



## The Edge of Wonder

*Pete Kauffman*

Sandhill cranes, long legged and musical, pitching into the estuarine mud flats with stilted legs outstretched. A flock of several hundred White-fronted geese, these with a watery cackle, circle once and join the cranes. The sky is alive with birds: Lesser Canada geese, Pintails and Mallards, a wigeon, some Northern shovelers. There are some Yellowlegs too, with long legs for wading and long beaks for probing. The birds keep coming, flocks as large as several hundred or in bands of two or three.

I came hoping to catch a glimpse of the Snow geese. As a bird, a Snow goose barely rises above the quotidian. They migrate across the Midwest in flocks that resemble the passenger pigeon and are not particularly good to eat. Some people call them "sky carp," which does

not mean much if you know carp. This morning, there are about twenty of them mixed with the White-fronts, not the numbers I was hoping for, but better than nothing.

According to a local biologist, there is a population of Snows that migrate through these estuarine flats each year on their way to Wrangel Island and Siberia at the top of the world in the Chukchi sea. It would be tough to prove that these particular birds are the ones who will summer in a place I will never see, but it would also be tough to prove that they *won't*. And I like to imagine that they do.

I am not a birder. I only know enough about the avian kingdom to change my relationship with my friends and the birds. My friends mock me, and the birds don't care. That's ok, though, on both counts. There are many other humans in the world, and everyone a friend until proven innocent. While my erstwhile friends reevaluate our friendship, I will continue to geek out over birds, because birds don't care.

Birds can live their extraordinary lives under your nose and remain unnoticed. When Edwin Way Teale was on his famous 17,000-mile journey chronicled in *North With the Spring*, a North Carolina resident told him that there was "nothing like migration," that the birds just went "farther back into the woods." Aldo Leopold writes of an educated lady, "banded by Phi Beta Kappa... who had never heard or seen the geese that twice a year proclaim the revolving seasons to her well-insulated roof."

For myself, the current fascination began with waterfowl hunting that evolved into curiosity about waterfowl. Suddenly, I noticed birds and wondered where they had been all this time. A wedge of geese flying over the city, a tornado of vultures over a ravine, a mockingbird on the gutter. And then I thought of that Ruby-throated hummingbird at the feeder and realized that bird may have wintered in Panama or the southern tip of Florida but came all this way to see me.

Suddenly, birds were no longer mere feathered creatures that hop and peck, but living organisms tied in with the cosmos, their secret lives masking astounding biological complexity and mystery.

I used to see Robins as a token of spring, the quintessential yard bird. Now, I watch the robin and know that when he migrates north, the temperature has reached 35° isotherm, or mean temperature. For him, the world revolves under his feet at a consistent temperature as he hopscotches north, nabbing the first worms after the frost has melted from the earth.

If you are lucky enough to see a Bar-tailed Godwit, it might appear to be some nondescript, gray-dappled bird with a preposterous beak and long legs. But upon closer inspection, it becomes a fist-sized, feathery bomb who migrates eight thousand miles in an eleven-day heat from the coast of Alaska to New Zealand, their activity level *four* times that of a marathon

runner. Imagine running a marathon. Now exert yourself four times harder—and do it for eleven days, without sleep. You would die, and you know it. You can't shrink your liver and tank up to double your normal weight beforehand.

Scott Weidensaul, in *A World on the Wing*, posits that some birds use quantum mechanics to navigate their epic migrations. He admits that this application of quantum theory would make Einstein grumpy. I understand so little about quantum mechanics that I cannot even guess why it would make Einstein grumpy. But as Weidensaul explains it, a photon leaves a star that is light years away, travels through space, and strikes the bird's eye. Here, this photon bumps an electron, knocking it into a neighboring molecule of cryptochrome. (This is taking place in the "double-cone" of the bird's retina, a part of the bird's eye that nobody understood the use of before.) The photon and electron, in quantum-speak, become "entangled" and form a radical pair. There is something in there about "spin angular momentum," which, in quantum jargon, has nothing to do with spinning round and round. Many radical pairs *probably* produce a smudge or smear on the horizon that turns with the bird's head but is not too opaque to affect their vision. The smudge then shifts with the magnetic field lines arcing around the earth.

I can appreciate how chary Weidensaul is to make bold statements, leaving loopholes like "probably" and "likely" throughout his writing. On the face of it, the idea seems preposterous, the stuff of sci-fi, and once one starts talking about "lines of force" it begins to sound like hocus pocus. And yet, who knows? Birds domesticate with incredible precision, and without maps, GPS, or even parents to show them the way. *How* they do it we have yet to figure out.

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It is here I find release from the world of man-made. Escape from the man-made does not directly translate into the spiritual, of course, and we ought to be careful to not confuse them. But it's a start.

There is power in a man's capacity to wonder, and it is, I think, a developed power. Most children possess it; adults seem to actively eschew it. Since my firstborn has arrived, it has crossed my mind that a man jaded by the world ought to spend some time in the company of a sleeping newborn to reawaken the feeling of being in the presence of a miracle. Or spend some time watching birds on a marsh, or attend the birth of a calf, or any of the hundred other things that speak of the commonplace miracle of another day alive.

It's not an easy virtue to develop: it requires curiosity and, at times, waiting to pull out the reference books or Google until we get home. I used to think of, say, the fact that women often hold their babies with the baby's head on their left arm, because, as science said, the sound of the mother's heartbeat calms the baby. The mothers didn't know why; they just knew it worked.

I used to wish that the people who figured stuff like this out would stop it. But I no longer wish such a thing. Learning all we can about sea creatures, the stars, the storms, does not kill mystery—it expands it. Wonder is not ignorance: it is the fullest awareness of our smallness. And I think that is pretty smart.

Mothers calming babies with heartbeats. Sea currents and storms, energy and hurricanes, the common Arctic tern that migrates between the ends of the earth each year. A single mushroom that spans the entire underground of Detroit. Trees communicating with slow, electrical pulses, telling each other where to go for sunlight or nutrients. Stars beyond the reach of our vision. A fish called a grunion that syncs its reproduction precisely with the tides. A drop of periphyton, such as pond scum, with its own ecosystem; flagella and rotifers navigating it like an entire world in a drop. Birds mapping courses with celestial, even intergalactic, cues.

My mind only stretches so far, and I stand at the border of ignorance and the edge of wonder.

*Photo by Joel Engbretson*

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