

Windows to Wildlife



Marks of the western monarch © (CC-BY-SA) Nedra on Flickr CC.

Flight of the Monarchs

Idaho researchers track monarch butterflies amid declines in migratory populations

Written by LAURA ZUCKERMAN*

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The sun had just climbed the Bitterroot Mountains and was piercing an overcast sky with pale rays one morning in late July when a pair of biologists fanned out in an Idaho field dotted with milkweed plants searching for monarch butterflies, among the most admired and mysterious of insects for an arduous mass migration that sees them winter in warmer climates.

The orange-and-black butterflies are roughly divided into two populations in the United States, according to fall migrations that lead monarchs east of the Continental Divide to embark on a 3,000-mile journey to Mexico and monarchs west of the Divide to wing hundreds of miles to California from Rocky Mountain states like Idaho and Montana.

Monarchs are known for that migration (which is unique among butterflies for its regularity and extensiveness) for an ethereal beauty and for emerging from a jade green chrysalis adorned with gold stitching. Lately, they have drawn attention for population declines tied to such factors as destruction of the milkweed — misnamed native plants with orchid-like blossoms — that the butterflies depend on to lay eggs and provide food for hatching larvae. Plummeting numbers of monarchs have led some scientists to question if the singular seasonal migration will one day disappear.

Word of the insect's plight led Beth Waterbury, regional wildlife biologist with the Idaho Department of Fish and Game, to launch the first formal inventory of monarch habitat in the Salmon and Lemhi river valleys in the east central portion of the state.

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This past spring, Waterbury colleague, Toni Ruth, and a team of citizen scientists launched a months-long project to catalogue and monitor monarch milkweed sites clustered in the grasslands, foothills and waterways of a county which spans more square miles than the states of Delaware and Rhode Island combined.

Preliminary inventories have revealed patches of a type known as showy milkweed in pasturelands, along roadside ditches and on dry ridges in primarily undeveloped acreage outside the ranching community of Salmon. Waterbury said it was unclear why the butterflies appear to favor some milkweed spots and not others. And generation after generation of monarchs fly to familiar sites through mysterious mechanisms science has yet to fully explain.

“It’s a little bit of a miracle that they find these islands,” said Waterbury.

The project is expected to provide key information about the Northern Rockies portion of the western monarch population. Far less is known about the hundreds of thousands of monarchs in Western states than their eastern counterparts, which are better monitored by scientists, nonprofit groups and vast networks of enthusiasts, said monarch expert Karen Oberhauser, professor and director of graduate studies in conservation biology at the University of Minnesota and head of the school’s Monarch Lab.

“It’s a little bit of a lot of things,” said Oberhauser.

The allure of the butterfly, once experienced, is lasting, casting a spell of wonder and delight among admirers and researchers alike. Recent canvassing of milkweed sites north of Salmon brought exclamations from Ruth, officially a wildlife technician for Idaho Fish and Game, who bent low to examine a gauzy chrysalis dotted with gold.

“It’s like nature’s jewel,” she said.

The chrysalis represents the last stage of a weeks-long metamorphosis that moves from egg to caterpillar of successively larger sizes to butterfly. One female will lay hundreds of eggs but just a fraction will become butterflies, said Ruth.

Oberhauser said insect predators and parasites are known to attack eggs and larvae, adding, “You never want to be a baby monarch; you have such a low chance of surviving.”



The suspended pupa is jewel-like- jade in color with a crown of gold stitching. © (CC-BY-SA) Jeffrey Wolk on Flickr CC.

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- Laura Zuckerman

This caterpillar is feeding on milkweed. During this stage the monarch does all of its growing. As the caterpillar’s body grows larger it sheds its skin. There are five parts to this stage, which are known as instars.
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A toxin in the milkweed is taken up by monarch caterpillars and butterflies and lends them the so-called warning coloration that suggests to predators they are not just a pretty face.

“It tells birds that they should look elsewhere for a tasty tidbit,” Ruth said.

Monarchs that emerge as summer is winding into fall will not breed but rather conserve their energy and resources — gaining nectar from late bloomers like coneflower and asters — to embark on southern migrations that will see them fly during the day but not at night since they do not navigate by stars like birds, Oberhauser said.

