



*owls*

OF BOULDER COUNTY

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Boulder County Nature Association

Boulder, Colorado

[www.bcna.org](http://www.bcna.org)



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## **Table of Contents**

Owl Encounters	4
Owl Magic and Mythology	6
Owls of Boulder County	8
Barn Owl	9
Flammulated Owl	10
Eastern Screech-Owl	11
Great Horned Owl	12
Northern Pygmy-Owl	13
Burrowing Owl	14
Long-eared Owl	15
Short-eared Owl	16
Boreal Owl	17
Northern Saw-whet Owl	18
Snowy Owl	19
Spotted Owl	20
Key to Common Owl Calls	21
Where to Find Owls	22
Historic Status of Boulder County Owls	24
Nesting Records for Selected Species	25
Sources for Nesting Records	28
Numbers of Owls Seen on Audubon Christmas Bird Counts	29
Distribution Maps	30
Rain Dance	35
Recommended Reading	36
Acknowledgments	37

## *Owl Encounters*

In March of 1985 forty volunteers from Boulder County Audubon Society and Boulder County Nature Association (BCNA) crammed into a South Boulder apartment to plan a small owl study. At the time little was known about populations of the small owls that live in Front Range coniferous and deciduous forests. No one had ever documented a boreal owl, flammulated owl, or northern pygmy-owl nest in Boulder County. None of us had ever conducted serious owl research.

Borrowing from research methodologies described in science journals, we armed ourselves with portable tape recorders and flashlights and headed for the mountains. During the first week, Dave Alles found a northern pygmy-owl nest in a dead ponderosa pine two blocks from his Pinebrook Hills home. A few days later, Mike Figgs stumbled upon a pygmy-owl nest on the slopes of Eldorado Mountain. Paula Hansley and Ruth Carol Cushman went skiing near James Peak; a boreal owl plopped down in the snow in front of them and flew off into the forest.

In early May Andreas Zetterberg decided to spend a weekend looking for nesting owls on Enchanted Mesa. After a day of fruitless searching, he lay down in the grass to rest. A northern pygmy-owl carrying a white lab rat flew directly overhead and disappeared into a nest cavity in a ponderosa pine. Around sunset Andreas knocked on the side of a dead tree 50 meters north of the pygmy-owl nest and a saw-whet owl stuck its head out of a nest cavity at eye level. Andreas was so excited he couldn't focus his camera.

One May morning before dawn I stopped at the upper end of Gregory Canyon, in the Boulder Mountain Park, and played a northern saw-whet owl territorial call on my tape recorder. Within 30 seconds, five owls were calling simultaneously: one saw-whet, one pygmy, one eastern-screech, and two great horneds. By the end of the first spring of our study, we had found 50 calling pygmy, saw-whet, flammulated, and boreal owls in Boulder County, about twice as many as had been reported during the previous 100 breeding seasons.

Looking back on that serendipitous first spring, we could only conclude that all the owls had banded together and decided to send us a message, something along the lines of, "We're out here, someone pay attention to us!" In the ensuing years, they seemed to become harder and harder to find. I returned to Gregory Canyon six times without hearing a single hoot. Field trips to Brainard Lake to find boreal owls turned up only high winds and barking dogs. When we analyzed our first five years of data, we found we had averaged only one small owl "contact" (a sighting or "sounding") for every two hours in the field. Some volunteers never got to hear or see a small owl.

Finally, after seven years of staggering around in the dark on ice-covered trails, we concluded our field work and published a paper in the *Colorado Field Ornithologist's Journal*. But our experiences with owls were so rewarding that it seemed a shame not to share them with a wider audience. We hope this booklet will encourage others to search for, cherish, and protect owls.

Nine owl species nest in Boulder County, ranging from the majestic great horned to the fist-sized flammulated. Three additional species--short-eared, snowy, and northern spotted--have either wintered in the county or migrated through.

Six of our owls appear on the Boulder County Avian Species of Special Concern List, published by BCNA and the Boulder County Parks and Open Space Department. Burrowing and long-eared owls are classified on the list as “rare and declining;” barn and short-eared owls as “rare and stable;” boreal and flammulated owls as “isolated and restricted.”

Burrowing owls and long-eared owls are in serious trouble. Both were considered common in the county around the turn of the century. Between 1990 and 2000 there were only eight documented burrowing owl nests and no documented long-eared owl nests in the county. The situation appears to have improved somewhat during the 2000s, but nest productivity for these two species remains low.

No one fully understands why these two species are doing so poorly, though we suspect habitat fragmentation, nest predation by urban-adapted predators, and competition with great horned owls have all contributed. In addition, little is known about migration patterns of boreal, saw-whet, and burrowing owls. The “first” Boulder County boreal owl nest has yet to be discovered. Only a dozen barn owl nesting locations have been documented, although we suspect there are many more. There’s lots of work to be done for anyone who doesn’t mind wandering around in the dark or sitting patiently in the shadows.

If you go looking for owls, remember that even minor disturbances lessen their chances of survival. When we approach a nest or play a territorial call, we force nesting owls to divert precious energy into repelling the perceived intruder. Use discretion when playing territorial calls. Play them softly and never for more than a few minutes in one location. Consider not playing them at all. We’ve found it more rewarding to hear the owls calling spontaneously than to hear them responding to a tape recorder. If you camp out in the foothills or on the plains, you’re almost sure to hear an owl or two during the night.

The Boulder County Nature Association maintains nesting records for local owl populations. We encourage you to report any breeding season sightings of owls (other than great horned) to BCNA, P.O. Box 493, Boulder CO 80306. Meanwhile, be careful out there (mountain lions prowl around in the dark, too), and enjoy the starlight.

## *Owl Magic and Mythology*

*There came a gray owl at sunset,  
There came a gray owl at sunset  
Hooting softly around me,  
He brought terror to my heart.*

--Pima<sup>1</sup>

In the Cheyenne language, the word *mista* means both “owl” and “spirit”. Traditional Ojibwa stories say that the souls of the dead must pass over an “owl-bridge” to reach the spirit world. According to an Oto-Missouri elder, quoted by Paul Johnsgard in *North American Owls*, the hoot of an owl portends death:

“The owl is the one that gives the death warning. The owl that’s got the horns they are the ones that warn you. You can hear them way in the distance and they give that kind of humming you hear...Hear them in the distance, it never fails, never fails, death is close. So that’s what they’re here for. ‘Look out, look out, danger is coming.’”<sup>2</sup>

These New World beliefs have close parallels in Europe and Asia. In Chinese, Japanese, Russian, and German folk tales, owls often symbolize death or demonic possession. The Mesopotamian goddess of death, Lilith, resembled a giant owl; and Athene, the Greek goddess of wisdom and warfare, was often depicted with owl companions.

It’s easy to understand why peoples all over the world have associated owls with death and the supernatural. Most owls hunt at night, floating silently through the darkness. Their booming voices seem to come from several directions at once. Their upright posture and forward-facing eyes give owls the appearance of ghostly humans.

Great horned owls often perch at dusk on the periphery of human encampments, where mice and rats abound. As these large owls hoot back and forth while silhouetted against the night sky, they seem to be speaking directly to us.

As nocturnal predators, owls have few equals. A barn owl can visually locate prey at illumination levels of .0000003 foot candles, about 35 times below lowest reported human visual thresholds. The eyes of an eastern screech-owl are so large that they comprise more than 5 percent of the bird’s total weight! Owls’ eyes are fixed in their sockets and their field of vision is narrow, but these predators have the spooky ability to rotate their heads 270 degrees as they scan for prey.

Using hearing alone, barn owls can capture prey in total darkness. Scientists believe that asymmetrical arrangement of the ears (one is higher than the other) enables these and other owls to pinpoint sounds by tilting their heads up and down and from side to side. The barn owl’s giant ears, located on the rim of a parabolic-shaped facial disk that collects sound, can detect a mouse scurrying at a distance of 400 yards.

Having a loud voice enables many owls to command large territories without having to expend energy chasing away intruders. Great horned owls defend nesting territories of one

square mile or larger. A whistling northern pygmy-owl can be heard from a half-mile away.

Near-silent flight enables owls to ambush the most wary of prey. Their feathers are softened at the tips, reducing wind-hiss. Cryptic coloration also helps them to surprise their victims.

