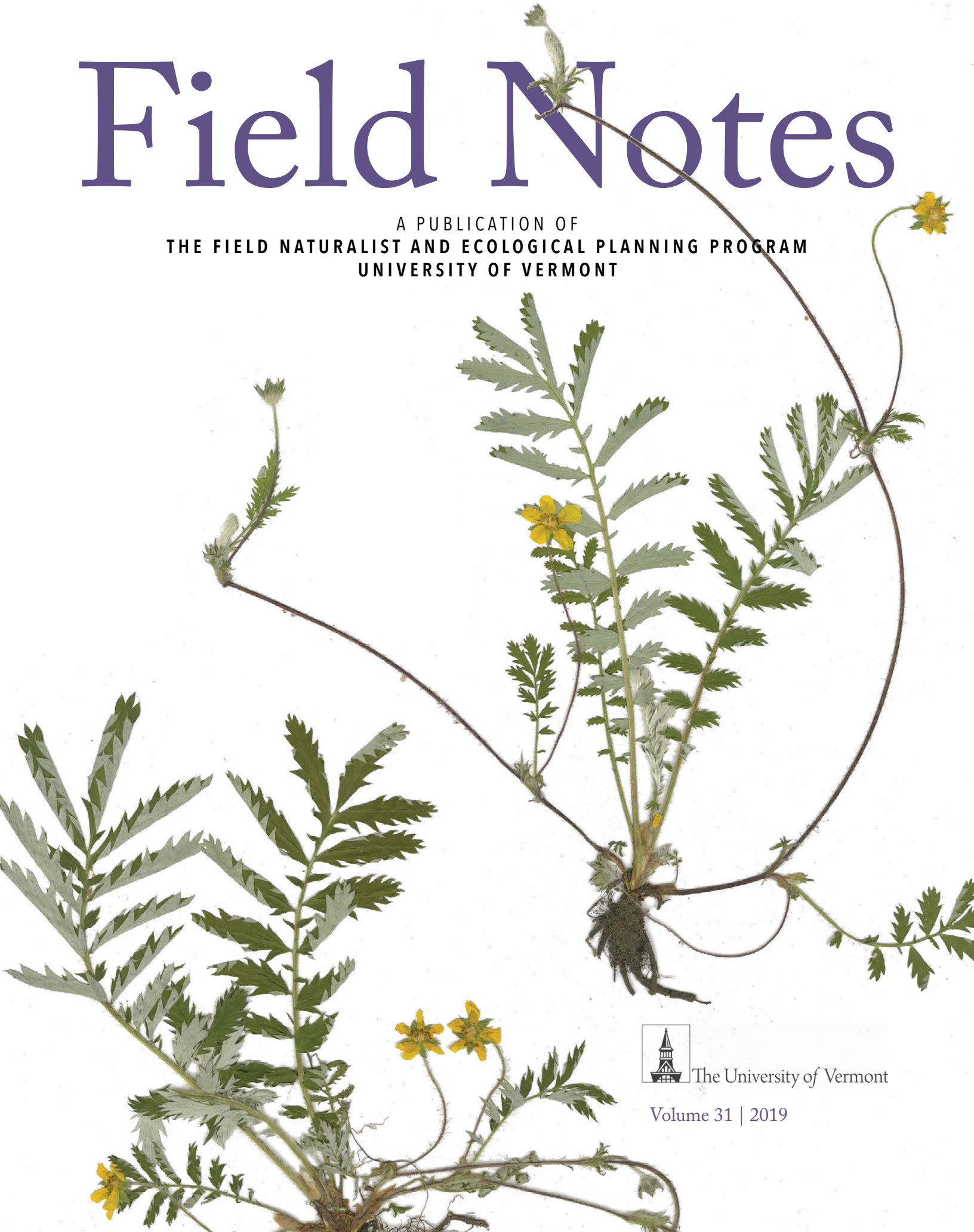
# Field Notes

A PUBLICATION OF
THE FIELD NATURALIST AND ECOLOGICAL PLANNING PROGRAM
UNIVERSITY OF VERMONT



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2019 Field Notes Team
**Grace Glynn**
**Eric Hagen**
**Meredith Naughton**

Designer
**Kelly Finan,** Cohort AD
www.kellyfinan.com

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Front cover image: *Argentina anserina* by Grace Glynn
Back cover image: Lyn Baldwin

FIELD NATURALIST & ECOLOGICAL PLANNING PROGRAM





GRACE GLYNN

# What's in a Name?

*What's in a name? That which we call a rose*
*By any other name would smell as sweet*
*–William Shakespeare*

The members of the AJ cohort—*Anax junius*, or the Green Darners—like to name names. We throw them out like seeds scattered to the wind: birch, beech, black-throated blue warbler, cedar-pine limestone cliff. As ecologists, we use names as taxonomic tools to describe the natural world and articulate the need for management and conservation. We also use names to build relationships with the world around us. As naturalist Tim Dee writes, "Without a name made in our mouths, an animal or a place struggles to find purchase in our minds or hearts."

But we know that language is limited in its ability to convey the entire essence of a thing. The true, solid nature of a rose—its heady scent and the whorl of its silken petals—can never be captured in a single syllable. The cliffs along Lake Champlain don't identify themselves as dolomite. Sometimes, when we look across the water to the distant hazy-blue mountains, words fail us completely.

*What's in a name?* is a linguistic, philosophical, and scientific question all at once. In pondering this theme, our writers consider the power of names: their utility and magic as well as their limitations. Our writers describe the way language connects us with botanists born centuries ago and facilitates conservation. At the same time, they warn us against pointing and naming as a means to claim ownership of the world.

That which we call a rose actually includes a multitude of names: there are over three hundred species in the genus *Rosa*, not to mention thousands more hybrids and countless common names. Botanists disagree over the exact number of species in the genus, and the roses undergo frequent taxonomic revision. Does what we call them define what they are? I don't know. But in the pages that follow, we invite you to join us in chasing after the names of the rose, as we wander into that impenetrable thicket where worlds and words meet.

## HANNAH PHILLIPS

Students and graduates alike will remember stumbling through early attempts to concisely describe the FNEP Program. In these moments, few will forget Jeffrey Hughes' description: "we teach students to travel the mountains between the Valley of the Scientists and the Valley of the Policy-Makers, fluent in the language of both valleys, armed with the communication skills to translate between foreign lands." In those words, it sounds like a grand expedition, does it not?

The journey begins with Latin names, landscape histories, and ecological story-telling. Students are deposited in unfamiliar lands so that they might practice communicating in a new language. Finally, students embark on their own trial journey over the mountain in the form of a Master's Project—an opportunity to combine the component parts into a single expedition.

But the journey can be arduous. Bureaucratic barriers, skeptics, and political momentum can all act as a steady headwind and, without a team to occasionally draft behind, forward progress can feel nearly impossible.

That's where the FNEP Alumni Association comes in. Across the world, FNEP alumni are undertaking expeditions to advance meaningful environmental change. The Alumni Association works to create new lines of communication between those perched high on mountain peaks and to nurture conversation between expeditioners in the valleys—to share learning, debrief the journey, and laugh together. The vision: by developing new networks of communication, perhaps, in the future, the yodeling call of another FNEP will never be more than a valley away.

This edition of Field Notes contains the words of alumni, mentors, and students alike. As you read through these pages, ask yourself: what expedition is this individual pursuing? What resources can I give them to ensure their safe passage? This network of counsel and support is a defining feature of the FNEP Program and is critical to the full realization of the Program vision: a global network of environmental practitioners enacting substantive, lasting change to protect the diversity of life.

**Hannah Phillips** (Cohort AG) is Chair of the FNEP Alumni Association.

FIELD NATURALIST & ECOLOGICAL PLANNING
ALUMNI ASSOCIATION

The FNEP-AA was created in 2017 by founding board members Sean Beckett, Lydia Menendez-Parker, Hannah Phillips, Lauren Sopher, and Dr. Jeffrey Hughes.





## DR. JEFFREY HUGHES AND DR. WALTER POLEMAN

Those who have seen UVM's "Field Naturalists (FNs)" and "Ecological Planners (EPs)" in action don't confuse our professionals with graduates of other M.S. or PhD programs. They seek us out, in fact, to fill leadership positions. Their phone calls are along these lines: "I'm calling to make sure that your Field Naturalists and Ecological Planners know about our job opening."

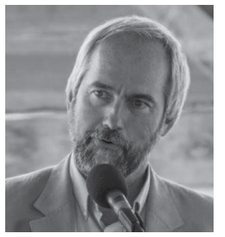
When we ask if they're having a hard time getting people to apply, we always get the same answer: "No, that's not the issue, we've just been hoping that a Field Naturalist or Ecological Planner would apply."

Why do they harbor that hope? Because "FN" and "EP" are titles with *real, substantive meaning*—they identify someone as having skills and abilities that few others possess.

But a name means different things to different people. We want to know what the "FNEP" title means to you.

We (Walter and Jeff) will be coordinating a deep dive over the next year as we reassess and reimagine what's in the "FNEP" name. We'll be reaching out to you through the Alumni Association for your input as we refine our brand over the coming year. We want to ensure that "Field Naturalist" and "Ecological Planning" continue to mean something special.

*YOUR* perspectives, insights, and ideas over the past thirty years have made the FNEP program the gold standard of environmental programs. So we're counting on you to help us make the next thirty years even better.



**Jeffrey Hughes** and **Walter Poleman** are the directors of the Field Naturalist and Ecological Planning programs, respectively.

Image: Lyn Baldwin

# Botanical Names: In English, In Latin, and In Song

LIZ THOMPSON

I was seventeen years old, waiting for an interview with a botany professor at a Maine college, hoping to launch a career as a professional botanist. I got chatting with another young woman on the same path. "I just want to be able to name plants, and to say their names," she declared. Then she exclaimed with gusto, as if casting a spell: "*Comptonia peregrina*!" She clearly relished the sound of those two words.

I love those words, too, partly because I love the plant they represent: sweet fern in English. Its name evokes the bayberry-like fragrance of the plant's crushed leaves. But I also love the words themselves, for their literal meaning. *Peregrinate* means to travel, to wander, which is what I was doing at seventeen: leaving home and looking for a new life.

