



Ray Miller leads bat walk. Photo: Sam Cuenca

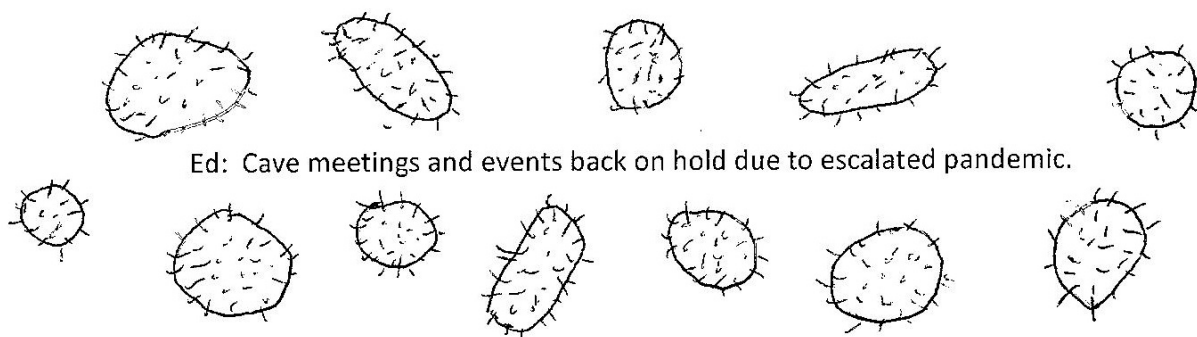
**Inside: Remembering Ray Miller 1929-2020**

---

The SAG RAG is published by the Shasta Area Grotto of the National Speleological Society. Grotto meetings are held at different locations on the fourth Friday of each month at 7:30 p.m. Meeting locations are announced in the SAG RAG. Membership dues are \$5 dollars per year and include newsletter subscription. Original material not otherwise noted is copyright to the SAG RAG. Such material may be copied with credit given to the author and the SAG RAG. For use outside of the caving community, please seek the permission of the author or editor first. Send material for publication any time to Bighorn Broeckel, 2916 Deer Meadows Road, Yreka, CA 96097 or <caverbill@live.com>. For more on SAG, check the web site at <<http://www.caves.org/grotto/sag>>.

---

## CAVE CALENDAR 2020



## SAG RAG SUMMARY

By Bill Broeckel

This SAG RAG is dedicated to the memory of grotto member Ray Miller (1929-2020). As far as bats go, we could always say “go talk to Ray”. Definitely, he was a batty guy, a scientist to be sure, but also a naturally funny person and good public speaker; and a caver. Almost a charter member of SAG, Ray joined the grotto along with Jim Kottinger, what, almost 40 years ago, at the next grotto meeting following a presentation at Sisson Museum. He never looked back, and found many uncharted caves, some with bat colonies. Out “in the field”, Ray once took the grotto down a wrong road, getting lost, and that’s when Neils Smith stumbled onto the Discovery of Freudian Complex. This was the beginning of many trips Ray and Liz Wolff led on the survey of Freud, the whole nine yards (actually it was some 18,000 ft. of passage). He had his own thoughts about things and didn’t mind naming caves after people. Kathy’s Tube, for example, was named for his niece. However, he was a stickler on protecting cave locations, limiting such information to need-to-know, otherwise only down to State/County. A useful standard really, but one I’ve muffed up many times editing the RAG. (He also wrote that I hardly never made no tipos, or something like that). Ray was especially protective of bat colonies. His perspective as an independent bat researcher has been a guide to the grotto for these many years, again setting a high standard for the group. As shown in this SAG RAG, Ray was focused on education as well, and was a licensed bat handler immunized against rabies. Once I asked him if he ever took rabies vaccine boosters. He got his shy, twinkly eye look and said “Oh, the bats take care of that”. Thanks to the photographers and contributors who made this issue possible, as together we remember and celebrate the unique life and work of our dear friend and colleague, the inimitable Ray Miller.

