

Geared for Connection:

Biomimicry, Outdoor Gear Design, and Millennials

My headlamp immediately dimmed as I stepped away from the doused fire ring. Taking a breath, I walked deeper into the dark forest just in time to see a furry, medium-sized animal dart across my path, glancing in my direction as it went. Thick clouds played across the full moon until its light all but disappeared.

A fox. That must have been a fox. Feeling silly, I lifted my chin and moved toward my tent sitting hidden in the trees on a hilltop. After picking my way up the hill, I reached the little two-person backpacking tent. An immediate rush of nervous relief swept over me, but I resisted the urge to dive in and hide away from the night.

The headlamp battery was nearly dead, so I switched it off and turned to face the expansive view of Arizona's pine-forested mountains. As if in response, the clouds peeled away from the moon for a few minutes, illuminating the forest.

This, after all, was the whole reason I was out there: my semi-annual solo check-in with the wild. To be alone with myself, my thoughts, and to flush out any fears that accumulated in the corners of my mind while I was gone or distracted with my usual companions. After a while I relaxed, felt my gumption return, and the easy pleasure of simply being there arrived. Now I could enter my tent with confidence and sleep. Or so I thought.

At various points in my post-college career exploration, a degree in biology led me from remote desert to expansive cities. Time in the wild wasn't new. But the time spent in cities were the hardest because of the surprising intensity of human rush. I found that removing myself periodically to wilderness was the only thing that helped my psyche and outlook stay bright. It took a few days each time to calm. After the first time, though, this became a tradition no matter where I lived.

A recent story published in National Geographic reviewed research that found much the same: time with nature not only improves our current quality of life, but how we continue living. This is increasingly important with the advances in technology. Humans in developing countries are spending more time indoors, engaged with electronics, and disconnected from the natural world and each other - which is especially true among the Millennial Generation. The more disconnected we become from the natural world, the more we see a negative reflection on the planet and ourselves. Or, in a cogitative sense, we have a greater chance of destroying what we don't understand.

It's challenging to understand something like the natural world if a person isn't taking opportunities to interact with it. Physical and mental health issues are on the rise, yet there is a growing contingency of doctors, biologists, psychologists, designers, engineers, and consultants who are seeing the benefits of time spent outdoors. Biomimicry is bringing this connection even closer to our everyday lives through architecture, energy, agriculture, medicine, communication, transportation, and even textiles and outdoor gear.

The outdoor adventure industry as a whole makes some pretty bizarre products. SCUBA fins with a split-fin design like dolphin and whale tails. All manner of newly-innovated synthetic fabrics for water- and wind-proofing, drag reduction, high strength, bioluminescence, antimicrobial efficacy, camouflage, and more. And they work. It makes sense that when we play in the outdoors, we integrate our minds and gear to the natural elements and indigenous creatures we play alongside.

Biomimicry is being used as a way to reduce the manufacturing waste of outdoor products, cut unnecessary early disposal of gear intended for long-time use, blend current outdoor enthusiasts more deeply with the environment, and bring more new outdoor enthusiasts onto the scene. Integration of biomimicry in outdoor gear design means we are actually using nature to bring us back to nature when our planet is speaking an urgent message loudly. If the new goal is to bring more people outdoors for nature connection and increased environmental action, then increasing comfort and ease with outdoor products is one part of the solution.

In fact, Millennials are driving the future of the outdoor economy. However, their interpretation of what an outdoor experience actually is, is different than the generations before them. Those experiences begin at their front door rather than somewhere remote and have little to do with intense images of the most extreme leaders in outdoor adventure. Overall, Millennials are less interested in possessions and more interested in experiences with friends, family, and through travel. Once they've found a connection to public lands, though, their desire to advocate for the protection of those places becomes significant. Combining this mindset with reasonable prices, quality, and companies that mirror customers' inspired causes builds a new formula for outdoor gear businesses and multilevel conservation.