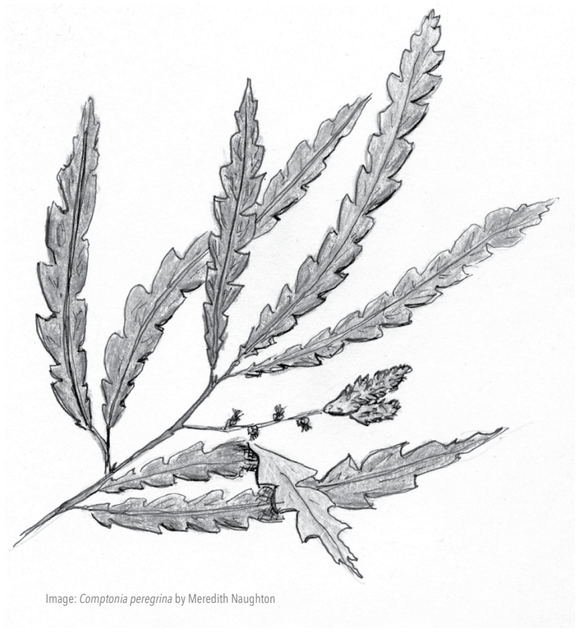


Image: *Comptonia peregrina* by Meredith Naughton

I have been a singer all my life, longer than I have been a botanist. I grew up singing 1960s folk music and old cowboy songs, but as a teenager I became more interested in classical choral music. Latin came into my consciousness then, because much of the great choral music of the world is written in Latin.

People sometimes ask me how the two parts of my life—botany and music—stitch together.

It's the Latin! The root of many plant names, the language of flowers, the language of green, the beauty of names like *Comptonia peregrina*. It is sheer delight to utter a plant name that includes a word I know from music, or to hear a botanical name in song. It's as if knowing one—the plant or the song—increases my understanding of the other.

A twelfth-century chant from the female mystic (and botanist) Hildegard von Bingen goes: *Prebe audiutorium peregrinis*—"Guide us wayfarers on." Singing those words brings them alive in a way that saying them does not. Singing brings them deeper into the soul.

Lately I've been out admiring *Sanguinaria canadensis,* bloodroot, the white-flowered beauty that blooms so early each spring in our rich Vermont woods. The word "sanguine" in common usage means optimistic, hopeful, cheerful. But the word literally means "blood." When I hear the name *Sanguinaria,* I immediately think of a beautiful, soaring melody—again from Hildegard, who wrote extensively on plants and their medicinal uses.

*Vos flores rosarum, qui in effusione sanguinis vestri beati estis…*

You flowering roses, who in the shedding of your blood are blessed…

True to the literal meaning of its name, the plant's roots and leaves shed red latex when cut, adding a certain drama to the botanizing trip that seems to call for musical accompaniment.

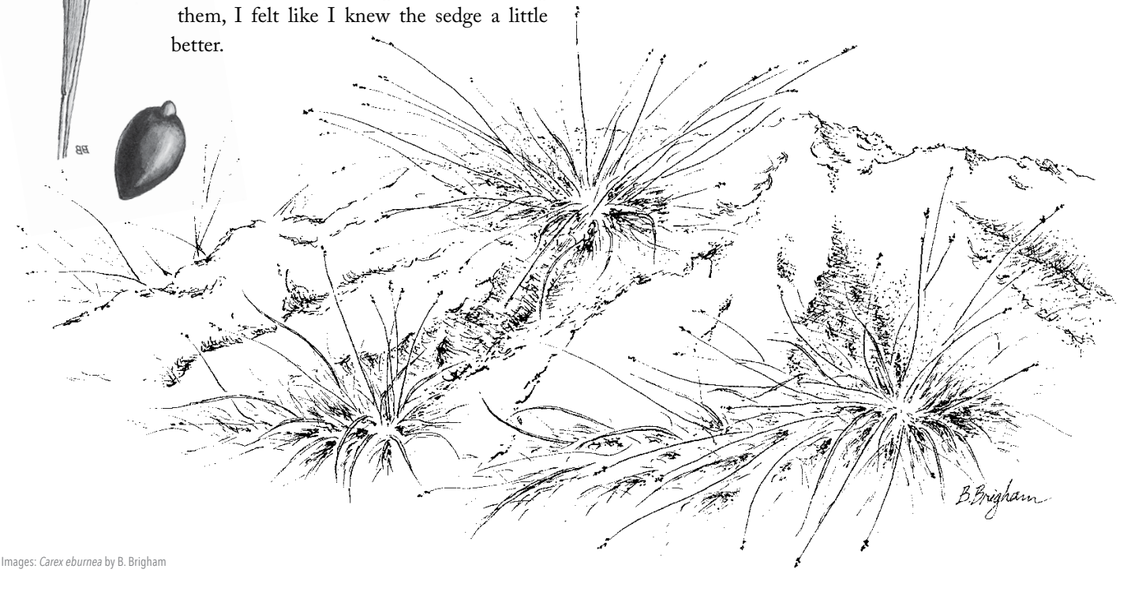
And there's my favorite, *Carex eburnea*, which for many years I thought translated to "ebony sedge," only to find this beautiful song:

Peregrinate means to travel, to wander, which is what I was doing at seventeen: leaving home and looking for a new life.

*Quam pulchra es et quam decora…collum tuum sicut turris eburnea…*

How fair and lovely you are…your neck is like a column of ivory…

So, even though the mature *Carex eburnea* has a shiny black perigynium, I now have to call it "ivory sedge," a name that applies earlier in the season, when the immature perigynium is the color of cream. Those lyrics in Latin were like a six-hundred-year-old field guide: after hearing them, I felt like I knew the sedge a little better.




Images: *Carex eburnea* by B. Brigham

*Comptonia peregrina*, sweet fern the wanderer, travels by way of its underground stems, which allow it to spread and form large patches in sandy soil. Having carried the sound of that name with me from Maine, I was delighted as a twenty-seven-year-old, having completed graduate school at the University of Vermont and having landed a job as a field ecologist here, to discover this familiar plant wandering through the state's sandplains. I treasure my annual visits to see and smell its fragrant leaves.

And each time I visit, as I crush the dry, curling leaves between my fingers, I think of Hildegard's words: *Prebe audiutorium peregrinis*—"Guide us wayfarers on." Her ancient Latin chant echoes through the sandplain forest, teaching me more and more about the plants that grow there.

**Liz Thompson**, a botanist and ecologist, works with the Vermont Land Trust and teaches field botany at UVM.

# Queer Taxonomy

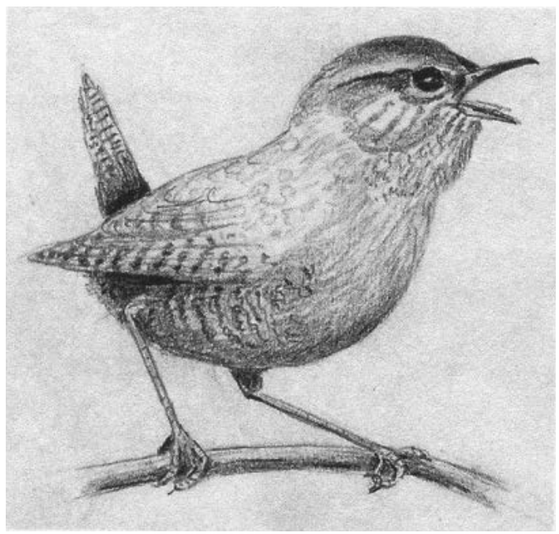
JOSHUA MORSE

*We love the things we love for what they are.*
*-Robert Frost*

In the stillness after my chainsaw's last grumble, a winter wren sang. Its piccolo-pure voice swept me out of my thoughts and into a brilliant April morning. For a moment, I forgot that I was struggling through a forest management course, rewriting my relationship with the familiar western Massachusetts woods one freshly felled tree at a time. And for a moment, I forgot that I was struggling through much deeper questions of identity as well.

I am a queer person. Seeking something like self-knowledge, I have written and rewritten the nomenclature of my sexuality many times, wrapping myself in new labels like a bird in springtime plumage. Bisexual? Gay? Fluid? Each name is shorthand for a narrative—a personal history that feels both entirely natural and entirely incomplete. There have been many comings-out, many name-takings, and just as many name-shuckings. That morning in the April woods, birdsong offered a welcome escape from this incessant, introspective rut.

I am also a birder, and cycles of queer re-identification are not the only rhythms of naming that have shaped me. Each spring, I take a comparatively uncomplicated delight in greeting the migratory birds returning to New England. The winter wren has always been one of the first, and one of my favorites. Imagine my surprise when I learned that its taxonomy is anything but uncomplicated.



The birds long classified as winter wrens are found in North America from the Atlantic seashore to northwestern Canada, and also in Europe. Everywhere, they have captivated and perplexed birders and ornithologists. Their virtuoso song is unmistakable, but also variable. This variation led researchers to speculate that the winter wren might in fact be several species. Genetic analysis confirmed the hypothesis, and *T. troglodytes* was given new nomenclature: *troglodytes* in the Old World, *pacificus* on North America's west coast, and *hiemalis* in the Northeast.

And still, the wrens sing. Now, a skillful listener can, with a little help from geography, match a mysterious song in the understory to the minutiae that differentiate species. But the birds themselves have not changed, and the thrill their lightning-quick arpeggios bring to listeners across two continents is as constant as the spring. A new nomenclature gives birders the power to distinguish between variations on a genetic theme. But when a sweet fanfare arrests my attention in the morning woods, lasting a heartbeat longer than seems possible—then three more heartbeats, then five more—I do not dwell on these distinctions. Even the broader classification, "wren," often slips from my mind. My essential relationship with this herald of mud season, sugar snow, and spring ephemerals defies the act of naming.

Although I did not realize it then, the winter wren who sang me through that painful April re-identification was more than a reprieve. It was a principle embodied. A reminder to love the things I love for what they are—not for the names I give them. In the years since, I have learned to listen better to the song in my heart, and to put less stock in the impulse to describe its mercurial nuances with a label. Like that singer in the early spring woods, perhaps my sexuality is best understood in its most all-encompassing capacities. As wildness. As liberation. As a source of joy.

**Josh Morse** is a PhD student in the Rubenstein School of Environment and Natural Resources at the University of Vermont.

