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TRAIL CAMERAS

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AJ PRODUCTIONS

Trail cameras have been around for a very long time, longer than most people think. In earlier days they were called ‘camera traps’

The first recordings of deer by a camera trap were made in the 1880s by a wildlife enthusiast named George Shiras. Shiras is the conservationist who is credited with the discovery of the subspecies of moose that roams Yellowstone National Park and the surrounding area. Some of you may have heard of the Shiras moose.

George Shiras developed an ingenious trap with trip wires and an automatic flash bulb connected to a very large camera by today's standards.

The modern passive infrared (PIR) trail cameras were introduced in the late 1980s.

In 2003, before trail cameras were available here in New Zealand, we put together a motion-activated device called the 'Wise Eye Video Camera System'. This system housed a Sony video camera inside a waterproof Pelican case. The system used a passive infrared controller that connected to the LANC (the Sony Local Application Control Bus) port of the video camera and upon each activation

it would send a command to the camera to start recording. These units were rather big and bulky.

With this system we were the first to record hidden camera footage of Sika deer in the wild, around wallows during the rut. **Video footage captured from these units was later used in our NZ Hunting Adventures DVDs volumes 1 & 2 on Sika deer.**

Fast forward to the present day and trailcams are an indispensable tool for hunters and wildlife researchers – and we're also seeing a big trend here in New Zealand of these devices being used for remote security applications.

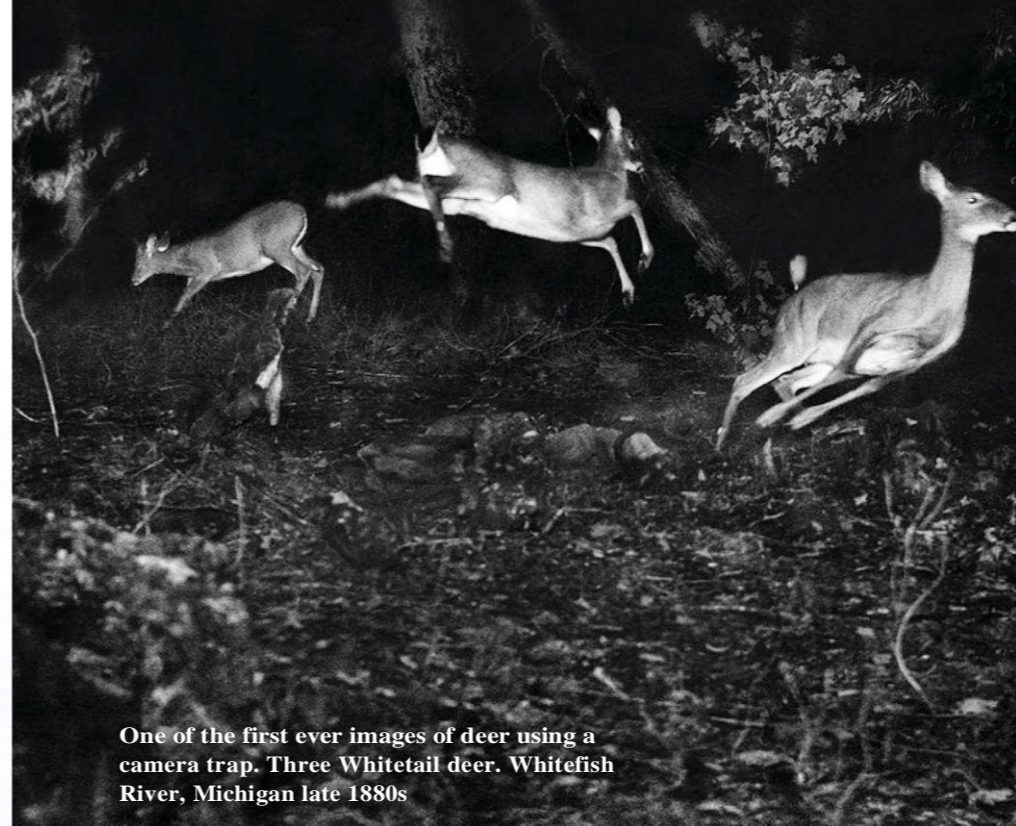
How trailcams work

A basic description of how trail cameras work provides a useful context in which to understand their various features. Trail cameras are designed to exist in a state of almost complete electronic sleep, much like a TV left on standby. The only component that is fully awake is the PIR motion sensor. When the PIR detects motion, it wakes up the rest of the camera and triggers a rapid chain of events: light levels are

detected and the flash is turned on. Focus is achieved, shutter speed is determined. One or more pictures or video are taken by the image sensor. Pictures/video are stored onto the SD (Secure Digital) card and then the camera goes back to sleep.

