

# Hibernation

# Hibernation

**Hibernation is used by some animals to help them survive through periods of environmental stress - like winter's extreme cold and lack of food. Hibernation is different from sleeping due to the difference in the way the organism's body operates.**

A hibernating animal's body temperature falls to nearly the same temperature as their surroundings, their heart rate and breathing rate decrease, and their metabolism slows right down. This allows them to use minimal energy to get through periods of time in which they would otherwise use huge amounts of energy to keep warm. Before entering hibernation the animal must prepare by adding as much fat as possible by eating huge amounts. Because hibernation takes place in winter the animals can take advantage of the late summer gluts of food.

Although hibernation has evolved to increase the chances of an animal making it through winter it can still be dangerous because the slowing down of all the body's systems means that the animals cannot respond quickly and so they become vulnerable to predators. They can also starve from lack of fat reserves, severe weather or being woken up too soon before food has become available again.

In the UK mammals like hedgehogs, dormice and bats hibernate as well as amphibians and reptiles like the common frog and the adder. You might be surprised to find out that some insect species like peacock and small tortoiseshell butterflies, ladybirds, Queen wasps and bumblebees also hibernate over winter.

Animals need to find somewhere safe and sheltered to spend the winter where they won't be disturbed and where the temperature remains stable. You can help by building winter homes for wildlife in your garden or school grounds.

Hedgehogs are particularly vulnerable to climate change because of warm weather disrupting their hibernation patterns. Ticks can persist on hedgehogs in warmer weather and there are many other parasites and infections, particularly ringworm, which affect hedgehogs. Their numbers are decreasing alarmingly: numbers have fallen by up to 30% in urban areas and 50% in rural areas since 2000. No single cause is responsible, making recovery plans difficult. There are ways in which we can help by providing food, creating shelter and making gardens a haven for the hedgehogs by interconnecting corridors and holes in fences.

### Further research keywords

Aestivation, torpor, denning, hibernaculum, dormancy, hyperphagic, metabolism, endotherm, ectotherm, phenology - nature's calendar, nocturnal, crepuscular, emergency rescue box.



# Build a Bug Hotel

## Equipment required

- Print out of the 'Bug Hotel' worksheet, one per group
- Wooden pallets or planks of wood
- Bricks
- Old plastic bottles
- Bamboo canes
- Straw / leaves / twigs / bark / stones and pebbles
- Tiles
- Cardboard

## To build the hotel

The best time to build a bug hotel is in the autumn because the materials are more freely available but you can build them at any time.

1. Divide the learners into groups. If you have enough equipment then each group could make their own hotel. If not you could divide up the jobs instead, for example one group fills the plastic bottles, one group stacks the pallets, one group pots up plants for the top, make the sign etc.
2. Stack the pallets or planks of wood using the bricks in between each layer so that you create lots of small rectangular sections.
3. Fill the sections with different combinations of items to create different sizes and types of gap and crevice.
4. Fill gaps with leaves and straw.
5. Add plants or turf to the top of the pallet stack.
6. The completed structure can be decorated; maybe include a hotel name sign or insect pictures painted on wood and stones.

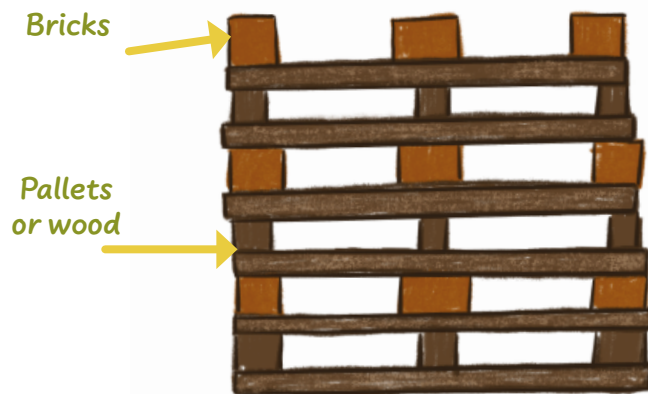
# Bug Hotel



Help insects get through the winter by building a bug hotel. Make sure it's got lots of different materials, gaps and crevices so that lots of different kinds of insects can live there.

