

GLOBAL
WARMING
Citizen
Science

Band of Brothers

NOT EVEN A TRAGIC ACCIDENT COULD DERAILED TWO YOUNG MEN'S INSPIRING PROJECT TO STUDY ONE OF NORTH AMERICA'S
LEAST-UNDERSTOOD BIRDS. THEIR GROUNDBREAKING RESEARCH IS HELPING ORNITHOLOGISTS UNDERSTAND HOW TO HELP THESE
BIRDS AS A WARMING CLIMATE ALTERS THEIR MOUNTAIN HOME. BY **SUSAN COSIER** Photography by Jen Judge

There are three distinct rosy-
finch species in North America,
and all of them thrive in extreme
environments. In winter the
finches congregate in the rug-
ged mountains of New Mexico,
where they feast on seeds.



One night four years ago, two boys were driving outside of Roswell, New Mexico, after a day of birding, when suddenly the unimaginable happened: a terrible car wreck. Ryan Beaulieu, 17, a bird enthusiast who had helped bring national attention to Sandia Crest, the highest point in New Mexico's Sandia Mountains, and to the rosy-finches that congregate there in winter, was killed instantly.

The other boy, Raymond VanBuskirk, was rushed to the hospital, where he received a full blood transfusion. Doctors immobilized his cracked elbow in a cast, wrapped his swollen head in bandages, and listed his condition as critical. When he finally came to, his family and friends cried in relief. But for Raymond, just 15 at the time, waking up meant facing an awful reality: Ryan, his best friend, was dead.

"We basically lived together, we were together all the time," says Raymond. "I probably saw him more than I saw my own family."

The tragic accident ended what had been a unique and successful collaboration between the two boys on behalf of rosy-finches. For the three years before that fateful day, armed only with a love of the finches and a bounty of enthusiasm and energy, the boys took to snowy Sandia Crest, where they collected invaluable data on the species, learning more about the birds than anyone could have imagined. After Ryan died, Raymond, along with a fellow birder and friend Michael Hilchey, decided to continue the project, now in its seventh year. What these young men are finding out could help ornithologists uncover how rosy-finches and other alpine bird species will be affected as warmer temperatures creep up their mountainside homes.



“Ryan lived quite a remarkable life, and in his death he’s left quite a legacy. Rosy-finches were his passion—he just loved them. To see him with the birds was like seeing a child on Christmas morning. If his life can encourage others to become interested, it’s there to be shared.”

Before the accident, Ryan and Raymond had been showered with awards and accolades for their rosy-finch bird-banding project. The three species of rosy-finches found in North America—the black, gray-crowned, and brown-capped—are among the least-known species on the continent because they breed in remote, far-flung places and winter in the southern Rocky Mountains, in rugged alpine habitat known as sky islands—isolated, high-elevation mountain ranges that exist above oceans of warmer, lower-lying environments. All three species spend the winter in the southern Rockies. But the Sandia Mountains, outside of Albuquerque, is a rare place where all three can be found consistently through the winter months, and the project

provides a unique opportunity to study these elusive, pink-tinted birds.

As word of the boys' work spread, Audubon chapter leaders began asking them to give presentations, so they put together a slide show and took it on the road across the state. When they spoke, their knowledge of the birds and enthusiasm about their work was palpable.

Ryan's excitement was so infectious that in 2005, a third teenager, Michael Hilchey, starting volunteering regularly at the Sandia Crest House Gift Shop and Restaurant, where Ryan and Raymond did their research, and he eventually joined the project as a full-fledged partner. The boys were all-inclusive, getting everyone they could involved, says Beth Hurst-Waitz, president of Central New Mexico Audubon, who first introduced Ryan and Raymond. "Ryan's legacy is his spirit, because it's indescribable the magic he worked on people," she says.

"Ryan lived quite a remarkable life, and in his death he's left quite a legacy," says Eileen Beaulieu, Ryan's mom. "Rosy-finches were his passion—he just loved them. To see him with the birds was like seeing a child on Christmas morning. If his life can encourage others to become interested, it's there to be shared."