The unique physical characteristics of owls, along with their inability, or unwillingness, to build their own nests, have led some scientists to describe these raptors as “primitive.” Perhaps “different” is a fairer characterization. Owls evolved separately from other birds of prey. Their closest relatives are the nightjars (nighthawks and poorwills). Owl fossils date back about 65 million years, and the fossil record for the two contemporary owl families, Strigidae and Tytonidae, begins 24 to 35 million years ago (see page 13).

Owls have evolved worldwide into about 24 genera and 130 species. Eighteen species inhabit North America. Boulder County’s diversity of owls (12 species, 9 of which nest in the county) stems from the variety of habitats found here. Each owl occupies a distinct ecological niche. Burrowing owls nest underground and hunt rodents and insects by day. Barn owls lay their eggs on ledges, in burrows, or in caves and hunt small rodents at night. Boreal owls nest in woodpecker holes in spruce-fir forests, where they prey on voles and other small mammals. Eastern screech-owls, which nest in deciduous tree cavities on the plains, hunt fish and amphibians, as well as birds and mammals.

These varying habitat preferences and behaviors are the product of 65 million years of evolution and adaptation. When we listen to owls, their ancient voices carry vital information about the magic and intricacy of our world. That’s one reason why Native American cultures included owls in many of their most sacred ceremonies. In *North American Owls*, Paul Johnsgard describes how a Pawnee holy man received a vision instructing him to place owl feathers on the sacred pipe:

“Put me upon the feathered stem, for I have power to help the Children. The night season is mine. I wake when others sleep...I have the power to help the people so that they may not forget their young in sleep. I have the power to help the people be watchful against enemies while darkness is on the earth. I have the power to help the people keep awake and perform these ceremonies in the night as well as the day.”<sup>3</sup>

Owls have the power. Do we have the patience and wisdom to hear their messages?

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<sup>1</sup>Russell, F. 1904-5. The Pima Indians. *Annual Report, U.S. Bureau of American Ethnology* 26:1-389.

<sup>2,3</sup>Johnsgard, P. 1988. *North American Owls*, page 88.

## *Owls of Boulder County*

The 12 species of owls that have been documented in Boulder County belong to 2 families and 9 genera. Common and scientific names (with approximate translations from the original Greek or Latin) are given below:

### Family TYTONIDAE

Subfamily TYTONINAE (barn-owls and grass owls)

Genus *Tyto* (“night owl”)

**Barn Owl** (*Tyto alba*, “white”)

### Family STRIGIDAE

Subfamily BUBONINAE (visually hunting owls)

Genus *Otus* (“horned or eared owl”)

**Flammulated Owl** (*O. flammeolus*, “flame”)

**Eastern Screech-Owl** (*O. asio*, “horned”)

Genus *Bubo* (“horned or hooting owl”)

**Great Horned Owl** (*B. virginianus*)

Genus *Nyctea* (“nocturnal”)

**Snowy Owl** (*N. scandiaca*)

Genus *Glaucidium* (“gleaming” or “glaring”)

**Northern Pygmy-Owl** (*G. gnoma*)

Genus *Athene* (after Greek goddess of war)

**Burrowing Owl** (*A. cunicularia*, “miner”)

Subfamily STRIGINAE (forest-adapted owls)

Genus *Strix* (“strident”)

**Spotted Owl** (*S. occidentalis*)

Genus *Asio* (“horned owl”)

**Long-eared Owl** (*A. otus*, “horned”)

**Short-eared Owl** (*A. flammeus*, “flame”)

Genus *Aegolius* (“nocturnal bird of prey”)

**Boreal Owl** (*A. funereus*, “funereal”)

**Northern Saw-whet Owl** (*A. acadicus*)

Source: Johnsgard, Paul. 1988. *North American Owls*.



# Barn Owl

*Tyto alba*

Though locally uncommon, barn owls nest in a variety of sites on the plains, including embankments, tree cavities, old barns, and radio towers. A cliff pothole at the White Rocks, along Boulder Creek, was the first documented nesting site in the county in 1943. Recently active sites include a historic barn on N. 63rd St, heart-shaped cavities in dying cottonwoods on St. Vrain and Plateau roads, burrows on the banks of Coal Creek, a water tower on Gunbarrel Hill, a wood duck nest box at Valmont Reservoir, and a grain silo in Lafayette.

Boulder County lies near the northern edge of this cosmopolitan owl's central North American breeding range. Barn owls also inhabit most of Latin America and Australia and much of Eurasia and Africa.

When alarmed, barn owls sway their heart-shaped heads from side to side or walk backwards into the shadows. Two calls, a beak-clapping rattle and an ear-piercing hiss-scream,

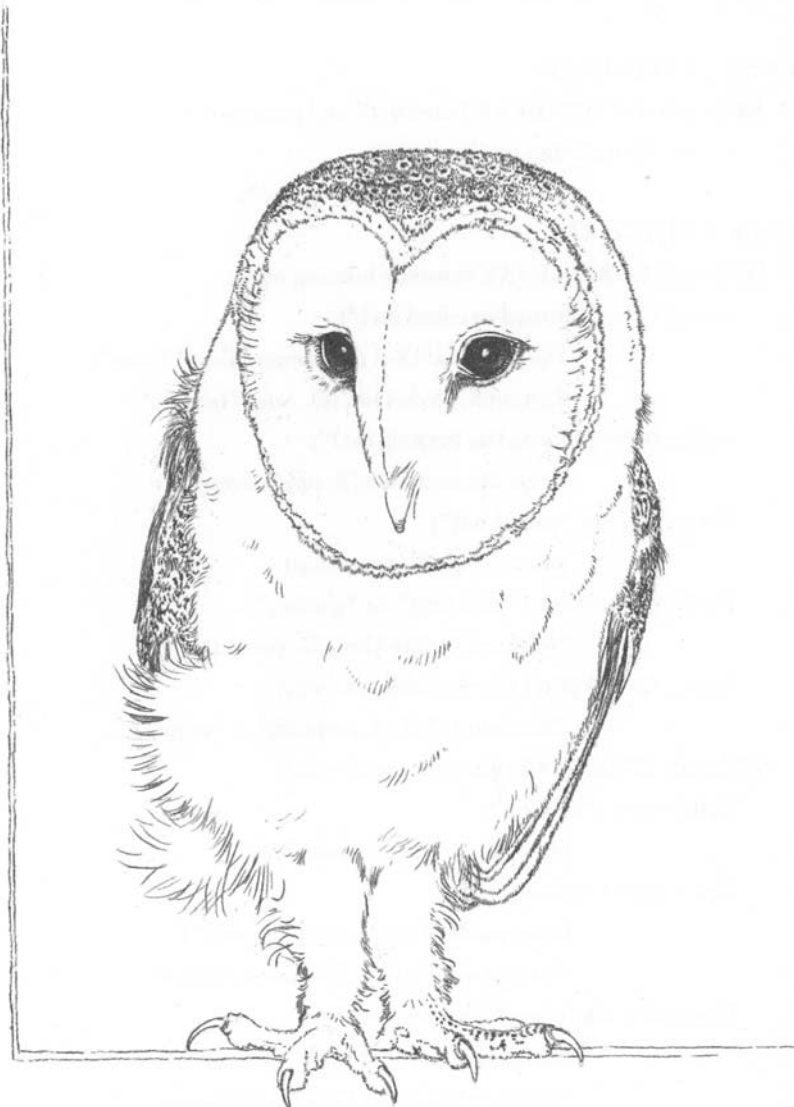
suggest a ghostly presence. Snowy feathers and buoyant, silent flight enhance this effect.

Our barn owls begin nesting as early as March and fledge young as late as November. Pairs may raise two broods. The female lays 2 to 11 eggs. Incubation requires about 30 days. The adults bring in up to 30 rodents (mostly mice, voles, and shrews) per night. Using their acute hearing, barn owls can capture rodents in total darkness.

**Vocalizations:** A loud hiss-scream similar to a locomotive venting steam; a prolonged rattle; slurps, clicks, and squeaks.

**Nesting:** Burrows, rock crevices, caves, tree hollows, barns and other structures; plains, March - November.

**Where to listen and look:** Embankments, cottonwood trunk cavities, and old barns on the plains.





## *Flammulated Owl*

### *Otus flammeolus*

Though once considered rare in Boulder County, these sparrow-sized insectivores are actually among our easiest owls to find. During the breeding season, flammulated owls respond readily to any reasonable imitation of their territorial call. They nest in densities of two or more pairs per square mile in remote foothills canyons throughout the county.