Trailcam megapixel size:

Many people purchase a trailcam based on the camera's megapixel size alone, with some brands advertising products as high as 36MP. However, the majority of trailcams' true (real) megapixel size are not quite as they seem.



One of the first ever images of deer using a camera trap. Three Whitetail deer. Whitefish River, Michigan late 1880s



George Shiras. Elk, Lake Superior, Michigan-1898

Almost all trail cameras are manufactured using either a 3MP or 5MP CMOS image sensor (camera lens) so anything above 5MP is interpolated. Interpolated images are created when the camera digitally adds extra pixels for every real pixel the camera creates. Interpolation can slightly improve (but not always) the quality of a picture but this will depend on the camera's software. **What larger interpolated pictures can do is take up more space on the camera's SD memory card.**

However, when it comes to using your trail camera's video function (providing your camera features this mode) megapixel (MP) size is irrelevant. When recording video, the camera can only use the true (real) MP size, which will be either 3MP or 5MP. Recently, some trailcam brands have upped their game on video quality, which allows the camera to record good 1920 x 1080 Full HD video @ 60 frames per second.

Power consumption

A big area of improvement we have seen in recent years is power efficiency. Five years ago, three months was about the limit a camera would last on a set of batteries but this has now been extended to 9-12 months and even more. This will only apply however if you're using high quality alkaline – or better still – lithium batteries. **Some cameras will function fine on rechargeable batteries but not all manufacturers recommend using these so check which type of battery is best for your trailcam.**

SD memory cards

A point worth mentioning here is the type of memory card to use in your trailcam. For some reason, many trailcams do not function properly when using the Micro SD card with adapter. In fact manufacturers like Spypoint, as an example, recommend that this type of memory card is not used at all.

We would suggest a SDHC (Secure Digital High Capacity) card 8GB or larger. If you want to record HD video, then a 16GB SDHC memory card or larger is recommended. Recording smooth video requires a faster write speed and any memory card above 8GB is class 10, which features a faster write speed.

Recording after dark

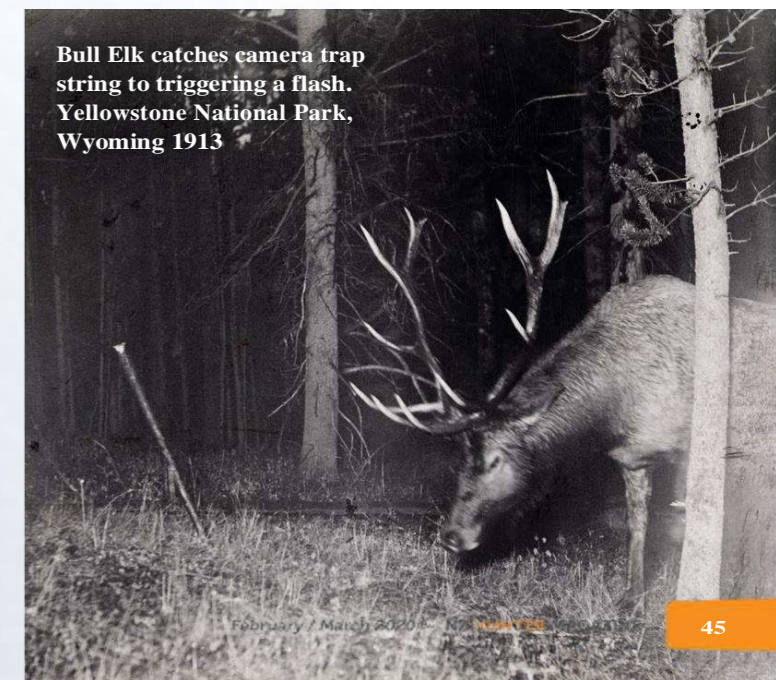
For recording after dark, trailcams use infrared LEDs for night-time illumination. Infrared LEDs generally fall into these brackets: red glow, low glow, no glow and black flash. Red and low glow LEDs have a wavelength of 850nm (nanometers) and are visible to the human eye but these normally give the best, brightest image after dark. They can

