. Notice the torch visible from two different images which I need not be concerned about removing yet.



## STEP 6 - COMBINE ALL

Next the illuminated set is dragged or copied onto the standard non illuminated set, a mask is applied and I start to blend in the illumination, working on it until I am happy. Another little trick, if you have part of the image that will not align, make a copy of it by dragging to the New Layer icon, remove the mask (right click and delete it), then position it where needed and add a new mask. From one image you can make copies and position different parts if needed.



Once you are done with all the merging you can save it, take it back into Lightroom for further work if needed and work on areas you feel could be improved such as darkening the background a little or altering the colour tones.

## CONCLUSION

Once you persevere with the processing aspect of producing 'Glowing Shrooms' you'll find you can go through the steps quite quickly and with confidence. It is technical, but once you are comfortable with it you can then concentrate on the fun bit, getting creative with the final look.

# INSPIRATION

A small collection of images with descriptions to inspire and encourage your shrooming journey. All images were taken with the Olympus 60mm Macro lens at f2.8, with the exception of 'Night Light'. All were focus stacked with various step differentials and captured as illuminated and non-illuminated sets, then blended in Photoshop.

## EXTENDED FAMILY

The image I've used as the banner and one that did take quite a bit of work but it was not as complicated as it may first appear. Firstly the composition is set ensuring I'm happy with how the subject is placed in the frame and that there is suitable background bokeh.

One thing to remember is the first set of images which will be the base set and includes the background will change as the light changes. If the highlights are created by sunlight the sun will move, so don't take too long.

A base set of focus bracketed images were taken at f2.8, and in this case notice the sharpness doesn't extend all the way to the rear shroom, allowing for some out of focus blur will actually add depth to the image, but make sure there will be enough separation between the subject and the background. Next the illuminated images were taken.

For this image 2 sets were needed with a hand held torch, first a set with a torch held towards the rear and another set held towards the front. After each set are stacked individually, the 3 resulting images were then stacked together and blended to bring light in just where I wanted it. It does take some patience but the results are worth the effort.

## THE FLY

Quite some patience was needed for this image, and a lot of luck. A base set were captured along with 3 sets illuminated. Each shroom was illuminated with a thin pencil torch and the sequence of images captured without changing any settings.

Although it does result in a lot of images and not all will be needed, if your first set are sharp front to back sometimes it is quicker just to repeat the sequence rather than reset the focus point and risk disturbing the camera too much. Just as the final set was complete a fly photo-bombed me.

Without changing any settings I reshot the whole sequence and luckily for me by just retaining the 3 or 4 frames where the fly was sharpest I produced another stacked imaged and blended it into the other images as the final step. It's worth looking out for bugs that do sometimes appear, and be aware of your shutter speed too.

# TWILIGHT GLOW

What absolutely fascinates me with Glowing Shrooms is just how creative it can be. This image was captured in daylight and after experimenting with how the light passed through this shroom I decided I wanted to capture with the outer rim glowing almost as if it were illuminated by UV light.

Getting the composition right was important, I needed to be able to see the whole rim and have some background bokeh just above it. Illumination was simple enough just with one torch hand held.

Creating the mood is achieved by firstly altering the white balance to a cool blue tone, synchronising it across all the frames, and then working on the colour balance of the final stacked and blended images to give a feeling of twilight to the image.

## BUGS LIFE

I'd decided I again wanted a dark twilight image to contrast with some warm light radiating fro the shroom. Angling the camera makes the large shroom (which was only around 20mm diameter) lean into the centre of the frame which I feel is more pleasing.

The background bokeh gave some great silhouetted definition to the shroom, and I felt it needed a little more so I found another smaller shroom and repositioned it so it was silhouetted in the bottom circle of light. During the shots a bug appeared again. It was moving and the final images were quite a mess so it had to be cloned right out, but again selecting just one of the frames where the bug is acceptably detailed I was able to clone it back in again.

