

# For Creative Minds

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## Animals and Winter Adaptation Fun Facts

Living things adapt to seasonal changes in different ways. Animals have adaptations to help them survive hot weather in the summer and cold weather in the winter. Even humans adapt to seasonal changes.

These adaptations can be changes in their bodies (physical) or they can be changes in things that the animals do (behavioral). Animals raised by a parent (or parents) learn some behaviors. Other animals never know their parents and survive purely on instinct. Can you tell which animals in the story could learn from their parents (say “mama”) and which could not?

Many animals move to a different location (migrate) when the weather starts to get cold. They are following not only warmer weather and seeking shelter, but also are often following food sources. Birds are the most obvious migrators to most of us because they are so visible flying in huge flocks along bird “flyways” that run north to south. But not all birds migrate—some stay through cold weather if there are enough food sources. Some birds that don't migrate include cardinals, crows, sparrows, black-capped chickadees, hawks, and starlings. A few mammals (whales) and insects (Monarch butterflies) migrate. Even some grandparents migrate by spending the winter in warmer climates and coming back in the spring as the weather warms and the snow melts.



Other animals go to sleep for long periods during the winter (hibernation in mammals or brumation in reptiles). These animals slow their systems down so they don't need as much energy: their hearts beat slower, they don't breathe as often, and sometimes their body temperatures even drop. These animals spend the whole winter like this. Some animals might go to sleep for several weeks (dormancy) but then wake up to go to the bathroom or get something to eat before going back to sleep again.



Animals need food for energy. Even animals that hibernate, brumate, or go dormant still need enough energy for their bodies to get oxygen and for their hearts to pump blood. Migrators need enough energy to fly, swim, or walk to where they are going. Animals that stay through the cold weather need enough energy to keep warm and to be able to get food.

Many animals eat enough food to build up a layer of fat before winter arrives. Their bodies burn this fat for energy when there's no other food. Bears going into hibernation will be fat but wake up thinner—after all, they haven't eaten anything for months. Migrating animals may eat little or no food as they travel.



Some animals save (cache) food. Humans might run to the grocery store to stock up on food if they know a big storm is coming. Squirrels gather nuts in the fall so they have something to eat in the winter when they might not be able to find nuts. Some animals (beavers and muskrats) even build their food supply into their dens!

The types of food that animals eat change with the seasons too. Foods that are readily available in the summer are not around in the winter. Animals that eat green leaves, berries, or small insects won't be able to find that type of food during the winter. They might eat tree bark or small rodents instead.



When it gets cold, humans heat buildings—schools, stores, and homes. The energy for that heat might come from electricity, gas, or oil. Just as we might try to save energy in our houses by turning down the temperature, some animals turn down their body temperatures to save food energy.



Humans wear thin jackets in the fall or spring but then wear heavy, warm coats in the winter. Many mammals grow thicker fur in the winter. Other mammals shed summer fur and grow winter fur. The winter fur is often two layers: an outer fur of hollow hairs to act as an insulator and a short, thick underfur. Fur colors might even change. The winter colors absorb and retain heat from the sun but the summer colors reflect the heat. Some birds molt summer feathers and grow thicker, warmer feathers for winter.

Many animals build or find warm winter homes to protect them from snow and wind. These homes can be underground, under rocks, under bushes, in piles of leaves, in tree hollows, or even dug right into snow! Some brumating reptiles or amphibians will even dig into mud at the bottom of a lake or pond!



Many animals will curl up to conserve body heat, just as we might curl up under warm blankets to stay warm. Animals cuddle with other animals—sharing body heat.

Some insects survive the long, cold winter as larva. When warm weather arrives, they move into the next stage of their life cycle. Other insects migrate long distances, and still others might find a warm spot and go dormant.



When cold, warm-blooded birds and mammals shiver to get warm. When muscles shiver, they turn energy into heat.



Tiny muscles attached to each hair make goose bumps. When the body is working to warm itself, these muscles raise the hairs for extra insulation. We don't have enough thick hair (fur) to make a big difference, but for mammals with thick fur, this helps a lot.

