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BY MICHELLE LEVY

AFTER 30 minutes immersed in a low-light setting, humans experience the Purkinje shift, when the eyes dilate and become more sensitive to motion.



Embracing the Darkness

MOST PEOPLE REFLEXIVELY TURN ON A LIGHT WHEN THEY CAN'T SEE. DARK EXPOSURE INVITES YOU TO INSTEAD SETTLE IN AND FEEL YOUR BODY ADAPT.

Night falls in the Black Rock Forest in Cornwall, New York. I walk the path to the reservoir without a flashlight. Even though a new moon shines brightly, the trees shroud the forest floor. I tread lightly to avoid falling off the trail into the brook, where bullfrogs croak and peepers peep. In the shadowy woods, a pair of eyes twinkles between the shrubbery. I sense what I hope is a deer tracking me; this is black bear territory, after all.

The 3,920-acre Black Rock Forest and field station in the Hudson Highlands have drawn environmental scientists since 1929. The governing body offers small grants for research in wildlife, invasive plant species and carbon sequestration, among other topics. I was there to join a science-writing group, convening for a hike with a specialist studying the impact of climate change on trees. But arriving one day early created

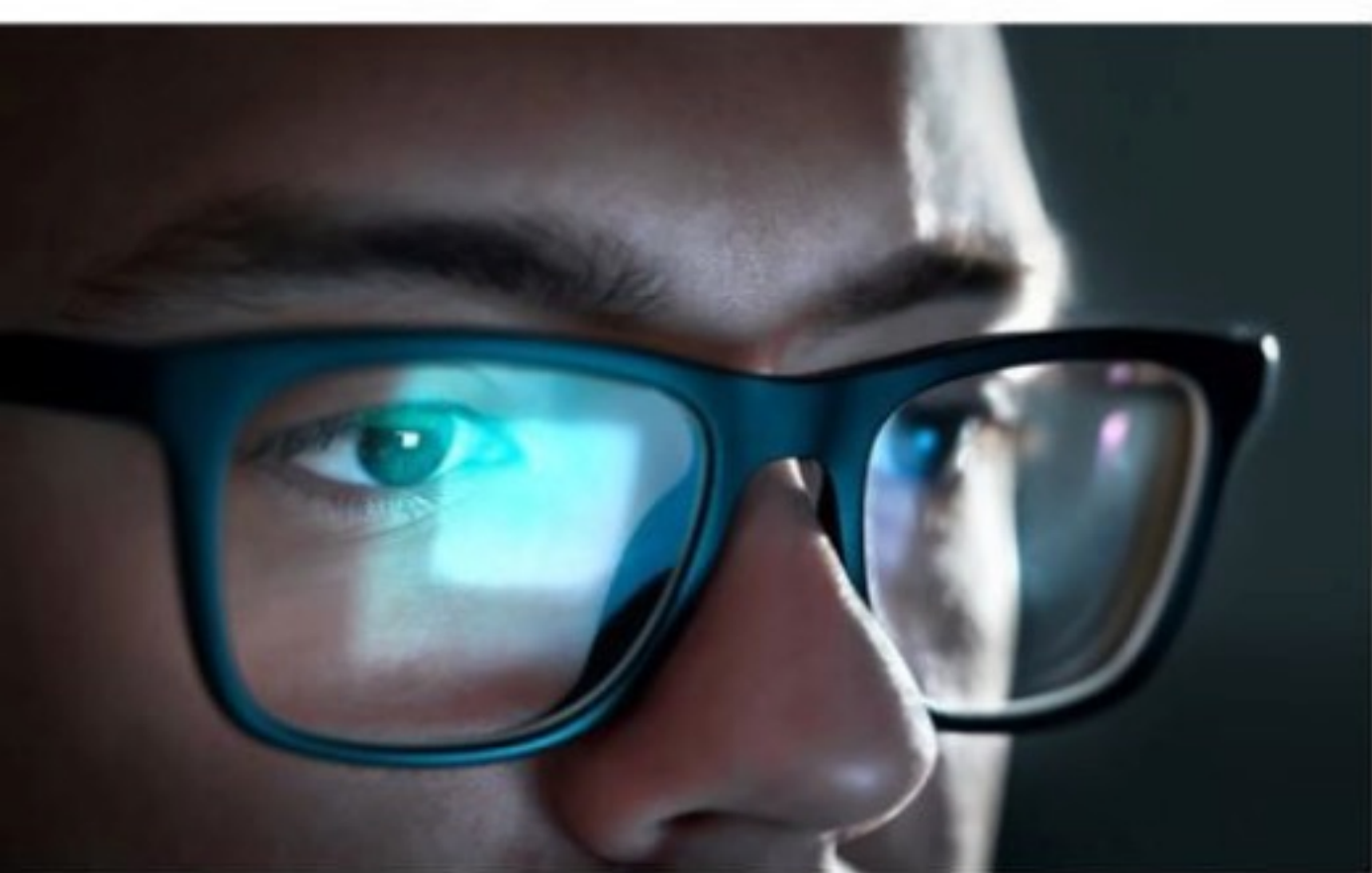
the perfect opportunity for a solo walk in darkness.