Because of their affinity for old-growth ponderosa pine/Douglas-fir forests, these little owls have been designated a U.S. Forest Service species of special concern. Nesting locations are given priority for preservation in forest management plans.

Pairs begin to arrive from Central America in early May. A few weeks later, the female lays two to four eggs in a woodpecker hole in an aspen or large-diameter ponderosa pine. Shortly after the young have hatched in late June or early July, the adults abruptly stop hooting. But the young owls hiss loudly as they beg for food--generally moths and other large insects snared by the talons of their acrobatic parents.

To find flammulated owls in early summer, visit any roadless foothills canyon containing large ponderosa pines and dense shrubbery. Listen to the hermit thrushes and nighthawks as dusk settles in. Hoot softly, and wait for magic.

**Vocalizations:** A soft hoot, given singly or in threes, "whoop, whoop, wh-wh-whoop." Rising whistles and wails.

**Nesting:** Woodpecker hole in aspen or large ponderosa pine, roadless foothills canyons from 6,500 to 9,500 feet, May-July.

**Where to listen and look:** Boulder Mountain Park; South, Middle, and North St. Vrain Canyons and side canyons; Golden Gate Canyon State Park; Mt. Falcon Park, west of Morrison.

# *Eastern Screech-Owl*

*Otus asio*

By day, these bark-colored owls melt into their surroundings as they perch on a cottonwood limb or peer out of a nest cavity. At night, when they swoop over meadows and streams snaring small rodents, birds, and crayfish, they're more often heard than seen. Their two primary calls, a sustained trill and a horse-like wail or whinny, have enlivened dozens of horror and suspense movies.

Eastern screech-owls favor mixed deciduous woods bordering streams or wetlands. In Boulder County they nest in riparian woodlands and in shady urban neighborhoods. Nesting densities along sections of Boulder and St. Vrain Creeks average about one pair per linear mile.

The female lays three to seven eggs in a woodpecker hole, usually in a deciduous tree, in March or April. Young fledge in June or early July. Vocal activity peaks during the courtship period, November through February, and just after the young fledge. The adults may grow nearly silent while incubating eggs and brooding young.

These small owls adapt well to urbanization. Several pairs nest in Denver urban parks. In a Texas study, pairs nesting in towns were more successful than pairs nesting in rural areas.

**Vocalizations:** A high, horse-like whinny; a monotonic trill, like the sound of a Ping-Pong ball bouncing on a hollow table; hoots, whistles, barks, and screeches.

**Nesting:** March-July in riparian woodlands and shady urban areas, mostly plains.

**Where to listen and look:** South Mesa Trail trailhead, near Eldorado Springs; Centennial Trail; Chautauqua Park; Boulder Creek at Sawhill Ponds; St. Vrain Creek west of Longmont.



# Great Horned Owl

## *Bubo virginianus*

Great horned owls nest in urban areas, grasslands, shrublands, riparian woodlands, and coniferous forests from the plains to near treeline. They lay their eggs in used hawk or magpie nests, in hollow stumps, on building ledges, or even on the ground. They prey on almost anything that moves, including insects, songbirds, other owls, mice, rabbits, prairie dogs, squirrels, snakes, skunks, muskrats, and house cats.

These large, non-migratory owls vocalize year-round as pairs defend territories ranging from one square mile on the plains to two square miles or more in the mountains. Vocal activity usually peaks during the late fall to early winter courtship period. Nesting begins in January or February. After leaving the nest in May or early June, the fledglings spend several days walking around on tree limbs or on the ground. Young may remain with their parents until early winter.

Local populations have increased in recent decades as these opportunistic predators adapt to our urbanizing environment. Great horned owls have replaced long-eared owls in Boulder County riparian woodlands, and their predatory activities may have contributed to a decline in local burrowing owl populations. They also prey on barn owls.

**Vocalizations:** A low, “who-who, who whoo” (male), or a slightly higher “who-who-wh-who, wh-who-who” (female); assorted barks, screams, and squawks.

**Nesting:** February-May on plains, slightly later in foothills and mountains; 3-4 eggs in a hawk or magpie nest or a tree hollow; usually 1-3 fledged young.

**Where to listen and look:** Boulder Creek near Sawhill and Walden Ponds; Rock Creek Farm Open Space; White Rocks Trail.





## *Northern Pygmy-Owl*

*Glaucidium gnoma*

On cold March evenings the dove-like whistles of courting pygmy-owls float through foothills ponderosa pine forests. These little owls call for only a few weeks while establishing and defending nesting territories. Too much vocalizing would attract northern goshawks, great horned owls, and other predators. In late April or May the female lays three to five eggs in a woodpecker hole or tree crevice. The young hatch about four weeks later.

Adults make a soft twittering sound around the nest as they shuttle birds, small rodents, and insects to their hungry young. They will dive-bomb magpies, squirrels, and humans that approach too close to the nest. They can kill rock doves, robins, and other birds much larger than themselves. They also hunt small rodents, lizards, and insects.

In Boulder County, northern pygmy-owls nest primarily in coniferous forests, from 5,500 to 10,000 feet. During winter they migrate vertically, sometimes concentrating in canyons at the base of the foothills. Partially diurnal, they perch on exposed branches, attracting mobs of chickadees, juncos, and other songbirds. False eye spots on the back of the owls' heads may discourage attacks by songbirds and hawks.

**Vocalizations:** A series of breathy whistles, 1-2 per second, slightly syncopated ("toot-toot, toot, toot-toot"); a soft, creeper-like twitter around the nest; a wailing whistle when alarmed.

**Nesting:** Tree cavity in conifer or aspen, foothills to 10,000 feet, March-June. Only four nests have been documented in Boulder County.

**Where to listen and look:** Enchanted Mesa (Boulder Mountain Park), Sunshine and Left Hand Canyons, Hall Ranch Open Space.

## **Burrowing Owl** *Athene cunicularia*

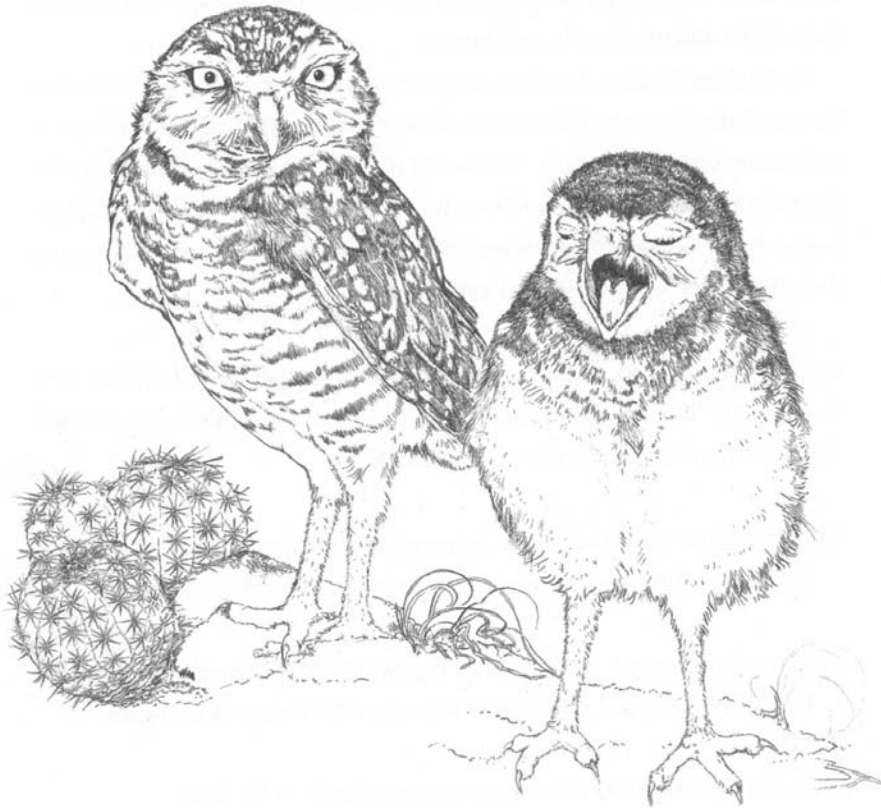
These spindly-legged cuties once nested by the dozens in eastern Boulder County. Now they have diminished to scattered pairs that fledge far too few young to sustain a healthy local breeding population.