# Winter Animal Matching Activity



box turtles



grey squirrels



black bears



white-tailed deer



honeybees



Black-capped chickadees

Match the animal to its description.

**1** These small **mammals** build a sturdy nest, called a drey, and huddle together to take advantage of the body heat of others. They slow down their movements so they don't use as much energy and don't need a lot of their already stored food. They also grow a thicker coat of fur to trap more body heat.

**2** These **mammals** eat and gain enough weight during the fall to have several inches of fat to provide enough energy during their long hibernation. While hibernating, their heartbeats drop from 40 to 50 beats a minute to only 8 to 12. Their temperature only drops a little, allowing them to wake up quickly if needed.

**3** These **reptiles** brumate by burying themselves in up to two feet of mud, soil, or the remains of decaying plants. Some even move into mammal burrows to hide from cold weather.

**4** These **birds** shiver to make body heat that is then trapped between their body and their fluffy down feathers. While they spend most of the day searching for food, at night they huddle together in sheltered areas to share body heat.

**5** These **mammals** shed their fur in the spring and fall. Their summer fur is solid with no underfur. Their winter fur has two layers: a dark fur to absorb the sun's heat with hollow hair, and a thick underfur for extra insulation. They eat lots of food in the fall so they have a thick layer of fat. That fat provides almost half of the energy needed to survive the winter. When they get cold, they get goose bumps to raise fur for extra insulation.

**6** These **insects** stay warm by clustering together inside their hive. The middle of the cluster, where the important queen and babies are kept, is about 80°F (26.6°C). The outside of the cluster is colder. They make heat by shivering and beating their wings. The animals on the outside move from the middle of the cluster to the outside and back again. They eat when they are on the outside of the cluster.

Answers: 1) grey squirrels, 2) black bears, 3) box turtles, 4) black-capped chickadees, 5) white-tailed deer, 6) honeybees

## and Animal Classes



Monarch butterflies



deer mice



humans



hummingbirds



wood frogs



red foxes

**7** During the summer, these small **mammals** have plenty of vegetation to keep them hidden from predators. Winter snow protects them as they travel around in tunnels. Come spring, the grass will be indented where their tunnels ran under the snow. Adults can squeeze through openings that are no larger than a dime!

**8** These **mammals** heat their homes and trap heat under warm clothing, blankets, coats, boots, mittens, and hats. Some retired adults even migrate to warmer climates for the winter.

**9** These **insects** fly over 1500 miles (2400 km) to warm weather in Mexico or Southern California. Even though they are the “great-grandchildren” of the insects that made the same trip a year earlier, these animals even fly to the same trees! Scientists don’t yet understand how they know where to go.

**10** During the winter, these **mammals** curl into balls and wrap their tails around their noses and feet to stay warm. Sometimes they are completely covered with snow.

**11** Even though they put on lots of weight before migrating, these **birds** need to eat often during their travels. They fly just over the treetops to easily catch insects and find nectar to drink. To hide from predators, they fly alone instead of in large flocks.

**12** These **amphibians** are not great diggers so they hide in cracks of logs, old mouse burrows, or under leaf litter on the forest floor. When the temperature begins to drop, ice crystals form in almost half their bodies. A substance much like antifreeze in a car protects their hearts, lungs, and brains. They look like they are dried out and dead, but are really just suspended until warm weather thaws them again.

Match the colors to identify the animal classes. Which animals are **mammals**, **reptiles**, **birds**, **insects**, or **amphibians**?

Answers: 7) deer mice, 8) humans, 9) Monarch butterflies, 10) red foxes, 11) hummingbirds, 12) wood frogs  
 mammals: grey squirrels, black bears, white-tailed deer, deer mice, humans, and red foxes  
 reptiles: painted turtles  
 birds: black-capped chickadees and hummingbirds  
 insects: honeybees and Monarch butterflies  
 amphibians: wood frogs