Camera Trap Photography Made Easy

By Will Burrard-Lucas

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Part One

INTRODUCTION

What is a Camera Trap?

A camera trap is a setup that automatically takes a photograph or records a video clip when an animal passes in front of it. At its core, a camera trap consists of three main components:

- A sensor to detect the animal,
- A camera to capture the image or video, and
- A light source to illuminate the scene in low-light or nighttime conditions.

By leaving a camera trap in position for long periods, it becomes possible to photograph animals even if they pass by only occasionally. This makes camera trapping an ideal technique for documenting rare, shy, or elusive species that are difficult to encounter in person.

Camera traps are also especially valuable for nocturnal wildlife. At night, the success of a photograph depends almost entirely on having effective lighting. Creating natural-looking night lighting often requires multiple lights placed carefully around the scene—something that must be done before the animal arrives. A camera trap allows the photographer to take their time refining the composition, focus, and lighting setup, then leave the equipment in place, ready to trigger the moment the animal appears.

Trail Camera vs Camtraptions Camera Trap

A typical trail camera and the resulting photograph.

The most common type of camera trap is the trail camera—a compact, self-contained unit widely used by scientists and conservationists to monitor wildlife populations. Trail cameras are invaluable for collecting ecological data, studying animal behaviour, and documenting species presence, often over long periods with minimal human disturbance.

However, the image quality produced by trail cameras is generally very poor. These devices typically use small, low-cost imaging sensors paired with inexpensive lenses, which limits their ability to capture fine detail, dynamic range, or pleasing colour. Their built-in light sources create further limitations: because the flash is positioned directly above the lens, images often suffer from red-eye, harsh or unnatural shadows, and severe flash fall-off, where the foreground is overexposed while the background fades quickly into darkness.

In contrast, a high-quality camera trap uses a dedicated camera, interchangeable lenses, and crafted external lighting. This setup allows for dramatically better image quality and the ability to create lighting and compositions comparable to professional wildlife photography.

To achieve high-quality camera trap images, you need to use a DSLR or mirrorless camera—just like you would for regular photography—paired with one or more off-camera lights.

Part Two

EQUIPMENT

The Sensor

The sensor is the heart of a camera trap setup—the component that detects the animal and triggers the camera. The most reliable, flexible, and easy-to-use option for camera trapping is a Passive Infrared (PIR) motion sensor. This is the same type of sensor found in trail cameras and in common security devices.

PIR sensors offer several key advantages:

- Field-proven reliability: They are used in many demanding real-world applications.
- Ease of setup: Simply point the sensor toward the zone where you expect the animal to appear. When motion is detected within the field of view, the camera is triggered.
- Compact and unobtrusive: With a small footprint and no separate emitter unit, PIR sensors are easy to position discreetly.
- Low power consumption: PIR sensors are extremely efficient and can operate for months on a single set of batteries, making them ideal for long-term deployments.

I designed the first Camtraptions PIR Sensor in 2012 with the aim of making it as versatile and user-friendly as possible. We are now on Version 4, refined through years of development and informed by the cumulative experience of photographers and filmmakers using our sensors in every environment on earth. The latest model features dual passive infrared sensors, adjustable flaps for shaping the field of view, and an intuitive menu-based interface. It can be connected to the camera either via cable or wirelessly.

The Camera

Camtraptions Sensors can be used to trigger a wide variety of cameras. If you have an old camera lying around – perhaps one that you have now upgraded from – then I would recommend starting with that camera. However, if you find yourself needing to buy a camera, here are the key characteristics that make a camera well suited for use in a camera trap:

External Triggering Port

The camera must have a shutter release socket so an external device can trigger it. Fortunately, most entry-level DSLR and mirrorless cameras include this basic feature, but it is always worth confirming. A useful rule of thumb is this: If the camera supports a wired electronic remote release, it can almost certainly be triggered by a camera trap sensor.

External Flash Compatibility

If you intend to use flash to photograph animals in lowlight, then the camera will need the ability to trigger an external flash. This means it needs to have a flash hot shoe or a flash PC sync socket. Most DSLR and mirrorless interchangeable lens cameras have this feature, but many compact cameras do not.

Manual Control

If the camera supports the two functions above then it is likely that it will also allow manual exposure control. Essentially, this means that you will be able to control aperture, shutter-speed and ISO manually (See section: Camera Settings). It is also important that the lens allows manual focus and that the focus does not reset when the camera wakes from sleep (only usually a problem with compact cameras).

Wake Up Speed

To preserve battery life, a camera must enter sleep mode between triggers. However, some cameras take significantly longer than others to wake up, increasing the risk that the animal may have already moved out of frame by the time the photo is taken. To solve this, the PIR v4 Sensor can use its dual-sensor system: the wide sensor is used to wake the camera as an animal approaches, while the far sensor triggers the shutter at the optimal moment.

Battery Life

If you can change batteries regularly, it is not essential that your choice of camera boasts good battery life, but for longer-term deployments it is a consideration. In general, DSLR cameras have better battery life than mirrorless cameras. For many cameras, it is possible to get an extension battery pack to extend the life.

Weather Sealing

Camera traps are left outside for long periods and often exposed to damp, dust, humidity, extreme temperature fluctuations and more. A camera with decent weather sealing is likely to be more robust and durable in these circumstances. An effective weather-proof camera housing can also help protect your camera.

Cost

Cost is always an important factor. In my view, if you can set up two capable camera traps for the same price as one top-of-the-range setup, the two-camera option is usually the better investment. A second camera trap not only doubles your coverage but also doubles your chances of capturing the image you're after.

When choosing a camera, make sure you're not paying for features you won't use. The clearest example is autofocus performance and high frame rates. In a camera trap, you will be shooting in manual focus, so there is no benefit in paying a premium for cutting-edge autofocus technology. You're far better off choosing a slightly slower or simpler camera if it offers a higher-quality imaging sensor for the same price.

Image Quality

Generally, full-frame cameras produce better images than crop-sensor cameras but they are more expensive, as are the lenses for full-frame systems. The latest models are also much more expensive than discontinued models. You can still get excellent image quality from a camera that is a generation or two out of date and it will come at a great discount. My preference is therefore to source good-condition second-hand cameras for my camera traps. For night-time photos, when I am using high-ISOs, I prefer to use a full-frame camera when I can. However, note that your lighting will have a much greater impact on the success of a night time photo than the image sensor and so make sure you have enough budget to source at least two or three flashes for your camera trap.

The Lens

Usually I will work in the focal range between 24mm to 50mm. Wider focal lengths mean a more intimate perspective, but you have to have the camera closer to the subject and this may spook more sensitive creatures. Therefore I more often go with a focal length of around 35mm to 40mm. When camera trapping, it can be hard to define the precise distance between the subject and the camera and so it is usually necessary to have enough depth of field to ensure the subject is sharp. This means that it is usually not practical to have a very wide aperture and so you can save money by getting slower lenses with a maximum aperture of f/5.6 or f/4 rather than f/2.8 or f/2.

The Flashes

Lighting plays a crucial role in camera trap photography, particularly at night or in very low light. Because the photographer cannot be present when the animal arrives, the lighting must already be positioned, balanced, and ready to fire. In most cases, this means using off-camera flashes, and many camera trappers find that using two or three flashes per setup helps create more natural and dimensional lighting (See section: Basic Lighting at Night).

In almost all camera trap setups, the flash is triggered by the camera itself, either through the hot shoe or a PC-sync output. The sequence is typically: sensor detects the animal → camera is triggered → camera triggers the flash. This sequence is critical because the flash must fire at the exact moment the shutter is open.

In this section, we will look at the Camtraptions range of flashes, which have been purpose-built and refined specifically for camera trap photography. Several models are available, each with different capabilities, allowing you to choose the flash or combination of flashes best suited to your creative style, budget, and deployment length.

