



PHOTOS BY BECKY LOMAX

ADDITIONAL AND ESSENTIAL EYES AND EARS

Volunteer citizen scientists across Montana help gather vital information for wildlife and fisheries research projects. **BY BECKY LOMAX**

As Kjell Petersen scrambles along a steep, rocky slope in one of the world’s most scenic parks, he’s not marveling at the picture-book vistas surrounding him—the breathtaking waterfalls, deep mountain valleys, and fields of alpine wildflowers that attract visitors to Glacier National Park each summer. His eyes are glued to the ground.

Petersen is looking for the droppings of American pikas, gerbil-sized mammals that live in high-mountain environments. After spotting a small pile of cut, dried grasses stashed by pikas as winter food, he uses a stick to push brown, BB-sized pellets into a small envelope. Steve Penner takes a GPS reading on the location of the “hay pile,” while his wife Barb Penner notes data about the pika site on a small chart.

Petersen is a part-time ski instructor, Steve Penner a forester, and Barb a ski lodge employee. None has a degree in biology, but all have an avid interest in wildlife. And along with other participants in the High Country Citizen Science Program, all three help professional biologists gather essential data for wildlife research in Glacier. In this case, the information will help scientists plan future monitoring to learn whether climate change is

reducing pika numbers. “They’ve helped us gather an incredible amount of data compared to what we could obtain with our one technician who monitors high-mountain species,” says Jami Belt, citizen science program organizer for the Crown of the Continent Research Learning Center, a National Park Service research facility. She notes that last summer the trio and 83 other citizen scientists combed the park’s backcountry for tracks, scat, and sightings of pikas, mountain goats, and Clark’s nutcrackers. “We don’t have a population baseline for these species and don’t know where they are located throughout the park. The citizen science program helps us gain that information,” says Belt.

Across Montana, a growing number of citizens help science by listening for toad calls, reporting wolf sightings, counting birds, and even fishing. The volunteers learn more about wildlife and

A DIFFERENCE Perched on a talus slope in Glacier National Park, Steve Penner records information called out by Kjell Petersen, who searches for sign of pika (below left) as part of the High Country Citizen Science Program. Says Petersen: “You feel like you’re doing the most important thing out there, and that what you do will make a difference.”

science while cash- and staff-strapped public conservation agencies and scientific nonprofits get invaluable help gathering essential information used for applied research. “The more we know about wildlife behavior and habitat, the better we can conserve populations and habitat,” says Kristi DuBois, a wildlife biologist for Montana Fish, Wildlife & Parks in Missoula. “Our big hitch is that we don’t have the funding or personnel to do all the work that needs to be done. For us, citizen science volunteers are priceless.”

Ordinary people have long been studying the natural world, such as watching where birds nest in spring, tracking star movement across the night sky, and recording when different plants flower. But not until 1900, when the National Audubon Society began its annual Christmas Bird Count, did an organization begin to systematically gather large numbers of citizen observations and put the information to use. Now in its 110th year, the annual Audubon program invites volunteers from across North America to count bird species over three weeks in midwinter. The century-long data set shows population trends, like the long-term decline in boreal chickadees, that scientists might otherwise miss.

Birds are the subject of many other citizen science programs. In Montana, landowners voluntarily monitor bluebird houses on their property in cooperation with the nonprofit Mountain Bluebird Trails. In September, volunteers with the Wildlife Research Institute count migrating golden eagles at Rogers Pass. More than two dozen volunteers assist FWP biologists each summer looking for falcons, hawks, and other birds of prey as part of the Montana Raptor Survey Route (“Following Raptors’ Ups and Downs,” March-April 2009).

The U.S. Geological Survey (USGS) monitors bird population trends each June using information gathered by volunteers across North America who take part in the agency’s annual Breeding Bird Surveys. Each of the 60 routes in Montana require four hours of surveying. Volunteers drive a pre-assigned 25-mile-long route, stopping every half mile to look—and more effectively, listen—for birds. “We really depend on skilled volunteers with good hearing and the ability to recognize different mating songs,” says Dan Sullivan, a Helena retiree who organizes the surveys in Montana.

Some science research projects benefit from the enormous commitments made by just a few individual volunteers. On his own



Licensed banders Ned (above) and Gigi Batchelder of Hamilton have trapped and banded thousands of hummingbirds, sending the information they gather to a federal conservation facility.



Retired cardiologist and active citizen scientist Carolyn Goren of Missoula plays recorded flammulated owl calls during a survey coordinated by the Avian Science Center and Montana Audubon.

time, Michael Schwitters of Choteau, a retired Air Force colonel, recorded the identification numbers of 40,000 collared snow geese—from the Arctic to Montana’s Freezout Lake to California—and supplied the information to FWP and the U.S. Fish & Wildlife Service (USFWS). State and federally licensed banders Ned and Gigi Batchelder of Hamilton have caught and banded thousands of hummingbirds in Montana and other states, forwarding the information to a federal bird research facility in Maryland.

“This is much more than a hobby for us,” says Ned Batchelder. “It’s our passion.”

