The Looooooong Sleep

Photo: Phillip Horwood

Dormouse (*Muscardinus avellanarius*)

Lock all the doors, close all the curtains, cancel the milk delivery... what else? Oh yes, record a new message on the answerphone. Something like: "Sorry I can't take your call right now, but if you leave your name and number I'll get back to you next spring!"

Have you ever considered it? Hibernating through the six coldest months of the year. Just shutting the world outside and going to sleep. No need to worry about 'trick or treaters' at Halloween, or Christmas shopping in December. It does seem to have its attractions. You could save a fortune on the food and heating bills.

The truth is, despite all the seemingly obvious attractions hibernating is quite a risky thing to do. It's usually thought of as just a deep sleep, but in reality it's much more than that. If it really were as simple as just nodding off, many more animals would do it.

During hibernation an animals heart beat and breathing almost stops. Hardly any energy is used. Chemical reactions are so minimal that the animal survives on just the food stored in the body.

Scientists have tried to imitate this condition of almost suspended animation for use in space. It would enable astronauts to make extra long space flights, without the need to carry vast supplies of food. So far they have been unable to replicate it.

AWARENESS

In this torpid state, the animals body temperature drops to within a few degrees of freezing. It becomes cold and stiff. Almost dead. It's easy to think that the animal has simply 'switched off', but in reality a hibernating animal is still very conscious of it's surroundings.

It needs to keep monitoring the environment around it's body to avoid freezing. If the air temperature falls below 1º Celsius the animal must 'switch on' again to prevent ice crystals forming in the blood which could be fatal. Just enough of the body functions kick in again to keep things ticking over.

The peacock butterfly takes this monitoring a stage further. It is able to defend itself against attack while sleeping. Peacock butterflies are frequently found hibernating in garden sheds and garages. If you get too close they will flash their brightly coloured wings at you. They're decorated with large eye-shaped markings,

Peacock Butterfly (*Inachis io*)

Hedgehog (*Erinaceus europaeus*)

which are designed to frighten predators away.

Could it be that rather than 'switching off', hibernating animals are really 'tuning in' to a different level of awareness to achieve and maintain this lifeless state?

IT'S ALL ABOUT LOCATION

Successful hibernation has a lot to do with exactly where you decide to spend the winter. Choosing the wrong location could literally mean the difference between life and death.

Take the dormouse as an example. These cute little creatures are famous for their sleeping. Even the name 'dormouse' originates from the Latin 'dormire', which means to sleep. Dormice build their winter nests on the woodland floor. Provided they are well hidden, and away from any beaten tracks, they can remain perfectly safe throughout the winter. But if the nest is built anywhere near a fox's territory, and the fox happens to get a whiff of it... it's dinner.

Another danger exists for frogs hibernating at the bottom of ponds. Ideally they need to find a pool with flowing water so it continues to provide oxygen even if ice forms

Photo: Dean Stables

Common Frog (*Rana temporaria*)

on the surface. If the weather gets too cold, and the pond is not deep enough, the frog risks being frozen solid. The location is critical.

LOSE WEIGHT WHILE YOU SLEEP

Hibernation is also a weight loss activity (or should that be inactivity?). It's been calculated that a hedgehog loses around one third of its body weight while sleeping through the winter. They doze off something akin to a spiky sumo wrestler, and wake up like the latest hedgehog catwalk model. Scientists are going to make some serious money if they can ever duplicate that trick.

Of course weight loss on this scale needs to be carefully planned to reduce any health risks. All summer and autumn the hedgehog is busy piling on the pounds (well grams anyway) so that it will have enough fat reserves to cope with the demands of this superdiet. If it tries to hibernate at less than 600 grams in weight it's unlikely to survive, and could literally starve.

HANG ON TILL SPRING

Many creatures don't bother to hibernate, and considering the dangers it's hardly surprising. Animals like the fox choose to 'tough it out' and rely on their expert hunting skills to get them through the winter months. They sleep through the worst of the weather in an underground den, and surface again for food on milder days. Fortunately their main foods, rabbits, rats and mice, behave in a similar way, so food is nearly always available.

Bats on the other hand don't have the choice. All British bats are insectivores, feeding on the kind of summer bugs we love to hate, such as midges and mosquitoes. During the wintertime, insects are so few that it would be worthless for bats to continue hunting.

Given that they have the ability to fly, British bats could migrate like birds to warmer countries. Instead they choose the less strenuous option, and from October to April they congregate in communal hibernation sites. Shoulder to shoulder, some species literally hang around by their toes all through the winter, occasionally in groups numbering thousands.

The chosen site could be a cave, a disused mine, a hollow tree or an attic space. Generally it's somewhere quite humid to reduce the risk of dehydration. Bats don't like waking up with that awful 'morning after', parched mouth feeling either.

EARLY ALARM CALLS

Even waking up is not a simple matter. You know those mornings after a really deep, heavy sleep, when you need a gallon of coffee just to feel half conscious again. Imagine that, but much much worse and you get the picture.

First the body temperature has to rise to its normal level. To do this it has to use up more fat reserves especially set aside for this purpose. The fat rserves are limited, so if the animal is woken up too

Red Fox (*Vulpes vulpes*)

many times it reduces their chances of making it through the winter. Some animals do wake up too early. Some even have to move to a different site to avoid disturbance, but its like driving your car with the fuel gauge in the red. You can only go on for so long before the tank runs dry.

WAKEY WAKEY

It's not certain what actually triggers an animal to wake up from hibernation, but rising temperatures in spring certainly play a part. The effects of global warming, producing brief warm spells in winter are going to create more problems for our hibernating animals as time goes on. It's no joke waking up too early, only to discover there's no food to be found.

Considering all the hazards hibernation may not be such a good thing for us humans. There's got to be an easier way to escape the dreaded Christmas shopping.

Daubenton's Bat (*Myotis daubentoni*)