## TWO SHROOMS

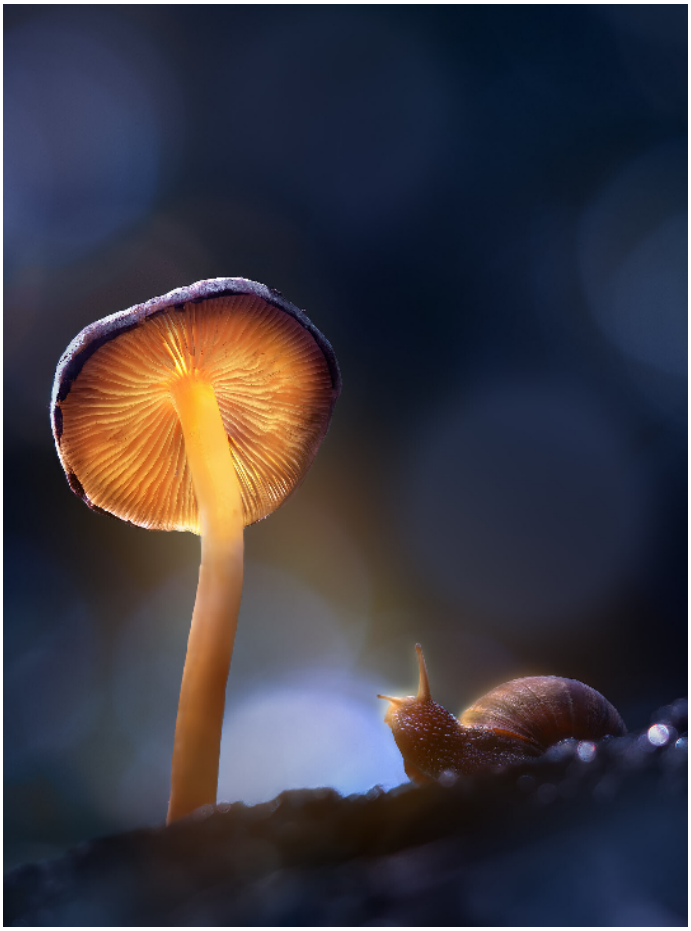
Two illuminated shrooms both illuminated individually. This is the image used for the processing tutorial which shows step by step how they were processed and blended together.

## BACKGROUND BLUR

Rather than shoot this set of three shrooms with the focus extending from the front all the way to the back I decided to keep just the front one in focus. It was very much a conscious decision because sometimes it can add more depth to an image, leaving part to the imagination.

Notice the shroom in the background, I wanted to lift it a little so I made sure part of the background bokeh was just behind the cap. Being aware of the background just as much as the shrooms really does make a difference.

## LIGHTING THE WAY



This image was a combination of the sets of images needed for the shroom, one set illuminated and another non illuminated, plus another for the snail.
I noticed the snail nearby so I placed him on the log next to the shroom after I'd finished with the main shots. It was important to have him in position so that he was on the correct angle and would look natural when blended in.
It was of course a task because he refused to go the directing I wanted, but a leaf and some gentle coaxing and eventually he did, even looking the direction I wanted. The snail was much bigger in reality, it was reduced in size to suit what I wanted. Some light was painted in using a polygon selection and the paint brush with very soft colour, and highlights added to the snail. To look more natural the highlights on the snail were given a Gaussian Blur to give it a glow.

## NO ILLUMINATION

Not all images need to be illuminated. The shrooms are leaning into the frame which is balanced by a couple of fern leaves on the opposite side. Highlighting the shrooms by placing the background bokeh behind them draws attention where it should be. Editing the tones into a twilight blue gives the atmosphere I wanted despite it being a daytime shot. Shadows were also given a tint towards blue and contrast was lowered.

## EMBRACE

These two shrooms were twisted together as though embracing and it was hard to resist not getting an image. The delicate tones and the earthy browns of the leaves had to be consistent through the image so the background was edited carefully to give a harmonious colour pallete.

Note the bug on top? It happened again, just as I was shooting the first set of images it popped up. My shutter speed was only 1/30th second but it was enough to capture the little fella. Obviously it isn't going to be still through the whole sequence, so finding a couple of frames where it is sharp is all that is needed.

Once the first set is stacked there's ghosting because of the movement of the bug which needed to be cloned away. Then the bug is blended back in just using the image(s) tat are in focus. If there's more than one image with a bug that look acceptable stack them and then use them to blend into the final image.