I was introduced to the concept of dark adaptation while studying neuroscience at New York University in the '90s. Since then, I've done night hikes everywhere from Illinois to the Ecuadorian Amazon. The pursuit has helped me conquer my fear of the dark while exploring the possible benefits of dark adaptation for the brain and body. It's a topic that has limited in-depth research, but holds promise in a world increasingly illuminated by artificial light. Plus, there's an allure to dark-sky parks, float tanks and other emerging experiences built around this phenomenon.

Some of the appeal and possible benefits of darkness seem to correlate with unplugging from tech. Light exposure from phones, computers and other sources — which many of us use from sun-up until we try to fall asleep

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— can impact our circadian rhythms. Exposure to any artificial light interrupts dark adaptation and routinely suppresses the secretion of melatonin, a hormone that regulates sleep and wakefulness.

Beyond melatonin, darkness can trigger a cascade of biophysical reactions in our bodies. One of them, the Purkinje shift, involves our eyes switching from utilizing cones, which help us see detail, to relying on rods, which help us detect motion. That shift fully sets in after about 30 minutes in a low-light setting. At that point, your ability to see color and contrast diminishes, and you become more responsive to motion. The pupils also dilate to let in as much light as possible, and peripheral vision amplifies.

On a dark night, you might notice this when you look directly at a star, and it disappears. You can see it better, typically, out of the corner of your eye. This is because rods concentrated in the outer retina are sending signals to the brain. The evolutionary advantage helps us detect potential danger while we're vulnerable to nocturnal predators. (Thankfully, I encountered no such threat in Black Rock Forest.)

Broadly speaking, spending time in darkness may promote neural plasticity. This refers to the brain's ability to rewire itself as it learns from new experiences or when one of its systems loses function, either temporarily or permanently. Research indicates activities that facilitate brain plasticity could help prevent cognitive decline, dementia and other age-related concerns, according to a 2020 study at the University of Rochester.

When asked how darkness exposure might impact brain plasticity and contribute to wellness, Duje Tadin, chair of Brain and Cognitive Sciences at the University of Rochester in New York, says duration may be a factor. "There's a big difference between an hour and one week," he says. "There could be benefits to being in a dark-adapted state. And if you do it regularly, neurochemical changes in the brain are going to affect plasticity."

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DARK SKY CONSERVATIONISTS view the encroachment of artificial light into our wild spaces as a pressing threat to humans, animals and ecosystems alike.

The International Dark Sky Association has developed a system for certifying dark sites around the world. Many of them offer great spaces for after-hours hiking. Now touting 200 locations and counting, the group's Dark Sky Places fall within five categories, based on night sky quality, the surrounding population and other criteria. At least 115 of these are Dark Sky Parks, while Dark Sky Sanctuary status is reserved for the most remote (and often darkest) places in the world. Just this year, Ynys Enlli (aka Bardsey Island), North Wales, became the 17th Dark Sky Sanctuary in the world, and the first in Europe.