Shared Features of Camtraptions Flashes

Although the models differ in certain areas, all Camtraptions flashes share a common design philosophy: to be reliable, quiet, and practical for unattended field use. All models offer the following features:

- Wide camera compatibility – Works with any camera that provides a standard hot shoe or PC-sync output.
- Instant readiness – Always ready to fire as soon as a trigger signal is received, ensuring dependable operation in the field.
- Extended power options – An external 6V power input allows the use of larger batteries to significantly extend standby time during long deployments.
- Flexible triggering options – Can be triggered wirelessly using Camtraptions Flash Triggers or via a wired connection through the 3.5 mm sync socket on the side of the flash.
- Robust construction – Durable housings and strong metal hot-shoe mounts withstand regular field setup and servicing.

Flash with External Power and Wired Connection

- Quiet performance – Minimal operational noise, with no capacitor whine or buzzing, helping keep setups unobtrusive.
- Automatic setting recall – The last-used settings are retained after battery changes, making maintenance far easier.
- Thermal protection – Built-in safeguards reduce firing speed if too many high-power flashes occur in quick succession.
- Articulating flash head – A rotating and tilting head with built-in diffuser and reflector panel for shaping and directing light.
- Familiar speedlight form factor – Easy-to-use, intuitive controls and a layout similar to a standard on-camera flash, making setup and adjustment straightforward.

Flash with Camtraptions Wireless Receiver

Two of the models—the Z Pro and Z2—feature a zooming flash head, offering additional control over beam spread. The F1 has a fixed flash head for simplicity and economy while retaining all the core advantages listed above.

A Wired Flash Connection

The Camtraptions Z Pro Flash

The Camtraptions Z Pro is the modern successor to what the Nikon SB-28 represented for camera trappers for many years. It is a flash with even better battery economy and the ability to sleep for long periods before waking instantly to fire.

Unlike the older SB-28 units, the Z Pro is newly manufactured, reliable, and designed specifically for camera trappers—no second-hand hunting or ageing parts.

The Z Pro is designed for situations where maximum battery economy is essential. It features an ultra-efficient sleep mode that allows it to run for extended periods on internal AA batteries. Because it uses this sleep mode, the Z Pro requires a wake signal shortly before the flash fires.

For Canon and Nikon cameras, this is handled automatically when using the Camtraptions Wireless Flash Triggers, as these systems pass both the wake and trigger signals through the hot shoe.

Z Pro Hot Shoe Contacts

For other camera brands that do not send a wake signal via the hot shoe (such as Sony, Fujifilm, or Panasonic), the PIR v4 Motion Sensor can provide the required flash wake pulse before the camera is triggered.

The Z Pro is therefore well suited to long-term deployments, remote camera traps, and situations where servicing opportunities are limited.

The Camtraptions Z2 and F1

F1/Z2 Hot Shoe Contacts

The Camtraptions Z2 and F1 flashes offer a simpler, universally compatible alternative. These flashes do not require a wake signal and are always ready to fire instantly as soon as they receive a standard trigger or flash-sync signal. This makes them compatible with every camera system that can fire a flash, with no special requirements.

Camtraptions F1 Flash

Both models share the same robust build quality, quiet operation, and external power options as the Z Pro. The Z2 includes a zooming flash head, whereas the F1 maintains a fixed head for an even more streamlined design and lower cost. While neither model has the Z Pro's deep sleep mode—and therefore they do not run as long on internal AA batteries—they still offer several days of reliable standby time, which can be extended significantly with external batteries.

External Power

Camtraptions Flash with External Battery

To extend battery life—and in particular to increase the number of flashes a unit can produce on a single charge—we added a low-voltage DC power socket to the side of the flash. We also provide external rechargeable batteries in two sizes: a 5Ah battery pack and a 10Ah battery.

Wired or Wireless?

Some people prefer a wired connection from the camera to their flashes, while others prefer a wireless connection. The Camtraptions v4 Sensor and Camtraptions Flashes work equally well in either scenario. Below are the main advantages and disadvantages of each setup.

Advantages of Wired Setups

- Better battery economy as a receiver does not need to remain on standby while waiting for the wireless signal
- Simpler setup with fewer electronic devices
- Fastest method to transmit a shoot signal from a sensor to the camera (i.e. potentially better for fast-moving subjects)

Disadvantages of Wired Setups

- Wires are cumbersome, hard to keep out of the photograph and out of the way of animals
- It therefore takes longer to set up than a wireless system
- Wires may be pulled out of sockets inadvertently so wires can be less reliable
- Rodents and other animals often like to chew wires
- For long distance links (i.e. more than 5m), long enough wires are heavy and the cost adds up
- It is necessary to add holes to camera housings etc for cables, which may be time-consuming and compromise weather-proofing

Advantages of Wireless Setups

- Quicker to set up
- More reliable with less risk of wires being pulled or damaged
- Easier to manage large numbers of flashes (one transmitter can trigger an unlimited number of flashes)
- No wires to hide from the final picture or route around animal paths

Disadvantages of Wireless Setups

- Wireless receivers increase overall battery consumption and add an additional sets of batteries to be changed when servicing traps
- To avoid interference between camera traps, you cannot set up more wireless camera traps in a given area than you have available wireless channels. One camera trap needs to utilise two channels when you have a wireless sensor and wireless flashes on separate channels
- Wireless signal from the sensor to the camera may be a fraction of a second slower than a wired connection depending on the settings

When setting up a wireless sensor and wireless flashes using the Camtraptions system, the sensor and the flashes must operate on different channels. For example, the sensor might trigger the camera on Channel 1. The camera should then have a separate wireless transmitter attached to its hot shoe, set to Channel 2, with all flash receivers also set to Channel 2.

This is necessary because there is always a short delay between the camera receiving the shoot signal and the shutter actually opening—and this delay varies between camera models. Flashes, however, fire almost instantly when they receive the trigger signal. If the flashes were triggered directly by the sensor on Channel 1, they would fire before the shutter had opened. By placing the flashes on a different channel, the camera fires them at the precise moment the shutter is open, ensuring correct synchronisation.

The Camtraptions v4 Sensor can either trigger a camera via a wired connection or wirelessly, regardless of the camera brand.

For wireless flashes, our Camtraptions Wireless Triggers work flawlessly with Canon and Nikon cameras and have been optimised for battery-life. They can trigger all Camtraptions Flashes and can be powered with external battery packs for longer standby time.

For non-Canon and non-Nikon cameras in wireless setups, Camtraptions Wireless Triggers can still be used, but it is advisable to pair them with the PIR v4. The PIR v4 can trigger the camera and send wireless wake commands to flashes on a separate channel.

For wired setups we recommend using Camtraptions Flashes. These can be connected to any camera with a standard hot shoe via a universal hot shoe adapter. If using the Z Pro flash, you will also need to use a Wired Flash Adapter to ensure wake signals are passed to the flash.