What has become of our burrowing owls? Banding studies of some North American populations suggest a high rate of winter mortality, possibly caused by ingestion of pesticides in Mexico. Automobiles kill hundreds each year. Loss of nesting habitat (particularly prairie dog colonies) also has threatened populations. In Boulder County, where many prairie dog colonies remain, fragmentation of nesting habitat by farms, highways, and subdivisions may lead to increased predation on these owls by great horned owls, red foxes, and dogs.

Burrowing owl pairs arrive in eastern Colorado in April. The female typically lays 6 to 11 eggs in an abandoned rodent burrow. Once the eggs hatch in May or June, the adults take turns bringing in insects and small rodents. The whole family flies south to Arizona, New Mexico, Texas, or Mexico in September.

Burrowing owls will abandon nests if grass grows tall enough to obstruct their view of terrestrial predators. They sometimes fight with, but rarely prey on prairie dogs.

**Vocalizations:** A soft *coo-cooo* or cackle; young make a rattlesnake-like hiss when begging for food.



**Nesting:** May-July in prairie dog colonies on the plains.

**Where to look:** Rock Creek Farm open space, prairie dog colonies around Boulder Reservoir, and other prairie dog colonies throughout the county. Several dozen pairs nest in prairie dog colonies near Barr Lake State Park and at Rocky Mountain Arsenal National Wildlife Refuge.

# *Long-Eared Owl*

*Asio otus*

During spring of 1887 naturalist Denis Gale collected eggs from 11 long-eared owl nests in Boulder County. Twenty years later, University of Colorado Museum curator Junius Henderson classified this species as a “common resident of the mountains and plains.” By the mid-1980s, long-eared owls were nesting at only two known sites in the county: a cliff near White Rocks and a grove of Douglas-firs in Skunk Canyon. During the 1990s, no nests were reported.

During the 2000s, a half dozen newly-documented nest sites cropped up, suggesting a modest recovery. These sites include ponderosa pine woodlands on Shanahan Ridge and at Heil Ranch Open Space, dense shelterbelts on the plains, and an urban park in Louisville.

The local long-term decline in numbers of breeding long-eared owls has coincided with an increase in nesting populations of great horned owls. The adaptability of great horned owls may give them a competitive advantage over long-ears in our urbanizing environment.

Gale found nests with eggs (3 to 5) between April 10 and May 20. Young fledged in late June or July. The owls typically used magpie or crow nests in box elders or willows on the plains, and in Douglas-firs in the foothills. Long-eared owls often nest near meadows, where the adults hunt mice and voles. During the 1990s, a pair in Rocky Mountain National Park nested in spruce-fir forest at 10,700 feet.

**Vocalizations:** Loud hoots given singly; barks, wails, moans, and squeals.

**Nesting:** Dense riparian thickets and dense Douglas-fir stands, plains and foothills, March-July.

**Where to listen and look:** Search for winter roosts and rare nests in shelterbelts and dense conifers, plains and mesas.



# Short-Eared Owl

## *Asio flammeus*

At dawn and dusk short-eared owls course over wetlands and grasslands, listening and looking for mice and voles. A round facial disk funnels sound to their oversized ears (not to be confused with the short, ornamental “ear tufts” on the top of their heads). Like northern harriers, these owls skim low over the ground, tilting from side to side. When they detect movement, they tuck in their wings, stall out, and drop silently on their prey.

There is only one Boulder County nesting record for short-eared owls, but individuals winter periodically in the county. Short-eared owls were seen on 7 of the 51 Boulder Christmas Bird Counts held between 1950 and 2000. They were reported to the Boulder Audubon Society Monthly Wildlife Inventory during 20 of 26 winters from 1981-2006. Most sightings occurred in and around cattail marshes at Boulder Reservoir.

These large, partially diurnal owls occupy every continent except Australia. Their range in the Western Hemisphere extends from Tierra del Fuego to Alaska. A few dozen pairs nest in grasslands and marshes throughout Colorado. The female typically lays four to nine eggs in a shallow scrape or depression on the ground. The young leave the nest a couple of weeks after hatching. Individuals may nest and roost communally.

**Vocalizations:** Raspy, high bark; rapid series of low hoots; squeals, hisses, and groans.

**Nesting:** Scrape or depression on ground in grassland or wetland, April-July. Accidental (one report) in Boulder County.

**Where to look:** Boulder Reservoir (west side) and Lagerman Reservoir in winter. At dusk watch hunting harriers, who may flush a roosting owl.





# *Boreal Owl*

## *Aegolius funereus*

The boreal owl illustrates the principal that everything in nature has its niche. Prior to the early 1980s, scientists knew that this owl nested in boreal forests throughout Canada, but field guides showed its range extending only as far south as the U.S.-Canada border. Biologists at Colorado State University, noting that boreal (subalpine) forests grow along the spine of the Rockies from Canada to New Mexico, began searching for boreal owls in spruce-fir forests on Cameron Pass. In 1982 they found 34 calling males and Colorado's first documented nest.

Two years later, Dave Hallock heard a boreal owl near Red Rock Lake, west of Ward. During ensuing years, BCNA volunteers heard boreal owls in this area and on Bryan Mountain, near Hessie. Biologists now know that this hearty subalpine specialist does, indeed, nest in Rocky Mountain spruce-fir forests from Canada to northern New Mexico.

The boreal owl's tremulous territorial call haunts subalpine forests from February through May. Females lay three to seven eggs in a woodpecker hole or other tree cavity. Nesting trees are often situated close to open meadows where these nocturnal hunters catch voles and mice, but boreal owls are equally adept at hunting in dense cover. Individuals may migrate downslope in winter, but during the breeding season boreal owls rarely, if ever, leave the subalpine forest.

**Vocalizations:** A rising tremulous call, like the "winnowing" of a common snipe, "hoo-hoo-hoo-hoo-hoo"; a synthesizer-like wail or scream.

**Nesting:** Woodpecker hole or other natural cavity in spruce or fir (above 9,500 feet), April-July.

**Where to listen and look:** Brainard Lake road and Left Hand Reservoir road, west of Ward; Fourth of July Campground road, west of Eldora.



# *Northern Saw-whet Owl*

## *Aegolius acadicus*

Nineteenth century naturalists sometimes caught these owls with their bare hands. Apparently, saw-whets are so small and so cryptically colored that their usual reaction to predators is to remain perfectly still.

Northern saw-whet owls nest throughout much of North America, from deciduous forests in New England to aspen and lodgepole pine forests in the Cascades and Rockies. In Boulder County they favor aspen groves and open coniferous forests between 6,000 and 10,000 feet.

Vocal activity generally begins in March, continues through May, and may resume for a brief period in the fall. Saw-whets respond readily to tape playbacks of their territorial call. The female lays four to seven eggs in a woodpecker hole in April or May. Young fledge in June or July. Most individuals migrate south in September or October.

During the day saw-whets perch motionless on a conifer, aspen, or box elder branch. At night they hunt mice, voles, and other small mammals in meadows and forest clearings. Local populations may fluctuate from year to year in response to variations in prey populations.

**Vocalizations:** High, hollow whistles, 1-2 per second, slightly higher pitched than northern pygmy-owl; a rising rasp, like someone sharpening a saw with a whet-stone; soft hoots, mews, and squeals.

**Nesting:** April-July in aspen groves, open, for forests, and, rarely, riparian woodlands, 5,000 to 10,000 feet.

**Where to listen and look:** Enchanted Mesa and Green Mountain West Ridge in the Boulder Mountain Park; South St. Vrain Canyon; Peak to Peak Highway.



## *Snowy Owl*

### *Nyctea scandiaca*

In Boulder County the ratio of clumps of snow misidentified as snowy owls to snowy owls actually seen is about 10,000 to 1. Only two sightings have been reported to the Boulder County Audubon Society's Monthly Wildlife Inventory since its inception in 1978. No snowy owls have been seen on Boulder Christmas Counts. Neither Norman Betts (1913) nor Gordon Alexander (1937) of the University of Colorado Museum included this species in their lists of Boulder County birds. In *Birds of Colorado*, Robert Andrews and Robert Righter found 28 statewide records from the 1960s, 27 from the 1970s, 11 from the 1980s, and none from 1985 to 1992. Most of these records came from eastern Colorado, but only one came from Boulder County. In December 1997 Gary Emerson and Greg Hayes saw a snowy owl along Highway 93 north of Rocky Flats.

Wintering snowy owls may be forced south into Colorado by prey shortages (mostly small rodents) in Canada. However, a firm relationship between snowy owl winter migration and fluctuations in prey populations has not been clearly documented.