**BB**

### **Shasta Area Grotto Meeting - October 24, 2020**

The meeting was called to order on Saturday at Melanie's place in Yreka at 18:45. Present were Jim & Liz Wolff, Steve Hobson, Melanie Jackson, and Bill Broeckel. Minutes were not read or approved.

**Treasurer's Report:** Previous balance - \$653.94. Expenditure - \$100.00 to WCC Volcano Area Caves Project. Deposits: \$116.00. Total - \$669.94.

**SAG RAG:** The Special Issue in memory of Wayne Cedidla is completed, with copies to Melanie and Wayne's family. A Special Issue for Ray Miller in the works. Layla Harris, Sam Cuenca, & Jennifer Jones may be contacted for photos. Some memories of Ray and his final wishes were shared.

**Web Site:** Will Urbanski contacted SAG to say that the caves.org webserver may have been compromised via unpatched software from our grotto's website. Steve contacted Dave who contacted Robert about closing the intrusion opportunity. The following folks were added to the list serve: Don Raan, Matt Silva, Logan Hellein, and Sharon & Thorne Bertrand.

**Correspondence:** Will Urbanski (see above).

**Old Business:** NSS Convention planning, cave relocation, and trip guide training and familiarization activity have been in progress with multiple camp-out events so far with good attendance. These guide camps are now done for the season.

**New Business:** Meetings scheduled for the rest of the year, subject to pandemic restrictions.

#### **Trip Reports:**

Ray Miller's ashes. Saturday (10-3-20). A small number of people (less than ten) representing cavers, grotto members, bat researchers, and friends gathered to say goodbye to one of the great all-time pillars of the Shasta Area Grotto. Ray's ashes were spread on the surface, near to one of his most favorite and interesting bat roosting sites. Jim Wolff also left a bat quarter from American Samoa. The entire undertaking was out of doors and followed Covid 19 best practices and guidelines. Opportunity was provided to enter one of the larger nearby caves, with plenty of breathing room, and where no bats were seen. We don't know what Ray would have thought, but probably OK. Afterwards, outdoor refreshments were provided.

Meeting adjourned at 20:08

Stand-In Secretary **BB**

Ray Miller, Aug 29, 1929 - Aug 31, 2020

Ray Miller was born in Mt Shasta and never moved far from home. His shy house-mate for many years was a kinkajou and later a skittish cat named DC - which meant whatever he wanted it to mean at the time. He had a varied career: in Naval Intelligence during the Cold War (the shenanigans they got up to with the Russians!); as a cave guide at Onondaga Caverns; and later as a volunteer aide to bat biologists. He had a, um, *quirky* sense of humor and sometimes one may not have been quite sure where a particular story or joke was headed. Puns, riddles, word plays and jokes (some obvious, some not) rolled off his tongue. In his 80's he began to go blind, barely able to see the ground at his feet, so stopped most outdoor activities. He never married and is survived by cousins and many nieces and nephews. His ashes were scattered near a bat cave, one of the many places he visited frequently.

Ray joined the Shasta Area Grotto (SAG) in 1983 and continued caving into his 80's. He almost always knew exactly where he was (whether he was lost or not), and that is how Niels Smith found the Freudian Complex – but that's another story. Ray went on many exploration and survey trips. He was the first in the grotto to buy a personal GPS unit, not too accurate in the early 1990's, but better than the triangulations made before the advent of electronic location recording devices. When he was no longer able to be active in the field, recognizing the need for a cave database, he created SAG's comprehensive cave files.

He became active with bat biologists Dr. Dixie Pierson and Dr. Bill Rainey of UC Berkeley in the mid-1980's helping with base-line population studies: entrance and exit counts, mist netting, night roost counts, maternity and hibernation counts, radio tracking, recording bat calls and excluding bats from theaters, wildlife reserve buildings (!) and people's houses. Following the Cantara chemical spill he helped with studies of how the riparian bat populations were affected as the river returned to health. In his bat work, he was requested by the USFS to check mines and caves for bat use and make recommendations to gate or permanently close the entrances. That was the beginning of a long partnership with the Klamath NF, which SAG continues to this day. The Modoc NF also called on him to check caves for bat usage. He was shown many caves in the Modoc Plateau, which SAG mapped and reported any wildlife use to them.

