WILD TIMES FOR KIDS

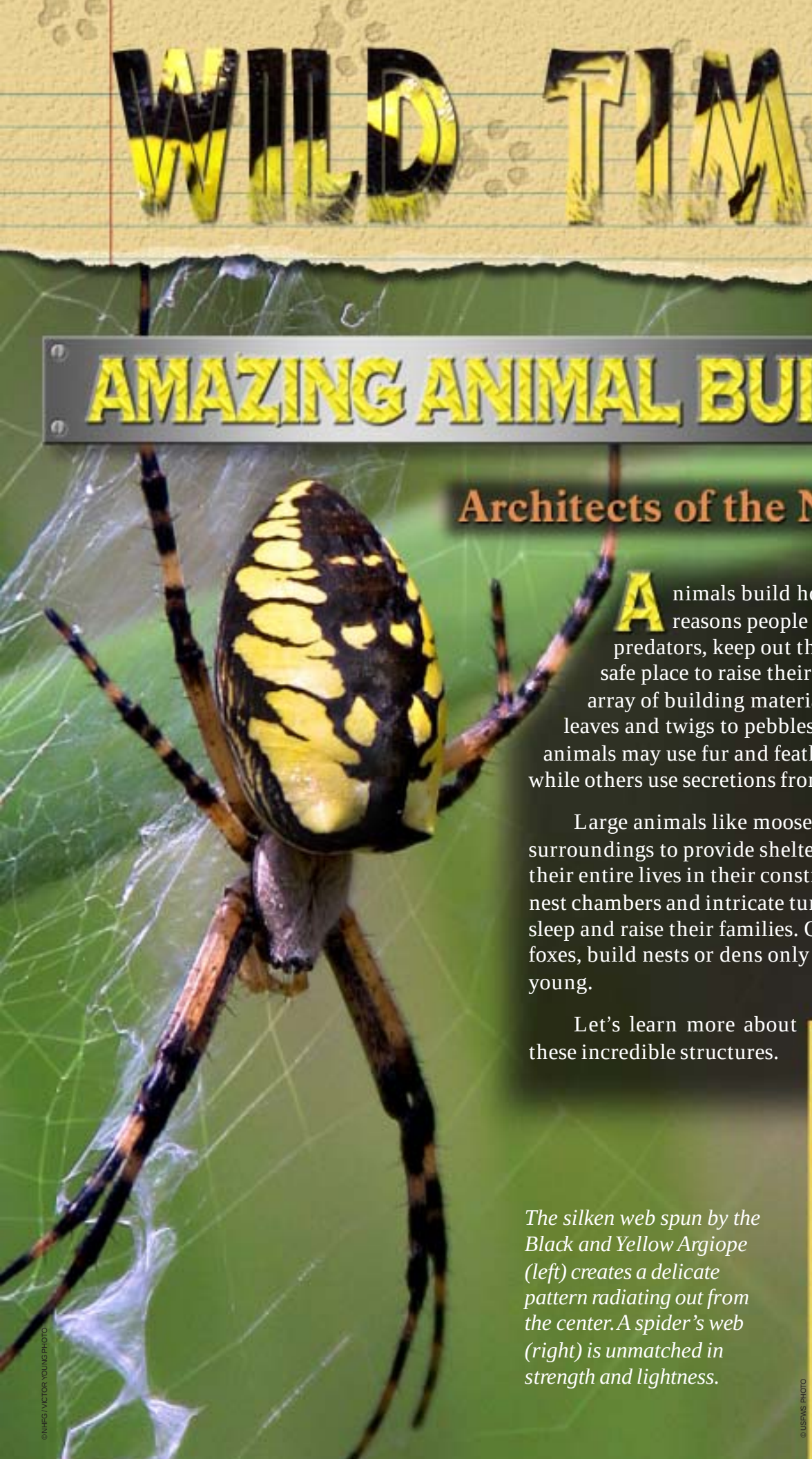
AMAZING ANIMAL BUILDERS

Architects of the Natural World

Animals build homes for the same reasons people do: to protect from predators, keep out the weather and have a safe place to raise their young. An amazing array of building materials are used — from leaves and twigs to pebbles and mud. Some animals may use fur and feathers to add insulation while others use secretions from their own bodies.

