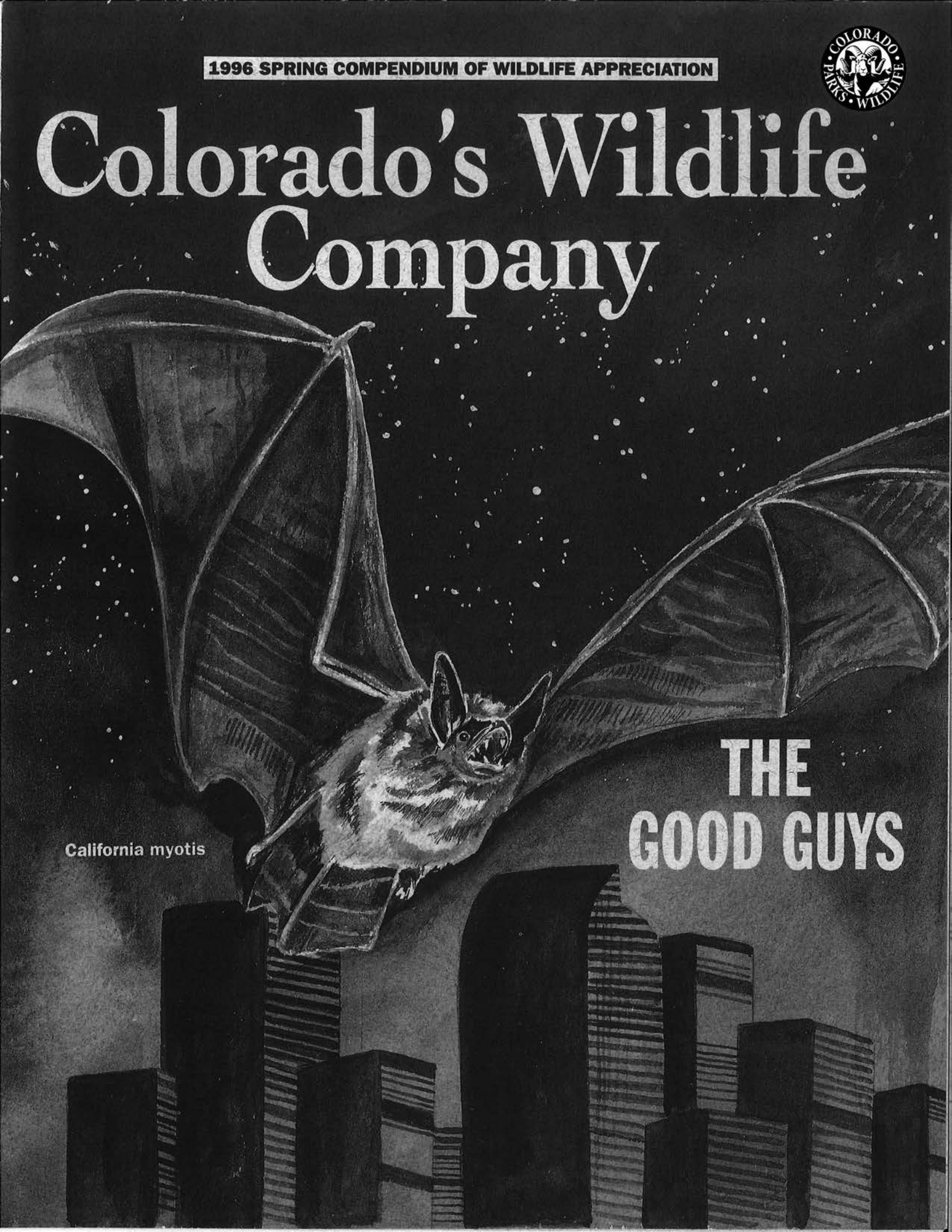
1996 SPRING COMPENDIUM OF WILDLIFE APPRECIATION

Colorado's Wildlife Company



THE GOOD GUYS

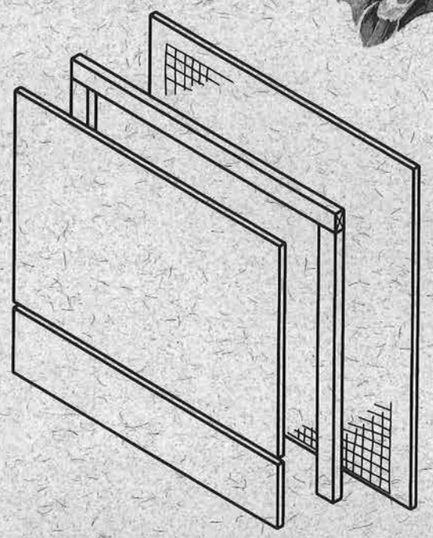
California myotis

Build A Better Bat House!

