

How Animals of the Sierra Nevada Mountains Survive Winter

Student Study Sheet

Animal	Strategy for Survival
Black Bear	Hibernates in a state of torpor and decreases body metabolism by lowering temperature, heart rate and breathing; eats lots of food in the fall to create a layer of brown fat; delays implantation; pregnant female dens.
Opossum	Hibernates in a deep sleep in the ground, a cave, a tree and decreases body metabolism by lowering temperature, heart rate, and breathing; eats lots of food in the fall to create a layer of brown fat; huddles with others to keep warm, sometimes with woodchucks, raccoons, and skunks.
Shrew and mole	Increases body metabolism by raising heart rate, breathing, and temperature; grows a dense coat and secretes oils to help waterproof the fur; stores food to eat later; tunnels under snow to find food; huddles with others to keep warm; produces a layer of brown fat; hunts all winter; changes diet.
Bats (9 species)	Some hibernate in a state of torpor and decrease body metabolism by lowering temperature, heart rate, and breathing; create a layer of brown fat; wrap wings around themselves in a cave, tree, or attic; delay fertilization; others wake up on warmer days to look for food and water, and others migrate to warmer areas and hunt all winter.
Snowshoe Hare	Changes color by growing a white coat with hollow hairs without the color pigment, melanin, that have more air spaces within the hairs and thus has greater insulation; hunts all winter.
Yellow-Bellied Marmot (Woodchuck/groundhog)	Hibernates in a deep sleep in rock piles or tree roots and decreases body metabolism by lowering temperature, heart rate, and breathing; eats lots of food to create a layer of brown fat;
California Ground Squirrel	Stores food to eat later; decreases body metabolism by lowering temperature, heart rate and breathing.
Northern Flying Squirrel	Stores food to eat later; huddles with others to keep warm.
California Gray Squirrel	Builds insulated nests high in the trees; stores food such as acorns for eating later; hides during bad weather.
Golden-Mantled Ground Squirrel	Hibernates; stores food to eat later; eats lots of food in the fall to create a layer of brown fat.
Chipmunk	Hibernates in a state of torpor (short sleeps) and decreases body metabolism by lowering temperature, heart rate and breathing; stores food to eat later.
Chickaree	Builds an insulated nest; changes color; stores food to eat later.
Mice	Some hibernate in a deep sleep in the ground and decrease body metabolism by lowering temperature, heart rate, and breathing; others hibernate in a state of torpor (short sleeps) and decrease body metabolism by lowering temperature, heart rate and breathing; eat lots of food in the fall to create a layer of brown fat; build insulated nests underground to keep warm.

Student Study Sheet, cont,

Animal	Strategy for Survival
Beaver	Eats lots of food in the fall to create a layer of brown fat; stores food underwater to eat later; uses an interlaced network of blood vessels as a heat exchanger to block excessive loss of heat to the environment.
American Porcupine	Grows a dense coat; males roost in trees for days, eating bark; females and juveniles huddle together in dens.
Red Fox	Grows fur on feet and between toes for greater insulation, warmth, and better mobility over the snow; changes diet; hunts all winter.
Raccoon	Hibernates in a state of torpor (short sleeps) and decreases body metabolism by lowering temperature, heart rate and breathing; huddles with others to keep warm; eats lots of food in the fall to create a layer of brown fat; changes diet.
Weasel	Tunnels under snow to find food; stores food to eat later; delays implantation; short-tailed weasel changes color by turning white to camouflage with the snow.
Skunk	Hibernates in a state of torpor (short sleeps) and decreases body metabolism by lowering temperature, heart rate and breathing; huddles with others to keep warm; eats lots of food in the fall to create a layer of brown fat.
Bobcat	Migrates to a new area, changes diet, and hunts all winter.
Mule deer	Migrates to new area, changes diet and hunts all winter; grows new hair that is hollow, which provides more insulation.
Bird	Migrates to a new area, usually a lower elevation, changes diet, and hunts all winter; fluffs out feathers to keep self warm; goes into short periods of torpor at night; generates heat by shivering.
Snake, lizard, newt, turtle	Hibernates in a deep sleep under stones, logs, compost heaps, and old burrows, and decreases body metabolism by lowering temperature, heart rate, and breathing.
Frog	Some hibernate in a deep sleep the ground at the bottom of streams and ponds where the water does not freeze; some find shelter under leaves and dirt; decrease body metabolism by lowering temperature, heart rate and breathing.
Slug, snail, queen wasp, bumblebee	Hibernates in a state of torpor (short sleeps) and decreases body metabolism by lowering temperature, heart rate and breathing; releases chemical to prevent itself from freezing.
Monarch butterfly	Migrates to coastal and southern areas and hunts all winter.
Most insects	Die so eggs can hatch in the spring.
Ladybug	Eats lots of food like aphids and pollen to create a layer of fat.
Fish	Migrates to warmer water and hunts all winter.
Earthworm	Migrates down into the ground, some as far as six feet.
Coyote	Grows a dense coat and secretes oils to help waterproof the fur; grows fur on feet and between toes for greater insulation, warmth, and better mobility over the snow.