Both Raymond and Michael are now studying biology at the University of New Mexico. They continue the rosy-finch project each winter, with guidance from Steve Cox, a research coordinator for Rio Grande Bird Research Inc., a citizen science program that gathers data on area birds and submits it to the U.S. Geological Survey's banding laboratory and to New Mexico's Department of Game and Fish to help

land managers make good conservation decisions.

On Sundays, from mid-November through March, Raymond and Michael, along with 10 to 20 volunteers, band and take a feather from each bird they catch. Then they weigh and measure each individual. Their plan is to take the information, analyze it, and publish their results in scientific journals and ornithology books with the help of professors at the University of New Mexico. "The work is really cool because of the scientific aspect and the emotional attachment," says Raymond. "We've dedicated the project to Ryan. We're keeping his memory alive by continuing."

Rosy-finches sparked Ryan and Raymond's interest when the boys were in middle school, just 14 and 13 years old. Ryan was enamored of the birds' high-altitude habitat, and the finches' pink coloring reminded him of the alpine glow on the mountains at sunset. The mystery surrounding the finches reinforced the allure. He saw his chance to work with them in Steve Cox, a soft-spoken, 56-year-old man, who has been collecting data on area birds for 25 years with his wife, Nancy, for Rio Grande Bird Research. As the group's research coordinator, he held banding permits. After volunteering with Cox, Ryan asked if he and Raymond could do their own project. Cox told Ryan that if they came up with a question to explore, he would help them get permits to band the birds. The boys decided to focus on trying to figure out whether the same rosy-finches migrate to Sandia Crest each year.

The affirmative answer marked a new discovery for both the boys and ornithologists. Only a handful



Opposite top: Ryan Beaulieu began the Sandia Crest rosy-finch project when he was just 14; a volunteer (opposite bottom) takes a bird's measurements and a feather before placing a numbered aluminum band around its leg. Above: Michael Hilchey (left) and Raymond VanBuskirk continue the project in Ryan's name.

of researchers study the species, making Ryan, Raymond, and Michael's findings significant. "This information is not known—even still—other than what we've been collecting," says Cox. The sky islands where the finches flock amid rocky ridges are remote and isolated, so knowing that the birds return to the same place each winter could help land managers safeguard them.

Today there's serious momentum to designate the finches' Sandia Mountains habitat an Important Bird Area. Steve and Nancy Cox had recommended it for listing even before the rosy-finch project began, but the committee denied the

request because it felt the proposed area was too small. Karyn Stockdale, Audubon New Mexico's executive director, believes there's now a good chance that it will be named an IBA. "I think the rosy-finch project makes it rise to the top," she says. "The Sandias are a wilderness area outside of a major metropolitan area, so the location has incredible educational opportunities. Secondly, it's a high alpine environment that the rosy-finches visit in the winter. We're fearful that these are some of the birds that are most at risk to the effects of climate change in the state because they only live in this environment."

In summer each of the three species nests in different locations, although the environment is the same: cracks or crevices in rocky terrain, often on mountainsides. The birds prefer cool temperatures, so in their northern ranges, they can nest at lower elevations. In more southern latitudes, they move to higher elevations to find the same brisk temperatures, often breeding near snowfields above 13,000 feet.

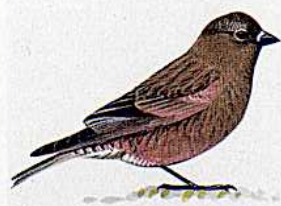
The brown-capped rosy-finch, identified by a pure brown head and a pink to red belly, rump, and wing edges, is the

least common of the three and was recently listed by the Colorado Natural Heritage Program as a species of special concern. It breeds in Colorado and southern Wyoming, and once nested in northern New Mexico, although no one has seen the species there in summer for years. The black rosy-finch, covered in dark feathers and with a strip of gray on its head, has a pink-tinged belly, rump, tail coverts, and upper portion of the wing. This species makes its summer home in the Great Basin area—eastern Utah, northwestern Wyoming, southwestern Montana,

southern Idaho, southeastern Oregon, and eastern Nevada. The gray-crowned rosy-finch, which breeds at higher altitudes than almost any other North American bird, is distinguished by brown body feathers and a black head with a gray strip around the back. In summer it migrates to harsh environments in the Rocky, Cascade, and Sierra Nevada mountains and as far north as Alaska's Brooks Range and Aleutian and Pribilof islands.