Image: Bernd Heinrich



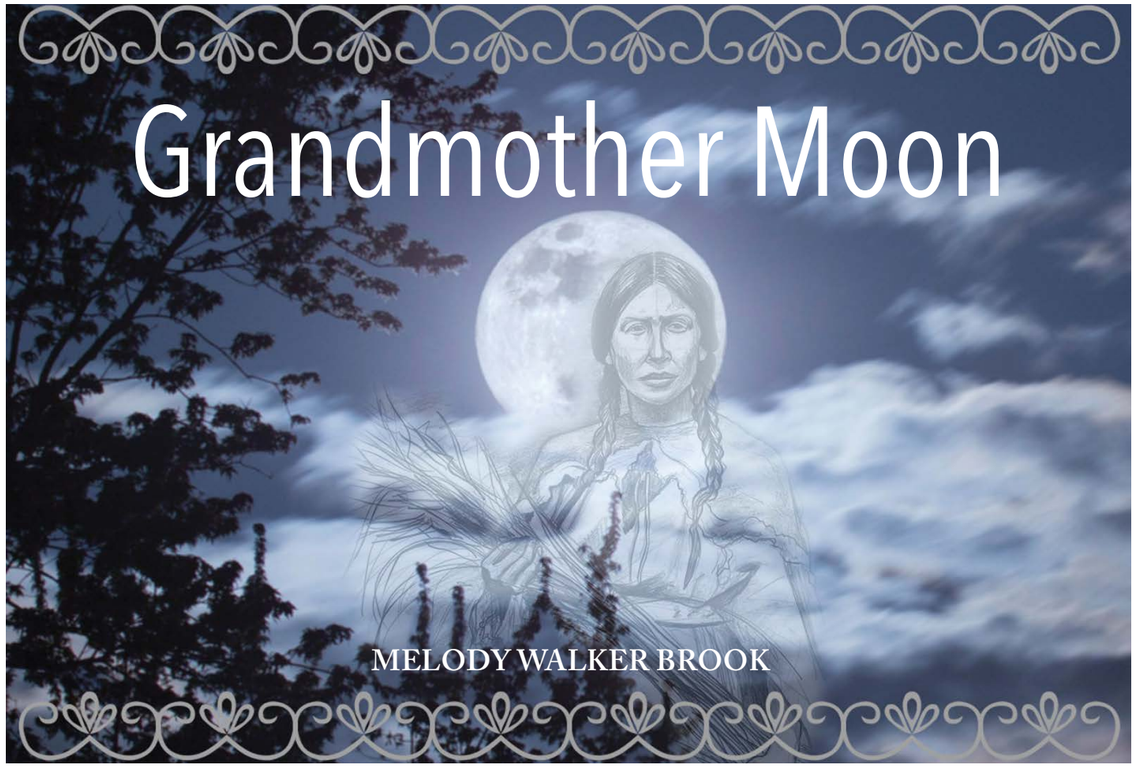



Image: Jim Taylor

Recently, at Elnu's Equinox ceremony, Chief Roger Longtoe Sheehan led our drum circle as Grandmother Moon rose and our words of gratitude filled the world.

Moon, *Nanibôsad*, translates to "the person who walks across the sky." Her name captures the way Abenakis experience her spirit, her personhood. Our words invite connection among all people, human and non-human, placing us in conversation with the world. As we sing words of gratitude carried up with smoke, we wonder, "Does she sing to us?"

The English word *moon* derives from the Latin *metiri*: "to measure." In this context, the moon is a tool to measure time. Her personhood is nonexistent. Astronauts planted a flag on her as was done in our homeland centuries before—Columbus would be proud. English has rewired not only how we experience the world but how people see themselves—the deepest wound of colonialism. Removed from the personhood of the world, English-speakers find it easier to objectify and destroy nature.

One of my elders, Jim Taylor, once explained that before speaking, words must be moved from the head to the heart and *then* out of the mouth. The truest organ of sight is the heart—the place where the world is experienced and words originate. Within that spark of creation inside each person lies core values, and both language and ceremony extend from that point. Language expresses how we see the world and ceremony is how we honor that experience.

Ceremony is living with a good heart and seeing all things as family—the legacy of our ancestors who lived on the circle of creation. A heartfelt conversation with a friend and even a song to the moon are ceremony. Reclaiming both language and ceremony brings us home to the path of the ancestors and the children.

After more than five hundred years, our community is just beginning to reclaim our language. My brother recently expressed his desire to learn—he said, "I want to go home."

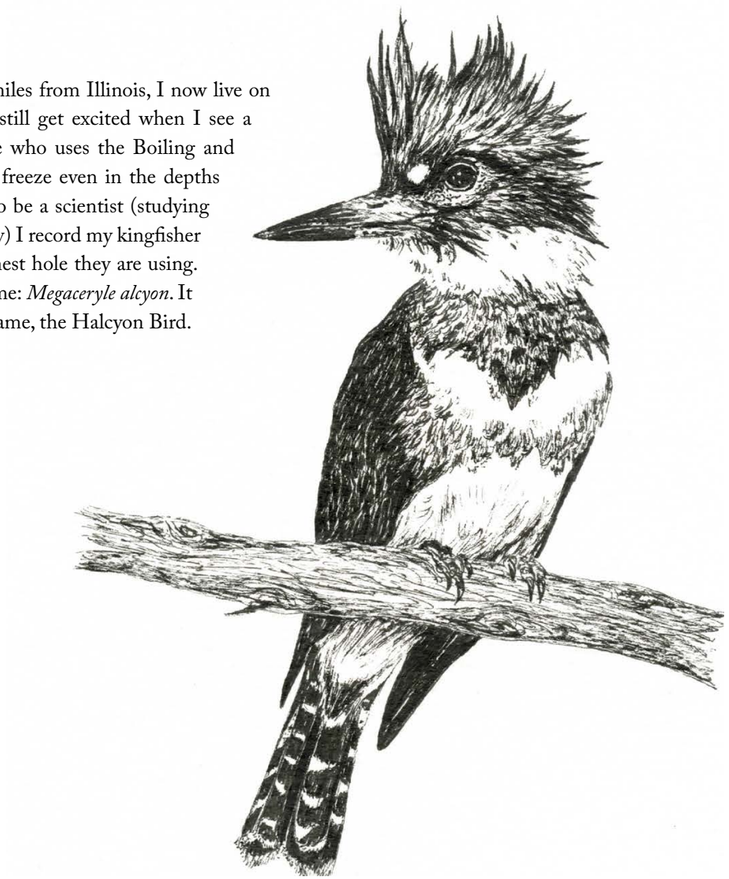
When we return home to our own words, we find that they hold reciprocity, balance, and *spirit*. As we sang to *Nanibôsad* that night, we removed the flags of colonialism from each other. And instead of walking across the sky, hopefully she danced.

**Melody Walker Brook** is an artist, activist, and citizen of the Elnu Abenaki Nation. She earned her master's degree from the University of Vermont.

# The Halcyon Bird

KIRA CASSIDY

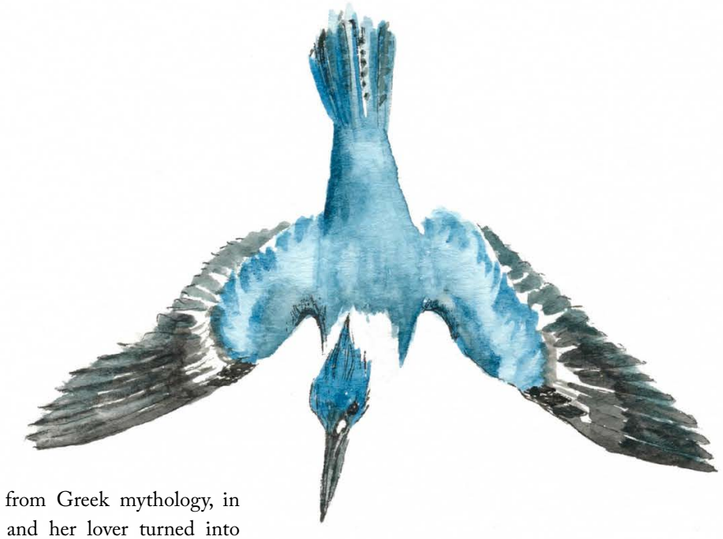
While growing up in Illinois I often saw the same squat and bluish bird with the funny, feathery crest near a creek behind my childhood home. In fact, I came to expect to see the bird every time we passed, and my dad taught me its name—kingfisher. Such a name! Royal and noble. And the full name: *Belted Kingfisher*—descriptive *and* complimentary. My six-year-old self mused, "Does a bird name get any better?"



Nearly thirty years later and over a thousand miles from Illinois, I now live on the border of Yellowstone National Park and still get excited when I see a belted kingfisher—especially the resident male who uses the Boiling and Gardner Rivers year-round (their waters don't freeze even in the depths of winter in Yellowstone). Because I grew up to be a scientist (studying wolves, but I keep track of birds as a fierce hobby) I record my kingfisher sightings and take notes on which mud-bank nest hole they are using. I sometimes refer to them by their scientific name: *Megaceryle alcyon*. It rolls off the tongue and recalls the bird's nickname, the Halcyon Bird.



Images: Kira Cassidy



The nickname is derived from Greek mythology, in which the goddess Alcyon and her lover turned into beautiful birds after they died. The gods were said to calm the seas for a few weeks in midwinter to allow the birds to nest and raise young. These are the Halcyon Days.

We humans have so many names for this charismatic little bird. *Megaceryle alcyon* is mostly used in scientific research—black and white lines on a paper. Belted kingfisher is more descriptive, used more often, easier to look up in a bird book. Halcyon Bird may be my favorite—it's romantic, and has a tragic backstory with a sweet tie to the bird's modern home ranges and weather patterns. But what does a kingfisher call herself? Or her mate? What does she call her favorite perch? We will likely never know. Even in this epoch of technology, nature still abounds in mystery. Mysteries with no name, or maybe a name known only to the Halcyon Bird herself.

**Kira Cassidy** lives in Gardiner, Montana, where she researches gray wolves for Yellowstone National Park, hikes on surrounding public lands with her dogs, and paints to honor and remember her experiences with wild creatures and wild places.