Snowy owls nest in the tundra, north of the Arctic Circle. The female lays 3 to 13 eggs in a depression or shallow scrape on the ground. The number of eggs appears to depend on the availability of lemmings and other prey. Around the nest, adults give a variety of calls, including soft "whoos," barks, whistles, rattles, and groans. These swift-flying owls are decidedly diurnal (there is no nighttime in their arctic breeding grounds), but they also can hunt in the dark.



## *Spotted Owl*

### *Strix occidentalis*

In November 1983 hundreds of birdwatchers tramped up the Saddle Rock Trail in the Boulder Mountain Park to view a spotted owl perched on a ponderosa pine limb. This was the first and only clearly documented spotted owl sighting in Boulder County.

Our region lies slightly north and east of this species' Rocky Mountain breeding range. Spotted owls inhabit wooded canyons in southwestern, south-central, and, possibly, northwestern Colorado. Their range extends southward into the mountains of central Mexico and northward into coastal and mountain forests of California, Oregon, Washington, and British Columbia. In the Pacific Northwest, remaining populations are threatened by logging of old-growth Douglas-fir and redwood forests and by competition with invasive populations of barred owls. Spotted owl numbers also have declined in parts of Arizona and New Mexico.

Females lay two to four eggs in a cave, cliff pothole, or broken-topped snag. They also use deserted hawk or raven nests. Prey include mice, rats, chipmunks, squirrels, other small rodents, and songbirds. The primary call is a four-note hooting sequence similar to the "who cooks for you" of barred owls. However, adults rarely vocalize around the nest.



## *Key to Common Owl Calls*

Most owls have a repertoire of ten or more distinctive vocalizations. Almost all owls hiss or squawk. This key focuses on the most common calls (particularly territorial calls) of Boulder County's nesting owls.

To use the key, start with number 1 and choose either "a" or "b." The key will tell you which number to go to next. Then continue the process.

- 1 a Low hoots, given singly or in a sequence. (Go to 2)
- b Whistles, whinnies, wails, squawks, screeches, cackles, rattles, or loud hisses. (Go to 4)
  
- 2 a Loud hoots given in sequence of four or more, "who-who, wh-who-who." Great Horned Owl.
- b Not as above. (Go to 3)
  
- 3 a Soft hoots given singly or in threes, "who, who, wh-wh-who." Foothills canyons, May-July. Flammulated Owl.
- b Medium to loud hoots given one at a time (no distinctive cadence). Great Horned Owl or Long-eared Owl.
  
- 4 a Horse-like whinny or monotonic trill (like a Ping-Pong ball being dropped on a hollow table). Riparian woodlands. Eastern Screech-Owl.
- b Not as above. (Go to 5)
  
- 5 a High, breathy whistles, 1-2 per second, sometimes given singly. (Go to 6)
- b Not as above. (Go to 7)
  
- 6 a Whistles very breathy and syncopated, "toot, toot, toot-toot, toot-toot." Northern Pygmy-Owl.
- b Whistles insistent, not syncopated, slightly higher pitched than above, "toot, toot, toot, toot, toot." Reminiscent of warning beeper on backing truck. Northern Saw-Whet Owl.
  
- 7 a Sustained rattle, or piercing scream-hiss (like a locomotive venting steam). Plains. Barn Owl.
- b Not as above. (Go to 8)
  
- 8 a Snipe-like "winnowing" (a high, ephemeral warble, "hoo-hoo-hoo-hoo-hoo-hoo-hoo"). Sub-alpine forest. Boreal Owl.
- b Not as above. (Go to 9)
  
- 9 a Loud bark or moan, or "kazoo-like" wail. Great Horned Owl or Long-eared Owl.
- b High wail, scream, rasp, hiss, or screech. Barn Owl, Great Horned Owl, Flammulated Owl, Long-eared Owl, Northern Pygmy-Owl, Eastern Screech Owl, Northern Saw-whet Owl, or Boreal Owl.

## *Where to Find Owls*

Owls nest in every Boulder County ecosystem except the alpine tundra. Highest concentrations of species occur in the foothills; the Boulder Mountain Park supports six nesting species. Listed, below, are places in Boulder County and nearby counties where we've had decent luck finding owls.

**Barr Lake State Park**, Piccadilly Road, east of Brighton. Great horned owls and eastern screech-owls nest in cottonwoods along the south shore. Barn Owls have nested in embankments north of the lake.

**Brainard Lake Road**, west from Ward. Listen for pygmy and saw-whet owls in montane forest (below about 10,000 feet), April-May. Listen for boreal owls in subalpine forest (above 10,000 feet), March-May.

**Enchanted Mesa, Boulder Mountain Park**. Listen for calling pygmy and saw-whet owls, March-May. Great horned owls nest in the ponderosas and on the Flatirons cliffs. Long-eared owls have nested near the junction of the Skunk Canyon and Mesa Trails. Listen for flammulated owls in remote canyons throughout the Park, May-June.

**Golden Gate Canyon State Park**, 25 miles northwest of Golden on State Highway 46. Flammulated owls nest in aspen groves and ponderosa pine forest throughout the park. Listen for northern saw-whet and northern pygmy-owls, March-May.

**Hall Ranch Open Space**, west of Lyons. Northern pygmy and northern saw-whet owls nest in ponderosa pine forest near Buttonrock Reservoir. Great horned owls nest in several locations.

**Mt. Falcon Park**, County Road 120, west of Morrison. Northern pygmy, northern saw-whet, and flammulated owls nest in coniferous forest habitat throughout the park. Listen for great horned and long-eared owls as well.

**Rock Creek Farm Open Space**, 104<sup>th</sup> Street south of Dillon Road. Great horned owls often nest in cottonwoods near Stearns Lake. Barn Owls may nest in embankments along Rock Creek.

**South, Middle, and North St. Vrain Canyons and side canyons**, west of Lyons. Listen for northern pygmy and northern saw-whet owls, March-May, and flammulated owls, May-June.

**Sawhill Ponds**, 75<sup>th</sup> Street between Valmont and Jay Roads. Great horned and eastern screech-owls nest along Boulder Creek, at the west end of the wildlife area.

**White Rocks Trail**, Valmont Road between 75<sup>th</sup> and 95<sup>th</sup> Streets. Great horned and eastern screech-owls may nest in cottonwoods beside the trail and along the creek. From a distance, you can see white excrement below Barn Owl nesting caves in the White Rocks. The White Rocks, themselves, are closed to the public.

## *Historic Status of Boulder County Owls*

<b>Species</b>	<b>Henderson (1908)<sup>1</sup></b>	<b>Alexander (1937)<sup>2</sup></b>	<b>BCNA Owl Studies</b>
Barn Owl	Not reported	Not reported	Uncommon
Flammulated Owl	Rare	Rare	Fairly common
Eastern Screech-Owl	Common	Common	Uncommon
Great Horned Owl	Rather common	Moderately common	Common
Northern Pygmy-Owl	Rare	Infrequent	Uncommon
Burrowing Owl	Abundant	Locally occurring	Rare
Long-eared Owl	Common	Infrequent	Rare
Short-eared Owl	Rare in winter	Infrequent in winter	Rare in winter
Boreal Owl	Not reported	Not reported	Uncommon
Northern Saw-Whet Owl	Uncommon	Infrequent	Uncommon
Snowy Owl	Very rare in winter	Not reported	Accidental in winter

<sup>1</sup>Henderson, J. 1908. An annotated list of the birds of Boulder County, Colo. Univ. of Colo. Studies, 6:220-242.

<sup>2</sup>Alexander, G. 1937. Birds of Boulder County, Colo. Univ. of Colo. Studies, 24:79-105.