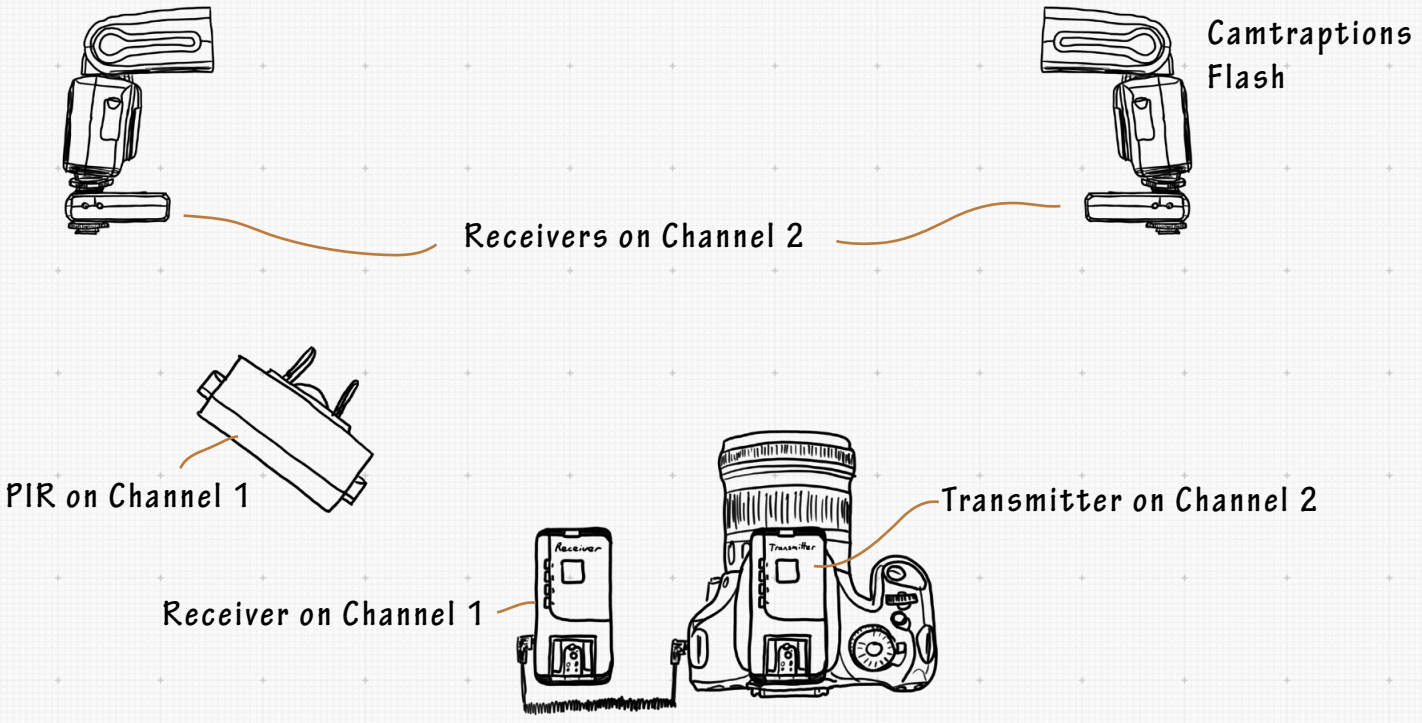
There are a range of flash cables of various lengths so you can place flashes as far away from the camera as necessary. You will need to use a flash cable splitter in order to connect additional flashes to the camera.

We also offer a waterproof cabling system with sealed connectors for a more robust and weather-resistant setup. These cables can carry both trigger signals and power, allowing you to position external batteries wherever is most convenient.

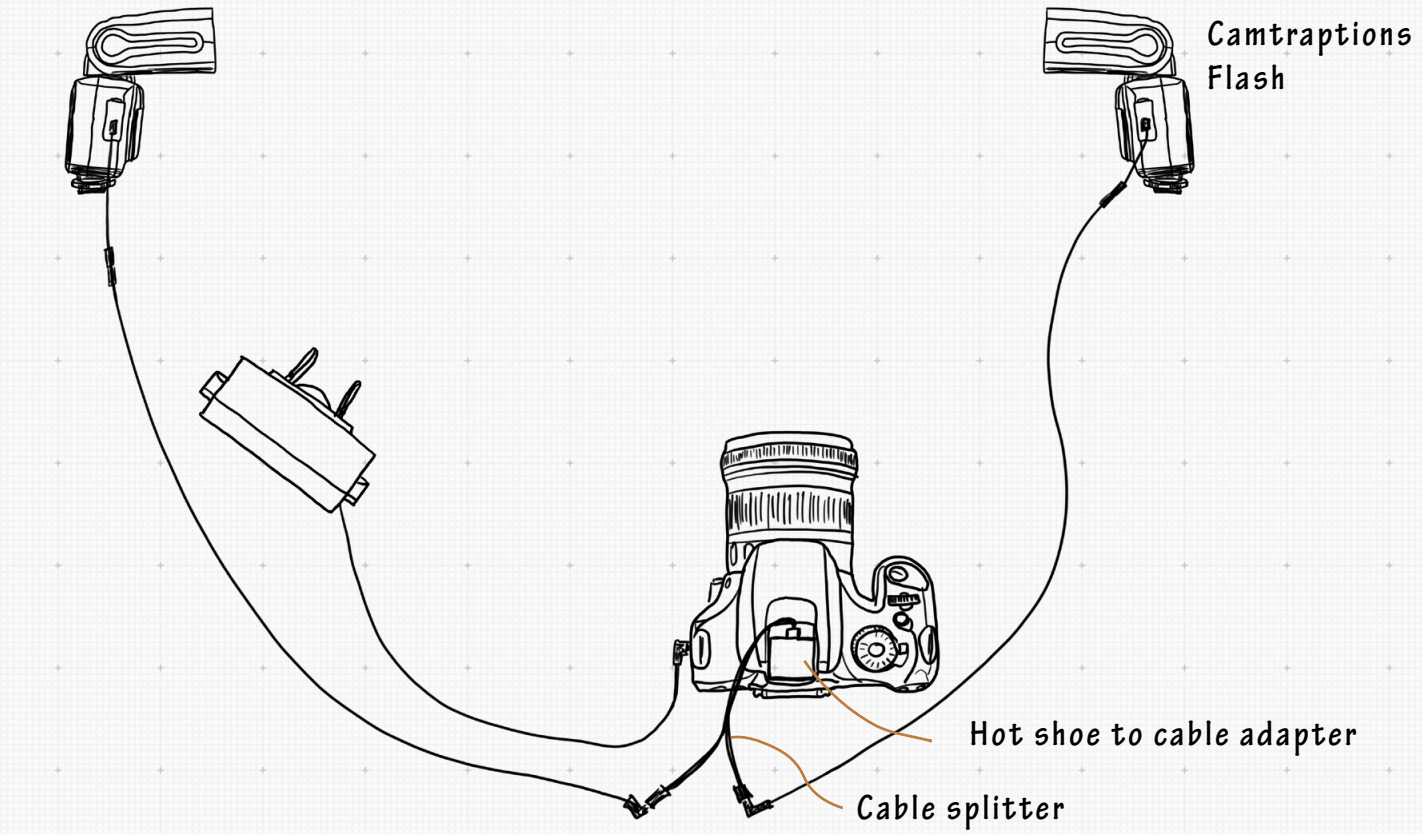
Flash Cable Hot Shoe Adapter

Flash Cable Connection

Wireless Setup



Wired Setup



Powering Your Equipment

In the past, powering camera trap equipment for prolonged periods in the field has been one of the main challenges of camera trap photography. Traditional camera equipment was never optimised for an application where it needs to remain on standby for days or weeks at a time and be ready to fire at a moment's notice. Below, I have broken down the key components of a camera trap along with tips for increasing the standby time.

Sensor

Camtraptions Motion Sensors have been designed with standby time in mind.

The v3 is powered by six AA batteries and will last several months on a single set of batteries. An LED indicator on the front of the sensor means the battery level can be checked easily simply by turning the sensor off and on again and then counting the number of flashes.

The PIR v4 is powered by an NP-F lithium-ion battery and can operate for several months on a single charge. The current battery voltage can be accessed from the home screen for quick checks in the field.

PIR v3 Sensor powered by 6 AA batteries

PIR v4 Sensor powered by an NP-F battery

Camera

The camera should be set to sleep in between triggers. The time interval between the last photograph and entering sleep mode can usually be set via the menu and the minimum setting should be selected so that the camera spends as much time in sleep mode as possible.

Mirrorless cameras often consume more power than a DSLR due to the picture displayed in the electronic viewfinder (EVF) or on the screen. The EVF should be selected over the screen as it consumes less power. The minimum screen brightness should also be set. If possible, the screen and EVF should be disabled and features like the automatic playback of an image after it is captured should also be disabled.

In order to extend the battery life of the camera considerably, you can use a large external battery in place of the standard battery.

Adapter to power the Camera, Receiver and Transmitter with an NP-F Battery

Wireless Triggers

Camtraptions Wireless Triggers have been optimised for power consumption and can be powered with external battery packs to provide as much standby time as needed.

We have also developed a compact NP-F battery adapter that can power both the camera and wireless triggers from a single battery (as shown above).

Flashes

Camtraptions flashes operate effectively on four internal AA batteries, and their runtime can be extended by connecting larger external batteries via the power input socket on the side.