The butterflies use the sun as a compass and use the Earth’s magnetic field as a magnetic compass on cloudy days, she said. “We still don’t know how they find the exact same spot every year since very few, if any, make the round-trip migration,” said Oberhauser.

As monarch numbers decrease, researchers ponder the future of the long-distance journey.

“We don’t really know if there’s a limit or how small the population can get before the migratory phenomenon is no longer viable,” Oberhauser said.

For her part, Waterbury is clearing part of her garden to plant milkweed, with seeds and plants sold online. She, Ruth and volunteers are facing the prospect of limited to no funding if Idaho does not grant the monarch — the insect of Idaho and six other states — so-called species of greatest conservation need status.

Yet for Waterbury and Ruth, the weeks of seeking butterflies in 2014 will ever represent a season of enchantment, a period when untold forces of nature converged to give rise to the flight of the monarchs.



Above: Monarch butterfly on milkweed © (CC-BY-SA) George Bott on Flickr CC. Left: As the shell bursts open and a monarch butterfly emerges, it takes several hours before it can fly because its wings are tiny, wet, and wrinkly. The butterfly pumps body fluid, called hemolymph, into the wings to make them grow and harden for flight. © (CC-BY-SA) johnmccomb on Flickr CC.

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Tax Form 40, Page 2

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Winter Wildlife Events

Boise Watershed

11818 West Joplin Rd., Boise; (208) 489-1284

www.cityofboise.org/Bee/WaterShed/Home/index.aspx

Jan. 17- WaterShed Weekend: The Science of Snow (Family Day)

Our popular snow day is back! Join us between 10:00 a.m. – 1:00 p.m. at the Boise WaterShed followed by a trip to Bogus Basin Ski Resort for snowshoeing (registration required). The snowshoeing trip is full, but you can be placed on a waiting list.

Morning activities include fun, snow-themed crafts and games. Talk to a scientist and learn how to become a Junior Snow Ranger! No wastewater tour is scheduled. At 12:00 noon, registered participants will be taken to Bogus Basin for an afternoon of snowshoeing, courtesy of Bogus Basin SnowSchool and Caldwell Bus Company! Small groups will meet at the Bogus Basin Nordic Lodge and will be lead on family-friendly trails by SnowSchool leaders. Beginners welcome!

Cost: \$5.00/per person (helps pay for bus transportation). Registration Deadline: January 15. Space is limited, only 44 spots available. Call 608-7300 to register or to be placed on a waiting list. Group Size Restrictions: Snowshoe trip is designed for small families and individuals. Consequently, we cannot accommodate groups. Groups can attend the morning session at the Boise WaterShed.

Feb 21- WaterShed Weekend: Engineering your Environment

Be an engineer for the day! Come to the Boise WaterShed between 10:00 a.m. – 1:00 p.m. to design and create projects great and small! Try your hand at engineering candy towers and magnetic slime. Young ones will enjoy blockfest building stations. From 10:30 – 12:00, Reuseum will host a Deconstruction Lab where older “engineers –in-training” can dismantle old technology and repurpose it for other projects.

March 21- WaterShed Weekend: Spring Awakening!

Spring is in the air at the Boise WaterShed! Between 10:00 a.m. – 1:00 p.m. we’re welcoming in spring with nature crafts and activities. Bird lovers can join us at 9:30 to take a one mile stroll to the Boise River with the Golden Eagle Audubon Society to view the blue heron rookery. At 10:30, join Master Gardener Debbie Smith, to learn about Idaho’s native plants, their history, and their importance to Native Americans. Catch a glimpse of our newly-hatched Rainbow Trout that will be released in May.

Foothills Learning Center

3188 Sunset Peak Rd., Boise; (208) 514-3755

www.cityofboise.org/Bee/Foothills/index.aspx

Feb. 4- Birding Series with Terry Rich: What is the Overall State of the Birds Worldwide?

9:00 to 10:00 am. Free! Come to one or all sessions. Bird books and binoculars are available. Which species are doing OK and which need help? Learn a bit about how populations are assessed and prioritized for conservation action and efforts. We’ll be looking at the following programs: Partners in Flight, Joint Ventures, the North American Bird Conservation Initiative, BirdLife International, National Audubon Society, American Bird Conservancy and the American Birding Association.

