

## Feature

# Thermal imaging and night vision



Tim Weston, the NGO's Development Officer for the South, investigates whether these have a place in the modern gamekeeper's armoury.

SHOOTING IS A SPORT STEEPED IN TRADITION and one that has changed little since the advent of the breech loading shotgun. Tradition reminds us of the roots of shooting sports, but when it comes to the actual nuts and bolts of shooting – gamekeeping – we have made great technological leaps to improve what we do and how we do it.

Vehicles, firearms, traps and snares have all changed for the better to help the gamekeeper and we have very recently seen the appearance of thermal imaging equipment and more affordable and better night vision scopes and spotters.

Thermal imaging and night vision can be a real asset for the gamekeeper when it comes to wildlife management. The technology can help with wildlife counts, vermin control without much disturbance and can have the added bonus of assisting you with estate security.

But what are the differences between thermal imaging and night vision?

Night vision cameras or goggles work on a similar principle to the human eye: they gather light and that light must be bounced off a detector and then converted into an image. Night vision cameras, like the human eye, must receive enough light to be able to gather an image. To cope with the problem of light gathering, night vision equipment should be fitted with an infra red (IR) illuminator. The IR is a bit like an invisible torch that sends a beam of infra red light that is invisible to the human (or animal) eye but provides enough light for the night vision equipment to work properly.

Night vision has been used far more extensively than thermal imagers over the years, but its use is limited to low light situations, because bright light can damage

the intensifier tubes that make night vision work. This risk is diminishing, however, as intensifier tube technology improves, but you still need to consider this when researching different products.

The technology has gone through multiple generations and the incredible durability (other than the light damage of the tubes) of these devices makes them fantastic for gamekeepers who inevitably bounce their equipment around in trucks, ATVs or UTVs.

Night vision scopes have improved massively; they are far more reliable and are able to withstand recoil perfectly well now. The early scopes had issues with picture clarity as well as problems keeping a zero. Another great advent is the addition of attachable scopes that you can use with your current day scope on

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Thermal imaging can be a very useful addition to a keeper's armoury for wildlife management and deer surveys.

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your existing rifle. This reduces the cost and means that you don't have to have a rifle tied up for night use only.

There is, however, a draw back with some of the night vision scopes and front-mounted attachments that convert a conventional scope into a NV version. We found when we tested several models that the IR can reflect off your moderator preventing the scope from 'seeing' anything further away than the end of your barrel. This is worth noting when you are looking at these options, and I would always suggest trying before you buy to make sure that what you are paying for is compatible with your current kit. The front-mounted digital versions that project an image into the rifle scope didn't have the same issues as they sit above the line of the scope eliminating the glare back issue. Nor were the higher stand-alone scopes we used affected but some of the scopes on ordinary height mounts were. So once again, try before you buy.

Different from low-light imaging methods of night vision (which require some ambient light to produce an image or IR torch), thermal imaging equipment does not require any ambient light at all. It operates on the principle that all objects emit infrared energy as a function of their temperature. In general, the hotter an object is, the more radiation it emits. A thermal imager collects the infrared radiation from objects in the scene and creates an electronic image. Since they do not rely on reflected ambient light, thermal imagers are entirely ambient light-level independent, or in layman's terms, can work in total darkness. In addition, they can penetrate obscurants such as smoke, fog and haze to a limited degree.

With all products of this nature you pay for what you get, and night vision and thermal imaging are relatively

expensive; a good night vision set up would cost you around £2,500 (but spotter scopes are far less). However, thermal imaging can range from £1,000 to £30,000 and there is a marked difference between the equipment at each end of the price spectrum. You should look for the refresh rate of kit: some of the cheaper models are slow to convert the image making scanning a field or wood difficult because the display can keep freezing on you. We didn't have this problem with any of the NV devices we tested because they were all of good quality and had a decent refresh rate. Thermal imaging was ideal for scanning and we picked up far more than we did with the night vision spotters, which were better suited to stationary situations such as sitting in a truck or high seat.

Thermal imaging seems like the perfect way of detecting, but not necessarily for identifying quarry. For the top end thermal imagers this wasn't a problem: we could see rabbits clearly at 800 metres and distinguish them from hares or muntjac deer. With the less expensive units this was not possible: all we could see was a blob in the field that could have been anything of that size, but at least we could detect it without it knowing we were there.

One major advantage of the thermal imaging system over the night vision is that it doesn't need an extra light and it can detect the heat through mist, as well as gaps in the hedge or trees. That allows you to be able to "see through" a hedge at night which can be a real advantage if you are thinking of estate security as well

as wildlife management. How effective this is will depend largely on how good your equipment is to start with.

As this technology races ahead there will be many more improvements to come, but for now these tools as a combination allow us to control vermin in a more effective manner and can also help with estate security. A little time and research about the best item for you is essential and you should end up with an invaluable tool.

## WHAT SHOULD YOU CONSIDER?

1. **Budget** – A good quality night vision spotter and scope combination might set you back £2,000, although that is probably the minimum you would want to spend on a thermal imaging spotter to get started with.
2. **Environment** – Are you working in areas that are mainly wooded, for example? If that is the case then you will really want to use a thermal imager because night vision will not be able to see through the trees. If you are working in areas that are extremely cold then the night vision would be the better option.
3. **Combine** – As already stated, thermal imaging is great for detection, but not ideal for recognition. Night vision has the opposite problem; once an object is detected it's no problem to determine who the person is or what kind of animal it may be, but if that person wears camouflage or the animal is stationary at a distance, it can be difficult to find. A great way to get around these issues is to use a thermal imager to scan the field and a night vision rifle scope.

## LEGAL NOTE

It is always important to consider whether the use of new technology complies with existing law. The Wildlife and Countryside Act 1981 makes it an offence to use "any device for illuminating a target or any sighting device for night shooting" for the purpose of killing or taking any wild bird or any wild animal listed in Schedule 6 (eg Polecat). The Deer Act 1991 makes illegal the intentional killing of any deer between one hour after sunset and one hour before sunrise unless it is done under individual licence or to prevent the suffering of an injured or diseased deer. Night vision scopes are not suitable for deer stalking.



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