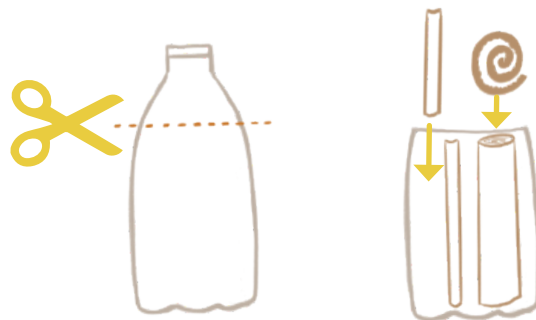
## STEP 1

In groups, stack up your pallets or bigger pieces of wood in between bricks so that you end up with little sections.



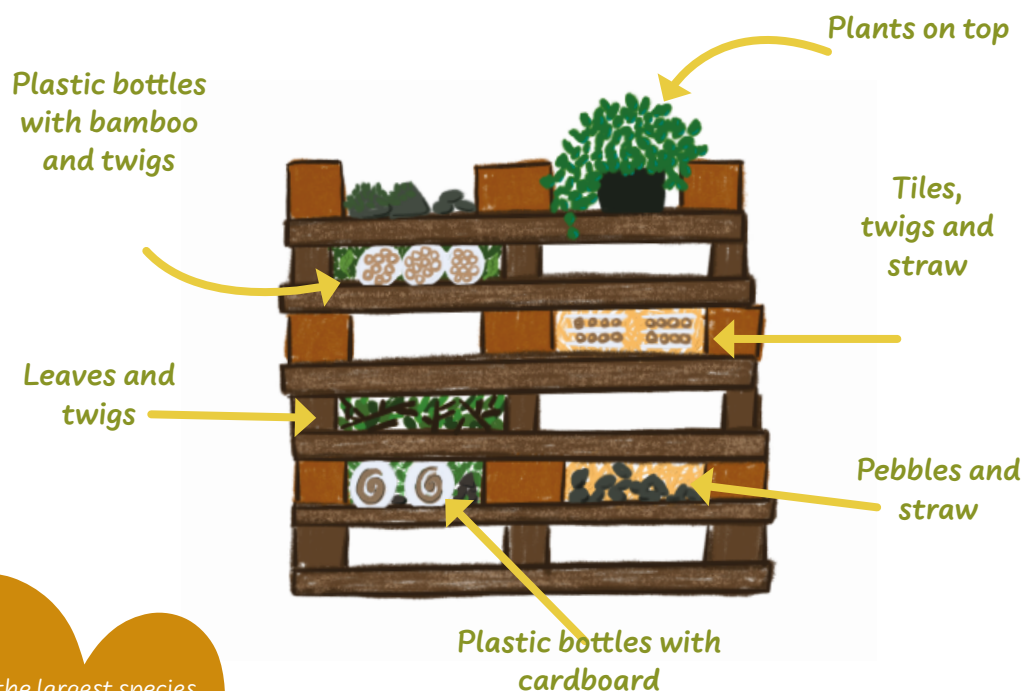
## STEP 2

Fill your plastic bottles with the bamboo canes or rolled up cardboard. Make piles of tiles and twigs.



## STEP 3

Fill in the gaps with straw, leaves, twigs and pebbles. Make all the sections different and fill all of them up. Add plants to the top.



The stag beetle is the largest species of insect to be found in the UK.