He was instrumental in establishing a bat and cave program for the local elementary schools. He showed pictures of cave dwelling animals, talked about cave environments and micro-climates; the next week he took the classes to Barnum Cave. He usually had a bat picked off the cave wall in his pocket to show actual bat size, shape, and the "hand-wing" to the kids. As the tour progressed many of the things talked about in the classroom were repeated with the addition of "you are now inside a lava flow" which caused some of the kids (and adult chaperones) to look around for hot flowing lava. He gave bat programs to other groups, who greatly appreciated his presentations: garden clubs, libraries, museums and colleges.

Some of the remembrances that have been sent to me include "I'll always think of him as a leprechaun." "I have good memories of him caving in his 'rompers'" – bright orange 'snivvies' as he also called them (coveralls). "Ray will be greatly missed by so many. It was an honor to know him." "Ray's knowledge about bats and passion for bat and cave conservation was very inspiring to me, and extremely valuable to other resource managers in the Forest Service and other organizations." "I remember him picking out of his pocket a live bat that he would present in his unscripted way, WITH much humor sprinkled in. As a fellow Navy man, I salute you, Chief!"

**Submitted by Wolffs**





Ray Miller and Liz Wolff near Barnum Cave. Photo: Syd Sloan.



Ray Miller and pocket bat with “hand-wing” on display. Photo: Syd Sloan

## BATS OF SHASTA AND SISKIYOU COUNTIES

Seventeen species of bats have been identified in our area. All local bats eat insects taken on the wing or gleaned from foliage. The Pallid bat will also forage on the ground for scorpions and crickets

**Bat identification requires hands-on examination and careful measurements.  
Do not attempt to identify bats.**

**Big Brown Bat** *Eptesicus fuscus*

Glossy chocolate brown with a black mask. Wing span about 12 inches. Cavity dweller. Among other places, roosts in structures, hollow trees, caves and wood piles.

**California Myotis** *Myotis californicus*

Small brown bat. Wing span about 9 inches. Roosts in crevices in rocks, trees, woodpiles, behind shutters, etc.

**Fringed Myotis** *Myotis thysanodes*<sup>2</sup>

Reddish brown fur. Wing span about 11 inches. Fringe of hair on tail membrane. Roosts in trees, buildings, mines and caves.

**Hoary Bat** *Lasiurus cinereus*

Glossy dark brown and gray fur tinged with white. Wing span about 15 inches. Solitary. Roosts in the foliage of broad leafed trees.

**Little Brown Bat** *Myotis lucifugus*

Glossy brown fur. Wing span about 10 inches. Roosts in buildings, wood piles, behind shutters.

**Long-eared Myotis** *Myotis evotis*<sup>2</sup>

Glossy pale brown fur and black ears. Wing span about 11 inches. Poorly known. Has been found in Siskiyou County farm buildings.

**Long-legged Myotis** *Myotis volans*<sup>2</sup>

Small brown bat. Wing span about 10 inches. Probably primarily roosts in trees, but has been found in structures and crevices.

**Mexican Free-tailed Bat** *Tadarida brasiliensis*

Dull gray fur. Wing span about 12 inches. Roosts in caves and structures. Active in winter at lower elevations. Has an exposed tail about 1 inch long. Distinctive odor.

**Pallid Bat** *Antrozous pallidus*<sup>1</sup>

Blonde with lighter belly. Wing span about 15 inches. Diet includes scorpions and large beetles. Roosts in hollow trees, mines, buildings and rock piles. Faint skunk-like odor.

**Red Bat** *Lasiurus borealis*

Brick red fur with white shoulder patches. Wing span about 12 inches. Roosts in the foliage of trees.

**Silver Haired Bat** *Lasionycteris noctivagans*

Glossy black fur with silver tips. Poorly known. Roosts against the bark of mature conifers. Only known nursery colonies in the U.S. are near the Shasta-Siskiyou county line.