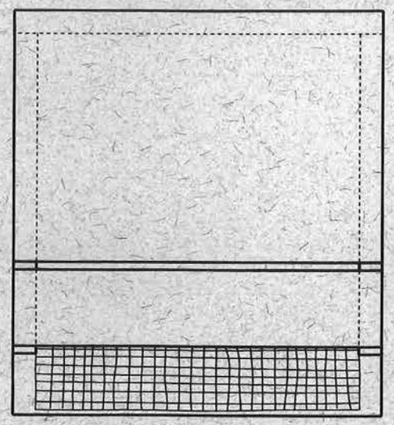
SMALL ECONOMY BAT HOUSE

Materials Needed

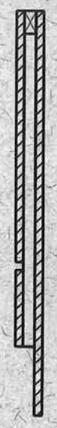
- 2' by 4' sheet cdx (outdoor grade) plywood
- 8-foot 1" by 2" furring strip
- 20" by 22 1/2" piece of 1/8" mesh hdpe (plastic) netting. Do NOT use metal window screening.
- 30-40 1 1/4" multipurpose (drywall) screws
- 5/16" staples
- 1 tube acrylic caulk
- 1 pint exterior latex paint



exploded view



front view



side view

Bat Conservation International

These plans are provided courtesy of Bat Conservation International, a non-profit organization dedicated to bat conservation, bat research and public education. Founded in 1982, BCI works to transform public perceptions about bats, protect threatened and endangered bats and preserve valuable ecosystems. To obtain information and membership information contact Bat Conservation International, P.O. Box 162603, Austin, TX 78716, 1-800-538-BATS (2287)

DIRECTIONS

1. Measure and cut plywood into three pieces: 26.5" by 24" (back); 16.5" by 24" (front-top); 5" by 24" (front-bottom)

2. Measure and cut furring strip into one 24" length and two 20 1/4" lengths

3. Screw back to furring strips, caulking first, placing 24" piece first along top, and shorter lengths along sides. Leave bottom open.

4. Staple the netting to inside surface of back (between furring strips), starting at the bottom. Be sure netting lies flat (curve down) and does not pucker.

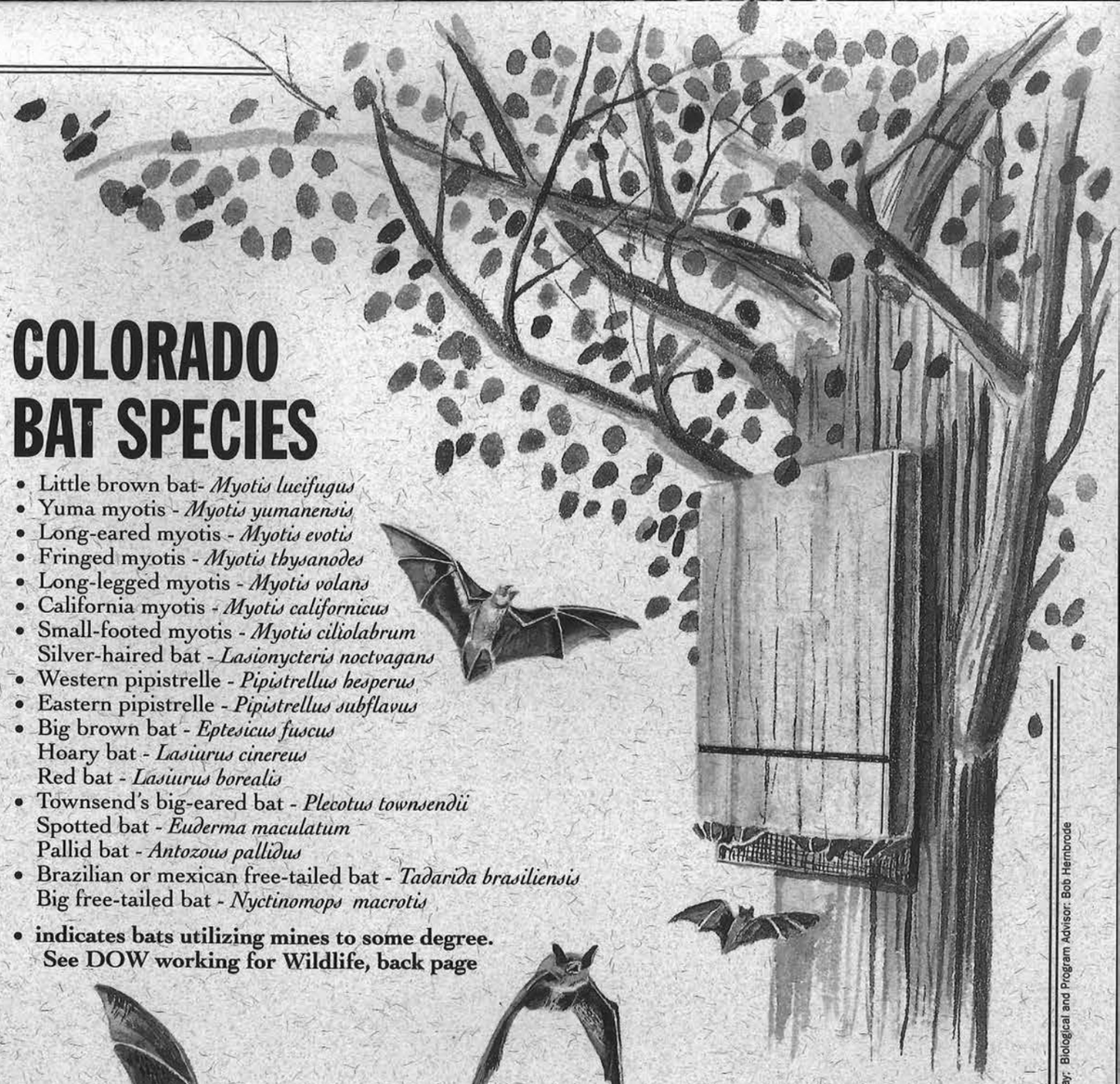
5. Screw front panels to furring strips, starting with top piece and caulking first. Leave a 1/2" vent space between top and bottom panels.