# Unplaced Memories

MEREDITH NAUGHTON

Image: Meredith Naughton

My mind is drifting towards dinner when the ledge I'm walking along suddenly narrows. Loose rocks cascade down with each step. Ahead, the ledge falls away, melding with the steep canyon wall. Heart pounding, I scour the map. On paper, the ledge continues, but I can no longer match the contour shapes on the map to the landscape in front of me. It's late April, and my partner and I are in southern Utah, sixty-five miles west of the Colorado-Utah border, eight miles deep in a canyon we cannot name.

Jon Krakauer would probably keep a steady pulse, but this is not a good place to get lost. Yesterday morning we left Hite, an abandoned town on now-dry Lake Powell. We are hiking across the southeastern corner of Utah toward a remote outpost about seventy miles away. A plate compass on a red string and printed maps tucked into a Ziplock bag are our only tools for navigating through the maze of canyons, washes, and mesas that make up the landscape of the Hayduke Trail. But this trail *has* no trail, just a suggested route through the mapped contours of the desert Southwest.

I'm accustomed to the well-worn paths of the East, where each trail and hilltop has been diligently named by generations of travelers before me; where weathered wooden trail signs nailed to trees tether my reality to the map. This trip is a mud season exodus from early spring in Vermont, but also an opportunity to navigate in a new way. Map and compass are my only guides. There will be no familiar kiosk, no reassuring red arrow that says "You Are Here." In the trail-less expanse of Utah's public lands, knowing where you are is more abstract. I do my best to match the lines on the map to the shapes of the land around me, relying on landforms rather than trail names to reference where I've been and where I'm going.



As much as I looked forward to the navigational challenge, being unable to put a name to my location is unsettling. Author and botanist Robin Wall Kimmerer writes that without names for the plants and places around us, we feel "estrangement from the rest of creation." Here in an unfamiliar region, I understand what Kimmerer means. I'm a visitor to this vast landscape – the sparse vegetation doesn't spark recognition, and most of the rocky protrusions and canyon forks remain formally unnamed. Because the map offers few labels with which to know the world around me, it removes me from landscape, rather than being a tool through which to build a relationship. When the ledge disappears in front of me, so does my tether to reality.

"I don't think we're here," I say to my partner, as if we're nowhere in the world.

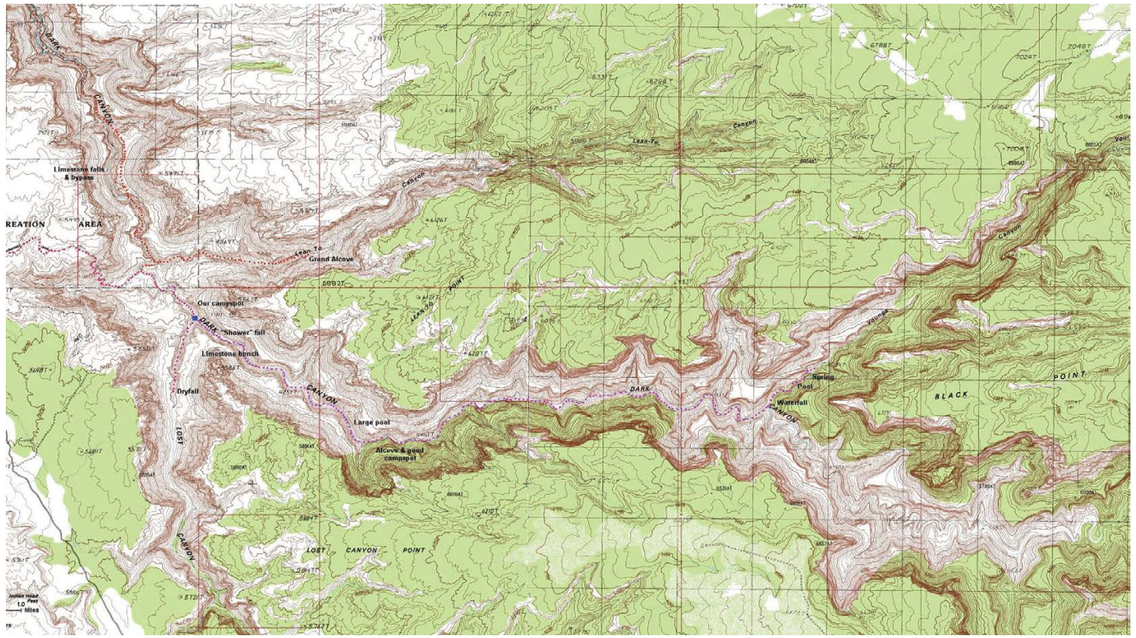
I'm shaking slightly and shifting my feet over loose rocks. "I don't think we're here," I say to my partner, as if we're nowhere in the world. He's a few steps behind me on the ledge and hasn't yet realized our mislocation. I long for a trail sign to confirm my actual place in the canyon against the contour lines on the map. With so many winding crevices we could explore each one until we run out of food.

Food is not my immediate concern. I could live a long time on the assortment of tortillas, peanut butter, and Fritos in my backpack. My need is more complex. Emerson called for an "original relation to the universe," but all I want is to understand my relationship to these steep canyon walls through the map I'm now wringing in my hands. Without names for the landforms around me, I rely on the map as my sole relation-building tool.

The sun is setting and, like desert clockwork, the temperature drops. After hours of searching for a way up the canyon wall, we heed the descending darkness and find a ten-foot ledge on the canyon wall wide enough to set up camp. The tarp snaps in the wind as I struggle to secure the corners with my gloved hands. We settle in to our sleeping bags for a fitful night of sleep on the exposed ledge.

In the morning, we find a continuous series of ledges and footholds gradual enough to allow our escape upwards to a better vantage point. I throw my backpack up to the ground above and hoist my body up over the edge. I sprawl in the crusty soil just to feel its flatness. I'm finally able to use distant landmarks to put us back on the map, mending some of the separation I feel from my surroundings by finding my way back to the intended route.

Two years later I dig out the map, stained red with Utah dirt, and look back at the contours of those canyon walls. Again, I scour the page to search for where I was that day in April. "Where are we?" is often answered with a name. So I look to the map and ask, "Where were we?" in search of something to attach my memories to. The images of orange rock and those traces of dirt on the page should prove to me that I was somewhere all along, but I still can't shake the lingering feeling of being lost.



# *Wachuma:* a Cactus by Many Names

ERIC HAGEN

### *Wachuma:* a medicine

Antaurko called *wachuma* medicine—he told me it teaches you what you need to learn most. We cut the spines off a segment of the cactus and peeled off its waxy brittle skin. Antaurko mashed the outer green flesh into a mucousy froth, then boiled it over a fire.

We fasted all day and as night fell we gathered around the fire. Antaurko laid potatoes, corn, and coca on a blanket and thanked *Pachamama*, Mother Earth, for the gifts that sustain us. He blew tobacco smoke on our heads and held floral perfume to our noses, which we inhaled from his hand. The alcoholic bouquet struck my sinuses, knocking my head back.

Antaurko asked *wachuma* for guidance, then gave us each a cup to drink. Sweet, then nauseating, it slowly transformed the others' behavior. One drew silently inward and left the ceremony; another began praying out loud. Antaurko, his face beaded with sweat, grabbed a glowing ember to light his cigar. Later he called his burns "kisses from the fire."

### *Echinopsis pachanoi:* member of Cactaceae

Common names: *San Pedro*, *wachuma*

*E. pachanoi* is a 20-foot-tall moth-pollinated cactus that grows in the dry shrublands of Ecuador, Bolivia, and Peru at altitudes between 6,000 and 10,000 feet. Narrow sparsely-spined branches extend upwards from the base, each with six to eight longitudinal ribs. *E. pachanoi* produces many alkaloids, including mescaline. When ingested, it alters patterns of visual perception and thought.

### *San Pedro:* the colonizer's language

When the Spanish arrived in Peru, they encountered people using a cactus that produced visions of heaven. They called this cactus *San Pedro* after Saint Peter, who holds heaven's keys. The cactus also gave people the power to send their spirit through time and space. Early Spanish writings describe shamans reporting on distant events before the news could be received by normal means. The Spanish accused the shamans of communicating with the devil and imprisoned them for heresy.

### *Wachuma:* respect and love

Antaurko spoke Quechua, an indigenous language of the Peruvian highlands, but the language of his daily communication was Spanish. Even in his remote community of farmers, few words of Quechua were spoken. But, as Antaurko stressed, "the name of the cactus, its original name in Quechua, is *wachuma*," and he always called it that.