**Small-footed Myotis** *Myotis ciliolabrum*<sup>2</sup>

Small brown bat. Wing span about 9 inches. Poorly known. Roosting preferences not determined.

**Spotted Bat** *Euderma maculatum*<sup>1,2</sup>

Black with 3 white spots on the back. Enormous pink ears. Roosts in cliff faces. First found in our area in 1993.

continued

**Townsend's Big-eared Bat** *Corynorhinus Townsendii*<sup>1,2</sup>

Dull gray to brown fur. Wing span about 12 inches. Rarely roosts anywhere but in caves and mines. Very sensitive to human disturbance.

**Western Mastiff Bat** *Eumops perotis*<sup>1,2</sup>

Dark gray or brownish gray. Our largest bat with a wing span of 2 feet. Roosts in cliffs and occasionally found in buildings. Unknown in this area until found in Siskiyou County in 1992.

**Western Pipistrelle** *Pipistrellus hesperus*

Smallest bat in the U.S. Wing span about 8 inches. Weighs a little less than a U.S. penny. Roosts in cliffs and forages high over the trees about sundown

**Yuma Bat** *Myotis Yumanensis*<sup>2</sup>

Small brown bat that roosts in structures, caves, mines and hollow trees. Wing span about 9 inches. Possibly the most common local bat. Can be found foraging over water at dusk, and will show interest in angler's lures.

1 Mammal of special Concern or Sensitive Species, California Department of Fish and Game.

2 Until list was abolished was a candidate (category 2) for listing under the U.S. Endangered Species Act.

**Did you know:**

Bats are our major nighttime insect predator, eating as many as 600 mosquitoes an hour. To eat as much as a bat we would consume over 300 Big Macs every 24 hours.

Rabies is much more common in skunks and raccoons than in bats. Rabid bats normally become paralyzed instead of going berserk. Never handle any dead animal, or any animal you do not know, especially if it is not acting normally.

Bat parasites are highly specialized, and seldom bite humans.

Bat guano (poop) carries no disease other than histoplasmosis, a fungus infection causing flu-like symptoms. Histoplasmosis is not found in California.

Bats do not build nests. Babies are born while the mother hangs by her thumbs, and she catches the baby in the membrane between her legs.

Baby bats weigh about 30% of their mother's weight at birth. This would be like a 130 pound woman giving birth to a kindergarten size kid. OUCH!!

Bats are not mice or rats. They are placed in an order of their own, and their DNA is rather close to humans.

Bats are the only animal not a bird that is capable of true flight. All other "flying" animals can only glide.

Bats echolocate by producing ultrasonic calls with their vocal cords. All other echolocating animals (toothed whales and some birds and insects) produce sound using clicks and whistles.

Bats are not blind. Their eyes are often small and adapted to low light levels, so they will often shut their eyes or squint when confronted with a bright light.

Ray Miller  
Mount Shasta, CA

**Ed:** This is the most recent rendition I could find of Ray Miller's local bat guide.

## About Bats

### WHAT GOOD ARE BATS?

To many, the fact that an animal exists is not a good enough reason to have concern for its wellbeing and future prospects. If the animal does nothing to further human goals why be concerned? After all, the void left when the dinosaurs became extinct was filled by other life forms. If the world can get along without T. rex there should be little impact from the loss of a wisp of an animal that we seldom glimpse.

Bats do pay their way in this world. The fruit and nectar eating bats pollinate blossoms and spread the seeds in their guano. Birds do this also, but to avoid predators birds will not cross open areas where the seeds are most needed. At night bats can do this without worry.

The insectivores, the kind of bats we have in this area, are a major nighttime insect predator. Each night the bats sally fourth and eat their weight in bugs. That translates to about 5,000 mosquitoes. If we ate that much we would consume about 300 Big Macs per day. To determine the diet of a bat we examine their guano under a microscope. The

hard parts of insects (exoskeleton) are not digestible, and we can identify prey species from the bug body parts. How can people who do this for a living answer "Daddy, what do you do for a living?" All our bats capture their prey on the wing or glean the bugs off the foliage. The one exception is the pallid bat. These guys get on the ground and hunt terrestrial insects. They find Jerusalem crickets (potato bugs), scorpions and centipedes absolutely yummy.

