Volunteers help biologists find out more about wildlife

Citizen science

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“The great thing about citizen science is that it increases everyone’s wildlife knowledge. It also gives agencies and planners information about which animals live where, how they migrate, and when they’re there,” says Sue Mortensen, a citizen scientist in Jackson, Wyoming.

Today, citizen science projects run the gamut of species and even include astronomy, yet no one has nailed down what citizen science encompasses. Cornell Lab of Ornithology, which sponsored a citizen science conference in 2007, offers the following as a working definition: projects in which
volunteers partner with scientists to answer real-world questions.

Wyomingites' appreciation of their state's wildlife has turned into a call for action. They recognize the mounting pressure on wildlife and its habitat from increased human population, energy development, and climate change. They're creating foundations to support a range of citizen science projects, volunteering to help the Wyoming Game and Fish Department monitor mule deer populations, and pooling their individual observations of birds and mammals with fellow citizens. Most importantly, whether acting individually or as a group, they're sharing the science with Game and Fish biologists and anyone else who wants it. Whether documenting the rare or the common, the data they collect become even more valuable as part of the permanent record. Despite our advanced technologies, once the year 2010 has passed, no one can go back in time to record wildlife observations for this year ever again.

Community decision makers in Jackson seek to balance the needs of wildlife in the face of a booming human population. They've been stymied by the lack of information on their valley's wildlife, however.

Many Teton Valley residents relocated to the area because of the natural beauty and the wildlife, yet as Steve Kilpatrick, terrestrial habitat coordinator with the Game and Fish Department in Jackson says, "It's a double-edged sword.

"As more people move here, we inadvertently have more impacts on wildlife, and therefore, we need to know more about wildlife. There's not enough money or time in the wildlife professional world to document wildlife use and to address all of our impacts on wildlife as the community expands."

Local governments and land and wildlife agencies are "data hungry from a wildlife and natural resources standpoint," according to Kilpatrick.

"Data hungry" may be an understatement. More data are needed on which species live in Teton Valley, how wildlife uses and moves through the habitat, or species' population status. For example, the mystery of why the local moose population seems to be declining remains unsolved.

Although private land occupies only three percent of Teton County, that thin slice provides critical habitat and travel corridors for a myriad of species.

"If we block the corridors in our valley, it will have a huge impact on wildlife—no question," says retired biology professor, outdoorsman, and long-time environmentalist Chuck Schneebeck.

"Some corridors have already been blocked and it has changed distribution in a big way."

Citizen scientists are filling the data void. In 1992, biologists in Washington State launched NatureMapping to satisfy the hunger for wildlife data. They simply requested people report which species they see and where they see them. Jackson residents now follow the NatureMapping format in documenting their area's wildlife.


All of Jackson's NatureMapping projects fall under the auspices of the newly formed Meg and Bert Raynes Wildlife Fund. Grants from many individuals, Wells Fargo, and "1% for the Tetons," an organization that funds sustainability programs, kicked off the

Frank Layton (left) was a dedicated birder and raptor rehabilitator. With his wife, Lois, he operated a rehabilitation center in Casper for many years. Here, he bands a young white pelican as part of a study of a pelican nestling colony that existed on an island in Pathfinder Reservoir for several years before drought dropped the lake level and allowed predators access to the island. (Photo by LuRay Parker)
fund. The museum donated its venue for the potluck.

Teton Valley citizen scientists wanted more from NatureMapping, however. They've refined the data form to include more sophisticated observations. For instance, if it's a mortality incident, what was the cause? If observers record a group of animals, what are the animals' gender and age and the habitat type where they were found?

"The volunteers we've recruited so far are chomping at the bit to do something for the wildlife resource that makes a difference," says biologist Kilpatrick, who is also one of the board members of the Meg and Bert Raynes Wildlife Fund board. In 2009, the fund trained over eighty volunteers, conducted a Moose Day where citizens reported moose sightings, launched a Pika Project in conjunction with Teton Science Schools, monitored wildlife in the Gros Ventre Range southeast of Jackson, and started a backyard project encouraging people to report wildlife they see out their windows.

Citizen scientists discovered pikas at much lower elevations than either they or Embere Hall, research director at Teton Science School's Conservation Research Center, expected. Pikas commonly inhabit rocky slopes near meadows at 7,000 to 10,000 feet in elevation, but citizen scientists documented sightings as low as 5,800 feet.

One obvious question rises when the people gathering data have different backgrounds and levels of training: Is this information dependable? Some scientific observers live by the mantra, "If in doubt, leave it out." The fund approaches the problem of accuracy carefully—unusual information goes into a "data purgatory" for biologists to review for misidentifications and location errors. In keeping with the scientific, not advocacy, approach, the Raynes Wildlife Fund shares its data with all agencies and interested parties, including the Game and Fish Department, U.S. Forest Service, and National Park Service. Raynes Fund organizers designed their wildlife database to be compatible with Wyoming Game and Fish Department's database.

Raynes believes in the importance of partnerships. "It gets the information out there in ways you might not otherwise be able to do," says Raynes. "Science ain't science until you share it; it's just a report stuck away on a shelf.