## EMBRACE 2

The same two shrooms as above but with a different composition and slightly different editing. These two were so cute I couldn't resist another shot, and I wanted a different feel to atmosphere too.

The colour was altered to give it a colder tone. Notice that the light illuminating the shrooms in both images is very subtle, it is illuminated by hand but I wanted both images to appear as though they are illuminated naturally by the background bokeh.

## SUNSET SHROOMS

I tend to only illuminate the shrooms from above when possible, and only from below if it is particularly dense.

For this image I wanted a different atmosphere with some warm side light instead of illuminating the gills. I just used my LED panel light, placing it to the side and altering the temperature to warm.

The background was edited to my taste and a small branch with a few leaves was hand held on the right to give a little more interest.

## SILHOUETTES

This small group of shrooms used illumination and silhouettes. The foreground shroom is illuminated and stacked leaving the background shroom dark and out of focus for depth, and the angle of the camera was placed so that it would be silhouetted against the background light. Using boken and silhouettes can add another dimension to you images and create more interest.

# NIGHT LIGHT

Another very Autumnal colour palette, this shroom was around 4" (100mm) diameter. A first non-illuminated set were taken focus stacked at f2.8 and the illuminated image taken as one shot at f9.  The depth of field was a little shallow on the gills underneath, the rear is a little soft but the stem is sharp. The main set of images at f2.8 leave the background and the rear shroom out of focus which was a conscious decision, for me it adds more interest.

It was impossible to view the rear screen to see what I was doing when I illuminated them so I used a video capture card and a mobile phone as an external monitor.

# GOLDEN BOKEH

My preference for atmosphere when producing Glowing Shrooms is for twilight, but when there's some golden light when the sun is low it can be very attractive. This image was taken late in the afternoon when the sun was low giving warmth to the background bokeh.

## A FAIL

I've included this image as one I consider a fail, when at the time I was happy with it. The composition is fine, the background bokeh is simple and quite attractive but the lighting is wrong.

The front of the top shroom is a little too bright and I had too much light spilling over onto the tree trunk. Be careful how light spills when doing the illuminated shots. I could fix it because I have the images to do it, I could easily blend in more of the non illuminate shroom and the tree trunk. I tend not to go back and fix images afterwards though if it is some time before I realise the mistakes, I just move on and learn from it.

## CONCLUSION

Although Glowing Shroom images are quite a technical process with the amount of images needed and then the processing, it is also surprising creative. Experimenting with the illumination, background bokeh, silhouettes gives quite an amount of creative freedom, and then the processing allows you to be imaginative with the final image and the mood you want to create. Low sunlight, twilight, moonlight, all are possible with a little imagination. I do hope this has been useful and I wish you every success with your images.

# OLYMPUS SETTINGS

This section deals with shooting Glowing Shrooms using Olympus cameras which is my main camera, with some useful tips and tricks. Any camera that has the ability to focus bracket can be used although Olympus cameras do have some features that are worth noting. If you are not using an Olympus camera you may still find a few tips that could be useful. Adding Peaking to a button for example is a great way to use show it without touching the focus ring.