Other volunteer-fueled projects require far less effort. The Great Backyard Bird Count—run by the National Audubon Society and the Cornell Lab of Ornithology—only asks volunteers to count birds they see in their yard during a 15-minute period over President’s Day weekend. In 2008, participants submitted more than 85,000 checklists and recorded 634 species across North America as part of the backyard survey.

Many conservation agencies and nonprofits rely on volunteers to supplement existing research work. Allison Begley, an FWP wildlife biologist in Billings who coordinates Montana’s portion of the North American Amphibian Monitoring Program, says volunteers listening for breeding calls each spring in the state’s eastern half help her monitor a wider geographic area for a longer time. “Frogs and toads are particular about where and when they breed, and they can be quiet for days and then go gangbusters all of a sudden,” she says. “Our biologists are out

there listening, but there’s huge value in also having additional ears out there to fill in the picture.” The 4,472 hours that volunteers donated to Yellowstone National Park’s various wolf research projects in 2008 is the equivalent of four additional full-time field technician positions, according to Yellowstone Wolf Project coordinator Doug Smith. FWP wildlife research supervisor Justin Gude says elk hunters have saved FWP tens of thousands of dollars by volunteering to draw blood from the cow elk they kill. Hunters use kits supplied by the agency and mail their samples to the FWP wildlife laboratory in Bozeman, which tests for brucellosis, a disease that can infect nearby cattle. “We can’t afford to do the blood draws ourselves, and since hunters are out there anyway, their volunteer effort makes a lot of sense,” says Gude.

Work by volunteer citizen scientists occurs across the state and throughout the year. In fall, hunters voluntarily submit deer heads to the FWP wildlife lab for chronic wasting disease testing. Waterfowl hunters send duck wings and goose tail feathers to the USFWS. Hunters and others help monitor wolves and mountain lions by reporting sightings and activity on the FWP website and during phone surveys. Volunteers help FWP and

FISHING FOR SCIENCE

Anglers across Montana have been volunteering to help with the FWP Fishing Log Program since it began in 1951. Last year the department recruited 952 anglers to keep diaries of their fishing effort and catch. Biologists use the information to track trends in the size and species anglers catch and also to determine catch rates. “With more than 3,000 miles of streams and 450 lakes in our region alone, there’s no way FWP biologists can get to every water body and monitor it,” says Jim Vashro, FWP fisheries manager in northwest Montana, who has been keeping a personal fishing diary as part of the program for the past 23 years.

Yellowstone National Park runs similar programs. One asks anglers to voluntarily report their catch, providing information that helps park fisheries managers track changes in specific trout populations. Another program recruits anglers willing to tackle specific challenges, such as catching and tagging arctic grayling in certain creeks or hiking into backcountry waters to probe lakes and streams for trout.



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David Jurovich, 11, of Billings, found this snapping turtle last summer during the Yellowstone River Bioblitz. In bioblitzes, citizen scientists perform a one-day inventory of all living organisms in a specified area. FWP biologists tagged the turtle with a radio transmitter and released the reptile to track its movement.



USGS biologists capture black and grizzly bear hair for DNA analysis. FWP uses volunteers to monitor Caspian terns, white pelicans, and other colonial waterbirds. To keep closer tabs on elk populations in the Elkhorn Mountains, FWP asks hunters and landowners to report sightings on the agency's website. Volunteers also help monitor winter range conditions for the Rocky Mountain Elk Foundation, check peregrine falcon nests for the Montana Peregrine Institute, and record stream conditions for Trout Unlimited.

Montana's largest citizen-fueled scientific database collects observations year-round of mammals, birds, and "of concern" plant species through the Montana Natural Heritage Program's on-line Natural Heritage Tracker. The program was launched in 2007 and has logged more than 750,000 observations. The data is available to anyone but is used mainly by the U.S. Forest Service and other land management agencies to identify species that might be present in proposed timber sale sites and developments undergoing environmental analysis.

Volunteer observations and other work is scientifically valuable only when conducted according to rigorous protocols. "Scientists need reliable data," says Gude. "To get that, field methods must be tested, trustworthy, repeatable, and consistent." Volunteers in many citizen science programs are taught how to accurately collect and record data. The University of

Becky Lomax is a writer in Whitefish.



BOB MARTINAKA



CORIG & LIZ LARCOM

Montana's Avian Science Center has trained dozens of people over the past two summers to locate flammulated owls in the state's western half. Organizer Amy Cilimburg shows volunteers how to make owl calls, fill out data forms, and use GPS units to find recording sites at night. Participants in the amphibian monitoring program learn how to identify frogs and toads by the species' mating calls. To ensure reliable survey results, all participants must follow the same protocol of driving a 10-mile route after dark, stopping every mile to listen for five minutes, and then record the species they hear. This must be repeated three times dur-

“You get totally swallowed up in the adventure of it.”

ing the spring season, year after year.

If volunteers don't gather samples according to necessary standards, the information may be useless. When FWP first used hunters to collect blood from harvested elk to test for brucellosis in the Greater Yellowstone Area, only 10 percent of samples were usable. To improve volunteer blood-gathering efforts, says Gude, FWP clarified its explanation to hunters about how, where, and when to draw blood samples. This year more than 80 percent of samples were adequate to submit for brucellosis testing.