6. Caulk around outside joints if needed to seal roosting chamber.

7. Attach a 4" by 28" board to the top as a roof, if desired.

8. Paint exterior with at least two coats (preferably brown).

Mount the finished house at least 12 feet from the ground, on a pole, wall or tree with a south-facing exposure where it will get six or more hours of direct sun. Bats will only use the house in the summer and can tolerate temperatures as high as 110°. For further information and other bat house options, consult *The Bat House Builder's Handbook*, available from Bat Conservation International.



COLORADO BAT SPECIES

- Little brown bat- *Myotis lucifugus*
- Yuma myotis - *Myotis yumanensis*
- Long-eared myotis - *Myotis evotis*
- Fringed myotis - *Myotis thysanodes*
- Long-legged myotis - *Myotis volans*
- California myotis - *Myotis californicus*
- Small-footed myotis - *Myotis ciliolabrum*
  Silver-haired bat - *Lasionycteris noctvagans*
- Western pipistrelle - *Pipistrellus hesperus*
- Eastern pipistrelle - *Pipistrellus subflavus*
- Big brown bat - *Eptesicus fuscus*
  Hoary bat - *Lasiurus cinereus*
  Red bat - *Lasiurus borealis*
- Townsend's big-eared bat - *Plecotus townsendii*
  Spotted bat - *Euderma maculatum*
  Pallid bat - *Antozous pallidus*
- Brazilian or mexican free-tailed bat - *Tadarida brasiliensis*
  Big free-tailed bat - *Nyctinomops macrotis*

- **indicates bats utilizing mines to some degree.**

See DOW working for Wildlife, back page

Who's Living In Your Bat House?

You can help conserve these remarkable and vulnerable animals by joining BCI's North American Bat House Research Project. By sharing information on the bats using your bat house you can make an important contribution to our understanding of the needs of bats, while sharing in the excitement of scientific discovery. Contact BCI to join.