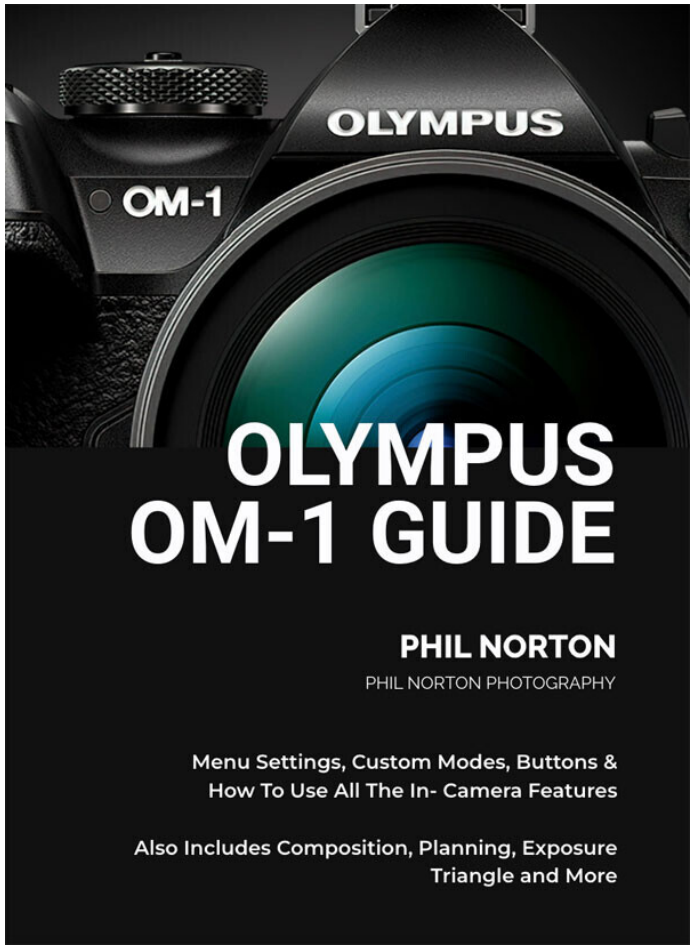
## OM-1 GUIDE

I wrote a Guide for the OM-1 which you will find very useful if you use this camera.

It's full of tips and tricks, with a full Menu walkthrough, advice on settings, suggestions for Customs Modes, and details for all of the in-camera features such as Live Time, Live Composite and others, with examples of how to use them.

It also covers all you need to know about photography including composition, exposure, depth of field, planning and research and processing workflow.

More information is available here.



# OLYMPUS FOCUS BRACKETING / STACKING

Olympus cameras are fully featured and most support Focus Bracketing/Stacking. Not all lenses support focus bracketing although the 60mm f2.8 Macro does, and this is the lens I suggest you use, along with the 30mm Macro. Other lenses can be used such as the 12-40 f2.8 Pro if you don't have a macro lens and want to try although you will not get 1:1 macro.


Cameras supporting Focus Stacking:

OMD EM-10 (MKII MKIII, MKIV)

OMD EM-5 (MKII, MKIII)

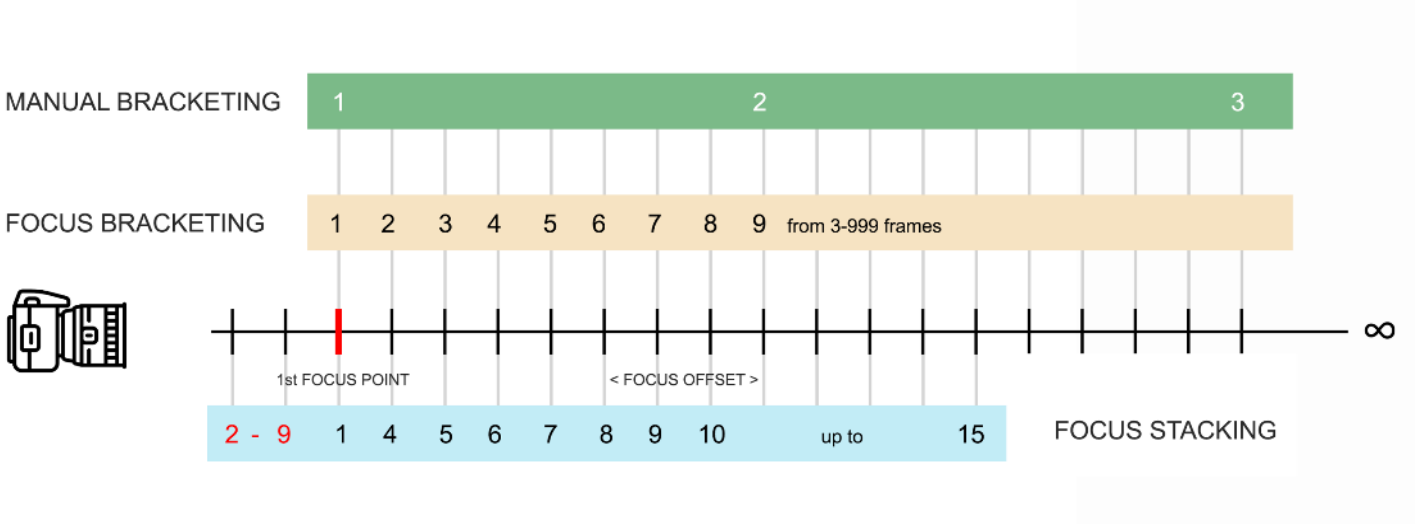
OMD EM-1 (MK1 firmware v4, MKII, MKIII)

OMD-EM 1X

OMDS OM-1

# FOCUS BRACKETING / STACKING BASICS

Not all cameras support Focus Stacking, which is different to Focus Bracketing, but what are the differences?