# Hibernation Match

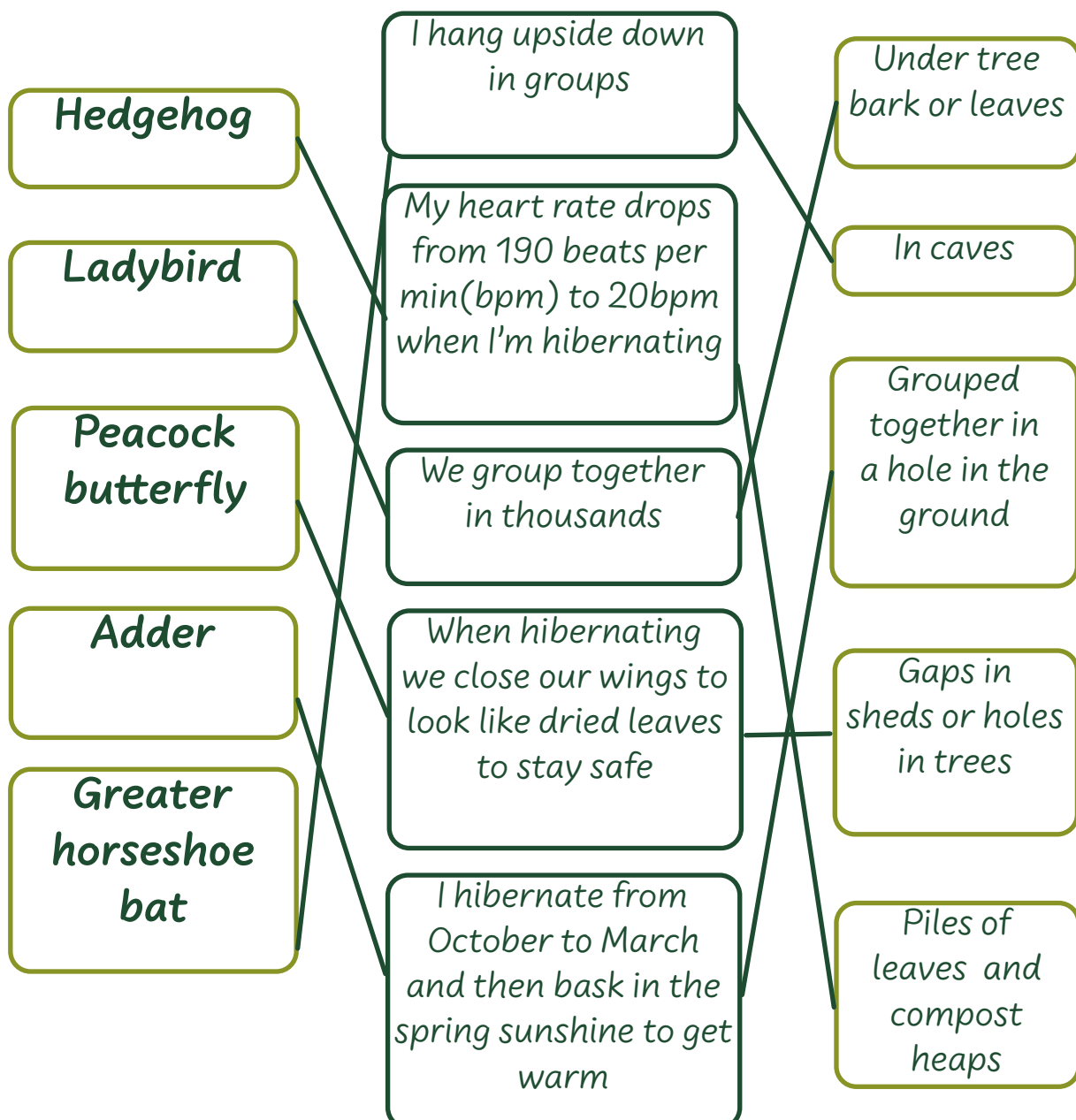
## Equipment required

- Print the 'Hibernation Match' worksheet for all learners

## To complete the activity

- Support learners to complete the worksheet.