While seeing a wolverine would be exciting, the Raynes Wildlife Fund focuses on "keeping common species common," and developing a permanent record of Teton Valley's wildlife.

The Wyoming Bird Records Committee (WBRC), on the other hand, seeks out rare and unusual bird sightings. No birder would travel to Wyoming to check a lesser frigatebird or shearwater off his life list. These species inhabit marine ecosystems, but both have been documented in the state.

In 2003, Sue Halt and Bill Robertson discovered a dying lesser frigatebird near Basin in Big Horn County. Several people observed a streaked shearwater on the Cassidy Ranch in Albany County in 2006. No one knows how the birds found their way to Wyoming. They may have been blown in with a storm, but the reason behind their presence will remain a mystery.

Andrea Orabona, nongame bird biologist with Game and Fish in Lander, has chaired the all-volunteer, five-member committee since 1992, starting only three years after the committee was founded.

The committee's report lists the species, location of the sighting, date, time of day, and whether the committee confirmed the observation. If a report isn't confirmed, it doesn't mean it wasn't an accurate observation. The committee simply may need more information to verify it. After the committee reviews each year's records, Game and Fish pub-lishes its report on its Web site.

Anyone can call Orabona with observations. In addition, she monitors the WyoBirds Listserv for reports of unusual birds. An Internet user with an e-mail address can subscribe to listservs on various topics. When a subscriber e-mails the listserv, all subscribers receive the e-mail and can respond to it. The Murie Chapter of Audubon in Casper pays for a birding listserv for Wyoming. Birders can e-mail their observations or comments to the WyoBirds Listserv and all subscribers will receive the e-mail.

The WyoBirds Listserv and the Internet has been a boon to the WBRC. "It has enabled us to get more sightings because there's a place to go to look for what people are seeing and getting more timely information," says Orabona.

Timeliness means better accuracy in eyewitness reports. By being able to find qualifying observations soon after they're posted, Orabona can contact the birder before his memories fade.

Digital photography, even from cell phone cameras, can boost the chances of verifying the bird species. Orabona encourages birders to send in even blurry images in case it reveals an identifying characteristic.

In 2006, Game and Fish started a Species of the Season Challenge for citizen scientists with a competitive bent. Biologists publish a list of unusual animals twice a year and challenge the public to find as many as they can. The observer who records the most sightings wins. In the spring/summer competition, nongame biologists pick two each of birds, reptiles/amphibians, and mammals. Since amphibians and reptiles weather the cold season out of sight underground, only birds and
Retired biology professor Chuck Schneebeck (in ball cap) helps a group of NatureMap volunteers locate a band of bighorn sheep as part of a survey of big game in the Gros Ventre Range. (Photo by Sue Mortensen)

mammals are on the list for the fall/winter challenge.

Biologists choose species based on the department’s need for more distribution data or select species of greatest conservation need. Many species fall in this category because no one knows how many are out there or their distribution. Citizen scientists can help fill these data gaps.

Herpetologists suspected the plains black-headed snake range might extend into Wyoming from its known habitat in Kansas and Nebraska. The snake’s secretive, nocturnal nature kept its presence in doubt, however, until an observant citizen scientist discovered one near Glendo Dam southeast of Douglas. Herpetologists characterize the species as locally abundant, but not colonial or as Zack Walker, Game and Fish herpetologist says, “If you find one, you’ll find more.”

You probably won’t see one as you’re hiking through its rocky shortgrass habitat, however. The small snakes, averaging only seven to eleven inches in length, hide under rocks, rotting logs, or even cow pies during the day. They emerge at night or on warm, humid, overcast days to hunt insects and invertebrates. Deep burrows shelter the snakes from cold temperatures from October to April. In Kansas, black-headed
train surveyors on how to identify recent bones and carcases from previous years, judge the age of remains, and differentiate between mule deer and pronghorns that may be sharing winter range.

The survey, now approaching its seventeenth anniversary, always occurs the first weekend in May. Horseback riders and hikers travel transects based on standard survey procedures. Fralick determines specific survey sites based on where the deer wintered that year, but the basic procedures don't change.

Weather, forever uncontrollable, can be a boon or disaster for both the deer population and shrub communities the deer depend on for food, cover, and shelter from bone-chilling winds. Nothing illustrates the ravages of winter better than fawn carcasses.

As citizen scientists and Game and Fish wildlife managers share lunch on the tailgate during the mule deer mortality survey or someone simply calls in an unusual sighting, the conversation goes beyond numbers and recordkeeping.

“T’ve never had an instance where someone has called to report an observation and then we’ve both hung up,” says Reg Rothwell, Game and Fish supervisor of biological services. “There’s always some discussion. In some cases, I’m learning from them, and in some cases, they’re learning from me.”

Knowledge of wildlife species’ distribution and habitat will only become more crucial the more Wyoming’s energy development increases and communities grow. As Sue Mortensen says, “It’s important to have the knowledge so that when we make decisions, we can do it consciously with the good of everybody—people and animals—so we can co-habit.”

Writer Marilyn Stone covers conservation, natural history, and hunting from her home in Paonia, Colorado.