



Zoo, Avian, Aquatic and Unusual Pets
Veterinary Consultancy

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Temperature monitoring (reptiles)

Reptiles are ectothermic meaning they require an external heat source to warm their bodies up to carry out normal metabolic processes.

Each reptile species will have their own Preferred Optimum Temperature Zone (POTZ). This zone is what is created by us in their enclosure, using a heat lamp, heat mat etc. When reptiles bask in their POTZ they are then able to reach their preferred body temperature (PBT) to carry out normal bodily functions such as feeding, digestion, reproduction and have a healthy immune system.

When a reptile is not exposed to their POTZ over a period of time they can become seriously ill. This illness can present itself in a number of different ways and can depend on the reptile species. In general, many reptiles will decrease their activity, become anorexic (stop eating), sleep more than usual, urinate and defecate less and become susceptible to infections and disease. Many reptiles may also appear to bask under their heat source frequently or never move away from it. This could indicate that they are not achieving their PBT despite a heat source being provided. This is when it is important we are always monitoring the temperatures in our enclosures.

Remember that temperatures will vary depending on the reptile species, please always carry out research for your particular reptile species, thinking about the environment in which they would live in the wild. If you are unsure, you can always ask us for guidance. Below are a few examples of reptile species and the temperatures (in degrees Celsius) that would be expected under their main heat/basking light:



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- Bearded dragon: 38-40
- Chameleon (Panther): 32
- Chameleon (Veiled): 35
- Leopard gecko: 28-30
- Snake (Corn): 24-28
- Snake (Royal python): 22-28
- Tortoise (Spur thigh, Hermann's and Horsfield) : 30-32

Please see our additional care guides for further information on how heat can be provided. With the correct set up a temperature gradient is then created. The warmest part of the enclosure is at the top (where you have placed a heat bulb) and the cooler end is at the bottom of the enclosure (where there is no heat source).

When you have suitable heat arrangements, you must ensure you can monitor the temperatures in your reptile's enclosure.

Various equipment exists to measure temperatures in your reptile's enclosure. These are discussed below. You can then make an informed decision as to which monitoring device would be most suitable for you and your reptile.

Adhesive thermometer strips:



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These use a coloured strip which changes colour depending on your enclosure temperature. They can be difficult to read and are unreliable, changing with external environment temperatures. These are not recommended as they are not accurate enough, often moving in five-degree increments.

Analogue dial:

These use a metallic strip which expands and contracts depending on the temperature. A needle attached to the strip moves as the strip moves. The needle then indicates the temperature your enclosure is showing. This method is extremely unreliable and not recommended. Often, they are not accurate enough and can be influenced by many external factors.

Digital thermometer with probe:

These consist of a small digital display powered by a battery with a probe attached. The probe is placed in the enclosure where you wish to monitor your reptile's temperature. Usually multiple digital thermometers will be used. For example, directly under the heat source to measure basking temperature, another in the middle of the enclosure to measure ambient temperature and then another digital thermometer placed at the cool end of the enclosure.

Digital thermometers are generally reliable and accurate and are used by many reptile keepers.



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Some products can also measure humidity in your enclosure which should also be monitored to ensure your reptile is being kept in the best environment possible.

The thermometer readings can then be recorded in a book or into a computer system.

Thermometer gun/Infra red:

These are a small hand-held device which allow you to 'shoot' the area of interest (a surface) and provide you with a temperature reading using infra-red technology. These are very accurate and can even be used safely on the back of your reptile if you wish to check that they are reaching the correct basking temperature under their heat bulb for example.

Be aware that they cannot read air temperature, like the digital thermometers above, so ensure to point the gun at a surface for it to work.

These should be used regularly to ensure no fluctuations in temperature are occurring over the three main areas of your reptile enclosure; directly under the heat source to measure basking temperature, in the middle of the enclosure to measure ambient temperature and at the cool end of the enclosure.

The thermometer readings can then be recorded in a book or into a computer system.



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We would recommend combining digital probe thermometers with the use of a thermometer gun to check accuracy. The probes allow for constant monitoring and the digital readout display can be checked quickly. The thermometer gun can then be used to ensure reliability of the digital probes. This way you can act quickly if changes in temperature are occurring before your reptile is affected.

Data loggers:

A data logger is a small handheld device with a digital display read out. Many data loggers will monitor humidity as well as temperature, another useful measurement when caring for your reptile. The data logger can be attached to the side of your reptile's enclosure. Be sure to buy a product which is robust and waterproof depending on the reptile climate you require.

The data logger reads the temperature over a set period of time. You can then attach the logger via a USB cable to your computer or the logger can transmit 'real time' data directly to your smart phone via Bluetooth. This depends on the product you decide to purchase. It will show you the temperature readings over a period of time, indicating if there have been any fluctuations. This allows you to make any necessary changes, during certain times of the day if needed.

These are very accurate and allowing you to store the data means you can discover when a problem may have occurred.



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As these are more expensive they are often combined with another thermometer type to measure other areas of the enclosure.

Alternatively, these can be used to measure the temperature of the room you house your reptiles in. This can be useful if you keep multiple reptiles in one room.

Please speak to us if you are unsure which temperature monitoring system you should use in your enclosure.