Protecting Your Gear

The Camtraptions Sensor is robust and weather-proof. It cannot withstand flooding so it should not be positioned in an area where rising water may submerge it. If you are concerned that an animal may gnaw on it, then we recommend mounting it high up angled downwards so that it is out of the way.

You can either make your own protective housing for your camera or select one of our ready-made options. We produce a weather-proof camera housing that provides protection from damp and humidity. We also have the option of a strong metal shell that provides additional protection from animals that may try to chew your camera. The housing can be secured shut with cable-ties or a padlock. To guard against an animal carrying the camera away, you may wish to tether the housing to a tree.

Various camera housing accessories—such as a heated window to prevent fogging and moisture-absorbing packs to control humidity—are also available.

Weather-proof camera housing

Camera housing inside metal enclosure

Wires connecting sensors or flashes can be an attractive target for animals, so they often need to be buried, protected with plastic sheathing (such as spiral-core conduit), or lifted out of reach. Even with these precautions, I have frequently had rodents gnaw through cables, which is why I generally find that going wireless is the most reliable way to protect the links between the components of a camera trap.

For situations where a wired setup is preferred, our robust waterproof cable system provides the most durable and dependable option.

Waterproof Cable System

For flashes, we offer strong, inexpensive flash housings that are simple, weatherproof, and durable.

Flash Housing

Support

Sensor

I recommend mounting this on a tree bracket, ground spike or mini tripod like our MightyPod.

MightyPod

Camera

Any cheap tripod will do although some may be flimsy. I created the Jungle Mounts system to provide a flexible, cost-effective, sturdy and lockable mounting solution for long-term camera deployments. Jungle Mounts are very versatile and can either be used like a tripod to stand your camera on the ground or in "Tree Pod" configuration to attach equipment to a tree trunk or post.

Jungle Mounts Tripod and Tree Pod

Flashes

You can mount flashes on objects such as trees or posts using our various Jungle Mounts. Alternatively you can use simple light stands for your flashes. To stop the stand from tipping over, weigh down the base with logs or large rocks. You can also support the top of the stand with guy ropes anchored to tent pegs if necessary.

Jungle Mounts Flash Bracket

Part Three

CAMERA & FLASH SETUP

Camera Settings

To conserve battery, check that the menu option that allows the camera to power down automatically after around 30 seconds is active, and turn off automatic image review after each shot.

Shoot in RAW to give yourself more flexibility to adjust the image brightness afterwards.

Focus

Select manual focus and focus on the spot where you want the animal to be in your composition. By pointing the PIR sensor at the same spot, you can ensure the camera is triggered when the animal is in the correct place (See section: Positioning the Sensor). If the lens has image stabilisation/vibration reduction then disable it.

Drive Mode

Mostly I would recommend setting the camera to "one shot" drive mode so the camera will only take one shot whenever an animal is detected. If you would like to take multiple shots every time motion is detected, you can configure the PIR Sensor to send a sequence of shoot signals and leave the camera in one shot mode. Alternatively, you can configure the sensor to send one shoot signal and set the camera to "continuous drive" mode so that a fast burst is fired for the duration of time that the shoot signal is held.

Exposure Mode

Before setting your exposure, you have to decide when the camera is going to be active. You can set the PIR Sensor to only work during the day if your subject is diurnal, only at night if you are photographing a nocturnal creature, or all of the time. If the camera doesn't have to work both day and night then it is quite easy to set the exposure – just set it as you usually would when shooting in the expected lighting conditions. However, if the camera needs to work day and night then you may need to consider the camera settings more carefully.

Below I have outlined the two most common scenarios for setting up a camera to work both day and night. The first is safer, and likely to work well the majority of the time, the second has a higher chance of going wrong, but will often result in more spectacular night time photos when it does work.

Example day time exposure in "M" mode

1) Natural lighting during the day, flashed foreground at night with a black background:

- Manual “M” exposure mode: shutter speed of 1/200s to ensure the subject is frozen. Set the aperture based on your desired depth of field (if in doubt, start with f/8 which gives a good trade-off between depth of field and light)
- Auto ISO so the camera will adjust the ISO to correctly expose the image. You may want to limit the maximum ISO setting to 1600 or 3200 to avoid getting excessive noise at night.
- Flash brightness set manually and is therefore independent of ambient lighting conditions. Flash brightness should be set for the darkest conditions when the camera ISO is at its maximum.

In bright sunlight, your camera will select an ISO of 100 at f/8, 1/200s. At ISO 100, the flashes will fill in shadows but mostly the lighting will be natural.

As it grows darker, the ISO will increase and the flashes will become the dominant light source. At night, only the areas illuminated by the flashes will be exposed while the background will be totally black.

Example night time exposure in “M” mode

Example exposure at dusk in Aperture priority mode

2) Natural lighting during the day, flashed foreground at night with background exposed by ambient light:

- Aperture priority exposure mode: set the aperture based on your desired depth of field (if in doubt, start with f/5.6 to allow enough light in to expose the background in low light)
- Auto ISO so the camera will adjust the ISO to correctly expose the image. You may want to limit the maximum ISO setting to 1600 or 3200 to avoid getting excessive noise at night.
- Flash brightness set manually and is therefore independent of ambient lighting conditions. Flash brightness should be set for the darkest conditions when the camera ISO is at its maximum.

In bright sunlight, the ISO will drop to ISO 100 and the camera will select a fast shutter speed. The flashes will have little impact on the image.

Example of "ghosting" that can occur during a long exposure
(in this case, the moon is too bright)

As it grows darker, the ISO will increase and the shutter speed will get slower. The shutter speed should remain fast enough to freeze motion until the ISO hits its maximum limit. Thereafter the shutter speed will start lengthening as the camera tries to expose the scene correctly.

In complete darkness, the shutter speed will approach the camera's maximum (usually around 30s). This will mean that stars will expose in the sky as well as any scenery illuminated by the moon. The flashes will illuminate the foreground at the start of the exposure. After the flash, the animal is likely to move and any scenery behind the animal might start to expose, resulting in a seemingly transparent animal. To avoid this, you should try to line up a dark or shadowy area behind the subject. However, if there is too much ambient light at twilight or due to a bright moon then it may be impossible to avoid a transparent animal and

Example of a successful long exposure camera trap photo

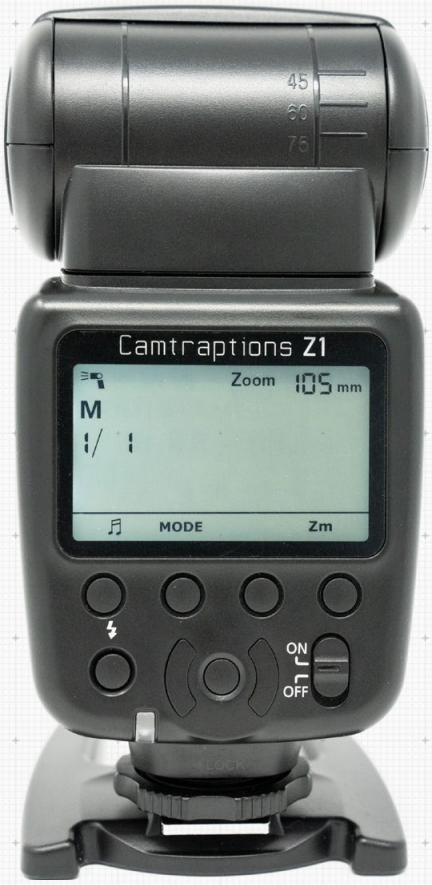
hence this method can result in spoiled shots. When it does work, however, the results can be spectacular.

One other thing to note is that due to the long shutter speeds in this mode, the camera is only likely to capture one image each time the animal passes at night whereas in the Manual setting mode, you could capture several images in quick succession. Some cameras do allow you to limit the shutter speed range (for example, limiting the length to 1 second, or 5 seconds) which might allow you to capture several images of the subject while still exposing ambient light at dusk but not stars or moonlight.

Flash Settings

Often photographers use TTL flash, where the camera automatically sets the flash brightness (and sometimes zoom) based on its light meter reading and the lens focal length. While TTL can work in simple, on-camera situations, it becomes far less practical in camera trapping. The flashes are positioned off-camera, the lighting is more complex, and the camera is left unattended—conditions in which TTL tends to be unreliable and inconsistent, especially when multiple flashes are used.