Performance apparel is leading the way in biomimicry among outdoor gear items. The performance textile industry is driven to develop wider ranges of use that include environmental sustainability and recyclability at the end of a product's life. Patagonia, Inc, for example, developed a warmer and less bulky fleece that mimics mammal fur by using both long and short hairs. Schoeller Technologies in Switzerland has innovated a performance textile with self-cleaning properties inspired by a lotus leaf, in addition to a windproof and waterproof membrane designed around the intrinsic movement of pine cones. Biomimicry education and certification is laying groundwork for a new rank of innovators and professionals to lead us into a creatively- and functionally-based future - and it's looking good.

Back in the Arizona mountains, finally asleep in my tent, a burst of thunder and lightning snapped me to attention. *Oh good!*, I thought, *I like thunderstorms...* and drifted toward sleep again. Fat drops fell sporadically, then steadily, until the rain hammered down. The feeling of rain landing on my face awakened me next. I couldn't see what was happening, but I felt it: the rainfly was laying on my tent, plastered and soaking through. The stakes must have come up.

Pulling on my jacket, my bare feet sunk into the spongy ground. I fumbled in the dark and discovered that the stakes were still in place. The guy wires were still tied, too. The rainfly was failing because the fabric expanded and stretched with the generous dumping of water. The fabric wasn't made for this kind of weather.

I stretched and re-staked the fly as tight as I could pull. This fixed the problem for the night but left me feeling like these were the kinds of experiences that turned so many people away from more intimate relationships with the outdoors. Tents that leak, boots that weren't really "water-proof," coats that never felt warm enough, or overall conditions that were less than ideal were convincing enough to stay indoors for many. There had to be better ways to increase confidence and ease while spending time outside through the gear we rely on - without having to buy mountaineer-grade equipment.

I packed up my gear the next day, shaking away the spiders and crickets that sought refuge under the tent edges. Seeing them reminded me of a large, green grasshopper that hitched a ride on the hood of my car in Florida months before. The crazy bug had no idea what it was in for when it found me. I was heading toward the interstate and planned on making good time. My better nature attempted to coax the grasshopper off of my car at stoplights, but it refused to budge. *Good luck, buddy.*

Onto the interstate I merged, gradually picking up speed in hopes that my hitchhiker might change its mind and jump off in a last ditch effort to survive. Soon, I watched as my speedometer reached 60 miles-per-hour... 65 miles-per-hour... and the grasshopper remained.

At about 70 miles-per-hour, I noticed something: it began to hunker down. Closing the gap between its body and the surface of my car, it crouched low, sealing the gap, clamped its leg joints close with its feet spread wide, and ducked its head slightly forward until it looked like a wet leaf stuck to the hood. I was amazed.

And curious. If I accelerated to 80 miles-per-hour, would it hang on? I really wanted to see just how aerodynamic this insect could be. Surely, it wouldn't survive a sustained 80 mile-per-hour wind for more than a few minutes.

Before long, I ran out of interstate, taking my exit toward home. As I pulled into a parking spot, I made sure to park near a row of bushes because my new buddy still clung to the hood. Hop-ping out, I looked closely at it. *Welcome to your new home*, I congratulated.

The grasshopper endured. Reflecting on this, I imagined the evolution that must have taken place to help a large grasshopper survive in Florida. It looks like a leaf, it can survive hurricane-force winds, it's adaptable within its environment. Looking at my tent in the Arizona mountains, I saw that the edges were too high, the material (or at least the waterproofing treatment) wasn't right, the "legs" or contact and tension points weren't in the best places to deter an equipment failure like I'd had the night before. I quickly decided that it was time for a new tent.

Likewise, humans have the ability to endure. We have the ability to flourish on this planet, actually. But this will require our creativity and adaptability. Nature gives us ideas and options for the innovations moving us into an exciting future: we only need to get outside and let nature show us the way forward.