Bats are good indicator species for studies of the well-being of the environment. When the Cantara chemical spill occurred in 1991 as many as 450 bats were captured per night. The animals were examined closely to determine their general health and reproductive status. These data were used to determine how the entire ecosystem was fairing.

In the good old days the primary collecting tool was a shotgun. Today we capture specimens without harming them, and release them at the point of capture in plenty of time to feed before daylight.

**Ray Miller**



Kids loved seeing the bat warmed up in Ray Miller's pocket. Photo: Syd Sloan.



## About Bats

### WHY THE GOOFY FACES?

The structure of animals will change over time to facilitate what the animal does for a living. Darwin reported this in his studies of the bills of birds and their diets. Bats are no exception. Big mouths mean your aim need not be as good when capturing lunch, and a long snout fits nicely into tubular flowers for those who would rather eat pollen than bugs.

But there is another reason for bat facial modification. It has to do with echolocation. Bats use their vocal cords to produce the sounds that illuminate their targets. To conserve energy the call can be focused by the configuration of the jaw, lips and tongue. Of course, the call will be

muffled if the bats mouth is full of food. To overcome this some species emit calls through their nose, but this causes them to produce a widely dispersed call pattern that requires them to shout louder and therefore use more energy. The bats with grotesque faces are all species who emit sound through their noses, and their facial configuration helps them focus their calls into a beam.

The ears of bats have evolved to efficiently direct the vibrations of faint echoes onto their eardrums. Their hearing is disabled while calling so their audio nerves do not overload causing ringing in their ears.

**Ray Miller**



Townsend's Big-eared Bat with goofy face. Photo: Syd Sloan.



## BOTANICAL GARDENS HOSTS BAT PROGRAM

DUNSMUIR - Local bat researcher Ray Miller will discuss bats at a special meeting hosted by the Dunsmuir Botanical Gardens at the Dunsmuir Community Building, 4821 Dunsmuir Ave. on Wednesday, July 7 at 6 p.m. (2010).

Although bats are poorly understood and seldom seen, there are probably more bats in this area than any other type of animal, a press release stated. Miller's talk will touch on the various species found locally, their habits and the myths associated with them. There will be time for questions.