## Answers - Habitat Match



# Hibernation



## Game rules

- Match the animal name to the fact about their hibernation and then to where they hibernate.
- Colour in the matching boxes in the same colour.

**Hedgehog**

I hang upside down in groups

Under tree bark or leaves

**Ladybird**

My heart rate drops from 190 beats per min(bpm) to 20bpm when I'm hibernating

In caves

**Peacock butterfly**

We group together in thousands

Grouped together in a hole in the ground

**Adder**

When hibernating we close our wings to look like dried leaves to stay safe

Gaps in sheds or holes in trees

**Greater horseshoe bat**

I hibernate from October to March and then bask in the spring sunshine to get warm

Piles of leaves and compost heaps



The 17 species of British bat all hibernate during the winter.



# Hibernation Challenge

## Equipment required

- Twigs (representing earthworms or slugs)
- Stones (representing snails)
- Leaves (representing bedding)
- Cones or markers to define each zone
- Large outdoor space for safe movement

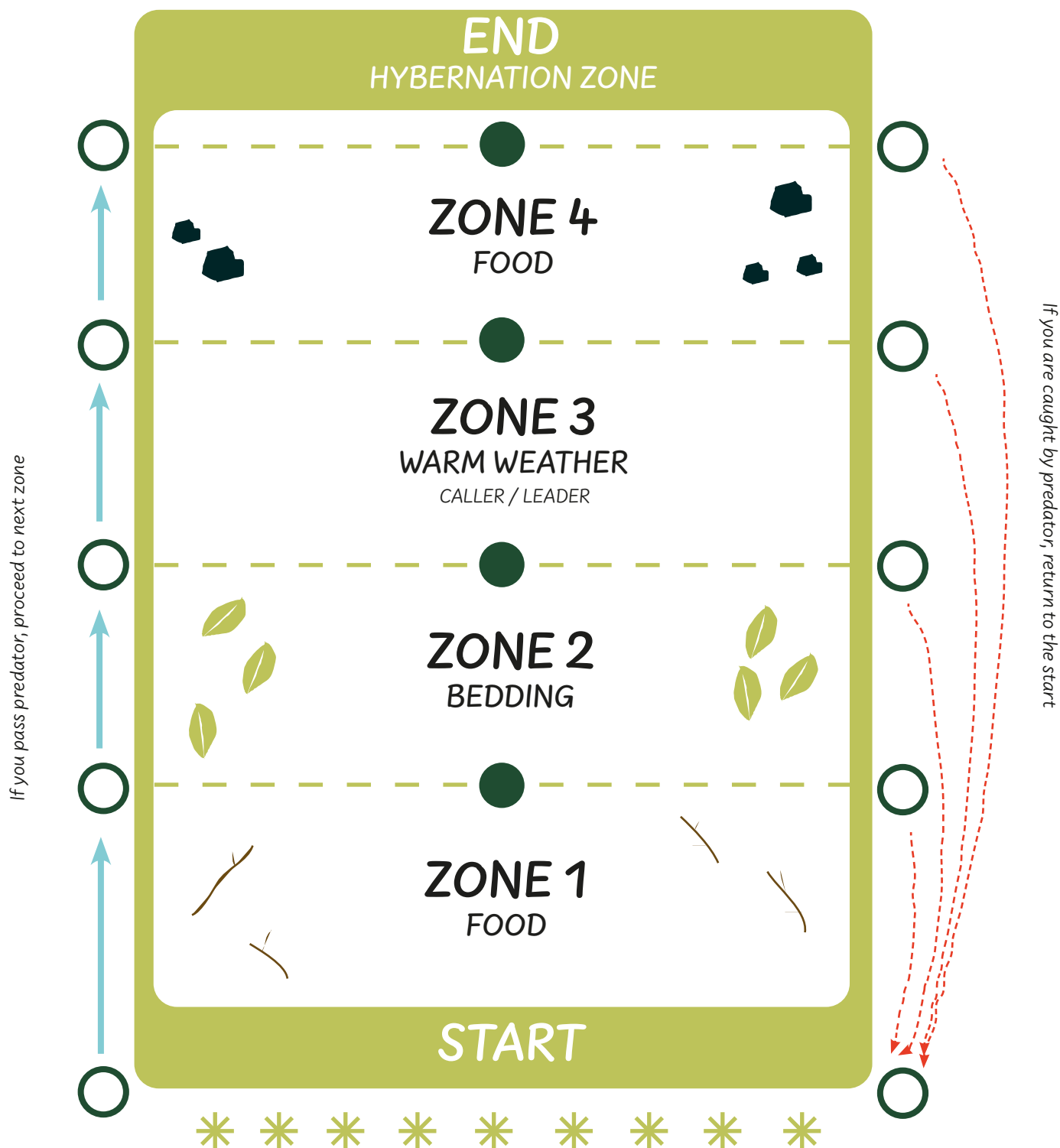
## Set up

1. Create a Start Line for all players to begin.
2. Set up four zones:
  - Zone 1: Food Collection (Twigs = earthworms/slugs).
  - Zone 2: Bedding Collection (Leaves = bedding).
  - Zone 3: Warm Weather Challenge (Simulate energy loss with jumping jacks/hops based on the temperature).
  - Zone 4: More Food Collection (Stones = snails).
3. Mark an end zone for players to reach safety/hibernation.
4. Assign 1–2 learners to act as predators (e.g., foxes or badgers) and tag players between zones.
5. Decide on a challenge for the 'Warm weather' zone, e.g. It's 10°C = 10 jumping jacks / It's 20°C = 20 hops / It's 30°C = 30 star jumps.

## How to Play

1. Players start at the Start Line and move through the zones, collecting 2 food items (twigs or stones) and 1 bedding item (leaves).