For these reasons, I always recommend setting flash brightness manually. This gives full control over the lighting, avoids unpredictable exposure changes, and allows you to preview and refine the lighting in real time during test shots. In the next section, I will discuss positioning flashes and setting flash powers in more detail.



Camtraptions Flash manual power setting

Basic Lighting at Night

One of the most powerful applications of camera trapping is to photograph animals at night. I believe this is the best way to photograph nocturnal creatures because no other technique provides the time necessary to set up decent lighting. As I've said before, the lighting is what makes or breaks a night-time picture.

One Flash Setup

Setting up a single flash will produce dark shadows. This sort of dramatic lighting may be desirable in some circumstances, but usually a second flash to fill in some of the shadows is preferable.

If you do just set up one flash then it still should be positioned away from the camera. If too close, you will get unnatural looking shadows, a bright foreground with rapid flash-fall off and possibly eye-shine as well.

A single flash pointing down at the subject, resulting in no detail in the shadows

Two Flash Setup

I recommend setting up a minimum of two flashes per camera trap. One flash will be the primary light source (aka the "Key" light). The second flash will be the other side of the camera and will illuminate the shadows on the other side of the subject (the "Fill" light).

Behind the scenes photo of a 2 flash setup

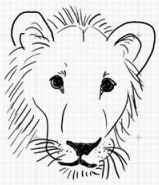
I recommend positioning the key light high up, pointing downwards to simulate more natural lighting. I usually then place the fill light at a similar height to my camera and at least 90 degrees from the plane of the key light if possible (see the diagram on the next page).

I will usually aim for the key light to be at least twice as bright as the fill light because one side of the animal should be darker to add depth. If you make the ratio between the key light and fill light greater, you will have more dramatic lighting but it may start to look less natural.

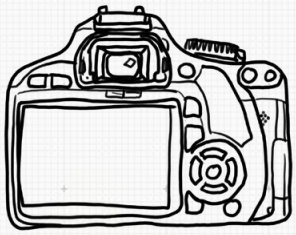
Example photo with 2 flashes: key light on the left of the camera and fill light on the right

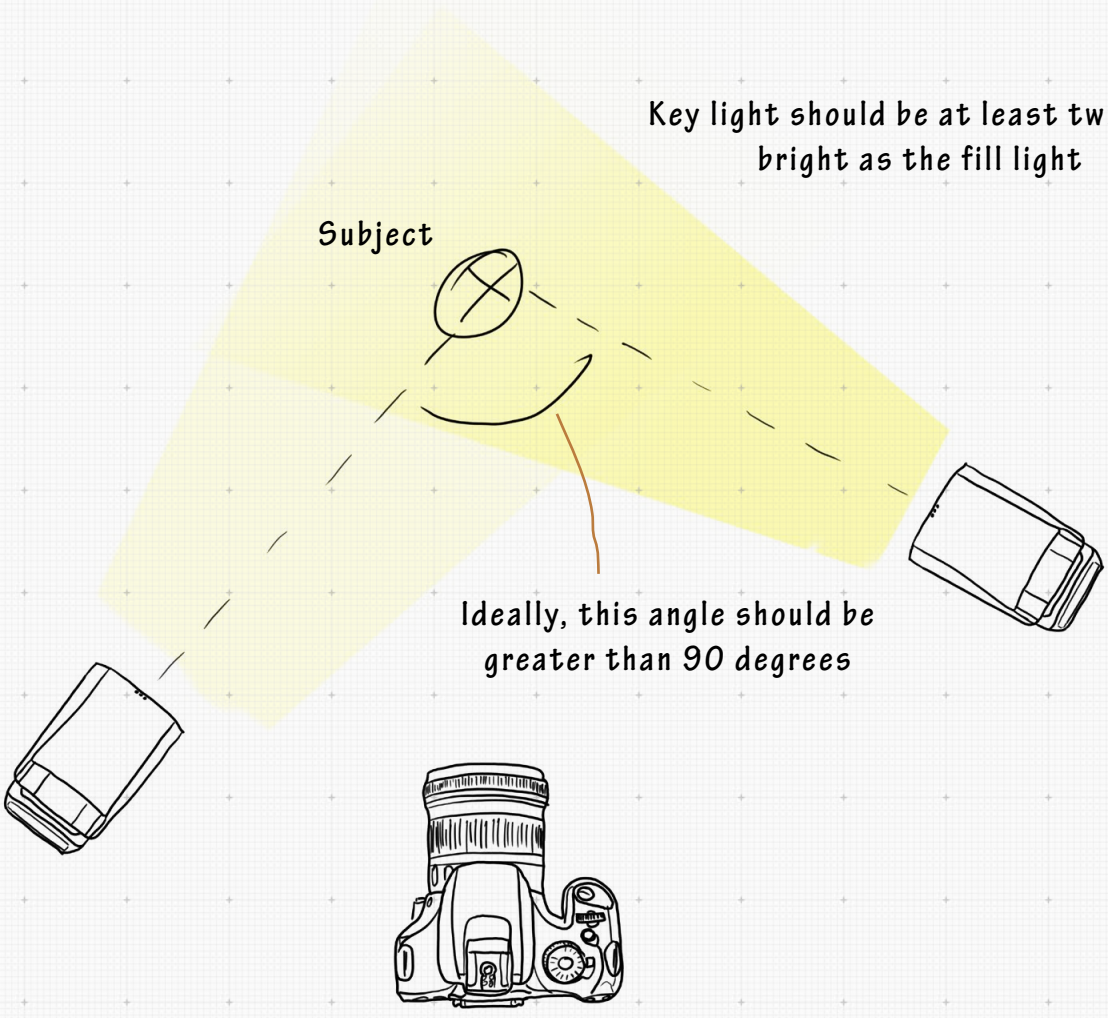
Two Flash Setup

Key light



Fill light





Three Flash Setup

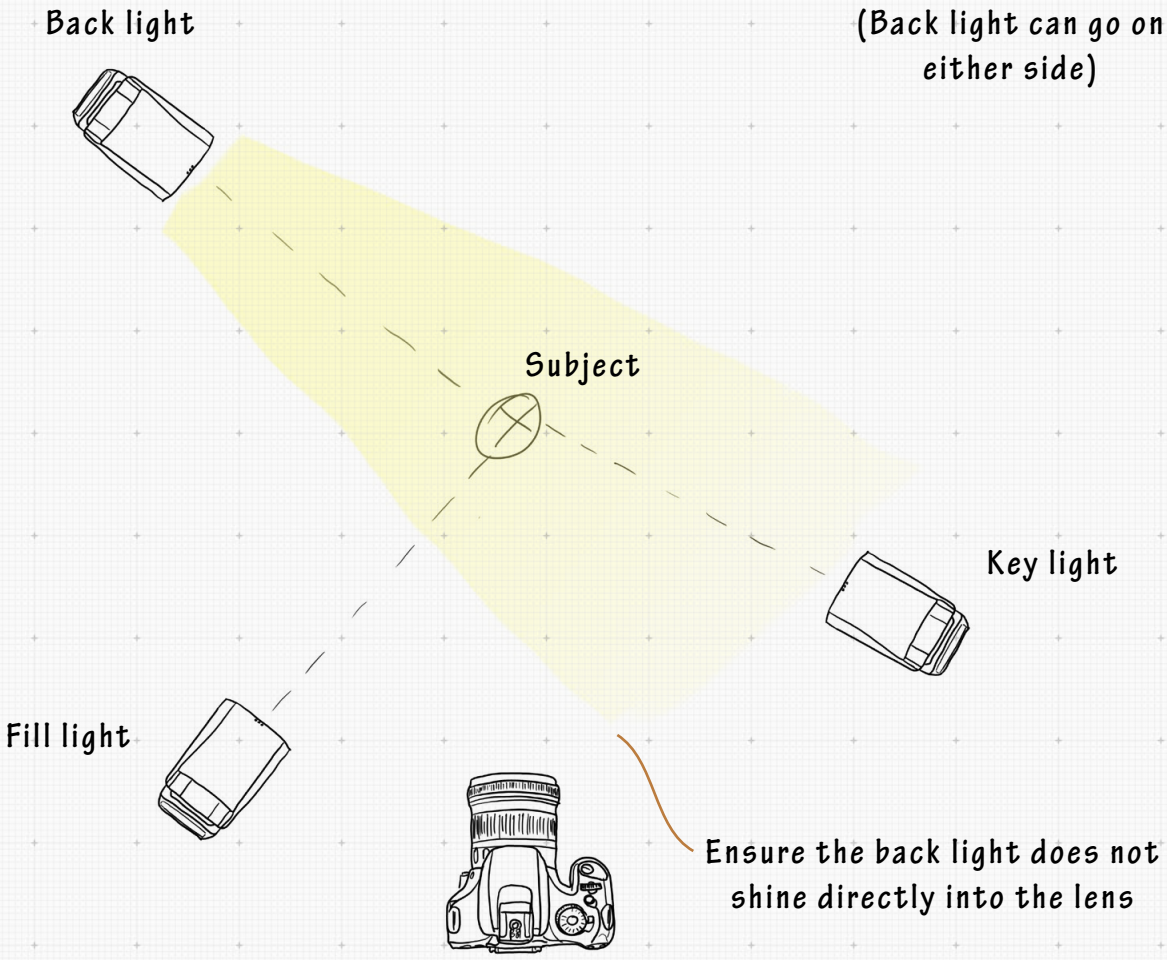
Often I will add a third “back light” as well. This is positioned behind the subject, pointing back towards the camera. It can sometimes be hard to position this light without it appearing in the photo, particularly if you are using a wide-angle lens. You may need to add a “snoot” to the back light so that it doesn’t shine light directly into the lens and cause lens flare.