Volunteering to help science has its perks. Citizen scientists get to spend time afield learning from experts. And they gain satisfaction knowing their work contributes to conservation. Ryan Rauscher, an FWP biologist in Glasgow who coordinates the Montana Raptor Survey Route, has seen how volunteers embrace their work and its importance to science. "Our project gives them a sense of ownership in the data, and they take great

HORNED LARKS BUT NO FRENCH HENS Since 1908, when the first Montana Audubon Christmas Bird Count was conducted in Bozeman, thousands of participants have identified 207 species, including horned larks (above left), and nearly 200,000 individual birds. This year's midwinter survey ran from December 14, 2009 to January 5, 2010. "Volunteers are the lifeblood of bird conservation organizations like ours," says Steve Hoffman, executive director of Montana Audubon. "They get so engaged and invested in the work they do for us, and that only strengthens the passion they already have for birds and other wildlife."

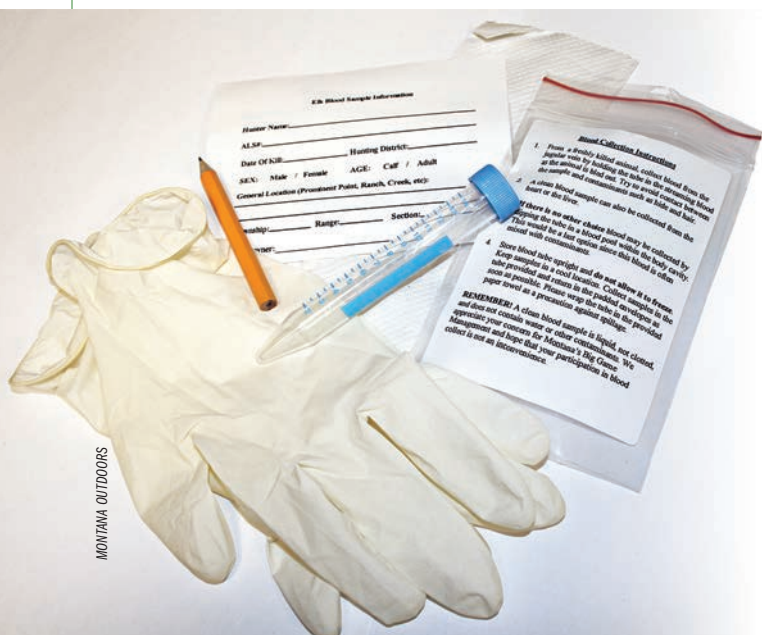
pride in completing their routes," he says.

Citizen science participation is growing. In just one year, the number of people volunteering to help monitor loons in Glacier National Park doubled from 77 to 156. FWP's Dubois and Begley report that as pub-

lic interest in amphibians, reptiles, bats, and other nongame wildlife grows, so do calls from people across Montana asking how they can participate in research projects.

Studies show that people who love the natural world want experiences that add

knowledge and significance to their time outdoors. More people are signing up for environmental education tours, outdoors classrooms, and nature seminars. And more are craving the intimate, hands-on learning that comes from helping with research projects across Montana. "You get totally swallowed up in the adventure of it," says Petersen, the volunteer who spent several days last summer gathering wildlife information in Glacier National Park. "You feel like you're doing the most important thing out there, and that what you do will make a difference." 🐾



GIVE BLOOD To increase the number of elk it tests for brucellosis, a disease that can infect nearby cattle, FWP asks hunters to draw a blood sample from their kill. Elk hunters are sent a collection kit containing rubber gloves, a syringe, and detailed instructions for obtaining a fresh and clean blood sample.

MONTANA OUTDOORS

BECOME A CITIZEN SCIENTIST

REPORT

- observations of wildlife or "of concern" plant species through the Natural Heritage Tracker: mtnhp.org/tracker/
- wolf sightings and activity through the FWP website: fwp.mt.gov/wildthings/wolf/. Click on "Report a wolf observation."
- sightings of birds to the Natural Audubon Society and Cornell Lab of Ornithology at: ebird.org/content/ebird
- observations of buds and first flowers for the BudBurst climate change studies at: www.windows.ucar.edu/citizen_science/budburst

JOIN

- Montana Audubon's Christmas Bird Count or other volunteering opportunities: <http://mtaudubon.org/birds/citizen.html>

E-MAIL FOR MORE INFO

Glacier National Park's High Country Citizen Science Program: jami_belt@umontana.edu

USGS Breeding Bird Surveys: Dsullivan01@bresnan.net

Mountain Bluebird Trails Bluebird Box Monitoring Program: mountainbluebirdtrails.com

FWP nongame wildlife volunteering opportunities: kdubois@mt.gov, lhanaska-brown@mt.gov, or rtauscher@mt.gov

FWP Fishing Log Program: fwp.mt.gov/fishing/guide/fishingLog/

Yellowstone National Park's Volunteer Flyfishing Program: wfv100@psu.edu or bywater@dixie.edu



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