**MANUAL BRACKETING, OLYMPUS FOCUS BRACKETING AND FOCUS STACKING**

Manual Bracketing as required. Focus Bracketing from first point back. 2-9 Number of frames in front of 1st Focus Point when Focus Stacking, depending on Focus Differential, Aperture and number of frames.

## MANUAL BRACKETING

Raw/Jpeg according to your settings.

You choose number of frames and where to focus. 'Focus Offset' or distance between is your choice and the order of frames is under your control.

Used mainly for landscapes. Will require blending afterwards.

## FOCUS BRACKETING

Raw/Jpeg according to your settings.

User selected 3-999 frames, with Focus Offset user selected from 1-10.

Frames will recede from the first focus point back into the scene.

Will require blending afterwards.

## FOCUS STACKING

Raw/Jpeg* according to your settings.

User selected 3-15 frames with Focus Offset user selected from 1-10.

Further frames are captured in front of the 1st focus point in the order show. In-camera stacked image is Jpeg only* and will cropped by approx 10% but will have the original pixel dimensions. Raws are saved but not stacked.

## MANUAL BRACKETING

Not recommended for Macro as we have built in features, but let's not forget back in the day all the images we shoot now were still being taken with manual skills.
For macro a slider would have been used to move the camera minute steps rather than the focus point.
I have included it here because for landscapes if I do need to focus bracket I will just do it manually, moving the focus point where I need for 2 or three frames ad then blending them in Photoshop.

## FOCUS BRACKETING

(Recommended for Glowing Shrooms)
Automated in-camera, set the number of frames and the Focus Offset, the camera will enter Continuous Silent drive mode and you're good to go. make sure you shoot in Raw for processing later. The challenge is to make sure the Focus Offset is correct, or how far apart the focus will shift to cover the front and back of the subject.

There are no set parameters for this, considering all the variables it would be impossible to have a chart expressing distances, offsets, frames, etc, so it's guesswork and experience.

The number of frames and the offset depends on how big the subject is and how close you are. Considering we are dealing with subjects that may be just a few mm diameter, or a few inches, you will only need to consider a step size of 1 or 2, rarely 3.

Practice and take test shots as outlined in the Shooting section, I tend to use Step Size 1 for small subjects and Step Size 2 if the subject is larger.
Next is the number of frames, you may need 10 or 20 or more. What matters is capturing the front and the rear details with enough frames in-between to include the detail of the steps and the gills. Too many frames is fine, they can be delated back home, not enough is a problem.

## FOCUS STACKING

As above, set the frames, the Offset and the camera will take all the shots in Continuous Silent. There are some major differences to Focus Bracketing, the main being that the camera will produce an in-camera stacked image of all the frames but in Jpeg only and the available frames are reduced to 15 as a result (all the frames are saved according to your settings Raw and/or Jpeg).

The image is also cropped slightly to around 90% of the original but is then resampled back up to the original pixel size, and at the time of shooting a frame will show on the screen as a guide for composition.
This is to account for 'Focus Breathing' where as the focus is moved objects in the scene can change in size due to the field of view changing, which is more apparent in very close focus subjects such as Macro. It's the reason it is important to 'align' image sets in post before they are blended. As Focus Stacking produces a stacked image the frame shows how the image will be cropped to remove the edges that will not align successfully. With Focus Bracketing there is no such guide frame so you need to be aware of it when composing your scene.

Note that a number of images in total is limited to 15, with a number receding from the focus point and a number in front of the focus point with the second shot stepping forwards first. The number of images in front of the focus point, 2-9, depends on the focus differential or how wide the 'steps' are, aperture and total frames set.
Focus Stacking can be a little unpredictable, trial and error are needed and experience will guide you. You are better to shoot Glowing Shrooms in Focus Bracketing and not Stacking mode.