The back light achieves two functions: firstly it counteracts the flash fall off whereby you have a bright foreground fading to black. The back light creates more of a puddle of light rather than a linear gradient which I find much more attractive.

The second function of the back light is to separate the subject from the background (when the background is exposed by ambient light) by creating a slightly brighter rim around the edge of the subject.

A photo where I overdid the back light slightly, you can clearly see the bright rim light on the back of the leopard

Three Flash Setup



Four+ Flashes

Sometimes you may want to add additional flashes to illuminate parts of the background or scenery. It can be hard to make this look natural so I do not recommend this if you are just starting out.

Setting the Flash Power

Once you start using two or more flashes, it can be hard to visualise the lighting and know how powerful to make each flash.

The best way to set flashes is to do so in darkness so you can preview the lighting. When possible, I will usually set up my traps in daylight and then return after sunset just to tweak the flash power.

I used three flashes on the leopard and a fourth flash to illuminate the plants in the background

As mentioned previously, I manually set the flash brightness using the “M” mode (i.e. not TTL).

I will set the brightness of each flash one at a time before turning them all on to preview the overall effect. I start with the key light and adjust the brightness until the subject is correctly exposed. Remember less light is sometimes more and you don’t have to expose the subject so that the histogram is bang in the middle – it is ok for it to be darker, you do after-all want to get across a sense of it being night.

Once the key light is set, I will turn it off and set the fill light. As mentioned above, I make this at least half as bright as the key light. This doesn’t necessarily mean half the power setting as the brightness of the flash also depends on its distance from the subject; if you double the distance from the flash to the subject, the flash brightness would be quartered (this is known as the inverse square law).

After the Key and Fill light have been set, I will then set the back light in a similar way. Finally, I will turn on all of the flashes and take some test shots with myself standing in for the animal.

Inverse-square Law

Remember that the apparent brightness of a flash is dependent on the power setting of the flash and the distance from the flash to the subject. The inverse-square law dictates that if you double the distance to the subject you would need to quadruple the flash power for the brightness to remain the same. Thus you can make fine adjustments to the lighting just by moving the flashes a bit closer or further away.

A snoot on the main flash forms a "puddle" of light around the subject

Modifiers

Many photographers working with strobes in studios will use light modifiers such as diffusers and gels. These undoubtedly help produce better lighting but it is often not practical to use them in the wild. A big diffuser, for example, is likely to spook wildlife or get blown over.

Gels can be used to change the colour temperature of the light. For example, they can be used to simulate bluish moonlight, but this is an advanced technique which is easy to get wrong and so I don't recommend using gels if you are just starting out.

What I do use are snoots to shape the light. Simple tin foil and duct tape works well for this. I regularly use a foil snoot to stop the key light from illuminating too much of the foreground. A bright foreground in front of the animal is a distraction that draws the eye away from the subject.

Part Four

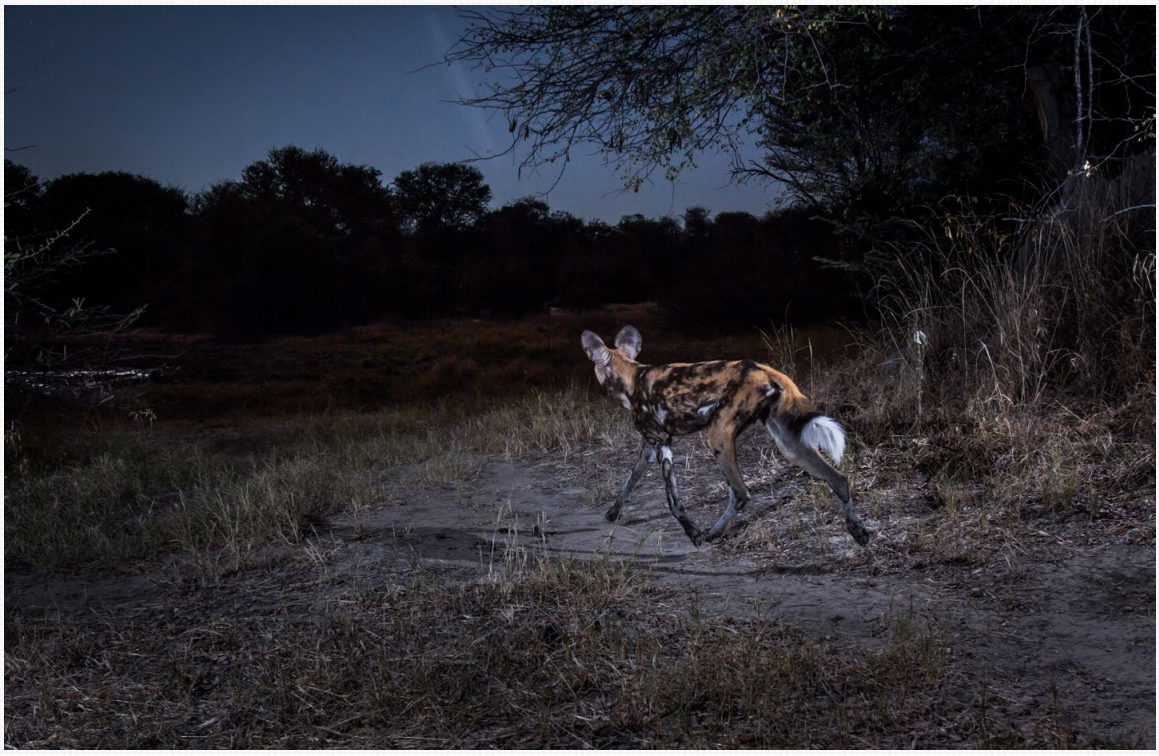
FIELD CRAFT

Finding Places for Camera Traps

Mastering the technical challenge of setting up a high-quality camera trap is half the battle. Finding the most productive places to put your camera traps is the other half. Here, there is no substitute for research and perseverance.

Understanding the behaviour of your subject is key. If you are working locally then you can observe a species over a period of time to learn its habits. If you are travelling to a new location then try to collaborate with a guide, researcher or conservationist who already understands your subject and can help you find places for your camera traps.

When trying to locate wildlife, inexpensive trail cameras can really come in to their own. You can set up quite a few trail cameras for the same price as a DSLR or mirrorless camera trap and use them to locate the most productive spots.