sometimes spook animals. No glow uses the same LEDs as low glow but with a darker colour panel in front of the LEDs. This panel helps to restrict the visible light emitted by the camera to about 5 metres. Black flash LEDs use a wavelength of 940nm and are totally invisible to the human eye. If you plan on using a trailcam for security, this is the best option. Another benefit with black flash is that animals can't see it either.

Walk-test

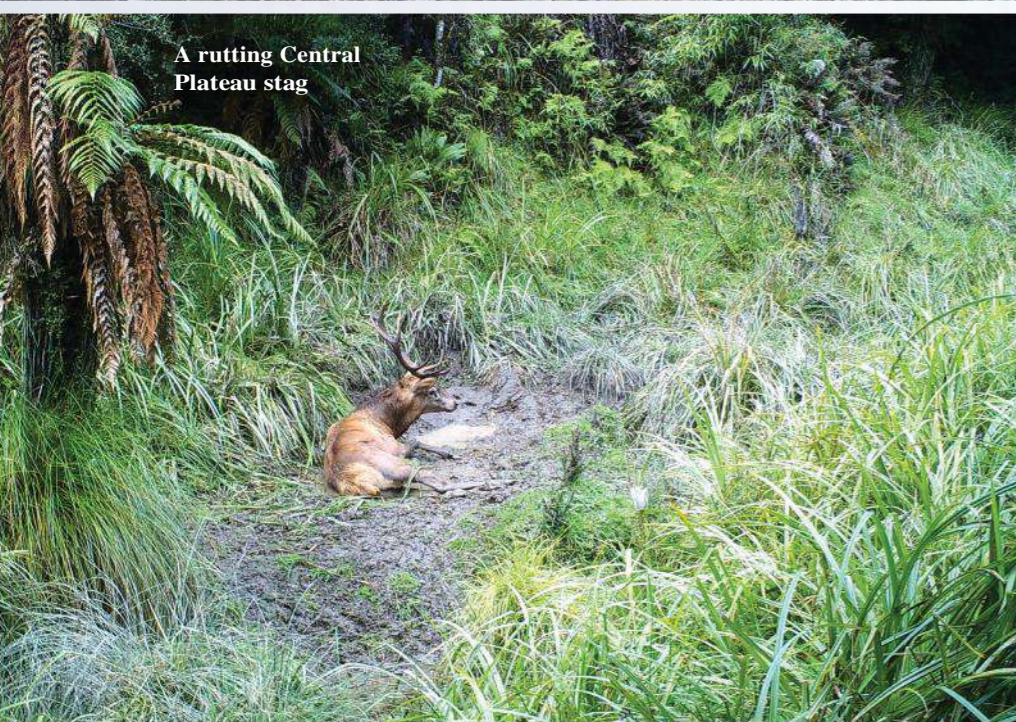
Many trailcams now feature a walk-test mode, which helps you make sure the camera is pointing in the right direction. Once the camera is fixed to a tree/post etc, turn the walk-test mode on and walk around the area you plan to monitor. As the camera senses your movement, a red LED on the camera will flash, letting you know that you are

Bull Elk catches camera trap string to triggering a flash. Yellowstone National Park, Wyoming 1913





Promising looking Sika stag in velvet



A rutting Central Plateau stag



The same stag with his hinds

in the detection zone. If this LED is not flashing, simply reposition the camera – it may only require a little tilting.

PIR detection angle, distance and lens (field of view)

Most trail cameras have a PIR detection angle of around 45 degrees, with a camera lens field of view angle of about 40 degrees. And today, many have a detection range out to 25 metres or more.

The PIR's detection angle from top to bottom is narrower, at around 30 degrees, see image on page 47. PIR sensors react to both heat and motion. The image overleaf displays how the camera sees heat (temperature variances).