The stacked image is Jpeg and we want raw so it is redundant, although the frames will be recorded in Raw (make sure you have Raw set). The frames are limited to 15, which may be enough, but the second frame will step forwards with a number of additional frames (depending on the number set and the step size) captured forwards of your focus point.
This works fine in many Macro images but can cause us a problem for Glowing Shrooms.

Your focus point will need to be set into the subject to compensate for the forward focus frames, but where? An amount into the gills, on the stem? What if your shroom is sideways on and you can't see the gills? And if you do focus partly into the subject there is a danger that the forward frames will not capture the front edge. Try it by all means but it is much easier just to use Focus Stacking.

## MANUAL FOCUS

As I said in the Shooting section we need to manually focus on the subject on the front edge. There's nothing wrong with auto-focusing but do switch to manual to fine tune it and make sure you have Peaking (edges in focus are highlighted) enabled.
The 60mm Macro lens doesn't have a manual focus switch or a clutch so we need a way to enable manual focus. Luckily there are a number of ways.

→ **TIP**If you are using a non macro lens such as the 12-40 f2.8 Pro do not rely on the clutch to switch between auto and manual focus and retain the same focus, if often disturbs it. I often auto focus, I find it easier the shooting landscapes, but then if I want to enter manual I never pull the clutch back, the focus more often than not is disturbed. See below:

## SUPER CONTROL PANEL

Your rear screen makes it very easy to adjust settings, just select the focus mode and change it.

## BACK BUTTON FOCUS

You may already use BBF. Back Button Focus separates the shutter button from focus, using a rear button for focus instead. It means you have manual focus and easy access to auto focus.

It can be quite handy because it means the shutter will not disturb focus when pressed, useful in this situation and others such as when using external ND filters or shooting panoramics. The EM-1 MKIII shipped with BBF already set up (AEL/AFL button) and the OM-1 has the dedicated AF-ON button.
Once in Manual Focus these buttons act as an auto focus button. Set your camera for BBF if not already and if it sounds like a feature you'd like.

## Fn LEVER

The Fn Lever is often overlooked and can be set for various focus modes and the focus target size can be set for each too.
For instance in Position 1 you could have a small AF target size and Single AF, then in Position 2 have a cluster target size with Continuos AF plus Tracking.
Therefore if you don't have or want to set BBF you could just set MF (Manual Focus) to Position 2.

Setting it is very easy, just set the lever to the position required, change the relevant settings and it will be stored in the camera memory. Check your lever though, on some cameras there can be a difference in stiffness and you really do not want to have to push hard, and disturb the camera. My MKIII was fine but the MKII was quite stiff.
The OM-1 Lever is much smaller and quite stiff so I am glad it has a dedicated AF-ON. Note the E-M 10 never had an Fn Lever so mapping MF to a button is the only way or just use the Super Control Panel.

## MAP A BUTTON

Set MF to a button. Since the days of the E-M 10 and E-M 5 I have always customised the rear Direction Pad. Instead of it just moving the focus point it can be customised for additional functions without losing the original function.

Once customised the right direction actives the AF Target function and then they all return to their default 'left, right, up, down' status. In the Button Function Menu go to the D Pad and set it to Direct Function, then set each to what you would like.
I usually set White Balance to one, Drive Mode to another and MF to the right direction button. It's handy to have quick access just using my right hand to functions I want to use often. Note in the E-M 1MKIII the option for MF was strangely removed, so use one of the other options above.

## CUSTOM MODES / MYSETS

Before we look at settings for shooting Glowing Shrooms a word about Custom Modes and My Sets. Depending on your camera they may be My Sets or CM's and they do the same thing, saving a group of settings for use in particular situations for quick recall.

The advantage is obviously quick recall, and any settings you change will return back to the original saved set once you switch off and on again. It removes the chance of for instance setting a high ISO only to find you used it again unnecessarily on your next session.

This is not a guide on setting up Custom Modes, I covered it in the OM-1 Guide but the principles are the same. I set up the basics for each CM depending on the genre or situation and set up Custom Buttons too.