2. Players must avoid predators between zones. If tagged, players return to the Start Line, discard items outside the play area, and restart.
3. Follow zone-specific instructions:
  - Zone 1: Collect 1 twig.
  - Zone 2: Collect 1 leaf.
  - Zone 3: Perform the warm weather challenge based on the temperature.
  - Zone 4: Collect 1 stone.
4. The game ends when the players reach the End Zone with all items collected, OR no items are left to collect, symbolising resource scarcity.
5. After playing the game, take some time with the learners to reflect:
  - What do hedgehogs need for food and bedding to prepare for hibernation?
  - How does warm weather cause energy loss and create survival challenges for hedgehogs?
  - What threats do predators pose to hedgehogs?
  - How do limited resources affect the survival of wildlife?
  - How could this activity be adapted for younger learners? (e.g. reducing the number of zones or making predators stationary).

# Hibernation Challenge



Cones



Hedgehogs  
Learners



Predator  
Fox/Badger/Owl/  
Hawks/Dogs



Twigs



Leaves



Stones



# Why Hedgehogs Need Help

## Useful link

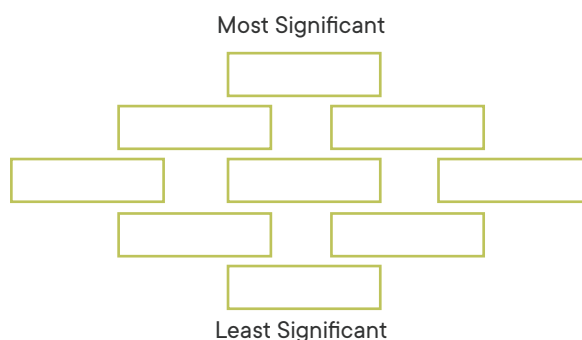
Visit The Big Hedgehog Map website to discover how many hedgehogs have been seen in your area  
[www.tiramor.cymru/hibernation](http://www.tiramor.cymru/hibernation)  
 (Resource 1)

## Equipment required

- Print out the 'Hedgehog Threats' and 'Possible Solutions' worksheets, one per pair
- Scissors
- Pencils or pens
- Internet enabled devices and internet access for research

## To complete the activity

1. Give each pair of learners a set of statement cards to rank. Ask them to cut and rank these statements in a diamond formation. Learners may wish to use the internet to research and gather more information about each threat to make informed decisions. The most significant threats should be placed at the top, and the least significant at the bottom.