Almost nothing is known about rosy-finch populations. Scientists can only speculate about flock sizes, or about whether the birds' numbers are going up or down. Seeing them in the winter allows researchers in the finches' southern range to learn about them from an often more accessible vantage point, without having to travel to their high summer homes. When there's a lot of snow cover the birds often cluster at Sandia Crest, where food is almost always available. During the summer months they move quite a bit, but scientists still don't know exactly where they go.

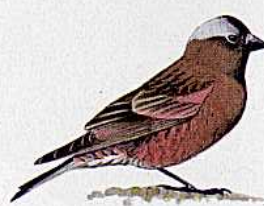
Helping to solve that riddle—and building their bird knowledge by chasing other species—is addictive, says Michael, a tall 18-year-old with buzzed blond hair and glasses. "I love the people, I love all the science behind everything. The birds are beautiful, I love learning new things, and I love to go on road trips," he says. "Birding is mysterious—you never know what you're going to find." He and Raymond have canoed in Costa Rica with crocodiles swimming alongside their boat and snowshoed up a mountain, reaching 10,000 feet in the middle of the night, just to see a boreal owl. "I figure everybody has



Brown-capped rosy-finch
(*Leucosticte australis*)



Black rosy-finch
(*Leucosticte atrata*)



Gray-crowned rosy-finch
(*Leucosticte tephrocotis*)

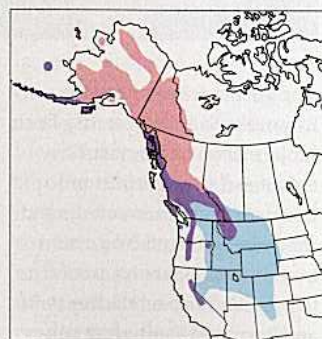
State of the Bird: Rosy-Finches Looks: Chunky birds, the size of large sparrows, mostly blackish to brown with touches of rose-pink on the body and wing feathers. The three species differ mainly in head pattern. **Behavior:** Living in small flocks when they are not nesting, rosy-finches forage on the ground, feeding mostly on seeds in winter, and insects and seeds in summer. Insects that have been carried high by updrafts and then dropped on mountain snowbanks may be a significant part of their summer diet. Rosy-finches build their nests in crevices among rocks. **Range and habitat:** See maps. Each species has a separate nesting range, but they overlap in winter. At all seasons they favor barren, open habitats: mostly above treeline in summer, somewhat lower in winter, or on rocky tundra of Alaskan islands all year. **Status:** Population trends are unknown, because the remote nature of their habitat makes them so hard to monitor. **Threats:** Brown-capped and black rosy-finches (and southern populations of gray-crowned) have limited mountaintop ranges that could become uninhabitable for them if climate change alters the condition of the habitat. **Outlook:** Some northern populations of gray-crowned rosy-finches are probably secure, but the future is uncertain for all the other populations.—*Kenn Kaufman*