Large animals like moose and deer use their surroundings to provide shelter. Some animals spend their entire lives in their constructions. Moles dig nest chambers and intricate tunnels where they hunt, sleep and raise their families. Others, like robins and foxes, build nests or dens only as a place to raise their young.

Let's learn more about these incredible structures.



The silken web spun by the Black and Yellow Argiope (left) creates a delicate pattern radiating out from the center. A spider's web (right) is unmatched in strength and lightness.

NATURE'S ENGINEER

New Hampshire's Master Builder, the Beaver

As the water moves slowly through the tall grass, the engineer surveys the landscape. His watchful eyes spot two natural banks located just the right distance apart for building a new dam. He scans the area for poplar and alder and finds the supply sufficient for his needs. With a dam built right here, a reservoir ten feet deep would form a fine aquatic habitat for plants, fish, amphibians, waterfowl and other furbearers. Who is this engineer? It's one of New Hampshire's best wildlife managers and construction experts—the beaver.

CREATING A POND

Beaver dams are usually located between two banks, with a water source in the middle. Dam construction begins when sticks or logs are placed lengthwise on the downstream side, with longer sticks forming the base. Spaces between the sticks are chinked with stones, leaves, mud and twigs, stopping the flow of water. Beaver continually maintain their dams.

Unlike their human counterparts, beavers are not issued special tools or equipment to help them build. Instead, they have adaptations which are ideally suited for cutting down trees, constructing dams, building homes called lodges and storing food.

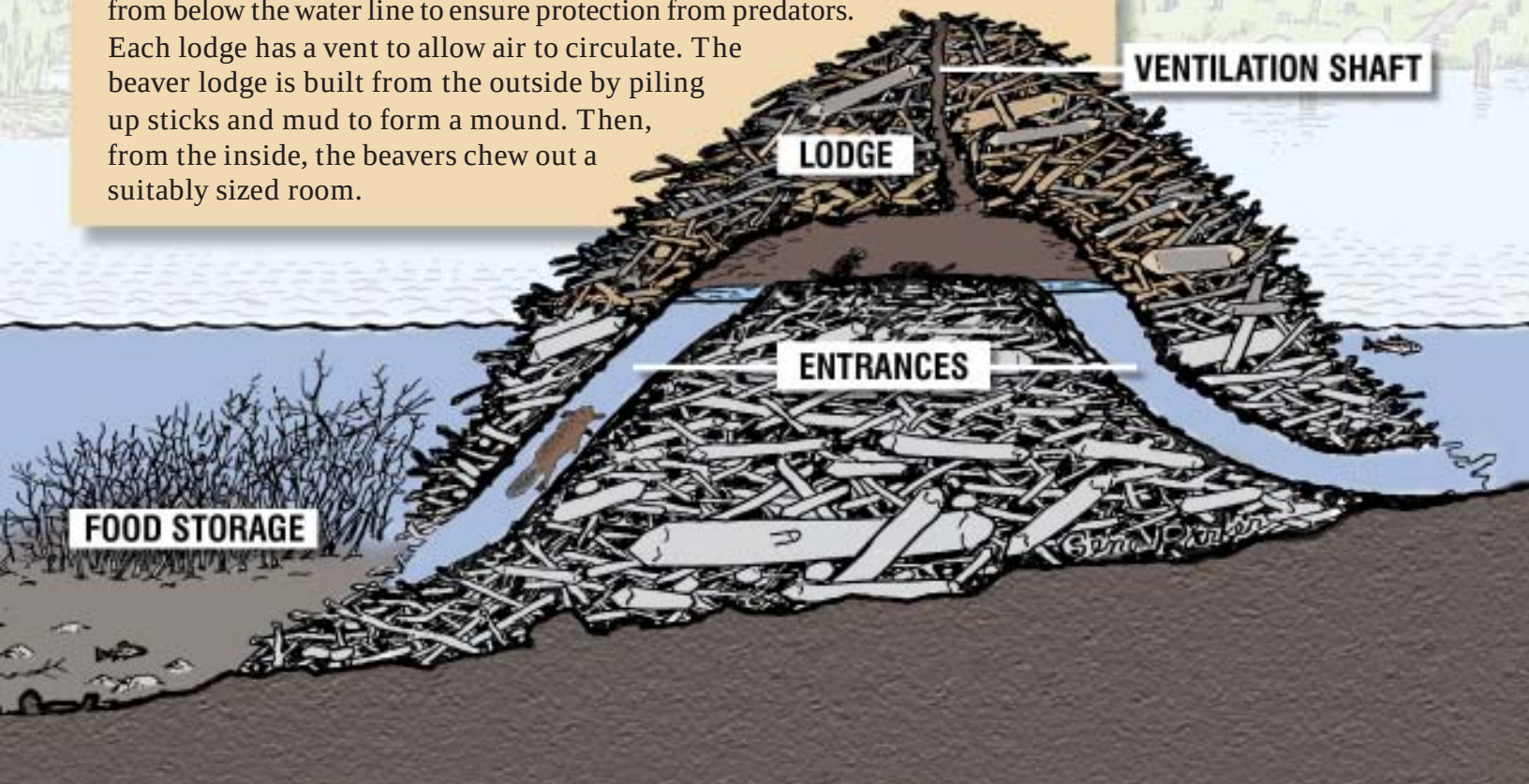
Beaver are one of the world's largest rodents—weighing from thirty to eighty pounds or more — with short, front legs, large webbed feet and a broad, flat scaly tail. It might surprise you to know that a beaver never stops growing.