## Nesting Records for Selected Species

### Barn Owl

<u>Location</u>	<u>Year</u>	<u>Type and Result</u>
White Rocks, 5100'	1947	Grotto, 7 young seen
	1972	Occupied nest
	1978-83	Occupied nest
	1984	1 young seen
	1985	2 nests, 3 young seen
Whiterock Ditch, Niwot, 5160'	1983	Burrow, 4 fledged
	1984	Occupied nest
Table Mt., 5600'	1990	Antenna, 5 young seen
Rock Creek Farm, 5250'	1993	Burrow, 1+ young seen
Coal Creek, Lafayette, 5180'	1996	Burrow, occupied nest
	1997	2 young seen
	1998	2 young seen
	2007-08	occupied nest
Water tank, Gunbarrel Hill	2002	3 young seen
Valmont Reservoir 65th and Nelson Road	2004-08	Nest box occupied
	2004	Barn, 11 fledged (2 broods)
	2005-09	Active
St. Vrain Road	2005-08	Tree cavity, young seen
Plateau Road west of 63rd	2005	Tree cavity, 5 young fledged
North 63rd and Plateau	2006-09	Silo, young seen each year
Old Lafayette	2006	1 young seen
	2007	active
6650 119th St., Lafayette	2008-09	Nest failed

### Flammulated Owl

<u>Location</u>	<u>Year</u>	<u>Type and Result</u>
Ranger Canyon, 6720'	1986	Aspen, 4 young
Coulson Gulch, 7480'	1988	Ponderosa, occupied

### Northern Pygmy-Owl

<u>Location</u>	<u>Year</u>	<u>Type and Result</u>
Pinebrook Hills, 6510'	1985	Ponderosa, occupied
Enchanted Mesa, 5970'	1985	Ponderosa, 3 fledged
Eldorado Mt., 7230'	1985	Ponderosa, occupied
Meadow Park, Lyons, 5350'	1994	Cottonwood, 3 fledged

**Long-eared Owl (since 1980)**

<u>Location</u>	<u>Year</u>	<u>Type and Result</u>
Skunk Canyon, 6230'	1984	Doug.-fir, 5 fledged
	1985-7	Territory active
White Rocks, 5100'	1984	Grotto, 3 fledged
Heil Ranch, 5300'	2004	Ponderosa, 2 fledged
	2006	COHA nest, 1 fledged
	2009	Nest failed
	2009	Shelterbelt, 4 fledged
119th St, Erie	2004	failed
	2005	2 fledged
	2006	1 fledged
	2007	active
	2008	active
	2009	2 fledged
E. Boulder Creek, Sullivan	2008	Cottonwood, 4 young
N. Louisville, Monarch Ct.	2008	Cottonwood, 3 fledged
	2010	Ponderosa, 3 young
Shanahan South Trail	2008	2 young
Bull Gulch	2008	at least 1 fledged
	2010	

**Burrowing Owl (since 1980; all nests were in prairie dog burrows; all elevations 5000-5300')**

<u>Location</u>	<u>Year</u>	<u>Type and Result</u>
City of Boulder Open Space	1981	2 nests
	1984	2 nests, 6 fledged
	1985	2 nests, 4 fledged
	1986	3 nests, 10 fledged
	1988	1 territorial pair
	1989	1 territorial pair
	1993	1 territorial pair
	1997	1 territorial pair
	2000	1 nest, 2 young
	2001	2 territorial pairs
	2002	1 nest, 3 fledged
	2003	1 nest, 1 fledged
	2005	2 territories, 3 young
	2006	2 territories, 3-4 fledged
	2008	5 nests, 18 fledged
	2009	5 nests, 9 fledged
2010	5 nests, 10 fledged	
Boulder Parks (Reservoir)	1982	2 nests, 6 fledged
	1983	1 nest, 5 fledged
	1988	1 nest, 4 fledged
	1989	1 nest failed
	2004	1 nest, 3 fledged
Boulder Parks (N of US 36)	2002	1 nest, 3 young

**Burrowing Owl (continued)**

**Boulder County Parks and Open Space**

1983	2 nests
1984	2 nests
1985	1 nest
1986	1 nest, 5 young
1987	1 nest
1988	3 nests, 4 fledged
1989	2 territorial pairs
1992	1 nest, 2 fledged
1994	1 territorial pair
1998	2 nests, 9 young
1999	2 nests, 7 young
2000	2 nests, 11 young
2001	4 pairs, 1 young
2002	2 nests, 6 fledged
2005	1 nest, 2 fledged
2006	5 nests, 15-18 fledged
2008	2 nests, 10 fledged
2009	5 nests, 7 fledged
2010	4 nests, 9 fledged

**Northern Saw-whet Owl**

<u>Location</u>	<u>Year</u>	<u>Type and Result</u>
Bear Gulch, 7590'	1985	Ponderosa, occupied
Enchanted Mesa, 5970'	1985	Ponderosa, occupied

## **Sources for Nesting Records**

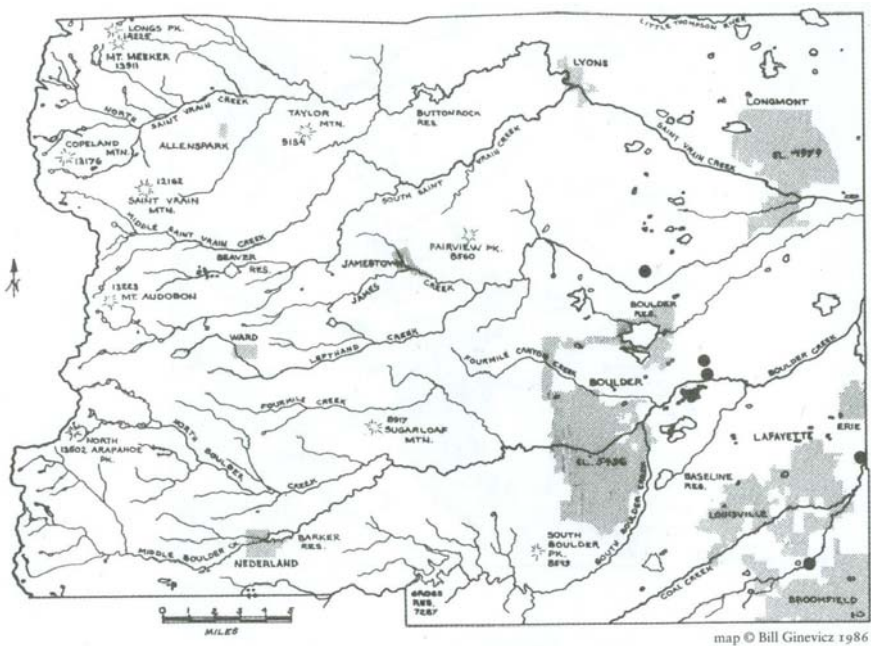
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**Numbers of Owls Seen on Boulder Audubon Christmas Bird Counts,  
1951-2006**

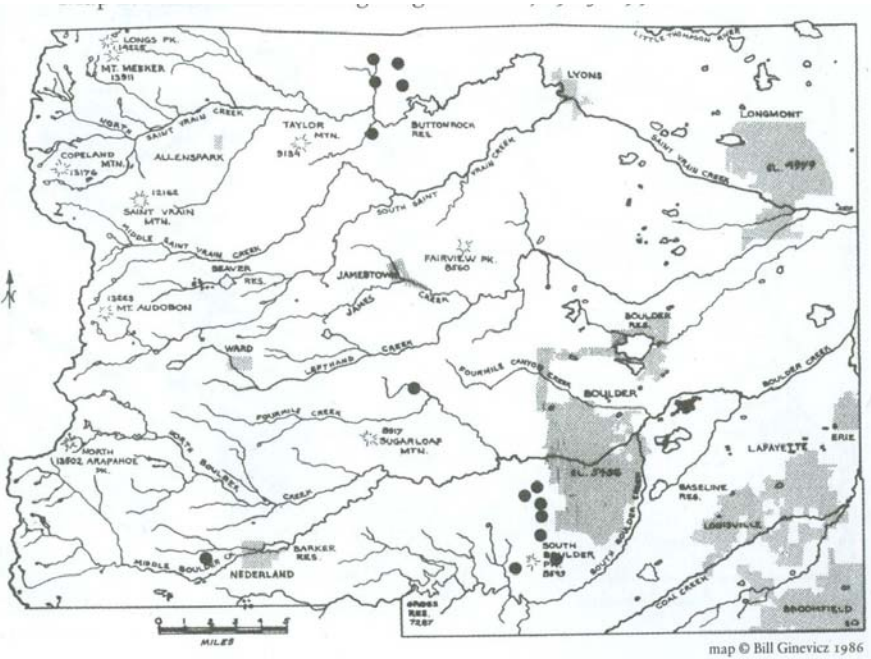
The Boulder Audubon Christmas Bird Count usually occurs on the last Saturday or Sunday before Christmas. Participants count all birds seen or heard within a 15-mile diameter circle centered at 20<sup>th</sup> and Alpine. Annual numbers of participants have increased from around 15 during the 1950s to more than 130 during the 1980s and 1990s. Note the apparent inverse relationship between numbers of long-eared owls and great horned owls.