Writing/Editor: Mary Taylor Gray; Graphic Design: Linda Maas; Illustration: Paul Gray; Biological and Program Advisor: Bob Hernbrode

Hawk-Eyed

Humans have excellent vision, but we must tip our hats to the birds of prey. Hawks and eagles have very acute vision, necessary for seeing mice, insects, rabbits and other small prey from the sky or other vantage point. The hawk's eye makes sharp images of small and distant objects that would be indistinguishable blurs to human eyes. We have about 200,000 visual cells per square millimeter in the fovea, or focal point, of our eye, compared to 1,000,000 in hawks and eagles. The raptor eye functions like a telescope; the lens is flattened and placed far from the retina, producing a large image and thus greater visual resolution. Soaring 100 feet above a meadow, a red-tailed hawk can see a mouse moving in the grass below, while a hovering kestrel can pick out grasshoppers in the grass from the same distance. Because their eyes are located more forward in their heads than many other birds, hawks and eagles have good binocular (two-eyed) vision, as well as monocular vision. Thus they can locate objects and form images using both eyes together, or each eye independently. The eyes of the bigger hawks are as large as a human's, pretty amazing considering their heads are maybe the size of tennis balls. Hawks have two fovea in each eye, compared to one in humans. One of these, the "search fovea", gives the bird sharp vision to the side, using just one eye. The other, the "pursuit fovea", functions for accurate depth perception and helps the bird chase down moving prey. Acting together, the four fovea give hawks unusually accurate perception of objects at a distance.

red-tailed hawk

turkey vultures

California myotis

Going Batty

A peaceful summer night broken only by the gentle singing of crickets? Ha! Though soundless to our ears, bats are actually filling our night skies with racket. Flying with their mouths open, bats emit a constant stream of cries, reading the echoes which bounce back from objects in their path. Because these echoes are faint (maybe only 1/2000th of the emitted call) bats are basically shouting as loud as they can. A jackhammer operates at a loudness of about 90 decibels, while the cries of a bat were measured at 100 decibels four inches from its mouth! These sounds are so intense, if humans could hear them, it would be comparable to the roar of a jet engine. Yet bats can pick up faint echoes amid all the noise, like hearing someone whispering over the roar of the crowd at a Bronco game. How do they avoid being deafened by their own calls? Bats have sound-dampening structures in their ears which make their own calls tolerable. Though we sometimes hear the low frequency calls of bats flying overhead, we are deaf to the high pitches used for echolocation. Humans hear frequencies from about 20 to 20,000 cycles per second (cps), while bats can hear sounds up to 200,000 cps. Bats use ultrasonic sounds not to avoid disturbing humans, but because higher frequencies can be beamed like a searchlight, producing sharper echo "images." Bats also have a much greater ability than humans to discern echoes from the original sound. The bat's brain registers an echo as a separate sound with an interval of as little as 1/1000th of a second. By contrast, the human ear cannot differentiate soft echoes directly after a loud sound; study subjects played a sharp "tick" sound in a closed room could not discern the several echoes coming off the walls.

Top Billing

Shorebirds can't rely on sight to find food hiding in sand and mud beneath shallow water. Instead, they use their sensitive, probing bills–not to smell, but to feel for their supper.

The probing action of feeding shorebirds isn't just a hit or miss proposition. Specialized nerve endings in their bills are highly sensitive touch and vibration sensors. Thrust into the mud, the bills can feel prey as well as sense the movements and digging of snails, clams, worms and other food. While we think of the bills and beaks of birds as hard, some are pliable. Snipes and woodcocks have such mobile bills that when the bird thrusts its bill into the soft mud of a marsh, part of the upper mandible can feel around and grab a worm, a bit like the tip of an elephant's trunk! Woodcocks are known to stamp a foot to get the earthworms moving so they can be detected.

The different bill lengths of shorebirds are related to the foods each species eats, and tell us something about the senses needed to find that food. Birds with short, stubby bills, like killdeer, hunt mainly by sight, plucking invertebrates from the surface of a mud flat. At the other end of the scale, the nearly nine-inch bills of long-billed curlews really need the help of touch to locate their prey as they probe deep into the mud after worms and other animals. The long and short of it is, by probing for prey at different depths these species avoid directly competing with each other for food.

common snipe

That Fishy Taste (& Smell)

We don't think of water as a medium for carrying scent, yet the ability of fish to detect trace chemicals dissolved in water rivals the best bloodhounds. A fish's nostrils open to scent organs but have nothing to do with breathing. The Colorado squawfish's olfactory sense is so acute it is comparable to detecting one molecule of a substance in an Olympic-sized pool of water. Trout are so sensitive to a certain chemical in a river otter's skin they will react to evidence of this fish-eater even when it is diluted 1,000 million times. The migration of spawning fish to the small tributary streams where they were hatched is a feat of remarkable homing guided by scent. Colorado squawfish migrate roundtrip 70 to 350 miles in the Yampa and White rivers to spawning grounds in Dinosaur National Monument. After three to five years, kokanee salmon from Blue Mesa Reservoir return 25 miles to the Roaring Judy Hatchery. Probably the sun, water currents or magnetic cues initially guide them, but as they get closer, the fish recognize the scent of their spawning stream. Both dissolved organic and inorganic matter from the plants, animals and geology of that site make up the water quality and characteristic odor the fish identify. When their nostrils were plugged, salmon couldn't find their way to their spawning stream. If they don't recognize a site as "home" they won't deposit their eggs.