With this information in mind, it becomes easier to understand that when a subject walks directly toward the camera, it may not be seen as it is likely staying in one temperature zone so the best detection is from an object moving diagonally across the detection zone. Large animals such as deer and pigs are easier to detect than smaller animals like birds, rats and possums. PIR sensors also react to motion so it pays to clear any twigs, branches, grass etc away from the front of the camera for the first metre or two to avoid any false triggers.

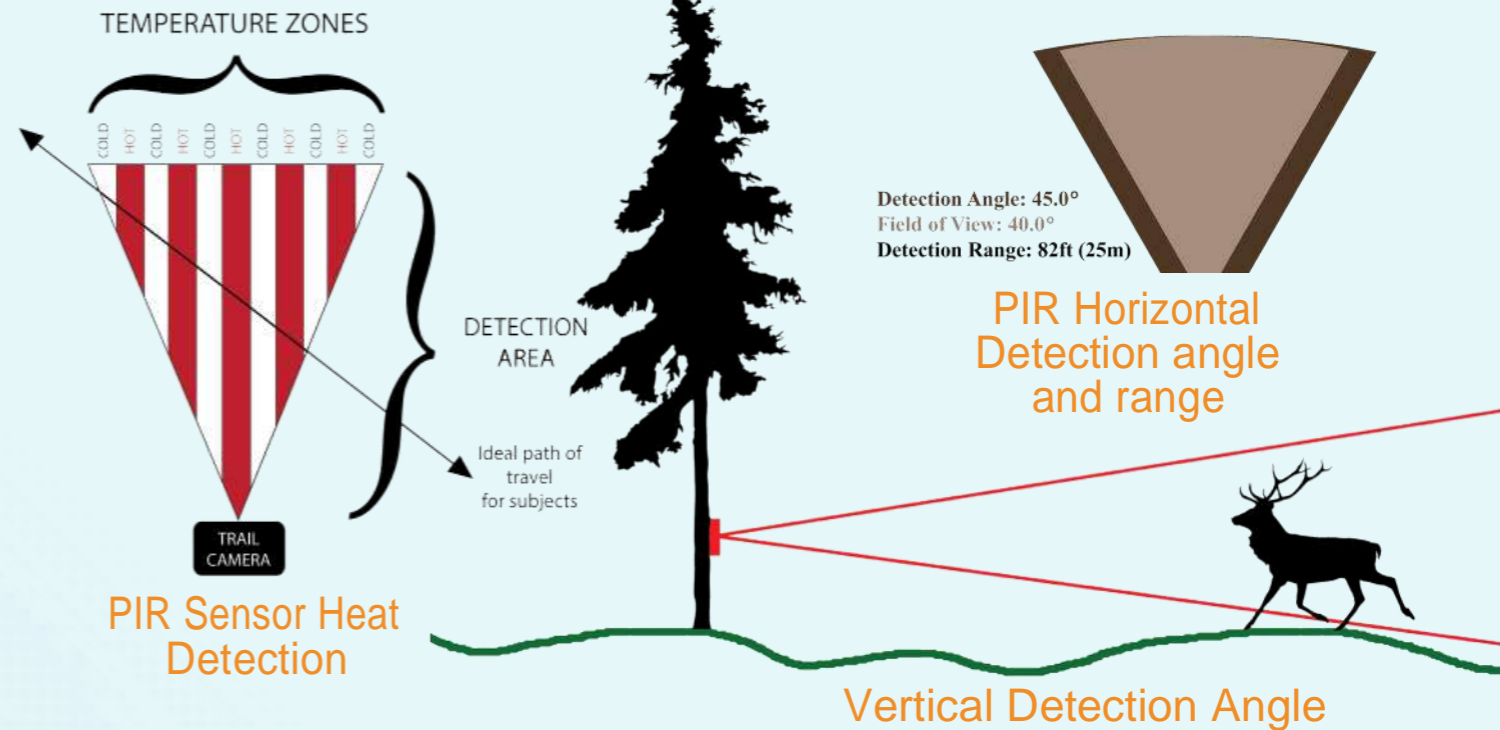
Trailcam limitations

Although some trailcams can detect movement beyond the 25-metre mark, at these distances game animals appear tiny in the frame.