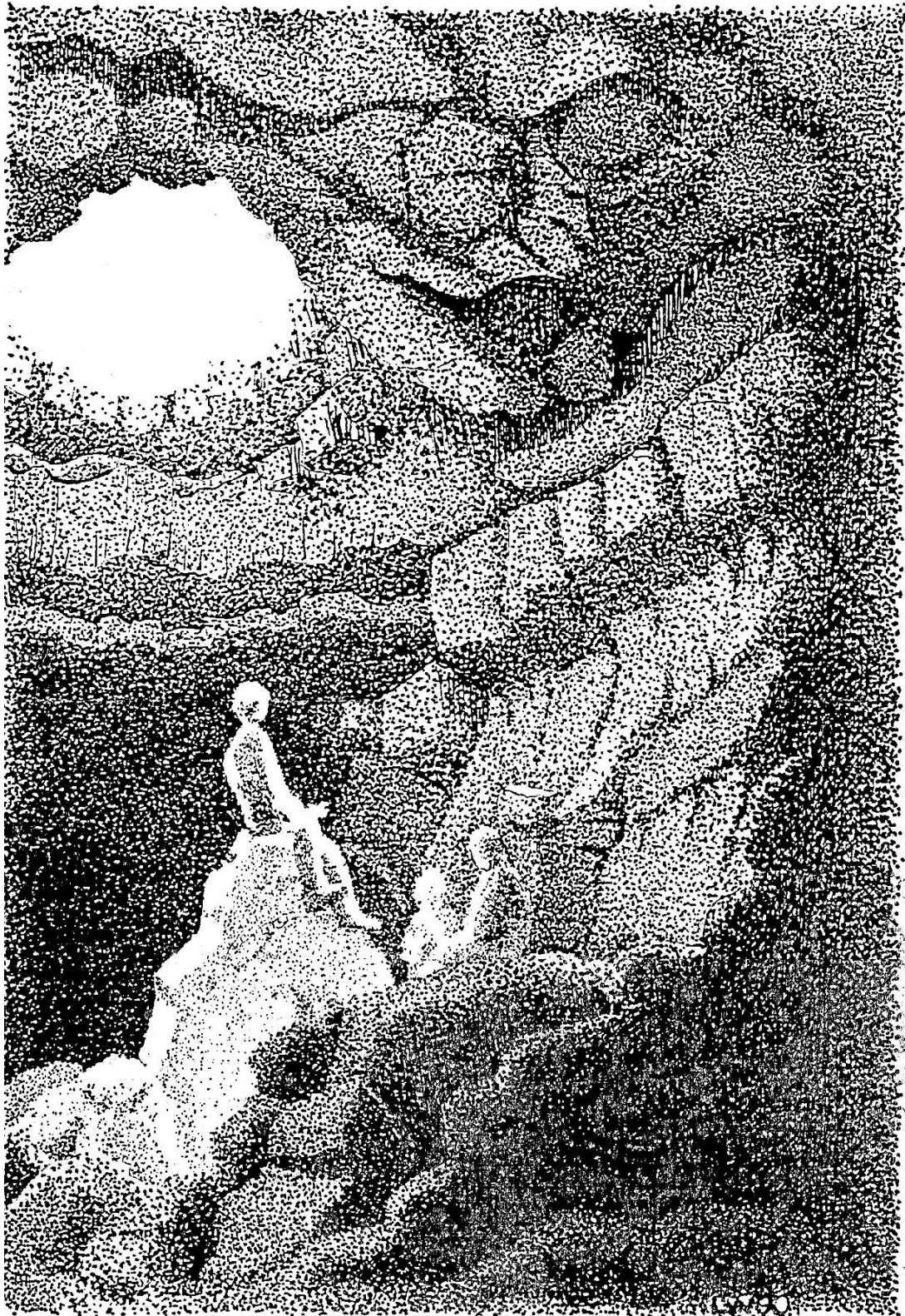
Miller retired from the Navy in 1968. A caver, Miller started his career with bats when the University of California asked him to report on bats found in area caves. He became more involved with bats when asked to collect data to help assess the damage caused by the chemical that spilled into the Sacramento River in 1991. His work has taken him as far away as Yosemite National Park and Vandenburg Air Force Base.

Bats are the only mammals that truly fly, and they are important night-time insect predators, the release stated. Each of the 17 species found locally specialize in where and on which insects they forage, but collectively, a large part of their diet are moths and beetles. Mr. Miller stated, "And they eat a lot. If we ate as much as a bat we would consume about 150 Big Macs daily."

SISKIYOU DAILY NEWS JUNE 28, 2010, PAGE 3



Ray ridgewalking on the day when Jarbl Cave was mapped. 7-11-06.



## UNDER THE DISCOVERY ENTRANCE, CATWALK CAVE

Can you find Ray Miller's laughing face hidden in this picture? Art: Liz Wolff.





Ray Miller and Wolffs at Barnum Cave public bat program. Photo: Sam Cuenca.

**SAG RAG**  
2916 Deer Mdws Rd  
Yreka CA 96097

**STAMP**

**TO:**

### TABLE OF CONTENTS

Page 1	Cover – Sam Cuenca	Page 8	About Bats – R. Miller
Page 2	Calendar and Summary	Page 9	Goofy Faces – R. Miller
Page 3	October Minutes – B. Broeckel	Page 10	Bat Program – SDN
Page 4	Ray Miller – Wolffs	Page 11	Cave Art – Liz Wolff
Page 6	Local Bat Guide – R. Miller	Page 12	Back photo – Sam Cuenca