When setting buttons I have a master set which I set first and then only change them for each Custom Mode if I really need to, one thing to avoid is making things too complicated or you just end up confusing yourself.


Above are a few suggestions to think about. My Custom Modes on the OM-1 are different to this and very similar to how I had them set on the E-M1 MKIII. I have a General Landscapes CM, a General Manual Mode CM with Live ND mapped to AEL because Live ND is only available in M or S, and a Wildlife CM I use when the opportunity arises with high shutter speed saved, Auto ISO and SH2 drive mode set.

I also have a Live Time CM, which may sound odd at first. Olympus made Live Time even easer to access when Bulb was added to the Mode Dial along with Manual, so using it is just a case of setting B and using the front wheel to set Live Time. In most cases when I use Live Time I just set B, but there are times when I do not want noise reduction enabled. Setting a long exposure of a few minutes at sunset means time is precious if I want to get a few shots so I'd rather deal with noise in post processing. As I use Live Time much more than I use macro settings (just Autumn) I have a CM saved with Live Time and noise switched off. I can switch easily between the two knowing I'm not going to forget to check if noise is on or off.

This means I don't have any more space for an additional Macro CM, but the standard APSM setting on the Mode Dial I rarely use because I have all I need saved on Custom Modes. This means I can set things up how I want for the session in hand, knowing that any changes to buttons etc will be reflected across all the APSM modes. But for most situations I am using a Custom Mode, so as long as you are aware any changes you make in APSM will be global across each, you can actually expand your saved settings because the camera remember settings set in APSM.

For example, I already said I save Live ND (one available in M or S) to the AEL button (a button I have little use for) in Manual Mode and have this saved along with other settings as a Custom Mode. I generally shoot landscapes in Aperture Priority (never let anyone tell you a 'proper' photographer uses M because it's rubbish, there's little difference), but when I want to use Live ND I just swap to my Custom Mode which was save as M.

Now on the Mode Dial I have little use for APSM so for shooting Macro I swap to M and then have AEL set to Magnify (I explain why below). AEL is now set to Magnify across A, P, S and M and also B. But as the only mode I use is B it doesn't matter at all.

# MYSETS

Mysets are still current on E-M5's and they are a little different in that there is no specific location they can saved to on the Mode Dial. And they are a little more complicated to set up. First set your settings and then save them as a Myset in Shooting *Menu 1 > Reset/Myset.*

Set each of the 4 available as required, but don't select *Reset* for obvious reasons.
Next you have to tell the camera how to access them in *Custom Menu > Button/Dial/Lever > Mode Dial Function*.
Select the Myset and save it on the Mode you want to use to access it. The Scene Mode and Collage Mode are also available, you may want to preserve Scene Mode but who the Collage Mode is aimed at I have no idea.

Do keep any Mysets you have saved to the relevant Mode, for instance don't save an Aperture Priority Myset on Shutter Priority, otherwise you could get conflict. Changing any settings in a mode that isn't saved as a Myset will still reflect across others PASM modes so be aware of it.

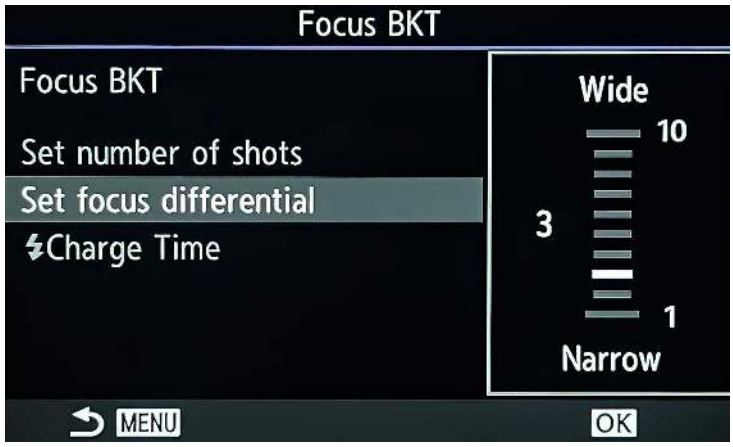
# BUTTONS & SETTINGS

We can set up a few buttons and settings ready for the session and to make things a little easier. You can also save this as a Custom Mode or a Myset if you wish. I won't list the menu positions because they have changed across different camera bodies but the naming remains the same.