2. Encourage learners to discuss their choices and explain why they ranked them as they did. e.g. "Why do you think this threat is more significant?"

3. Invite learners to share their ideas with the rest of the class. Systemic issues (like habitat loss and road traffic) have the most profound and widespread impact, while more localised or preventable dangers (like litter or bonfires) are less critical overall.

4. The activity can be extended by encouraging learners to consider and research possible solutions to protect hedgehogs and their habitats. Ask learners to come up with creative ideas to address a significant threat (e.g., creating hedgehog highways through fences and hedges; building hedgehog homes, like nesting boxes or log piles; or, implementing slower speed limits in areas with known hedgehog populations).

5. Challenge learners to write a hedgehog-friendly post for the school social media, educating others about how to protect hedgehogs.

## Social media post guidelines

1. Select the social media platform to be used.
2. Create an engaging message, keeping the content concise (maximum 150 words).
3. Include a clear call to action, e.g., creating hedgehog-friendly gardens.
4. Choose strong visuals, ensuring necessary permissions to use any images.
5. Use relevant hashtags to increase visibility (e.g., #hedgehog, #wildlife, #conservation).
6. Consider providing hyperlinks to reliable additional information in your post.

# Hedgehog Threats



## Game rules

Cut out the statements and arrange in a diamond shape, placing the most significant threats to hedgehogs at the top and the least significant at the bottom.

Discuss your choices with your partner and be ready to explain and justify your rankings to the rest of the class.

### Habitat loss

The loss of natural habitats like hedgerows and woodlands reduces the space for hedgehogs to live and forage.

### Pesticides

The widespread use of pesticides harms hedgehogs by killing the insects they rely on for food.

### Road traffic

Hedgehogs often fall victim to road accidents, especially when crossing roads at night. An estimated 200,000 are killed annually on roads.

### Garden and other dangers

Man-made dangers like ponds, netting, and garden tools such as strimmers and lawn mowers can harm. Football goal nets left unfurled are also a real danger.

### Climate change

Warmer winters can disrupt hedgehogs' hibernation, causing them to wake up more frequently and deplete their energy reserves.

### Weather changes

Changes in weather patterns can affect the availability of insects, hedgehogs' primary food source.

### Disturbance of nesting sites

Human disturbance of nesting sites can stress hedgehogs and disrupt their breeding cycles, leading to fewer successful litters.

### Fungal infections

Hedgehogs can be susceptible to fungal infections, particularly in damp conditions, which can weaken their immune systems and make them more vulnerable to other threats.

### Ticks

Warmer, wetter winters can create ideal conditions for ticks to survive and reproduce. Ticks carry diseases which can pose a health risk to hedgehogs.

### Human cruelty

Some people still harm hedgehogs intentionally, which can have devastating consequences for individual hedgehogs and populations.

### Bonfires

Hedgehogs may seek shelter in unlit bonfires. When the bonfire is lit, the hedgehogs can be injured or killed as they will curl up rather than run away.

### Litter

Hedgehogs can become trapped in discarded rubbish, such as plastic rings or cans.



Hedgehogs can run up to 6 miles per hour!

# Possible Solutions



Research possible solutions, like creating hedgehog-friendly gardens, building nesting boxes, or slowing traffic in areas where hedgehogs live. Think about how these ideas can help protect hedgehogs and reduce the threats they face.

Once you have your information, write a hedgehog-friendly post for the school's social media page!

Max  
150 words

In your post, explain why hedgehogs need help and share how people can protect them. Be creative and include simple tips that others can follow to make a real difference!



A hedgehog has  
between 5000 and 7000  
spines/quills (spikes)!