● SUMMER RANGE



● WINTER RANGE



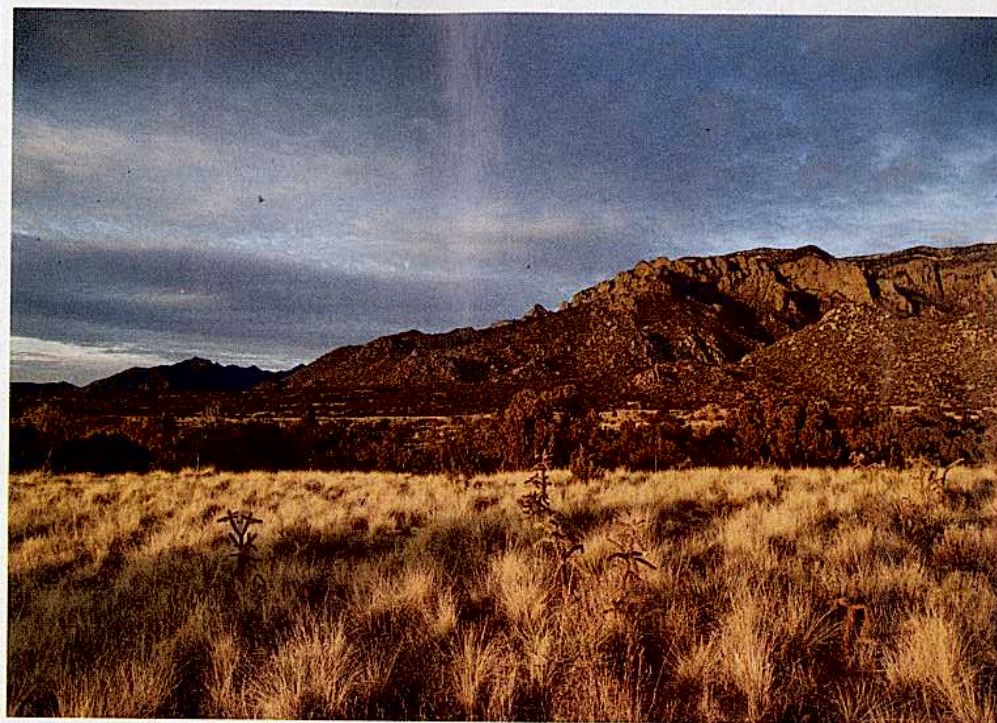
● YEAR-ROUND RANGE

The Sandia Mountains outside of Albuquerque, New Mexico, provide valuable high-altitude habitat for species like rosy-finches, which could be pushed out of their environment as climate change forces warmer temperatures up the slopes.

something they geek out on—we just took it to the next level,” says Michael. Adds Raymond, “It’s intense, it gets me outdoors—and if I don’t get outdoors, I lose it. We don’t have other obsessions, but we have other interests.” They both played soccer, Raymond has a girlfriend, and they live otherwise normal college lives.

Both boys credit Ryan’s exuberance for their fascination with birds, rosy-finches in particular, and for giving them the confidence to pursue their passion. “He always had a great outlook on life. He taught me and Raymond not to care about what other people thought, to just be yourself,” says Michael. “I know who I want to be, and I think I owe a lot of that to Ryan,” says Raymond, who also sports a buzz cut and has two diamond-stud earrings.

Besides doing research, they serve on the board of directors of Central New Mexico Audubon, the same group that Ryan and Raymond presented to when they first started the project seven years ago. Ambassadors for their work, Raymond and Michael still give talks. They also collect data for Chris Witt, an ornithologist at the University of New Mexico, doing sandhill crane surveys in the Rio Grande Valley, where an energy company plans to install utility poles. “So many people in ornithology went through that stage, the awakening to the diversity that’s out there that changed their lives and everything they do,” says Witt.



Although climate change will have an impact on most species, rosy-finches and other alpine animals are of particular concern because of the “elevator effect.”