<u>Years</u>	<u>Barn Owl</u>	<u>Eastern Screech-Owl</u>	<u>Great Horned Owl</u>	<u>N. Pygmy-Owl</u>	<u>Long-eared Owl</u>	<u>Short-eared Owl</u>
1951-55	0	4	1	2	0	0
1956-60	3	2	1	0	33	1
1961-65	1	7	0	0	17	0
1966-70	3	7	13	0	22	0
1971-75	1	3	38	4	11	2
1976-80	0	3	27	1	7	4
1981-85	0	3	51	12	5	1
1986-90	0	10	78	2	1	0
1991-95	1	17	94	1	0	0
1996-00	1	7	92	2	11	0
2001-06	1	8	98	4	9	0

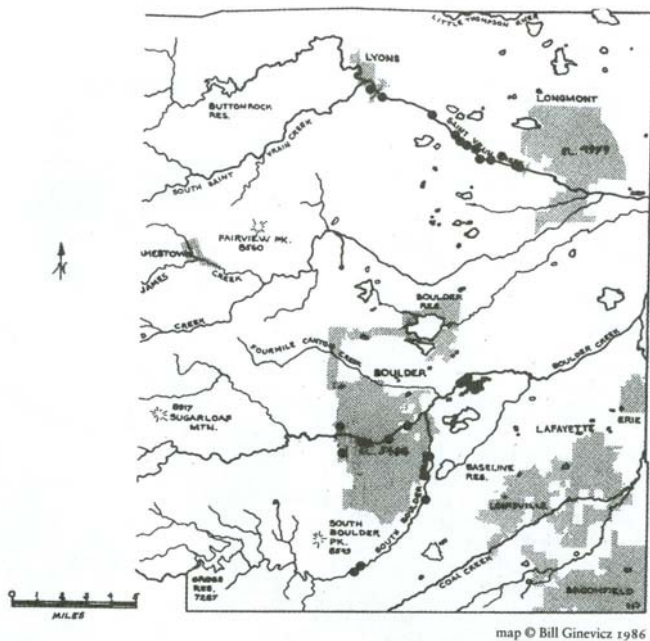
Map 1. Barn Owl nesting locations, 1985-2001.



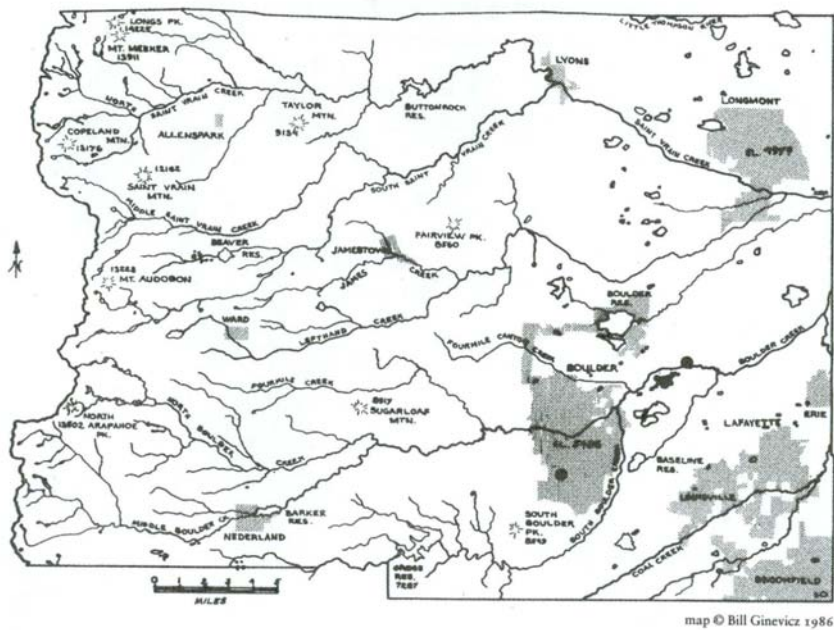
Map 2. Flammulated Owl sighting locations, 1985-1992.



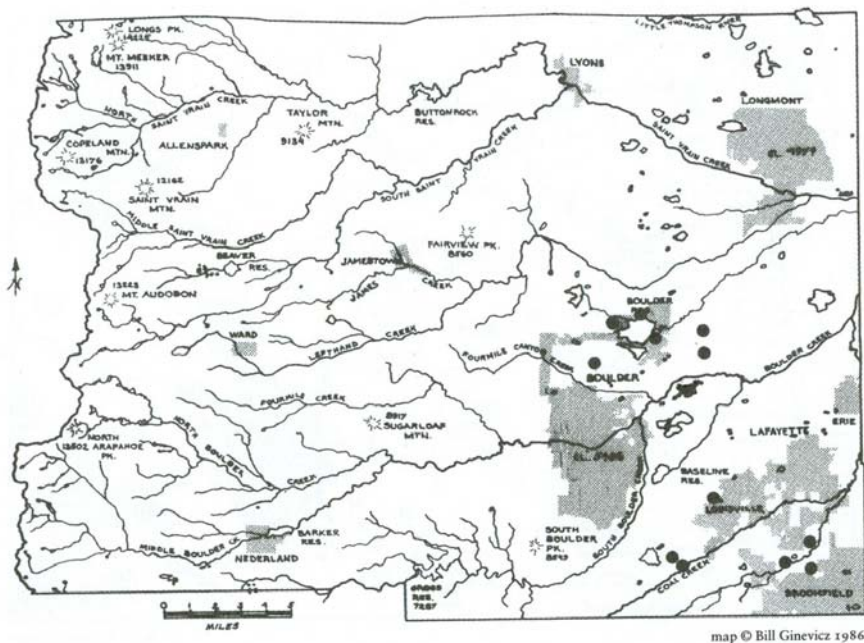
Map 3. Eastern Screech-owl sighting locations, 1985-2000.



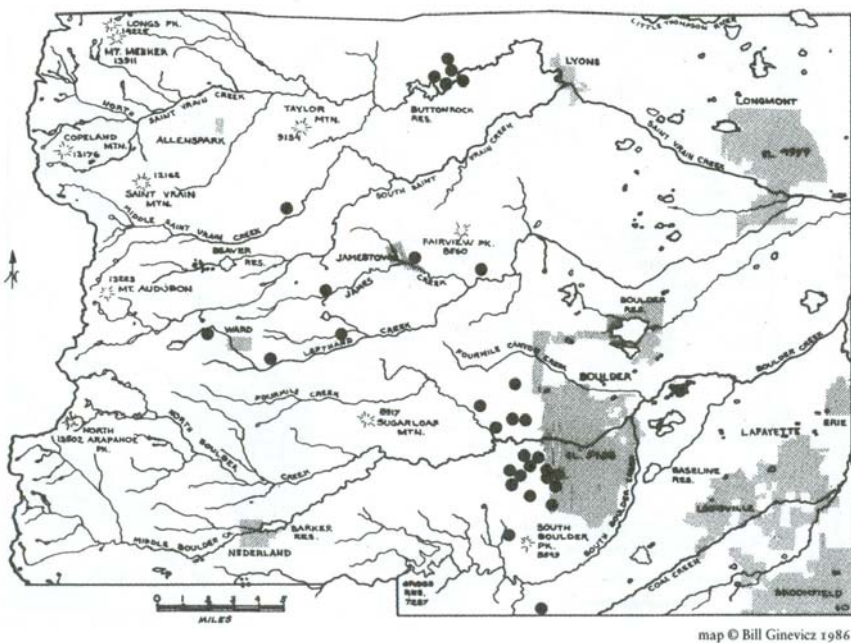
Map 4. Long-eared Owl nesting locations, 1985-2002.



Map 5. Burrowing Owl nesting locations, 1985-2002.