Feb. 14- Second Saturday Series: Hot Water and Hearts

10:00am to 1pm. Free! No registration necessary. Please no pets. Escape the cold and come learn about Idaho’s amazing geothermal features and how they work. Amanda Laib, Geology Masters student at BSU, will tell us all about these underground wonders. We’ll explore the ways the water gets heated up by the Earth and the pathways it follows to reach the surface. We will talk about the abundance of geothermal resources right here in Idaho! We’ll build a tabletop geyser, explore the powers of heat and pressure, and more. And since it’s Valentine’s Day, you can also craft a natural valentine for someone you love.

March 4- Birding Series with Terry Rich: Spring Migration!

9:00 to 10:00 am. Free! No registration necessary. Come to one or all sessions. Bird books and binoculars are available to borrow. Different species move north at different times. We may also be seeing a shift in overall migration patterns of some species due to changes in climate. Terry will talk about waterfowl and shorebird identification.

March. 14- Second Saturday Series: Spring Animal Babies

10:00am to 1pm. It’s almost spring and many species of animals will soon raise young and on the move after a long winter’s rest. Bill London, of Idaho Department of Fish and Game, is back to share his wonderful stories and expertise about baby animals, survival strategies, challenges and success stories. We’ll have lots of engaging activities for visitors!

Idaho's Winter Hawk

by Rob Cavallaro*, Regional Wildlife Biologist, IDFG- Upper Snake Region

Hastings Lane in Teton Valley, Idaho is an important winter conduit for skiers travelling from throughout eastern Idaho to the Grand Targhee Ski Resort. This county road is often busy with ski traffic, particularly in the morning and evening as skiers hustle up to "The Hill" to get first tracks, or file home to Rexburg, Idaho Falls, or Pocatello. Hastings Lane is framed by a power line and bisects an area of open farmland and scattered residential developments. Due to the alignment of power pole perches and open fields for hunting, Hastings Lane attracts hungry birds of prey throughout the year, especially in winter.

One of Idaho's most common hawks doesn't breed anywhere near the Gem State. However, every fall thousands of rough-legged hawks (*Buteo lagopus*) move into Idaho where they are commonly seen perched on power poles in open habitats. Rough-legged hawks have a Panboreal breeding range, meaning they nest in the far northern boreal forest and tundra of Alaska, Canada, Europe, and Asia. During September in North America, "roughlegs" begin moving south through Canada and the Northern U.S. and are usually established at their wintering areas by late October to early November.

There is no current breeding population estimate for rough-legged hawks, but given their worldwide distribution they are likely one of the world's most abundant hawk species. According to Christmas Bird Count data, approximately 50,000 roughlegs winter in North America south of Alaska and Canada. Montana and Idaho support the largest concentrations of wintering roughlegs with about 5,000 and 4,000 birds respectively. In Idaho, most wintering roughlegs occur in southern Idaho.

Identifying roughlegs can be a little tricky due to the variation in plumages by age, gender, and overall color (light or dark morph). However, if you see a hawk perched on a power pole in open country between the months of November and March that has a predominantly white tail, with either a single or multiple dark bands, you may be looking at a rough-legged hawk. Several other characteristics are diagnostic for light-morph roughlegs. All ages and both sexes



typically have prominent dark carpal (wrist) patches that are very obvious on the underwings of flying birds. Females and juvenile roughlegs have dark belly bands that resemble tuxedo cummerbunds. Roughlegs have relatively long wings (extending beyond the tail in a perched bird) and their legs are feathered right down to the toes. They also have relatively small feet and beaks compared to other hawks.