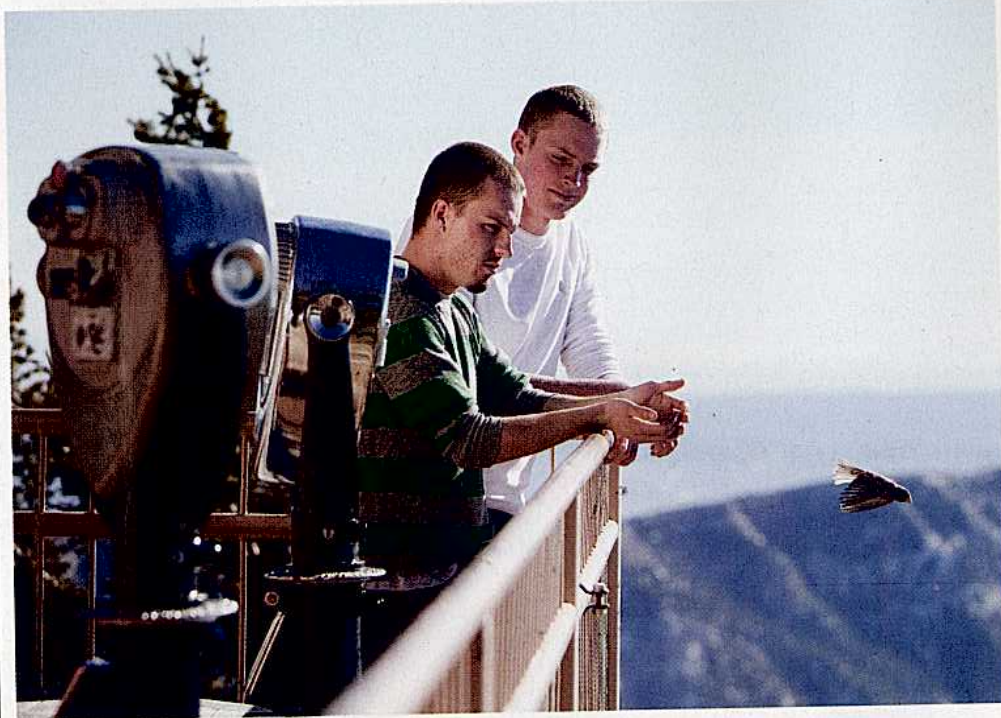
The Sandia Mountains, encrusted with snow, glimmer in the New Mexico dawn. A road winds up through ponderosa pines and junipers until it reaches Sandia Crest, elevation 10,000 feet, ideal sky island habitat for wintering rosy-finches.

Raymond and Michael sit in chairs behind a glass door in the restaurant at the summit, anxiously waiting for a flock to come close to their seed-baited cages placed on the deck outside. A group lands in the fir tree boughs that reach over the wooden terrace, which has a view of Albuquerque. One, two, three rosy-finches fly into the cages. When another follows suit, Michael presses a

button and the cage doors close. The boys hurry out and carefully take the birds from the enclosures, placing each one in an overturned bucket with a hole cut in the bottom, what they call “bird buckets.” A pant leg is glued to the hole to prevent the birds from escaping, and mesh wiring covers the top, keeping them securely inside until someone can take their measurements.

In turn, Raymond or Michael or their volunteer helpers measure each bird’s wing and tail, fanning the feathers to expose a spectrum of pink while announcing the numbers for another volunteer to record. They carefully take a feather, put it in a small manila envelope, and label it. Then they gently blow on the bodies, checking for lice and looking through the transparent skin to estimate how much of the birds’ weight is fat versus muscle, a measure of how much they’ve been eating and the energy they’re expending. They estimate each bird’s age and determine its sex. Finally, if it doesn’t already have one, they equip it with a numbered aluminum band. “Now it’s got a new bracelet—some bling,” says Raymond, holding up a black rosy-finch. Raymond and Michael typically catch 30 to 50 birds per day, but the most exciting ones are those that already have jewelry. When that happens, volunteers can look up when the bird was first caught and who took the measurements, comparing the past to the present—additional evidence that the finches return to the same place each year.