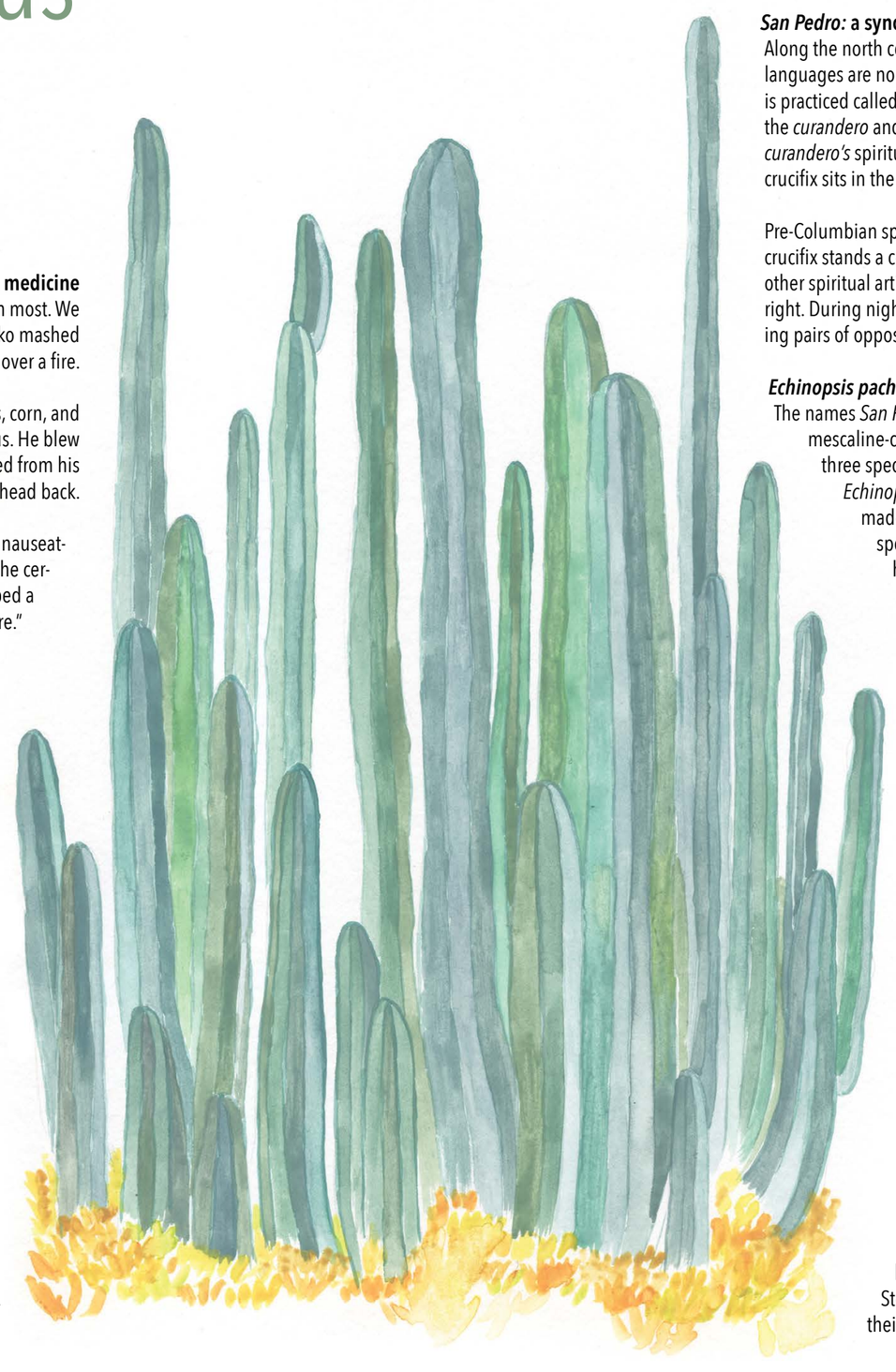


Image: Audrey Irvine-Broque

### *San Pedro:* a syncretic culture

Along the north coast of Peru, where indigenous languages are no longer spoken, a type of folk healing is practiced called *curanderismo*. During healing sessions the *curandero* and the patient drink *San Pedro* to catalyze the *curandero's* spiritual vision. Prayers are made to Catholic saints; a crucifix sits in the middle of the healing table.

Pre-Columbian spirituality is essential to these healing sessions. Alongside the crucifix stands a container of herbs, which talk to the *curandero* and mediate with other spiritual artifacts—artifacts of decay lie to the left and artifacts of growth to the right. During night-long ceremonies the *curandero* receives symbols and visions, bringing pairs of opposites together to create wholeness and health.

### *Echinopsis pachanoi:* systematic revision

The names *San Pedro* and *wachuma* most commonly refer to *Echinopsis pachanoi*, but two other mescaline-containing species of cactus share the same common names and ritual use. All three species, once classified within the genus *Trichocereus*, are now placed within the genus *Echinopsis*. Frequent convergent evolution of pollination modes and growth habits has made classification messy. *Echinopsis* is currently thought to have 100 to 150 polyphyletic species, and recent genetic work still falls short of accurately describing its evolutionary history.

### *Wachuma:* a teacher

I had travelled to Peru to solve a growing sadness, so when Antaurko introduced me to *wachuma* I was curious and hopeful. I didn't understand how a plant could have a spirit or answer questions, but I tried my best to embrace his prayers and beliefs.

When I drank *wachuma* and felt nothing, I was devastated. I took *wachuma* four more times and I never had visions or felt the plant's guidance. Each ceremony felt like a personal failing. The morning after my fifth ceremony, loneliness and despair descended upon me like a great bird. I left to be alone.

I dwelled on something Antaurko had once told me: *you have to learn to love yourself before you love others*. I couldn't grasp the concept. It felt selfish and shameful. If I had to love myself it meant I wasn't good enough to receive love from others.

As I wrestled with what to do, my thoughts turned towards words of advice: *give yourself care and understanding like you would to someone you love dearly*. Tentatively, I followed them, and a floodgate of understanding and emotion opened. *Wachuma*, teacher and medicine, had done its healing work.

Acknowledgments

I thank Antaurko for his lessons, hospitality, and permission to write parts of his story. I also thank Douglas Sharon and Eduardo Calderón Palomino for information about *curanderismo*, published in the book: "A Wizard of the Four Winds, A Shaman's Story." Lastly, I thank Carlos, Louis, and Rainer Wilson for sharing their knowledge and experience with me.

# Common Name, Common Spirit

SONIA DEYOUNG

Image: Dutchman's breeches by Bryan Pfeiffer

Botanists don't care much for common names. Not knowing them, in fact, seems to be a badge of honor. To the scientific mind, they serve only to confuse and mislead. One man's red trillium is another man's wake-robin, which is a third's stinking Benjamin. Not to mention that cottongrass is actually a sedge. The Latin name alone conveys without ambiguity—in theory, at least—the species in question and its position in the taxonomic tree.

Common names convey information of a different kind. They tell us that, centuries ago, this flower reminded someone of a monk's hood; these berries made someone else think of a doll's eyes. A shepherd ambling after his sheep might have dreamed up the name for shepherd's purse. A mother showed her child a flower that looked like a lady's slipper. Common names tie us to the past, and to the people who lived there. They are remnants of long-dead imaginations. Their purpose may be unnecessary to science, but it is essential to the human spirit.

This kind of nostalgia for a time before we were born is a modern phenomenon. For the first few hundred thousand years of *Homo sapiens*' existence, most humans' lives would have had very few, if any, material differences from their parents'. The hunter-gatherer lifestyle rolled along, one generation after another. There would have been no grumbling about "kids these days," no lamenting the loss of old ways of life, because new ways of life developed over millennia, not decades.

Given our evolutionary history, it's no surprise that humans struggle with cultural changes. We want affirmation that despite the unrecognizable aspects of our ancestors' lives, we share a common sensibility with them—a comforting implication being that our descendants will share it with us, too. Things that remain the same from one generation to the next are reassuring.

Some common names have remained unchanged for so long that they're like living fossils, the horseshoe crabs of our vocabulary: they preserve words and customs that have fallen out of use in almost every other context. We still call *Dicentra cucullaria* Dutchman's breeches because of the flower's resemblance to the voluminous short trousers fashionable in Holland during the seventeenth century. This would not have sounded quaint at the time; it would be like our naming the plant "Dutch guy's pants" today. The Abenaki name *beljesizal*, or "little trousers," points to a possible linguistic convergence or exchange, and, more importantly, reminds us of all the common names around the world that have been drowned out by invading cultures.

Common names tie us to the past, and to the people who lived there. They are remnants of long-dead imaginations. Their purpose may not be necessary to science, but it is essential to the human spirit.

The lichen *Cladonia cristatella*, with its gray-green stalks and bright red fruiting bodies, draws from one such invading culture with its fossilized name: British soldiers. It is unlikely that someone nowadays, stumbling upon these tiny denizens of rotting logs, would think first of the Redcoats. But two hundred years ago, some person strolling through the woods, who had perhaps lived through more than one war with the British, might well have had that thought—in fact *did* have that thought, if not at that precise time and place, or we would not be using the name today.

There lies the charm of the common name: not just that it preserves ideas from the past, but that it allows us to look at a plant and know with certainty what some person, at some time, imagined while looking it. We cannot know anything else about this person, whether young or old, man or woman, amateur botanist or expert, but despite death and distance we can still feel the bond. We can think, "That could have been me."

Common names may be useless to the taxonomist, but they are of the utmost importance to those of us aching to share a moment across centuries with fellow naturalists who admired the intricacy of nature and saw their own lives reflected in it. Backwards and forwards in time, we are still humans, trying to create stories from the world we see around us.

**Sonia DeYoung**, Team AF/AG, works for the Keller Lab in the UVM Plant Biology Department and on the redesign of the UVM Natural History Museum.

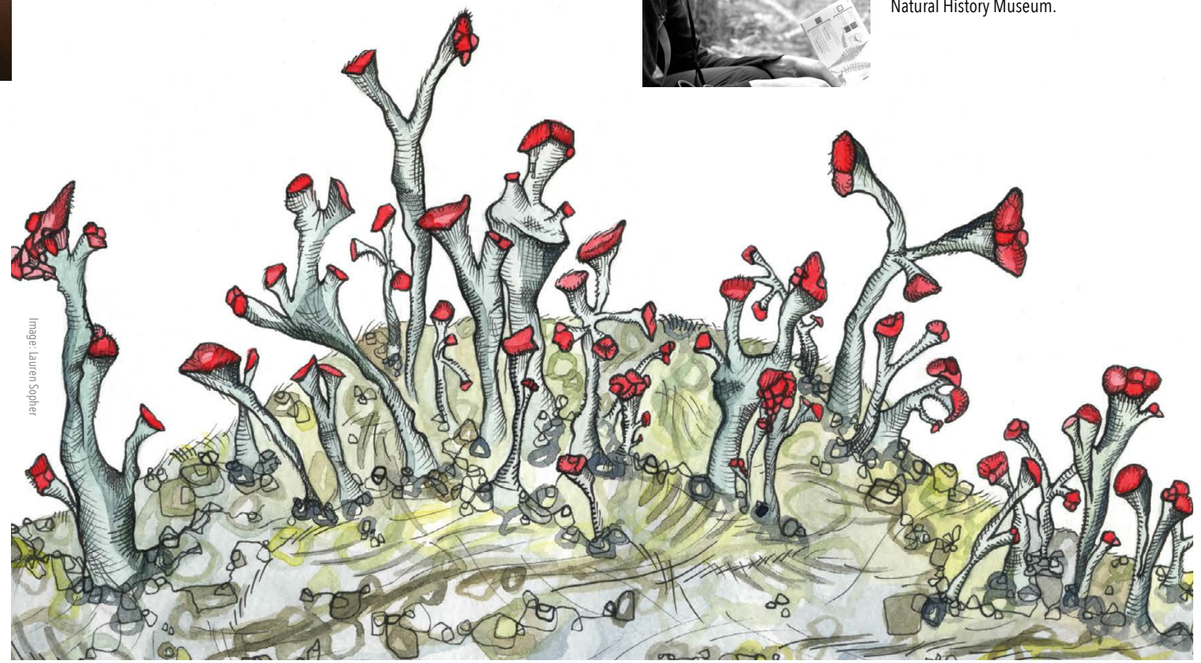


Image: Lauren Sopher

# You Say It's a Rich Fen?

ERIC SORENSON

Image: Eric Sorenson

Names open doors to friendships and knowledge. A best friend's name brings to mind all you know about them. Black-capped chickadee (*Poecile atricapillus*) brings to mind this small, gregarious, and winter-hardy resident, along with its hopeful spring call of "see me." And Rich Fen—a favorite natural community of mine—conjures up a green and sedgy peatland, with calcium-rich water and a profusion of mosses and orchids.