Like other rodents, the beaver has four large, orange front teeth called incisors. These chisel-like teeth continually grow. Beaver must gnaw to keep their teeth under control. Two protective flaps of skin behind the teeth keep wood and water out of their throat as they carry supplies while swimming.

Nearly everything beavers eat is plant material. In the summer they eat soft plant foods and roots of water plants, as well as the bark, twigs and buds of trees. These woody plants make up the bulk of autumn and winter foods.

ARCHITECTURE OF A LODGE

Once there is a pond behind the dam, beaver generally build a lodge to live in, exercising great architectural skills. The top of an average lodge rises six to eight feet above the water line and is six to twelve feet across. The cozy interior is lined with twigs, leaves and bark to keep the beaver dry and warm in winter. Two or more plunge holes, or entrances, to the lodge are entered from below the water line to ensure protection from predators. Each lodge has a vent to allow air to circulate. The beaver lodge is built from the outside by piling up sticks and mud to form a mound. Then, from the inside, the beavers chew out a suitably sized room.



the Fine Art of NESTING

A Nest for Every Bird

Nests are shelters prepared by birds to keep their eggs and young warm and safe from predators. These amazing structures come in all different shapes, sizes and styles. Birds build their nests in many different kinds of places. Some birds choose to nest on the ground; others build high up in a tree; still others look for tree cavities or burrow underground. Birds use a variety of nesting materials, including sticks and twigs, mud, stones, leaves, lichens, mosses, grasses, spider webs, snake skins, thistle down, hair, feathers and saliva and even human-made materials like ribbon and paper. Nest materials help cushion, insulate and keep the eggs together. Beaks and claws are the tools that nature provides to build a nest — a bird will often use the curve of its body to mold the perfect shape.