Blair Wolf, a University of New Mexico ornithologist who studies the impact of climate change on birds, is collaborating with the boys to analyze the 2,000 feathers they’ve collected as part of an isotope analysis project. Researchers cut out a tiny piece of each feather’s hollow shaft with a knife. From that sample, they can determine the abundance of each hydrogen isotope, or form of that element, that was present in the environment where a particular bird grew its feathers. When birds breed they molt in the same place and incorporate the isotopes found in their food into their new feathers. Using a map of where hydrogen isotopes occur, biologists can deduce



where, and at what altitude, the birds were breeding. So far Wolf's lab has processed the feathers from about 100 of the birds and found that the gray-crowned rosy-finches at Sandia Crest generally nest in Alaska and that the black rosy-finches generally nest in western Utah.

Climate change could already be transforming their sky island habitats. Although climate change will have an impact on most species, rosy-finches and other alpine animals are of particular concern, because of what scientists call the escalator effect, or, for the dark-humored, the stairway to heaven, says Cagan Sekercioglu, an ornithologist at Stanford University. As lower-elevation habitat warms, altering things like precipitation patterns and food sources, species move to higher ground in search of cooler temperatures. "A lot of species that we currently think are safe from extinction will be affected by climate change," Sekercioglu says. Larger areas of habitat often lead to larger populations, which are then more likely to go extinct as those areas shrink, he says. Less mobile animals will probably be affected faster than birds, which can fly to different locations, but Sekercioglu's research shows that the consequences of climate change and habitat loss could lead to the extinction of up to 550 bird species by 2100 if the earth warms five degrees Fahrenheit, which is within the expected range of increase, according to the Intergovernmental Panel on Climate Change.

How this affects the finches remains widely unknown, but ornithologists can predict how their habitat and food sources might change. "With the rosy-finches, their alpine environment is probably waning," says Wolf. "On sky islands the temperature is going up, and plants and animals have physiological limitations. They're being burned out of their environments." Some studies show that at high-altitude summer breeding grounds, rosy-finches depend on insects that drift on wind currents to higher altitudes until they reach the cold snowfields, where they die. "If you don't have those snowfields anymore, there may not be these insects," says Wolf. "That could alter the finches' food

The consequences of climate change and habitat loss could lead to the extinction of up to 550 bird species by 2100 if the earth warms 5 degrees Fahrenheit.

availability. They don't appear to have the flexibility to go lower, and they need a high protein source. That could alter the whole diagram of rosy-finch breeding productivity and success." They may be able to move to other mountains, but suitable alpine habitats in the region are few and far between. "There's not enough data, and in that way this monitoring project is the only game in town," Chris Witt says of Raymond and Michael's research.

Raymond and Michael have accumulated multiple years of data, so when global warming's effects on alpine ecosystems become better known, they can correlate

Now in its seventh year, the rosy-finch project is still going strong. Raymond and Michael's team bands as many as 200 birds a day before letting them go 10,000 feet above Albuquerque.

that information with the health of rosy-finches, and even potentially extrapolate that data to other species. A warming alpine ecosystem "may not be an issue today or next year for these particular birds, but eventually it will be," says Cox, who still bands birds with Raymond and Michael on Sundays.

Ryan could never have realized the extent to which his project could help the birds he cared for so much—or the interplay between his project and global warming. Still, his partners will forever remember his contribution, and they keep some of his traditions alive, like allowing visitors to release birds from the deck after all the relevant data has been recorded. "After five years it's still so awesome," says Michael. Recently they even recaptured a brown-capped rosy-finch Ryan had banded in 2004. "There were a lot of happy people," says Nancy Cox. "A lot of us also shed a few tears." Knowing Ryan's bird is alive and well, and enjoying its homecoming, confirms the conclusion that rosy-finches rely on this place for survival—and underscores the importance of saving it. ■

WHAT YOU CAN DO

See the rosy-finches—and even release them—at Sandia Crest. For more information, visit the rosy-finches at Sandia Crest website (<http://rosyfinch.com/rosy.html>). In Ryan's memory, the Central New Mexico Audubon Society set up an endowed fund. To contribute, visit <http://rosyfinch.com/RyanMemorialScholarship.html>. Read Ryan's memorial website and his writings at <http://rosyfinch.com/RyanBeaulieu.html>.