But the names of natural communities have distinct differences from the established names of friends and species. Natural communities are conceptual—they provide a construct for viewing patterns in our natural landscape. We name natural community types based on a body of knowledge generated by ecologists and botanists over many years, taking notes and collecting data on species and ecology of forests, wetlands, and cliffs. When sorted and analyzed, the repeating patterns emerge, and we are able to create the classification of recognized natural communities.

There is a very human-centric element to the natural community concept and to community classification. Nature is complex, with the thousands of plants and animals each thriving where they find suitable habitat. The variation is staggering. But natural communities help us make sense of this profusion of life and the independence of each plant and animal. If we do a good job classifying natural communities, we will vastly increase our common understanding of the needs of thousands of species.

I first became hooked on fens in northern Maine in 1984. I was working on my master's thesis and on a statewide inventory of patterned fens. Patterned fens are a boreal fen type with a striking network of elongated hummocks and pools (called *strings* and *flarks*) that are oriented perpendicular to the fen slope. Many of Maine's patterned fens are also Rich Fens, because they have calcium-rich groundwater input. Getting to each fen in the wilds of northern Maine took a lot of bushwhacking and map-and-compass navigating, but the reward of finding each fen was immediate—breaking out of the dense woods and into the bright, open peatland, and beginning the botanical and ecological exploration for as long as daylight allowed. There were always rare plants to find, unusual mosses tucked into the edges of flarks or on the wet sides of wildlife trails, and variations in water chemistry that led to changes in the community composition. Each fen was different.

As I learned more about fens with each new encounter, I also learned more about my new friend Cathy who bushwhacked with me to many fens as she studied sweet gale (*Myrica gale*) for her master's. Cathy and I were married not long after those field seasons.

My fascination with Rich Fens has only increased since I've lived and worked in Vermont. Although Rich Fens here are small because of our hilly topography, they are highly enriched with water flowing through our abundant limestone, marble, and calcareous phyllite. Each fen is an ecological jewel in our forested landscape—a lush, green, spongy opening with high species richness. I get the same anticipation of discovery that I had in Maine fens years ago, even if I'm visiting a fen that many others have already explored.

If we do a good job classifying natural communities, we will vastly increase our common understanding of the needs of thousands of species.

But now I also think about community classification. Does the name "Rich Fen" and our concept of that natural community type fit the characteristics of this peatland? Is our concept of Rich Fen too narrow or too broad? The classification of natural communities should provide a framework for effective conservation action and for public engagement and appreciation. Ecologists need to continually check the classification to make sure it serves these functions.

The friend's name, black-capped chickadee, and Rich Fen bring to mind all that I know of each, but I don't want to let building the friendship or knowledge stop there. There is always so much more to learn about the friend, the chickadee, and the fen. My wife exemplified this to me recently. She knows chickadees and many other birds well, but she spent many cold dusks in January and February sitting in our back yard observing "our" flock of seven chickadees as they wound down their feeding. Her reports on their inter-flock communications and the timing and stealth of their departures for their overnight roosts were fascinating.

I will continue to explore Rich Fens to see how they fit the classification. But I'm even more excited to enter each fen, or other communities, with my eyes and ears open and simply explore. I hope that keeping my sense of wonder about what else lies behind the name will always lead to more treasures.

**Eric Sorenson** is an ecologist working with the Vermont Fish and Wildlife Department's Natural Heritage Inventory. He lives in Calais with his wife Cathy and loves to hike, garden, bird, run, and collect firewood for the winter.

Image: Eric Sorenson

# The Art of Ichneumon Wasp Identification

BERND HEINRICH

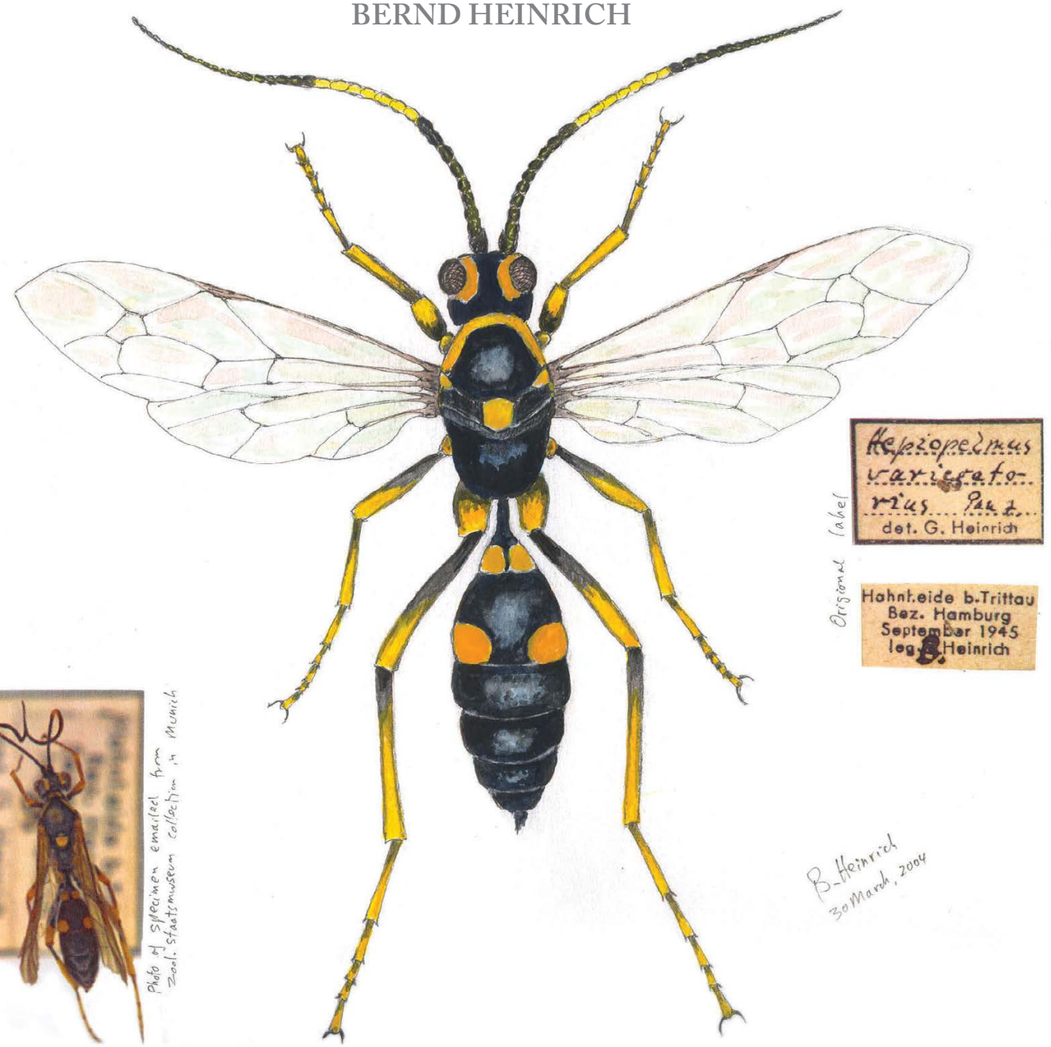



Image: Bernd Heinrich

An insect flits in a shady wood, stopping to land here and there on a leaf, running over it with vibrating antennae, searching for the scent of a specific kind of caterpillar. Casual observers, if they should happen to notice it, might suppose this is some strange sort of fly, its black, narrow body sprouting near-translucent wings. But they would be mistaken.

It is a female wasp. But "wasp" can mean any of a hundred thousand species. There are about twenty-three families of wasps, and this individual belongs to the Ichneumonidae family, which includes over twenty five thousand discovered and named species. With near certainty there are thousands of Ichneumonidae species still undiscovered and unnamed.



Next to our house, catching ichneumon wasps, 1951.

It's unlikely that more than a few people in the world would be able to identify this particular Ichneumon wasp. Unfortunately, for the aspiring student of Ichneumoninae or other wasps there is little guidance in identification beyond a few dry-as-dust verbal descriptions penned by a discoverer a century ago. The story might have been different had there been an Audubon who painted wasps. In this kind of taxonomic work, an exciting image and a name are the closest of cousins.

Birds are easily recognized by almost anyone; they hardly need a description and are popularly rendered in art and numerous illustrative guides to identification. Who doesn't know a robin? But the Ichneumoninae are practically impossible to identify to species by the only thing available, those dry and technical species descriptions. It's often necessary to compare the wasp in question to a physical type-specimen, which might exist only in a private collection halfway around the world.

I recently recovered a representative of one of these wasps that had excited me when I was a five-and-a-half year old looking for beetles for my collection. I found it hibernating under a mat of thick green moss. This wasp now resides in the ZSM (Zoological State Museum) of Bavaria in Munich, from which I could retrieve it because the world authority of that group had known its name. I have drawn it to try to show its beauty that I experienced live in my childhood.

However, although my sketch satisfies my personal recollection of it, it still does not include the fine details that are necessary to distinguish it from numerous other species with similar white antennal rings, yellow markings, and a thoracic yellow dot. A description doesn't do the job, nor a well-meaning drawing, nor even a photograph. Recognition often requires a particular kind of precise artwork—that accentuates the critical taxonomic features that separate one species from another.

Taxonomists can now use computer technology to facilitate the creation of this kind of art—and, therefore, the naming of species. One example of this was recently demonstrated by Alexander M. Tereshkin in Russia, who has described and named fifteen new species of Ichneumonids, not only through verbal description but also through computer-generated visuals. Tereshkin's diagrams accentuate the head view of these insects from above and the front; the propodium (attachment) of the abdomen and the abdomen's first two segments from above; the arrangement of the wings' veins; and the geometry of the "cells" the veins enclose, aside from the colors and their patterns.