This is because the lens is a fixed focal length. The ideal range for capturing game is around the 10-15 metre mark. Another feature with limitations involves the infrared LEDs for night-time illumination. In my opinion, this is a major area that all trailcam manufacturers spend little development time. The illumination distance at night for ALL trailcams is restricted to about the 15-metre mark, maximum. Some trailcams now feature blur reduction technology, which can slightly improve the picture quality after dark.

So which trailcam is for me?

Trail cameras come in two categories: **non-cellular (stand-alone)** and **cellular 3G and 4G LTE**. These cellular models are popular, however you need good network signal coverage for them to work. You can turn the cellular function off and still use it as a standard trailcam. We are seeing an



PIR Sensor Heat Detection

Vertical Detection Angle

increase in the number of pig hunters using these cellular models as they get an instant notification when a pig turns up.

Today's trail cameras are much smaller than their predecessors. Most feature modes such as photo, video and time lapse, plus multi-shot photo bursts, fast trigger speeds and even blur reduction improvements for night-time recording. Some have a built-in screen

that allows you to view the images direct from the camera and others feature a display panel for camera settings only. Cameras with a built-in screen are generally more expensive than those without one. Some trailcams take pictures in 4:3 mode (square) and others take pictures in 16:9 mode (widescreen) so it comes down to personal choice as to which camera suits your needs.

Camera placement

For best results, trailcams should be mounted at the same level as the target subject's chest. With that in mind, a general rule of thumb is from about your waist to shoulder height above the ground. If the trailcam is mounted too low and on the edge of a clearing as an example, when grass