A carnivore researcher helped me find this path that African wild dogs were using to get to a waterhole

So what sort of areas should you look for? I find animal trails are the most productive settings, particularly if you can find one that traverses challenging terrain or cuts through thick undergrowth. I often work in Africa and any animal trail that leads to water during the dry season is a good bet.

For species that scent mark, finding a rock or tree stump that they mark regularly is like finding a goldmine. Some species will visit the same spot on almost a daily basis!

I found this leopard regularly passed by to mark this plant

Improving the Odds

After identifying camera trap locations, there are then two obvious things you can do to increase your chances of success:

1. The more cameras you can deploy, the better your chances of success
2. The longer you can leave them running, the better your chances of success (more chances for the animal to pass and more time for the animal to get used to the camera)

Many species will be very sensitive to disturbances in their environment. Don't underestimate how far a little bit of camouflage will go towards increasing the success rate of your camera trapping. You can use vegetation or camouflage netting to breakup the outline of your equipment.

Your human scent may also be off-putting for animals. Once you have set up a camera trap, the longer you leave it running, the more time you give for your scent to dissipate. When checking camera traps, be mindful of what you are touching and try not to hang around longer than necessary so that you keep disturbance to a minimum.

A well-camouflaged camera trap at a waterhole

Positioning the Sensor

Where you position your sensor in relation to the camera will depend on the scenario. I have included my advice for the three most common scenarios below.

Scenario 1: Animal Trail

This is the easiest scenario as the animal's movement is restricted to one-dimension (i.e. the trail). I look for bottlenecks caused by obstacles or vegetation that increase the likelihood of an animal using the trail.

First I always start with composition and place my camera accordingly.

I generally like to have my subject approaching the camera rather than side-on.

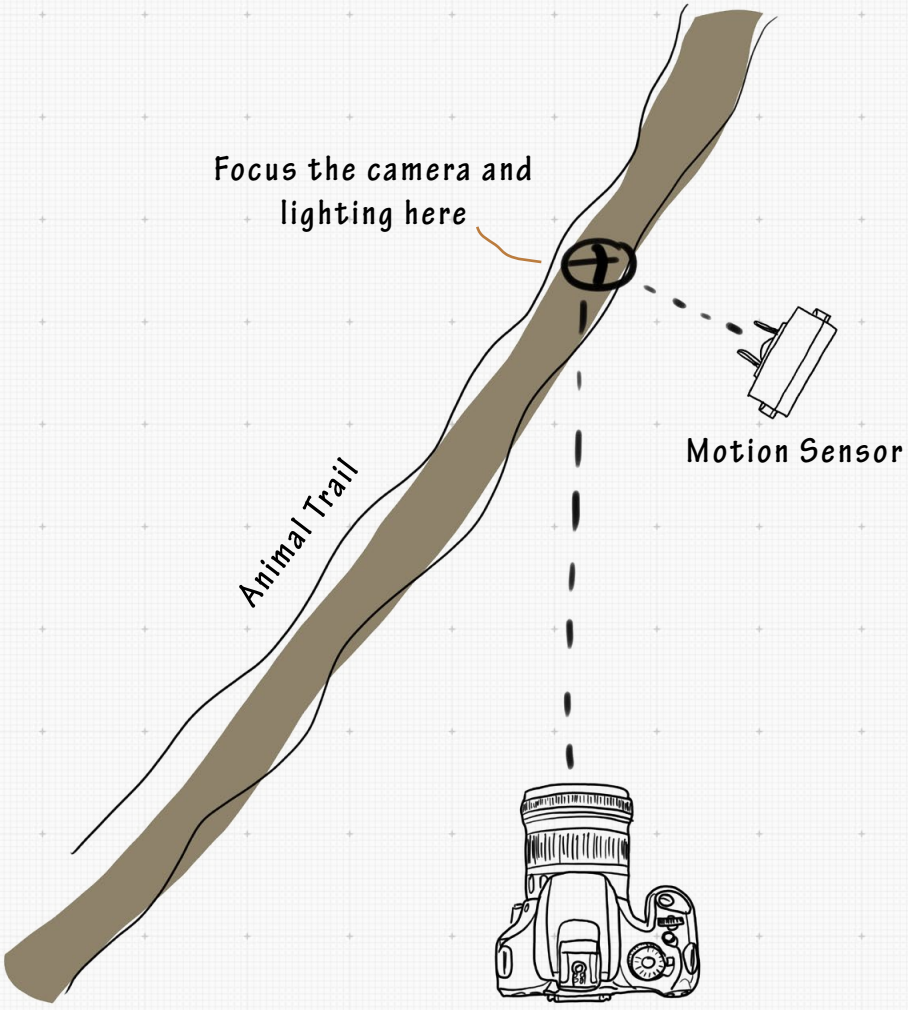
The setup for the photo on the previous page. The sensor is hidden and circled red.

This means placing the camera next to an animal trail pointing down it. However, this places the camera in front of the animal and may cause it to retreat or deviate from the path. Therefore a trade-off needs to be made between getting the best angle and minimising disturbance. How far you can go will depend on the species and the environment.

Once the camera is placed, I will usually put an object such as my cap temporarily on the spot where I want the animal to be when the camera triggers. This gives me a point to focus on and to light with my flashes.

I will set the sensor up perpendicular to the animal trail so it only "sees" a narrow strip of the trail. This allows me to define the point on the trail where the animal will be when the camera triggers.

Animal Trail Example Setup



Scenario 2: Point of Interest

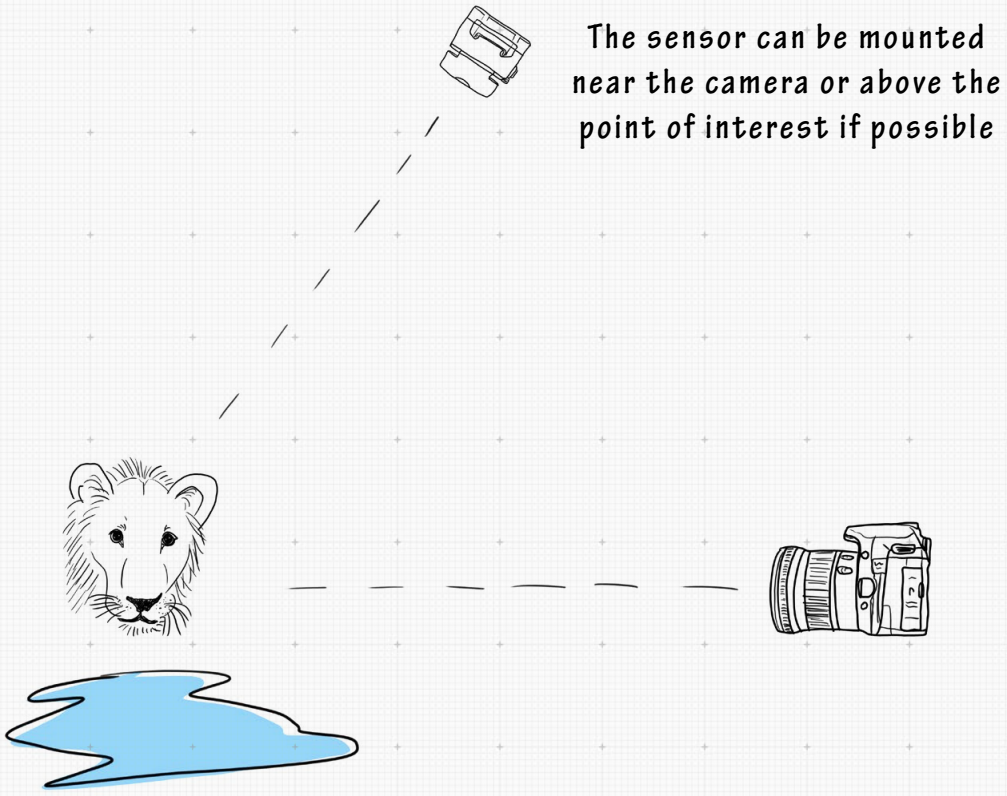
This is something like a freshwater spring where animals might come to drink, a stump that a particular species may scent-mark or some sort of food-source like a road kill carcass or pile of nuts. Unlike a trail, the animal's movement is not confined to one dimension as the animal could approach the point of interest from any direction.