Computer-generated images like Tereshkin's excite and focus the mind through the eye. And without the excitement of the mind there can be no science. The small and otherwise barely visible features can be magnified, and with modern digital technologies the drawings can be edited. A marriage between this artwork and visual descriptions can create a powerful tool that invites more than just two or three specialists to connect the animal to a name.

Recognition often requires a particular kind of precise artwork–that accentuates the critical taxonomic features that separate one species from another.

This new kind of technology is an invitation to exploration, since wasp distribution, species numbers, biology, and evolution have barely been explored. A new window has opened, and is now available to let many more people see the beauty of thousands of wasps and other insects—and also to reveal many more species that so far do not in praxis exist, because we don't yet know them by name.

What is in their names? The varied lives of a hundred thousand distinct wasp species. Without a name, they do not exist as something to search for, to see, and to study. You might think they're just flies.

**Bernd Heinrich** is a scientist, writer, and professor emeritus at UVM.

# The Nameless Wolf

GRACE GLYNN

The first domestic dog must have had a name.

It was sometime between 20,000 and 40,000 years ago, as thick, muddy ice sheets were still scraping their way south toward the last glacial maximum. Europe was covered in dry, windswept grassland and capped by polar desert. Mammoths lumbered across barren snowfields and herds of giant deer lifted antlers big as bedframes to watch for cave lions stalking across the frozen steppe-tundra. Our hominid ancestors lived in scattered tribes across Eurasia, sharing the landscape with packs of wild wolves.

The first domestication event, as anthropologists call it, began with a mutation. In the chromosomes of an ancient wolf, a disruption in a stretch of DNA associated with hypersocial behavior caused the animal to be unusually gregarious. When firelight flickered across the snow from the hunter-gatherers' camp, the mutation-bearing wolf was drawn away from his pack toward the sound of human voices. The rest of the pack lingered in the shadows, perplexed at the wolf's lack of fear, then turned into the night and left him behind.

The people were wary at first. Wolves may have been outsized by megafauna, but they were still predators. Plus, Ice Age winters were long and the wolf was eyeing the strips of meat hanging over the fire. But soon they began to anticipate the wolf's familiar lope into camp, the way his thick white-tipped mane would ripple in the cold wind. Night after night the wolf would curl up at the outskirts of the firelight and watch the people sharpen their spears.

One evening, someone looked up to see the same wolf trotting across the grassy steppe. She started to announce his arrival, but instead of using a broad categorical label—whatever word hominids had for *Canis lupus* thousands of years before the species concept was proposed—she named the individual wolf.

No one actually knows how the first dog came to be named and domesticated. Some anthropologists think that early humans somehow smuggled a blind yipping pup from its den back to their own caves, where they raised the wolf into tameness. Others think that wolves were exploited as hunting partners. A recently aired television series depicts a young boy finding a wounded wolf and nursing it back to health as his pet. Because dogs have become best friends to humans, their origin story has captured the popular imagination just as it has garnered interest from the scientific community.

No archeological dig can tell us that first name. It could have come in a cry of fear as the wolf made a sudden lunge toward the hunter-gatherers' children. Maybe it was formed through onomatopoeia as people mimicked the low howls of individual wolves, hoping for a howl in return. I can only speculate about the precise series of events that transpired in the shadows of the hunter-gatherers' camp. But the name served as a Stone Age tool linking canid to human, giving the hominids a way to talk about their visitor—to talk to their visitor.

But the name served as a Stone Age tool linking canid to human, giving the hominids a way to talk about their visitor–to talk to their visitor.

So, as a hominid, I feel personally involved. Each time you watch the family dog paw at his food bowl, you experience firsthand the culmination of thousands of years of human selection. And if you've seen wolves in the wild, you've had a glimpse of the pre-experimental phase: the world before the first dog was named.

Was the world wilder then? Were wolves less tame without names linking them to humans and their campfire's warmth? Before the first domestication event, maybe their howls would have sounded even more remote, with no human language attempting to compress the wolf into a single spoken word.

One early summer morning near the border of Yellowstone National Park, I found myself staring across a remote meadow into the yellow eyes of a wolf. We'd surprised each other, and he had one paw poised in the air, head lowered slightly below muscular shoulders. My heart hammered, my lungs frozen somewhere between surprise and elation. Even as I looked into the wolf's eyes I knew that the moment would be fleeting. He turned in one swift motion and disappeared into the dark woods.

Most biologists agree that wildness requires a certain distance from human influence, and that wildlife should retain a healthy fear of humans. Gone are the endless, untouched stretches of the Pleistocene mammoth steppe, and our increasingly domesticated world holds no more room for the taming of the last wild places and animals. I could have been dragging an elk carcass across the meadow that morning and the wolf still would have fled—and I was glad, mostly, for his avoidance of me.

But a twinge of disappointment flavored the thrill of meeting the wolf's gaze. A part of me wanted the wolf to come closer, to curl up there under the Doug firs for the rest of the morning. That unbidden, naked part of me thought, maybe if I give him a name he'll stay, and maybe I can call him mine.

Image: Amy Nelson

# COHORT AJ | CLASS OF 2020

## THE GREEN DARNERS

**Grace Glynn**

Grace made her first ascent of Maine's tallest mountain just before leaving her home state for college. The tableland of Mt. Katahdin stretched out before her, glinting with a hundred strange botanical jewels. Sensing that the place was special but unable to say why, Grace vowed to find the words to tell the story of that island of alpine tundra.

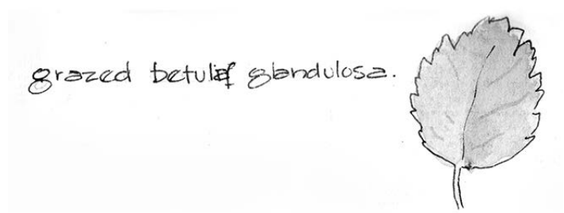
Grace went on to study botany at Connecticut College. Then, with chainsaw in hand and a head full of jumbled Latin binomials, she returned to Katahdin to work on a trail crew, constructing fences to keep hikers from trampling the fragile mountaintop. She carried a wooden rocking chair to a backcountry campsite on the Appalachian Trail, where she lived alone as a caretaker and led plant walks above tree-line. On the tops of mountains she discovered the joys of teaching people about life underfoot. She left Maine on a pair of skis to track wolves across Wyoming's jagged, snowy ranges. Now, as a Field Naturalist, she returns to the familiar plants and places of the Northeast.

Grace thinks life is richer when we feel a deep connection to our home places, when we know the things that live there too and call on them like neighbors. She likes to tell stories through music and maintains a repertoire of old logging camp songs and murder ballads. And every now and again Grace climbs up to the comfort of Katahdin's tableland. The tundra plants wave their low arms wildly in the chilly wind and she waves back, greeting each of them by name.

**Eric Hagen**

Eric grew up learning about plants and birds at the heel of his father in the woods of Wisconsin. At eighteen he left for Massachusetts to study ecology at Williams College, and nurtured his love for botany in the Taconic mountains and Berkshire hills. After graduation Eric switched paths for four years, pursuing interests in agriculture and carpentry. In southwestern Massachusetts he worked as a livestock apprentice: milking cows, making hay, processing chickens, and managing the farm's pigs. After finishing his apprenticeship, he travelled for four months in Peru, where he bought a donkey named Maria. Together they walked ancient footpaths without a map or timeline. Returning to the states, Eric learned carpentry on a construction crew and raised pigs, selling them to friends and neighbors.

Eric has learned a lot over the years. As a child he learned about steadfast care. In farming he learned about the cycles of life and death. In travel he learned how to make neighbors out of strangers, and in carpentry he learned the price of sweat and the satisfaction of craftsmanship. Here in Vermont, Eric is grateful to be learning to care for what he loves most: the natural world.