RAW - Make sure you have RAW set for the image quality, we need the Raw files for processing, and set the Aperture to f2.8.

FOCUS PEAKING - Set Focus Peaking on to highlight edges when manually focusing. Set the colour you prefer, I prefer white, set Highlight Intensity to Normal, and leave Image Brightness Adj off. Then in MF Assist set Magnify to ON. When manually focusing the view will zoom in to enable detailed inspection.

FOCUS BKT - Set Focus Bracketing. These are the OM-1 screens and the settings are the same. Set it to 10 shots and set the Focus Differential to 1. These are just basic and you'll change them for each situation.

Next we can set some buttons which will keep very simple. The actual menu location is different again but the name is similar Button Function (*E-M5 Custom Menu>B Button Dial Lever> E-M1 MKIII Custom Menu >B1>Button Function OM-1 Cog>1.Operations>Button Settings*)

Custom Buttons example screen for the OM-1

The buttons you choose to customise depend on what Custom Modes you decide to set, and your camera body, so below I list the buttons I have set on the OM-1 and they can be set on other Olympus bodies too. If a button is listed as *(this CM only)* I applied this just to this Custom Mode for Macro set. *(Global)* means I have it set as default across all modes and Custom Menus and *(Suggested)* means these are options. I am presuming you will use these as a CM or a MySet.

| BUTTON | FUNCTION |
|---|---|
| | |
| **RECORD** (this CM only) | Focus BKT |
| **AEL** (this CM only) | Magnify |
| **FRONT BODY TOP** (Global) | Night LV |
| **FRONT BODY BOTTOM** (Global) | Peaking |
| **LEVER 2** (Suggested) | Manual Focus |
| **D PAD RIGHT >** (Suggested) | Manual Focus |

Remember I just set it up on Manual Mode because I have used all my Custom Modes. I changed the Record button to Focus BKT which removes the default Hand Held Hi-Res function. This is a function I use often, but as I use it for landscapes and I have a CM saved already for this it doesn't matter to me that I change the default *PASM* settings. In other words I will set up settings on PASM for given situations temporarily, knowing all my main settings are saved and protected on Custom Modes.

These are fairly simple and all I need to help me when shooting Macro. I'll go though them to explain a little more.

## FOCUS BKT

Applying it to a button gives quick access to switch it on and off, and pressing/holding the button down reveals the settings menu for Focus Bracketing. Of course you could instead save this to My Menu instead for quick access. On the OM-1 I've changed the default Hi Res setting but tat doesn't matter because its still saved as default in my Custom Modes.

## MAGNIFY

Magnify as the name suggest allows me to zoom into the scene to inspect details. Focus Peaking does the same but the important difference is I can do it without touching the focus ring after I've painstakingly set focus.

## NIGHT LV

(Boost on other bodies). This boosts contrast which can be handy to for better visibility in lower light. I have this set as a Global default button.

## PEAKING

A Global default button. This is very useful to separate peaking from the manual focus. When manually focussing you should have set the camera to zoom into the view which is needed, but sometimes it can be annoying too.

If I'm shooting a landscape and just want to view the whole scene and what is in focus without zooming in I can just press the Peaking button.

Also, press Peaking first and then manually focus and the view will stay as the normal view. Activating Peaking first disables the zooming in feature which can be really handy. Note the E-M5 has only one button on the front so I would ignore Boost and give Peaking Priority.

## MANUAL FOCUS

Optional, as already discussed above. A way to focus to Manual is needed, and you can use the Lever if there is one, the D Pad, or indeed just the Super Control Panel.

# CONCLUSION

Those are all the settings you need. Once you set up the basics, set up Focus Bracketing, set a few buttons and then save as a Custom Mode if desired, then you're all set to start shooting.

Follow the guide in the Shooting Technique and the Processing Technique and you're sure to get some great images.

Happy Shrooming.

Phil Norton is an experience professional photographer who has been using Olympus, Canon and Nikon cameras since the original Analogue OM-1 and the Digital m43 E-M10.

He has built up quite a reputation for his images and knowledge of the Olympus system and runs workshops across the UK.

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