As ever, I start by placing my camera, based on the composition I want.

Next, I place the sensor as close as possible to the point of interest without it appearing in the frame. This might end up being under the camera itself or perhaps high up, pointing downwards. The latter approach has the benefit that the sensor does not "see" the area behind the point of interest and is therefore less prone to being triggered prematurely.

I set up this camera trap in a waterhole, pointing towards the area where animals would come to drink. The sensor is clamped to the camera housing.

Point of Interest Example Setup

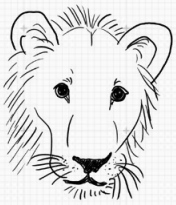


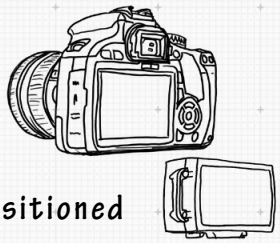
Scenario 3: Open Area

This is the hardest scenario as there is no focal point and no way to predict exactly where an animal might go. I try to avoid this scenario since it is hard to control the composition of the final image. If I must, I will set the sensor up just above or below the camera. I will use a small aperture to maximise my depth of field as I won't know how far away the animal will be from the camera when it triggers. Flashes will need to be placed further back so they illuminate the entire area more evenly.

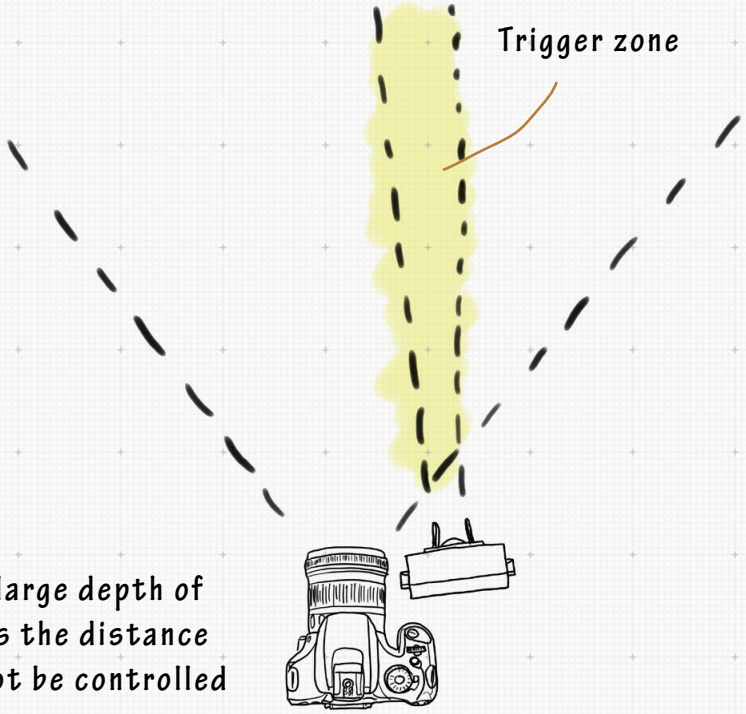
I had this camera trap at a waterhole but found many animals would just wade through the mud rather than sticking to the dry land so this was effectively an "open area" setup

Open Area Example Setup





The sensor is positioned near the camera



A small aperture (large depth of field) is required as the distance to the subject cannot be controlled

Sensor Setup

This section provides a simple recommended setup for using the PIR v4 in stills mode, allowing you to get up and running quickly. These suggestions work well for most basic camera-trap installations. Once you are familiar with the sensor, you can explore the full manual for more advanced features and fine-tuning options.

1. Mount the Sensor

- Use one or both tripod sockets on the bottom of the sensor.
- For maximum rigidity and to prevent twisting, use both sockets with a Jungle Mount or dual-screw bracket.
- Ensure that whatever mounting method you use does not conflict with the battery door.

2. Power On the Sensor

- Insert an NP-F battery.
- The sensor powers on automatically when power is connected.
- You can then turn it on/off using the power button (hold for 3 seconds).

3. Align the Trigger Zone

- Use the side flaps to narrow or widen the area in which motion is detected.
- Point the sensor directly at the centre of your intended trigger zone.

- After powering on or pressing any button, the front red indicator LED stays active for 5 minutes.
- Walk through the scene or wave your hand to confirm exactly where motion is detected.
- Adjust the flap angles and sensor aim until the desired detection area is achieved.

4. Recommended Sensor Settings (Stills Mode)

These settings provide a solid starting point for most scenarios (adjust as needed once you gain experience):

Menu Item	Recommended Setting	Purpose
Wireless Channel	1	Match the channel on your receiver.
Wide Sensor Sensitivity	5	Adjust depending on environment.
Far Sensor Sensitivity	5	Adjust depending on desired range.
Num (Shots per trigger)	1–3	Produces a single photo or small burst.
FPS	2 fps	A short delay between photos.
Gap Time	5–10 s	Prevents over-triggering.
Wake Time	Off	Turn on only if your camera needs it.
Time Windows	Off	Can be configured later if needed.
Periodic Wake	Off	Not required for most cameras.

5. Final Checks

Before leaving your setup unattended:

- Re-test the trigger zone using the red indicator LED
- Check the sensor is triggering the camera (if not then check the wireless channel on the sensor matches the wireless receiver that is triggering the camera).
- Ensure the PIR battery door, flaps, port caps and tripod screws are secure.

These steps will help you deploy the PIR v4 quickly and reliably in stills mode. As you become familiar with its features, you can explore additional options such as time windows and flash control. Refer to the manual for further details.

Ethics

As with all forms of wildlife photography, it is essential to ensure that animals are not harmed or unduly disturbed in the process of getting a photograph. Some species are far more sensitive than others, so caution and good judgement are vital.

Avoid placing camera traps close to birds' nests or animal dens, as repeated disturbance may cause adults to abandon the site. If in doubt, seek advice from someone with expertise in the species you are working with.

On animal trails, refrain from positioning the camera too close to the path straight away, as this may cause animals to change their route. It is usually best to start with the camera set farther back and use a longer focal length. You can gradually move the setup closer as animals become accustomed to it.

At night, camera flashes can potentially cause temporary visual disturbance. To minimise this risk, I raise the ISO to at least 800 and use a relatively wide aperture so that the flash output can be kept low. I usually avoid rapid-fire sequences; the first frame is often the most natural, so I set the PIR sensor to trigger no more than once every 5 or 10 seconds.

For particularly sensitive species, you can convert your camera and flashes to work in the invisible infrared spectrum. This ensures the subject experiences no visible flash at all. The process involves a simple internal modification to the camera (typically around $300) and the addition of inexpensive infrared filters to the flashes. The resulting images will be rendered in black and white.

I didn't want to risk disturbing the owl's vision as it came in to land, so I photographed it using an infrared-converted camera and flashes.

Part Five

FINAL THOUGHTS

Camera trapping is opening up new frontiers in wildlife photography. Whether you are aiming to capture elusive species or create dramatic images of nocturnal wildlife, camera traps make it possible to achieve things that would otherwise be out of reach. This is reflected in the growing number of camera trap images appearing in major wildlife photography competitions each year.

For me, camera trapping doesn't replace traditional photography—it complements it. At the start of a project, I can set up my camera traps and, while I wait for results, continue photographing in the usual way. The camera trap images add variety to my portfolio and effectively increase my output. I have even had traps running in one country while working on a completely different project in another.

Getting started with camera trapping may seem daunting, but with some perseverance and a willingness to experiment, it becomes an incredibly effective and versatile technique. Whether you are photographing wildlife in your backyard or in a remote wilderness, camera traps have the power to reveal the remarkable scenes that unfold when no humans are there to witness them.

Get Started...

We've created two bundles which provide all the equipment you need to get started with camera trap photography. Click on a bundle below to learn more.

Camtraptions
remote + camera trap photography

ANY QUESTIONS?

Get in touch and we'll be happy to help!

CONTACT US