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The hanging nest of the **Baltimore Oriole** *is attached at the far end of slender branches, making them safe from climbing predators or large bird predators like crows. The pouch is woven plant fibers bound with spider web, concealing the young and shedding water. The inside is lined with fine grass, plant down and hair.*

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Bank swallows *dig burrows out of a river bank, two to three feet deep. They then line the nest with grass, rootlets and feathers.*

The tiny nest of the **ruby throated hummingbird** *is a work of art, with lichen on the exterior bound together with spider's silk and lined with plant down.*

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Usually built in the fork of a deciduous tree about ten feet off the ground, the **rose-breasted grosbeak's** *nest looks like it was built in a hurry. The nest is composed of loosely put together twigs and coarse plant material lined with fine twigs, rootlets and hair.*

DESIGN *for a* REASON

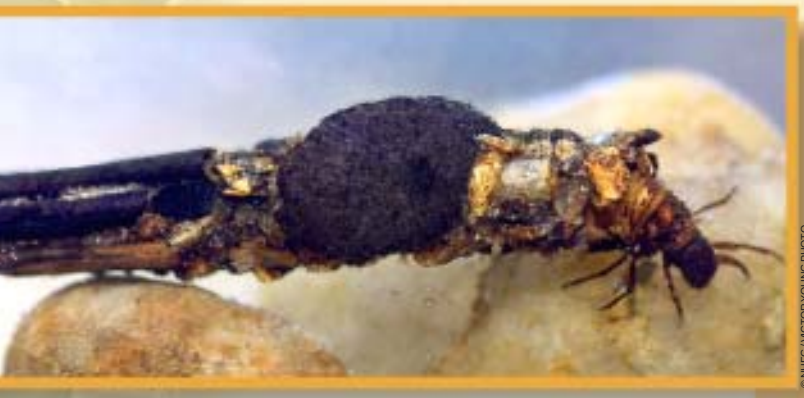
Insect Structures Abound

Did you know that there are more than 15,000 different kinds of insects in New Hampshire? From ants that mound huge hills to paper wasps that fashion intricate hanging homes in trees, these creatures' diverse architecture can teach you a lot about their lifestyles.

HONEYBEES

Wild honeybees build hives in holes of hollow trees or even rock crevices. They make their hives by bonding together thousands of wax cells into honeycombs. The wax comes from special glands on the bees' abdomens. The bees scoop up flakes of wax from their abdomens and put it into their mouths. They chew on the wax until it becomes soft and moldable. Then they make the cells to form the honeycomb.

©COREL PHOTO



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CADDISFLY

Caddisfly larvae live in a wide range of environments, from fast-flowing streams to freshwater ponds. Their soft bodies are usually covered in a protective silky case, woven with material from their salivary glands. Different species make their cases from all kinds of materials and in different shapes. Gravel, twigs, pine needles or sand are used as part of the case depending on what the stream bottom is like. These structures help protect caddisflies from predatory fish.

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MONARCH BUTTERFLY

©ALAN BRIERE PHOTO

The name for a butterfly pupa is a chrysalis (far left). When a monarch caterpillar pupates (about to become a butterfly) the larva (caterpillar) splits its exoskeleton and wiggles out of its larval skin. When this skin moves far enough down the body, the *cremaster* appears. The cremaster is a spiny appendage at the end of the abdomen. The monarch hooks its cremaster into a silk pad spun by the larva just before pupation; it will hang from this until it emerges as an adult butterfly. The freshly exposed pupa is very soft and delicate until it hardens. You can see many different body parts on the pupa, including the wings, abdomen, legs and eyes.