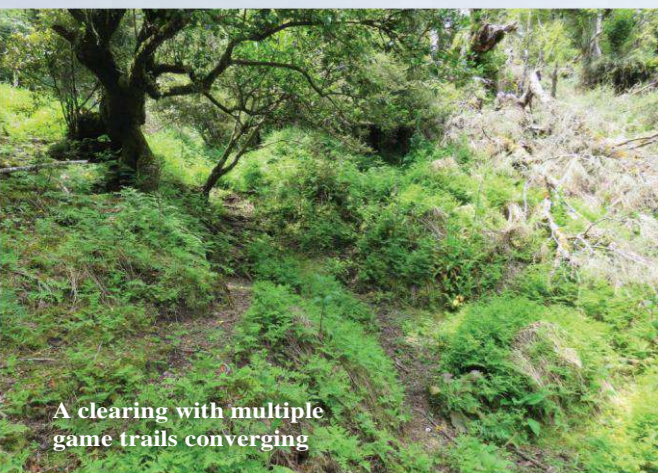




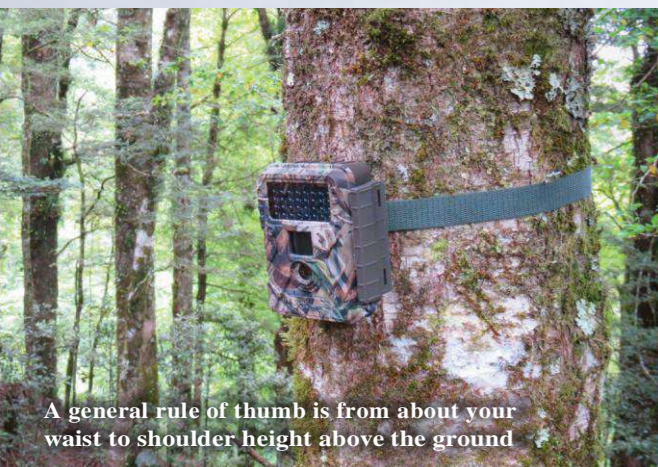
A good Sika stag just starting to strip

UOVision

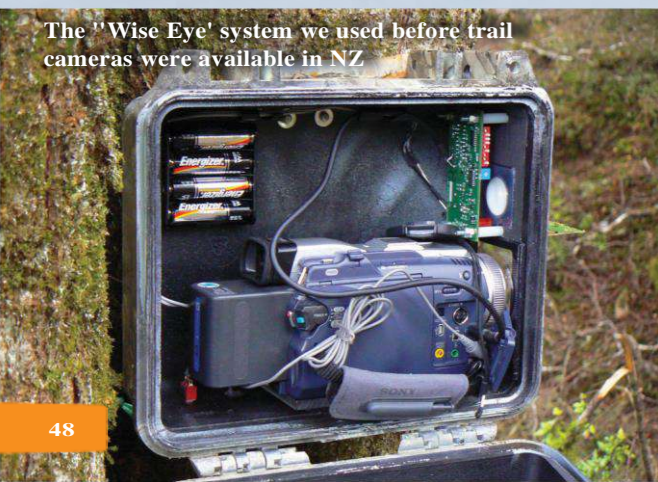
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A clearing with multiple game trails converging



A general rule of thumb is from about your waist to shoulder height above the ground



The 'Wise Eye' system we used before trail cameras were available in NZ

try mounting the trailcam back a good five metres or more.

Other areas worth placing cameras are on game trails and clearings. If you hunt an area regularly then you probably already know where the good clearings and game trails exist. When placing on a game trail, try to get back a good five metres or so from the trail and place the camera on about a 30-degree angle facing down the trail. This way you should get good

or other vegetation grows over spring/summer and moves in the breeze, there is a good chance that false triggers will occur. If you feel the need to mount the camera high, make sure you aim it down to where the subject is expected to be, keeping in mind that this will diminish the detection range, meaning that the subject will need to be closer to the camera.

When and where to put your camera

Trailcams are great for assessing trophy potential so a good time to place yours out in the field is from early February for Reds and early March for Sika. Both Red and Sika stags can roam long distances back to their rutting grounds and in most cases they will frequent those same locations year after year. These rutting locations can be many kilometres away from where they have spent the previous eight months or so.

So, great locations prior to and leading up to the rut/roar are around wallows. Wallows are frequented by many stags, not just one or two. I have spent

16 years monitoring Sika stags in and around wallows and the most I have seen over a 6-week period was nine different stags at one wallow site. Red hinds will also use wallows but I have never recorded a Sika hind wallowing.

When setting up on a wallow,

images of animals moving in both directions. Setting a camera directly facing down a trail will record some activity, but because of how the temperature zones work (see page 47) the trailcam may not trigger until an animal is all but at the camera. **Try not to place cameras across a game trail, such as at a 90-degree angle.** An animal will be walking along the trail, then the camera detects movement but before you know it, the animal has walked out of the camera lens field of view.

If you're intending to use a trailcam over the winter months, the cold may play havoc with the batteries. Cheap, heavy duty batteries just won't cut it so use high quality alkaline or lithium ones – these are way more expensive but not affected by the cold so much.

These days trail cameras have a multitude of programme settings but I find a good setup is to have the camera on photo mode, a 3-shot multi-photo burst, 30-second delay between activations, and if the camera features blur reduction, then set for this feature to improve the night-time images.

And finally, make sure you turn the camera on before leaving the area. There is nothing worse than returning to check it at a later date only to discover that you left it in standby mode – or worse still

– it wasn't switched on at all.



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TRAIL CAMERAS

7 models to choose from two different manufacturers and have a trail/security camera to suit everyone's needs. New Zealand's only authorised distributor for Browning and UOVision Cameras and Accessories. Camera prices start from \$299.00



UOVISION GLORY 4G LTE "CLOUD"

20MP 4G LTE Cellular trail/security camera. Takes photos and records HD video with sound. Invisible "Black Flash" LEDs for night-time recording. Features the latest GPS tracking chip technology. Easy Setup via the FREE LinckEazi Web-Portal and the FREE Mobile App.

Camera features fast trigger speed, password protect, selectable Start-Stop operating period or the default 24/7, long range detection plus much more. Camera works on Spark, Vodafone and 2-degrees networks.

BROWNING SPEC OPS EDGE

Features high quality 20MP image resolution as well as invisible "Night Vision" Black Flash LEDs. Spec Ops Edge also features an incredible 1920 x 1080 Full HD video processor, capable of producing stunning video footage @ 60 frames per second.

Additional features include a 2" colour view screen, Smart IR video for continued recording while game/movement is in front of the camera. International reviews rated this camera with the best quality video of any trailcam currently on the market. Perfect camera for surveillance or for monitoring game animals.

