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## ***Animals in Winter: Survival at Zero Degrees*** **November 19, 2005 – March 5, 2006**

**Bruce Museum of Arts and Science  
1 Museum Drive, Greenwich, CT 06830**



Snowshoe Hare and Eastern Cottontail  
Bruce Museum collection

When winter's chill sets in each year, we turn up the thermostats indoors but wildlife must adapt in other ways. How animals deal with winter and cold is the focus of the new exhibition titled ***Animals in Winter: Survival at Zero Degrees*** organized by the Bruce Museum of Arts and Science in Greenwich, Connecticut, and on view there from November 19, 2005, through March 5, 2006. The exhibition highlights more than 50 of the Museum's animal mount collection and includes touchable furs and hands-on activities for the whole family. The show is underwritten by The Charles M. and Deborah Royce Exhibition Fund.

Animals meet the challenges of the winter season and the effects of long term cold with diverse adaptations for enhancing survival. Dropping temperatures and shorter days trigger physiologic and behavioral changes in wildlife. These changes demonstrate the variety of successful strategies that animals use to continue the persistent cycle of life.

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Some animals escape the rigors of the coming deep freeze and scarcity of food by migrating to more favorable locations, some slow down and enter a state of hibernation or shorter term torpor, while others tough it out by remaining active. All have evolved adaptations that help them adjust to environmental conditions and survive the stresses of winter. The exhibition explores these three primary strategies for dealing with winter: migration, hibernation or torpor, and remaining active.

Adaptations to winter may be temporary seasonal ones within species, such as changes in fur and feathers, internal physiology, and eating habits. One example contrasts the bright yellow spring colors of the American goldfinch with its drab gray-green winter plumage. Other adaptations are morphological ones that demonstrate differences between similar species. Visitors can compare the eastern cottontail and the snowshoe hare, for instance, and learn why the hare's wider feet and a larger size help it thrive in colder, snowier environments.

Many birds, fish, and some insects such as the monarch butterfly migrate long distances in response to the changing seasons. Animals that cannot survive the stress of a New England winter leave this area, traveling thousands of miles to subtropical and tropical habitats. Some creatures, including numerous waterfowl that frequent on Long Island Sound, come into our area after leaving northern breeding grounds. Are Canada geese really from Canada? Find this out in the exhibition and learn the connection to the yellow neckbands on the geese in local parks. Visitors can follow migration highways to see where each species goes and participate in a Project FeederWatch study to track migrating and resident birds.

Among the most remarkable animals of winter are those that are seldom seen because they enter the "deep sleep" of hibernation or torpor, a state of reduced activity during which a mammal uses less energy and its metabolism decreases. The show features the woodchuck, black bear, chipmunk, and bats to highlight different states of torpor. Visitors can take a close-up view under the microscope of the special brown fat cells that help keep these animals from freezing and listen to the dramatic changes in their heart and respiration rates.

Examples of reptiles, fish, amphibians and insects are also on view to demonstrate how their metabolic rate slows down until a state of suspended animation is reached; they barely breathe and the heart slows almost to a stop. Some, such as the wood frog and spring peeper, can partially freeze without suffering damage to their tissues and revive again in spring; their secret involves a biochemical equivalent to antifreeze.

Remaining active in winter means finding food and conserving energy. Specimens on view illustrate concepts of survival strategies. One display shows specimens of gray squirrel, red squirrel, flying squirrel or ground squirrel and challenges the viewer to match a behavior to each type of squirrel. White-tailed deer grow thicker fur with hollow hairs to help keep them warm, and they eat more woody plants and buds at this time to stave off starvation. Mammals that live in cold environments are typically larger than members of the same species that live in warmer areas. Deer skulls on loan from the Peabody Museum of Natural History at Yale University show how this principle works, and a simple block game helps visitors understand why. Some species such as the willow ptarmigan and ermine have developed protective coloration that changes with the season. Red fox and coyote compete for resources, and visitors will learn which one usually wins. The glaucous gull helps explain how birds can stand on snow and ice without freezing, while bird feeding stations on the Museum grounds invite visitors to make observations of live winter birds. Hands-on exploration of animal tracks and signs show how we can discover more about winter animals from the clues they leave behind.

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The Bruce Museum of Arts and Science is located at 1 Museum Drive in Greenwich, Connecticut. It is situated near Interstate-95, Exit 3, and a short walk from the Greenwich, CT, rail station. Museum hours are: Tuesday through Saturday 10 a.m. to 5 p.m., Sunday 1 p.m. to 5 p.m., and last entry is 4:30 p.m. Closed Mondays and major holidays. Admission is \$7 adults, \$6 seniors and students, and free for children under five and members. Free admission to all on Tuesdays. Groups of eight or more require advance reservations and are subject to a special group fee. Museum exhibition tours are held Fridays at 12:30 p.m. Free, on-site parking is available. The Bruce Museum is accessible to individuals with disabilities. For information, call the Bruce Museum at (203) 869-0376 or visit the Bruce Museum of Arts and Science website at [www.brucemuseum.org](http://www.brucemuseum.org)