Fish also gather information from the water by taste; not by sticking out their tongues, as we might, but by using taste buds scattered on their body surface. Catfish and bullheads have so many external taste buds on their sides, fins, whiskers (called barbels), and all over the head they are like swimming tongues.

Paul Gray '93

News & Notes

A NEW LOOK! You may have noticed this issue of Colorado's Wildlife Company looks a little different. We've welcomed on board a new designer, Linda Nussbaum, who's giving us a fresh look, and we hope you'll enjoy the outstanding work of our new illustrator, Paul Gray. Mary Taylor Gray will continue to bring you her own unique style of writing. Mary has also taken over editorial duties, so direct any questions and comments on Colorado's Wildlife Company to her at P.O. Box 37351, Denver, Co. 80237. Our former editor, Janet Sheppard Duvall, has gone on to full time duties as a Larimer County commissioner, and illustrator Vicki Mayea is devoting more time to being a mom. Best of luck to both of them!

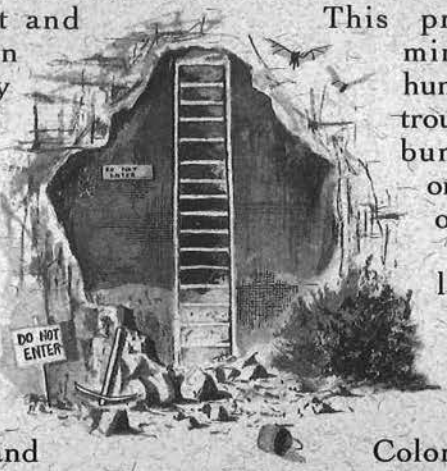
For up-to-date information on wildlife viewing activities or opportunities to learn about wildlife, call the Watchable Wildlife Hotline, 291-7518.

If you're getting more than one copy of Colorado's Wildlife Company please let us know. We're trying to consolidate several mailing lists and eliminate duplicates. But if you or someone you know would like to be added to the list, let us know. Thanks for helping out!

DOW WORKING FOR WILDLIFE

The Bats/Inactive Mines Project

As development and human activity in Colorado destroy habitat for bats, these small flying mammals take advantage of habitat created by humans — old mines. Some mines offer constant temperature and humidity and freedom from disturbance for roosting and hibernating bats.



But while some abandoned mines offer refuge for bats, they can be very hazardous for humans, who might fall into hidden mines or enter unstable tunnels. Approximately 400 mines are scheduled for closure annually as safety hazards by the Division of Minerals and Geology of the Colorado Department of Natural Resources. Typical closure methods involve sealing the opening with concrete or rock and/or backfilling and blasting the mine. This process renders mines safe for humans but is disastrous for bats, either burying them alive or sealing them out of essential habitat.

The solution lies in the Bats/Inactive Mines Project. Each spring and summer, teams of Colorado Division of Wildlife volunteers hike to the sites of mines scheduled for closure. Without entering the potentially dangerous mines (safety training is required before participating in any surveys), the volunteers survey for bat activity by using bat detectors—instruments that translate a bat's ultrasonic cries into frequencies audible to people. Waiting at the mine entrance in the evening, the surveyors detect bats leaving the mine for their evening hunt. Mines found to have active bat populations are sealed with "bat gates" (a grid of steel bars or angle iron) instead of solid closures. The gates allow bats to enter and leave the mines without permitting human access.

To date, of nearly 700 mines surveyed, 70 have been recommended for fitting with bat gates, thus protecting valuable habitat for bats. If you would like to volunteer for the program, contact Tom Ingersoll, Bats/Inactive Mines Project Coordinator, 303-291-7501, 6060 Broadway, Denver, CO 80216.

LETTER TO THE EDITOR

Reader Carol Buchanan expressed concern over a statement in our winter 1995 issue DOW Working For Wildlife article *Furbearer Management Plan*—"trapping strictly for the sale of furs or for recreation has been eliminated." She felt it left the impression that "all trapping is focused on animal damage management."

The intent of the Furbearer Management Plan is to focus trapping on animal damage management, but it does not preclude the sale of furs. The plan means to eliminate trapping for which the primary or sole intent is recreation or the sale of furs.

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