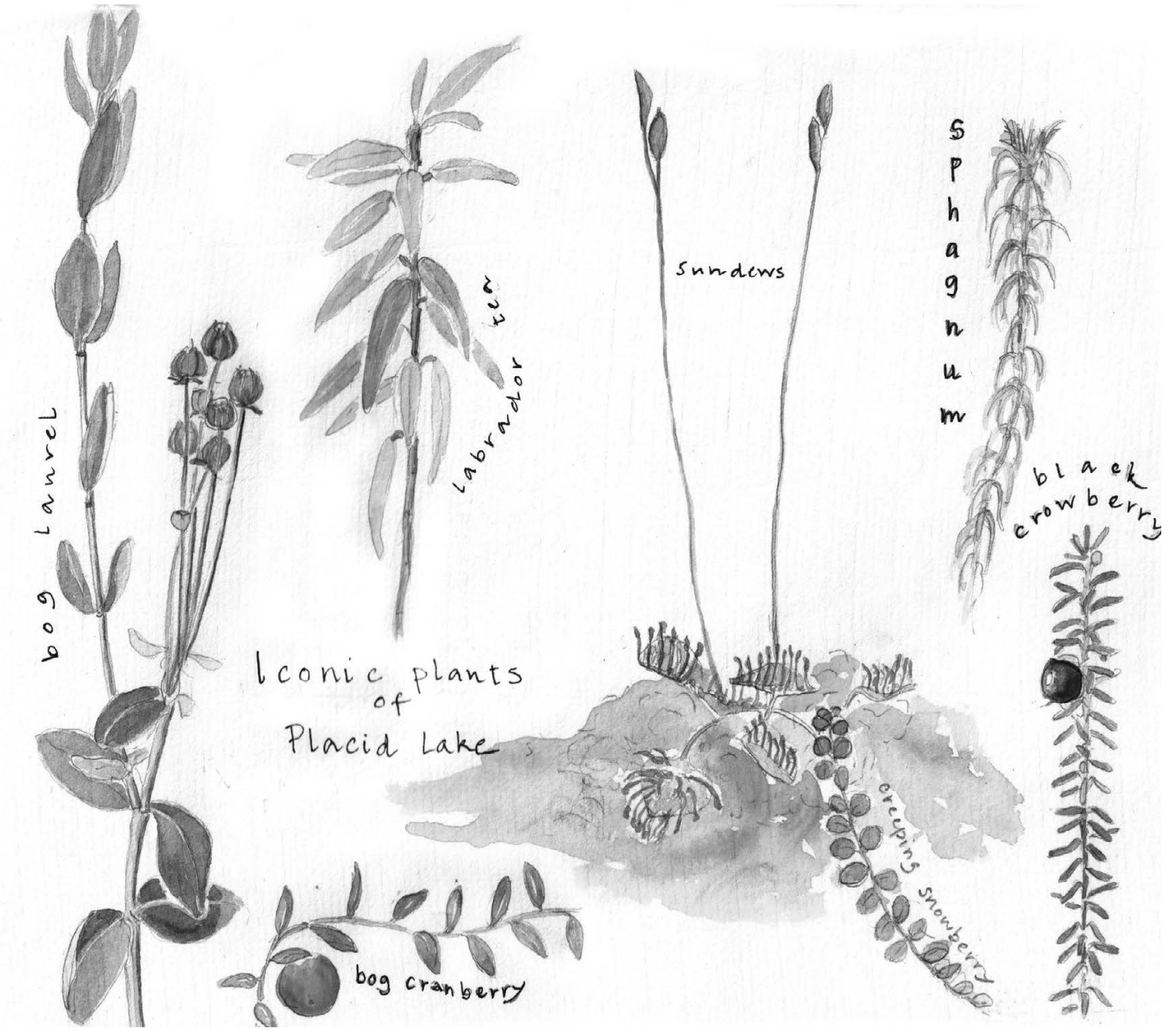



**Meredith Naughton**

Watching the mayflies hatch in Kentucky Lake was always Meredith's favorite part of summer. Not only are the abundant larva excellent fishing bait, their delicate bodies and adventurous lifecycle delighted her curiosity. Growing up among the agricultural fields and suburbs of Indiana, Meredith found wildness in life underwater. In the water, the world moves a little slower and the neighbors are even more peculiar.

Since those summers observing mayflies, Meredith has always found complexity and adventure in the minute. With her head down in a stream, a vernal pool, or a patch of grass, Meredith has spent many happy hours inspecting what others step over. She has analyzed ant genetics, catalogued guppies, sorted aquatic insects, and led hand-lens safaris from the tropics to Vermont.

At UVM Meredith is learning to better understand people and the environment, hoping to collaborate with both. Ultimately, Meredith keeps looking to the natural world because of the enchantment and comfort she finds in its complexity. She wants to make sure that the details are always there for others to find their own mayfly moment, and hopes that eventually the natural world can have a greater impact on us than we do on it.




Images: Lyn Baldwin

# NOTES FROM THE FIELD | CLASS OF 2019

## COHORT AI: THE RUDDY TURNSTONES

**Carolyn Loeb: Conserving Vermont's Future**

Eighty percent of Vermont is privately owned, average parcel size is decreasing, and two-thirds of landowners are families and individuals. Climate change and forest fragmentation are additional variables that will alter the character of the state. In the face of such uncertainty, how can we ensure that Vermont remains a haven for plants, animals, and people?

Working with the Vermont Fish & Wildlife Department and Vermont Coverts, Carolyn visited with a dozen private landowners to pilot techniques to introduce them to "Vermont Conservation Design," a new statewide vision for an ecologically functional future. She was also tasked with helping landowners better understand their properties and how to keep them ecologically healthy. To this end, Carolyn spent many a delightful summer afternoon walking with landowners, mapping natural features, and writing ecological reports tailored to each person and place. From this place of ecological counseling, Carolyn helped landowners find feasible, personalized approaches to managing their land. Carolyn's project concluded with a GIS analysis that takes the pulse of current conservation efforts by assessing how well already-protected lands overlay with Vermont Conservation Design landscape-level targets

Image: Rebecca Suomala

**Jason Mazurowski: Birds and Fire**

In New Hampshire, common nighthawks are no longer all that common. In fact, they're endangered. They're not raptors, as the name hawk might imply, and they're not really active at night either, preferring to feed at dawn and dusk. A more appropriate name might be something like "crepuscular aerial insectivore," but "nighthawk" seems to lend to the mystery of these cryptically camouflaged, ground-nesting birds.

Eastern whip-poor-wills–the nighthawk's more aptly named cousins–are also experiencing widespread decline across New England. Global loss of insect diversity and lack of early-successional habitat in the northeast are thought to be major factors, though the phenomenon is not completely understood.

In the summer of 2018, Jason joined The Nature Conservancy and New Hampshire Audubon as they partnered to investigate how habitat types and management strategies have contributed to the relative success of these birds in New Hampshire's Ossipee Pine Barrens, one of the only remaining places in the state where both species are known to breed in their natural environment. Over the last ten years, The Nature Conservancy has managed the pine barrens with a combination of prescribed burns, timber harvests, and periodic mowing in order to provide adequate habitat for ground-nesting and shrubland birds.

Fighting off mosquitos and ticks, Jason located six active nighthawk nests and measured vegetation structure and habitat features. Additionally, he gathered new data on whip-poor-will and shrubland songbird distribution to further understand these species' response to management, and to help plan for their uncertain future in New England.

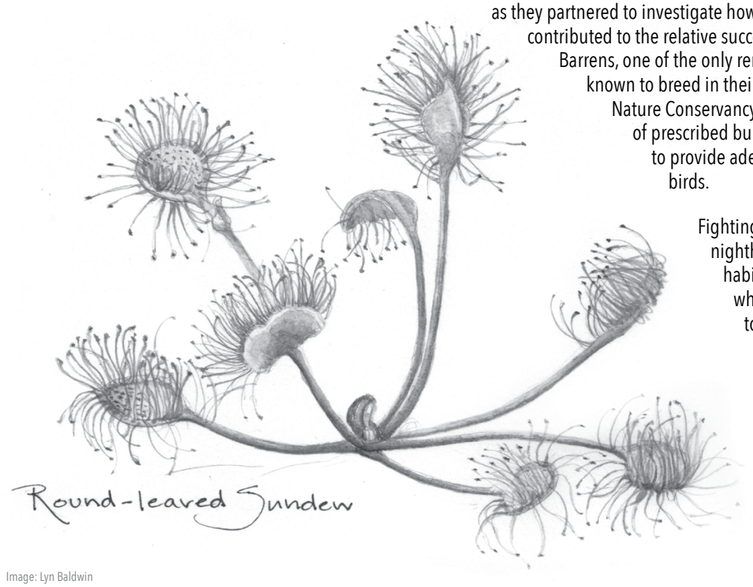



Image: Lyn Baldwin



**Chris Schorn: Growing 'Plains**

There once was a time when the Champlain Valley was blanketed by trees–vast, dynamic jungles of southern hardwoods and hemlocks, rooted in thick lakebottom clay. From this rich clay, Vermont's agricultural tradition also flourished, but the Valley Clayplain Forest today covers less than ten percent of its pre-settlement range. Restoring these primeval forests to their native landscape is easier said than done. Chris, working with The Nature Conservancy, analyzed the success of Vermont's first valley clayplain forest restoration project at the Hubbardton River Clayplain Forest Preserve in West Haven. In a landscape with a long heritage of sustained agricultural use, the deck is stacked against the future forest: in their struggle for establishment, the planted seedlings face depleted soils, competitive non-native haygrasses, and root-girdling rodents. Overcoming these barriers means redoubling efforts, recrafting strategies, and redefining restoration.

**Lauren Sopher: Just Conservation**

The intersection of a retired railroad and a river in Greensboro Bend, Vermont represents an ideal of conservation, where people and ecology are equally considered. Underserved populations are common in Vermont. Statewide, forty-four percent of students qualify for free and reduced lunch. How can we integrate marginalized populations into Vermont's progressive conservation agenda? In partnership with the Greensboro Conservation Commission and the UVM PLACE Program (Place-based Landscape Analysis and Community Engagement), Lauren facilitated socially just conservation through concurrent social and landscape analyses. She paired one-on-one interviews and community engagement opportunities with an ecological assessment of Greensboro Bend. As a result, ethical and effective conservation recommendations were published in the Greensboro Town Plan. This community-centered approach will foster socially just conservation opportunities for Greensboro Bend now and into the future.

## Need Professional-Level Assistance?

Each year the Field Naturalist and Ecological Planning graduate students consult on projects of importance to conservation organizations. Past projects have ranged in scope from tracking white pine blister rust in the High Sierras to mapping natural communities in Maine to improving trout habitat in Oregon streams to modeling wildlife corridors in New York to creating watershed-level conservation plans in Puerto Rico. More descriptive overviews of projects can be found by going to the Field Naturalist website (http://www.uvm.edu/~fntrlst/) and clicking on the "Masters Project" link.

When a Field Naturalist or Ecological Planning graduate student takes on a substantive project, we ask the sponsoring organization to contribute $5,000 to our Master's Project Fund; the entirety of the $5,000 goes to helping offset student tuition. Contact Jeffrey Hughes (jwhughes@uvm.edu) or Walter Poleman (Walter.Poleman@uvm.edu) for more information.

Thanks to the Alumni Association of the FNEP program, those seeking help from a Field Naturalist or Ecological Planning professional now have another option. If you need short or long-term professional help with fieldwork, stewardship, or outreach (in the U.S. or abroad), send us your needs and we will post them on our job board. Several organizations have already taken advantage of this service. Send your needs to: FNEPalumniassociation@gmail.com.

Image: Grace Glynn

The University of Vermont
Department of Plant Biology
111 Jeffords Hall
63 Carrigan Drive
Burlington, VT 05405



gaultheria hispidula
• closely related to eastern tea-berry. methyl salicylate is active chemical, closely related to aspirin's active ingredient. edible berries

oxycoccus oxycoccus
• all native peoples gathered berries. the name cranberry may be a corruption of "crane-berry" because head+stalk resemble crane.

ledum groenlandicum
• across entire continent, leaves were used as a stimulant tea. contains alkaloids called andromedotoxins, toxic to livestock. leaves boiled to make aromatic tea. must be boiled for a long time to destroy alkaloids

kalmia microphylla ssp. microphylla
opposite leaves, contains extremely poisonous alkaloids. 10 little bumps hold 10 anthers that are spring loaded. to throw pollen on visiting insect.

empetrum nigrum
• can make beer or sparkling wine, favorite food of bears. name derives from "en petros" Gk for "on rock."

rubus pubescens
• rubus is a poorly defined, rapidly hybridizing complex — poorly defined.