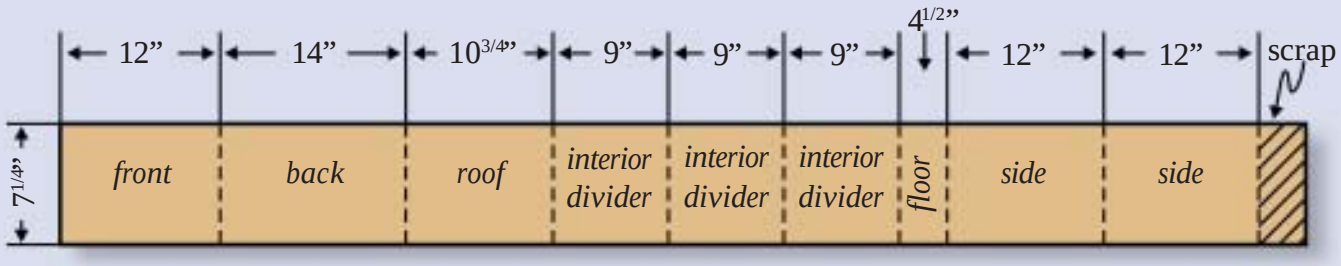
©ALAN BRIERE PHOTO

Be a Builder

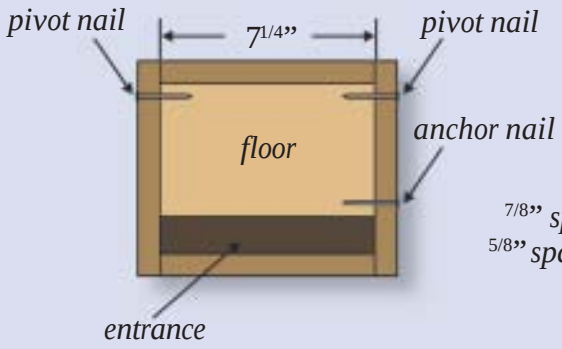
Home Building 101

Not all animals are amazing builders. In fact, many need to find a home that is already made. One of these New Hampshire creatures is the bat. Bats look for homes in caves, rock crevices, the attics of homes and many other hiding places. One way to help bats find a place to stay is to build a bat box. So, go get some help from your mom, dad or a friend and with a slab of lumber, a hammer, a saw and some nails, use the plans below and build a bat box!

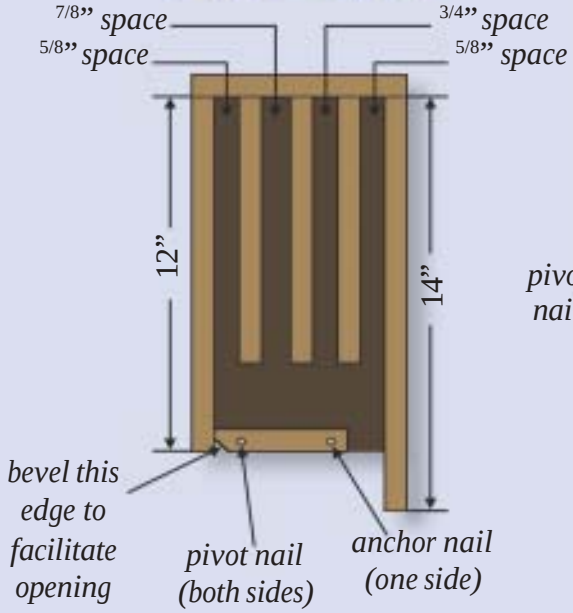
Lumber Needed: One 1" x 8" x 8' board



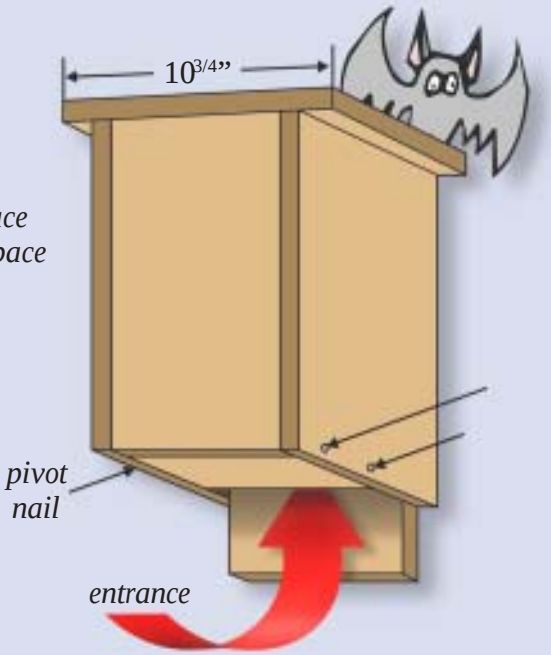
BOTTOM VIEW



SIDE VIEW



FRONT VIEW



Before assembling make sure you scratch up or roughen all interior surfaces. This will help the bats find some "grip" when entering and settling into the bat box.

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