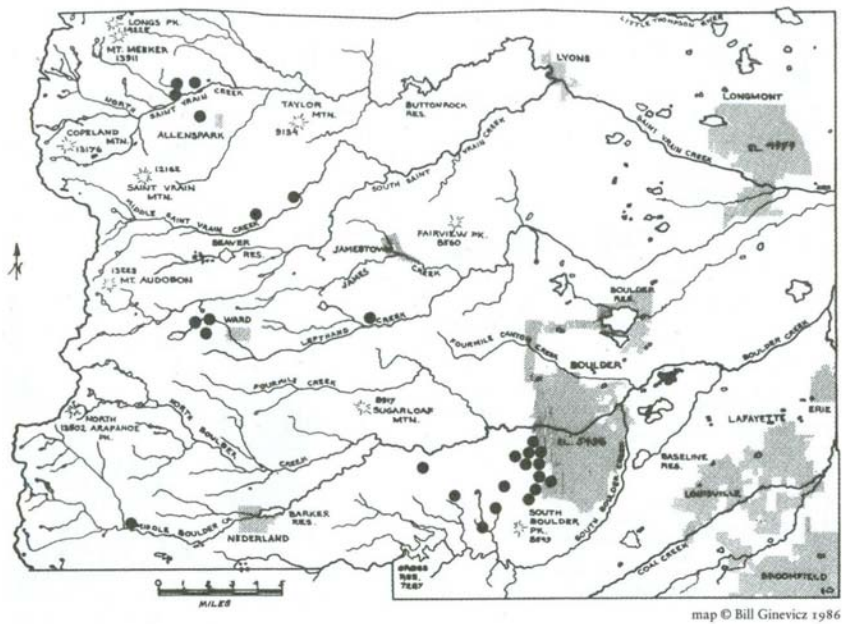


Map 6. Northern Pygmy-owl sighting locations, 1985-1990.



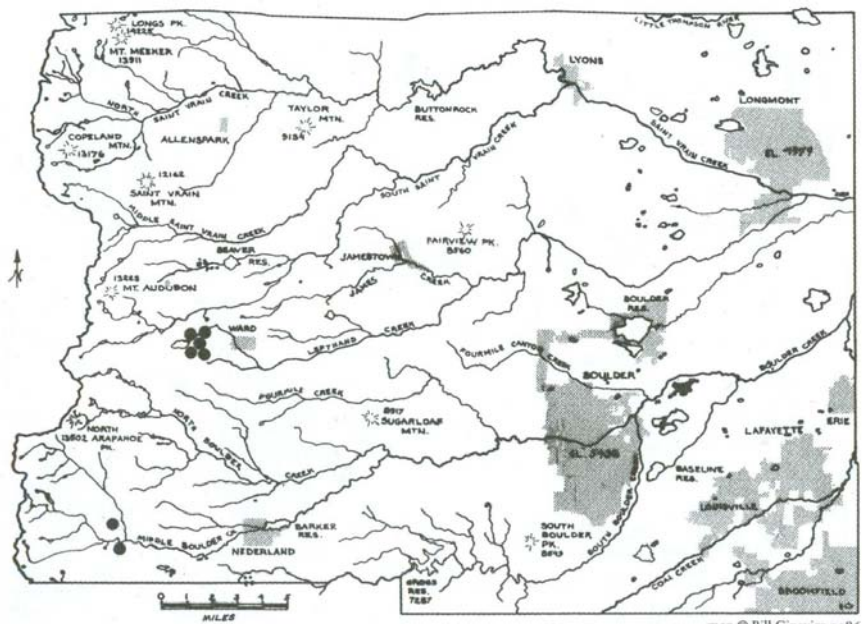


Map 7. Northern Saw-whet Owl sightings, 1985-1990



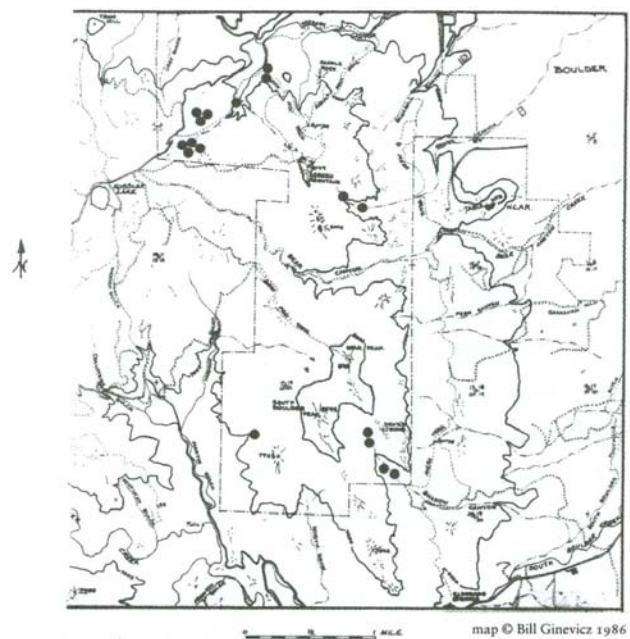
map © Bill Ginevicz 1986

Map 8. Boreal Owl sightings, 1985-1990.



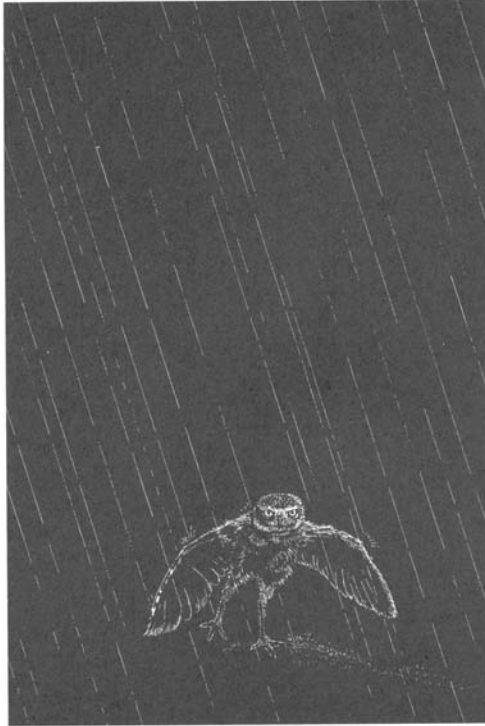
map © Bill Ginevicz 1986

Map 9. Flammulated Owl sighting locations in boulder Mountain Park, 1986-1989



## *Rain Dance*

by **Linda Mahoney**



How does an animal become a symbol of the landscape that makes it sacred? I think Joseph Campbell voiced that question, he certainly pursued it. Do we develop a special attraction for an animal or plant because it has beautiful coloration, unusual behavior, or just because something draws us, to witness, to connect to a level of consciousness that brings us peace. Native people had 'totems', they had messengers that would give them a sign, a premonition, warning or omen of good fortune. For me that totem animal has become the burrowing owl. It has a dance--I've been fortunate to observe it twice--and it seems obvious that it must have provided People of the Plains inspiration for some of their own ceremonies.

It was on July 22, 1998, after a very long dry spell. I had spent endless hot hours observing a nesting colony at Rock Creek Farm, where it often seemed like burrowing owls were the sleepest, least active birds in the world. When I arrived, the young owls were all at separate burrows, facing different directions, prone as much as upright. They were extremely hard to see, look-

ing like clumps of dirt around the burrow mounds. Swallows, western kingbirds, meadowlarks, prairie dogs and rabbits all mingled together. The animals didn't seem overly concerned by the turkey vulture flying south of the prairie dog town.

Suddenly, it began to drizzle. As soon as the rain began, the owls started to get excited. They began to fly into the air, up and down like carousel horses. Landing on the ground, they hopped and circled with their wings spread open, then held up at different angles, then spread open wider. They would stop and rest, and then fly into the air again. Finally the feathered dancers lowered their bodies, wings outspread, over the burrow mounds.

Not until August 4, 2000, was I able to witness the dance again. It was a baby, the smallest owl, alone on a mound when it began to rain gently. As the wind picked up, the baby opened its wings and took off like a kite. Supported by wind gusts, it hovered briefly, approximately 20 feet off the ground. After several "test flights", it landed and ran over to the mound. It raised its wings, adjusting and changing the angles, and flapped and circled. At one point when it began to rain harder, the little owl went down into the burrow a short time, only to reappear, like a child, to play in the rain again.

Only after the rain became a downpour, long after all the prairie dogs had taken cover, did the tiny dancer leave the rain, thunder, and lightning, and retreat to the dark safety of its burrow.

Were the owls enjoying the shower, or just cleaning the dust off their wings? I prefer to think that they dance, whether as a group or alone, because it gives them joy.

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*Screech Owllet*



The Boulder County Nature Association is an all-volunteer, non-profit organization committed to studying and preserving the natural history of Boulder County. For membership information, write BCNA, P.O. Box 493, Boulder CO 80306; or visit our web site at [www.bcna.org](http://www.bcna.org).