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# SMALL WONDERS

*PROFESSOR BEGINS RESEARCH  
ON WYOMING'S HUMMINGBIRDS*

*STORY BY AMBER LEBERMAN  
PHOTOS BY JESSICA U. GRANT*

**O**f birds, hummingbird family members are among the most diverse and smallest, but also among the least-studied. Families attending this summer's Forever Wild Families rite of passage got an up-close look at emerging research into Wyoming's hummingbirds, thanks to the expertise of a fellow participant.

The event gathered Laramie-area families at the Wyoming Game and Fish Department's Whiskey Mountain Conservation Camp near Dubois to commemorate their first year of hunting and fishing in Wyoming. Holly Ernest, along with her husband, Bruce Hoar, and son, Graeme, became Forever Wild participants after moving to Laramie.

"We were very excited to join the Forever Wild Families program last summer after moving to Wyoming. It provided a way to learn together as a family about Wyoming outdoor opportunities and the chance to get to know experts within Game and Fish," Ernest said.





Ernest directs the University of Wyoming's Wildlife Genomics and Disease Ecology Laboratory, and is a professor in its veterinary science department and ecology program. Hoar is the University of Wyoming's research veterinarian and brucellosis research coordinator.

Ernest started the Hummingbird Health Program while at the University of California – Davis, and is now expanding its reach into Wyoming, Colorado and neighboring states.

During the rite-of-passage weekend July 31 and Aug. 1, her fellow participants watched

Ernest take measurements, blood and feathers from hummingbirds while she explained their behavior and habitat use. She affixed a tiny leg band to each hummingbird, and other participants helped her release them.

Wyoming is home to four species of hummingbirds, including black-chinned, broad-tailed, calliope (Wyoming's smallest) and rufous. Other species make rare appearances. During the rite of passage, Ernest captured 16 hummingbirds (nine broad-tailed and seven rufous).

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**Thomas Hernandez, 13, Forever Wild Families participant, helps Holly Ernest release a hummingbird at Whiskey Mountain Conservation Camp.**



Holly Ernest uses a drinking straw to blow air at a hummingbird's neck and chest. Hummingbirds deposit body fat on their necks. By evaluating a hummingbird's body fat, researchers can determine whether a hummingbird is ready to begin its migration to Mexico or South America. "Hummingbirds need to fatten up before migrating so they have enough energy for the journey," she said.

Ernest examines a tail feather. She collects a single tail feather from each bird for DNA analysis.



Ernest inspects a hummingbird's beak. The appearance of the beak can help her determine a hummingbird's age. Juveniles grow so quickly that their beaks have a corrugated, diagonally striped appearance, such as in the rufous hummingbird at left. As the bird grows, these corrugations wear down and fill in, so adult hummingbird beaks are smooth. During the Forever Wild Families rite of passage near Dubois, Ernest captured six juvenile hummingbirds just hatched this spring. Half were male, half were female.

As Ernest collects measurements and samples from the hummingbirds captured at Game and Fish's Whiskey Mountain Conservation Camp, she periodically gives them the opportunity to feed on sugar water.







Above: Bruce Hoar collects a hummingbird from a feeder trap at the Whiskey Mountain Conservation Camp caretakers' cabin. He puts captured hummingbirds into touch-closure mesh bags, then delivers them to Holly Ernest so she can take measurements and blood samples.



At right: With a scale tared to accommodate for the mesh and clip used to secure a hummingbird, Ernest records its weight. Most of Wyoming's hummingbirds weigh between 2.5 and 5 grams. A U.S. nickel weighs 5 grams.

"Hummingbirds provide vital functions to natural areas including pollination. As ecosystem sentinels as they travel rapidly and widely from flower to flower and prey on thousands of tiny insects," she said. Such behaviors, as well as migration, expose hummingbirds to disease and make them vulnerable to habitat changes.

"There is very little available data on diseases, population health, genetic diversity and population structure for the hummingbird species breeding and migrating through Wyoming and the region," Ernest said. Analysis of feathers and blood samples (representing less than 1 percent of body weight) reveals the birds' genetic profile. Blood is tested for parasites such as avian malaria. Ernest also visually inspected each hummingbird for symptoms of diseases such as avian pox virus.

This year, Ernest and doctoral student Braden Godwin are examining hummingbirds and collecting data in Jackson, Pinedale, Foxpark, Laramie and northern Colorado. Next summer, they'll add more Wyoming locations.



## Golden trout come full circle

One of the Wyoming Game and Fish Department's 10 hatcheries and rearing stations, Story Hatchery and Visitor Center is home to the only captive brood stock of genetically pure golden trout nationwide. Each year, the department uses helicopters to stock approximately 30,000 to 45,000 3-inch golden trout in the state's remote wilderness lakes.

"In Wyoming, golden trout are a unique species only found in remote, high-mountain wilderness lakes," said Steve Diekema, hatchery superintendent. "They're on a lot of anglers' bucket lists to catch, because there aren't a whole lot of places you can go to catch one."

Story Hatchery's golden trout brood stock originated with eggs collected from fish in Montana's Sylvan Lake from 2007-09 in cooperation with Montana Fish, Wildlife and Parks. Although a golden trout brood stock is difficult to rear in a hatchery environment, Diekema said Story's water, which comes from South Piney Creek at an optimal temperature, contributes

to their success. After 30 days of incubation, golden trout eggs are shipped to Daniel Hatchery for rearing.

"We are pretty much supplying all the golden trout eggs to the Rocky Mountain West. This year, we are shipping eggs to Colorado for the first time. We've supplied Utah, Idaho, Washington and Montana. And we packed some up this morning for the first time for California — they're going to start a brood stock from our eggs," Diekema said on July 14.

Although golden trout are native to California, its brood stock currently includes some genetic material from rainbow trout. Wildlife agencies regularly trade fish eggs to provide variety to anglers and manage populations.

"Colorado is a pretty good trade," Diekema said. "We're scheduled to receive kokanee salmon eggs this fall."

Wyoming's trout eggs have a disease-free reputation, creating high demand from other states.

— Amber Leberman

Steve Diekema (left), hatchery superintendent, measures fertilized golden trout eggs while Jared Smith, senior fish culturist, puts sedated golden trout into a tub in preparation for removing the eggs from females and milt (containing sperm) from males.

Photo by Jessica U. Grant  
Wyoming Wildlife