Roughlegs spend most of the morning hours perched on power poles, fence posts and other convenient structures where they preen and hunt. From their perch, they scan for small mammals (voles, mice and shrews) making quick dives as opportunities arise. They often move down a line of power poles to better cover an area's hunting opportunities, particularly after a strike. In sagebrush country, jackrabbit carrion is likely an important supplement to their small mammal prey. Later in the day, roughlegs may leave their perches to soar or switch to an aerial hunting strategy. A common technique is a low quartering flight (similar to a northern harrier) to surprise small mammal prey. Roughlegs also kite. Kiting hawks rely on the lift of wind to hover in place over a likely hunting spot or potential prey. Kiting allows roughlegs to actively hunt with minimal energy expenditure. It is a particularly important strategy for areas with few perches. One Idaho study found that roughlegs have greater success perch hunting but hunt aerially when winds allow them to kite. Optimal wind speeds for an aerial hunting roughleg are between 10 mph – 30 mph.



Like other hawks active during daylight hours, roughlegs must find a suitable night roost as the sun goes down. Evenings are often a good time to observe roughleg behavior since they may be hunting actively before flying to their night roost. In Teton Valley, many roughlegs fly from their hunting areas on the valley floor to National Forest lands (often miles away), where dense timber affords protection from the cold and predators, especially the redoubtable great-horned owl. Roughlegs will roost alone, in small groups, or hundreds of birds may share a night roost. Southwest of Teton Valley, in the Idaho's Big Desert, roughlegs often roost alone at the base of a large sagebrush far away from major roads or on H-type power transmission lines immediately adjacent to the vertical uprights, where they are less detectable.

Major direct threats to rough-legged hawks on their winter grounds in eastern Idaho are collisions with vehicles and illegal shooting (all hawks are protected species). Idaho Department of Fish and Game Conservation Officers investigated a spate of raptor shootings in Teton Valley during the winter of 2011. Most of the victims were roughlegs. Other threats include disturbance at night roosts and loss of habitat.

On winter evenings in Teton Valley, as skiers from Grand Targhee drive from National Forest Lands towards their homes at lower elevations, roughlegs are finishing their daily hunting and moving in the opposite direction towards their roosts. I have watched as oblivious skiers heading home (drinking coffee, chatting, texting, etc...) drive past a rough-legged hawk perched in the right-of-way, shielding some recently killed prey; or flying low over the roadway towards their night roost.

As a skier I understand the strong appeal of the slopes after a fresh snowfall – it is a great part of the Idaho outdoor experience. Also, Grand Targhee lift tickets, currently priced at \$73/day, are considered a bargain compared to other large western ski areas. I trust that some ski commuters look up occasionally and admire roughlegs pursuing their wild careers, and for them, it is worth noting that for less than the price of one adult lift ticket, you can purchase both an Idaho Wildlife License Plate and a combination hunting/fishing license. Collectively, these investments support conservation and management of Idaho's winter hawks and all our other wildlife for a whole year.



The Salmon Valley Stewardship (SVS) presented the 2014 David Krosting Sustainability Award to Idaho Fish and Game biologist Beth Waterbury in the fall. This marks the first time SVS has ever given the award to an individual. While Beth noted her discomfort at being singled out among a team of dedicated biologists, as they discussed her nomination our selection panel noted what a difference one person truly can make.

The award, honors the attitude and ethics of former Bureau of Land Management Salmon Field Office manager David Krosting, who lost his battle with cancer in 2003. As the field office manager from 1990 -2003, Krosting earned the respect of community leaders for valuing not only the land he managed, but also the people on the land.

SVS Board President Julie Hopkins, who had the opportunity to work with Dave years ago, told last Saturday's Harvest Celebration attendees that Beth exhibits these same traits. She explained that when Beth notices an issue affecting wildlife, she seeks solutions that can work for people. One example cited was her current advocacy for reducing the number of osprey who become entangled in baling twine. Osprey are attracted by the twine and use it as nest material, often with disastrous results. Beth is putting a plan into motion to make baling twine recycling convenient for livestock owners and profitable for companies in the area who recycle the twine.

The gregarious biologist's career has spanned nearly 30 years. As she accepted the award, she recounted her days as a "combat biologist" in places like the Klamath Basin where collaborative solutions to complex fish and wildlife issues were "far too rare." She said when she moved to Salmon 13 years ago to work for Idaho Department of Fish and Game she had the good fortune to be "re-trained to work collaboratively with a community that truly values its fish and wildlife resources and works hard to sustain these values, not only for the benefit of our rural economy, hunters and anglers, or future generations, but because we recognize the worth of fish and wildlife for their own sake."

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