Visitors can check out the island's Bardsey Bird and Field Observatory from April through late September — and even stay overnight inside an 1874 farmhouse or private cottages. In addition to brilliant constellations, you may witness the sound

A LONG-EXPOSURE photo captures the starry sky above Ynys Enlli in North Wales, which became a Dark Sky Sanctuary in February.





of 20,000-plus Manx shearwater birds returning to nest and breed after dark. “Even during the brighter nights in the summer, the night sky on Enlli will be a spectacle, as we have so little light pollution,” says Siân Stacey, chair of the Bardsey Island Trust.

For people who’d rather try dark exposure in an urban setting, there are alternative options: restaurants that serve meals in total darkness. The Na Laga’at cultural center in Jaffa Port, Israel, is designed to fully integrate people with visual impairments into theater and dining. At its BlackOut Restaurant, waiters are all blind or visually impaired, and the guests embrace these



THE MILKY WAY shines overhead on a night hike in rural Brazil.

same conditions. Absent of sight, diners regularly report that flavors taste richer. And socializing in the dark highlights how much the sighted among us normally depend on visual cues to interpret others’ behavior. “Diners are welcome to spark candid dialogue with their blind or visually impaired chaperones, who speak openly about life with a sensory

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disability and fill the darkness with new meaning,” says Dorit Trivaks, the restaurant manager. There are roughly a dozen dark-dining restaurants operating around the world — but it’s an experience people could design at home, as well.

FOR RELAXATION or intensive therapy, floatation tanks also offer the chance to embrace total darkness. The pods are lightproof and soundproof. While you float in body-temperature salt water, the boundary between one’s body and the surrounding environment dissolves.

Justin Feinstein, a clinical neuropsychologist and director of the Float Research Collective, says this phenomenon effectively alleviates suffering in people with anorexia nervosa and other conditions. He studied Reduced Environmental Stimulation Therapy (REST) at the Float Clinic and Research Center, located at the Laureate Institute for Brain Research in Tulsa, Oklahoma. This lab work involves scanning subjects’ brains before and after float experiences; later this year, his team plans

FLOAT tanks often combine salt water and light deprivation to help reset the nervous system.



to release new data from EEGs recorded during floatation, which has never been done before.

REST has been demonstrated to improve anxiety, depression and addictions. It has also been shown to speed up learning a new language and improve athletic performance. “In the patients we’ve been studying, doing this once a week could help reset the nervous system that has been inundated with stimulation,” Feinstein says. Visitors to commercial float spas often report feeling serene and deeply relaxed afterward. And in a 2018 study, Feinstein demonstrated that people with anxiety and stress disorders who floated in darkness reported more substantial mood improvements than their peers floating with the lights on.

For most people, stargazing excursions, a dinner or a float-tank session are the most accessible ways to give short-term dark adaptation a try; even meditating at home in darkness makes a good introduction. On the more intense end of the spectrum, dark retreats are also popping up across the U.S. and Europe. These multi-day experiences typically provide a room sealed off from light and sound, and a food delivery system that ensures an uninterrupted dark-adapted state — promising participants a deep-dive into their psyche.

As for my bucket list, I’m eying dark sky sanctuaries, and deeper connection with my daughters who now join me on night hikes. But it will take a wide combination of darkness experiences, coupled with more research, for science to uncover how vital darkness is to our well-being. Who’s ready to experiment? **D**

Michelle Levy is an editor and essayist with a background in neuroscience.

DARK EXPOSURE DESTINATIONS

As of early 2023, there were 201 certified Dark Sky Places around the world. That includes 115 Parks, 38 Communities, 20 Reserves, 16 Sanctuaries, six Urban Night Sky Places and six Dark Sky Friendly Developments of Distinction. See the full map at darksky.org. Or, seek out the following:

DARK RESTAURANTS

In an immersive sensory experience, visitors enjoy a meal in pitch darkness, or while blindfolded.

Destinations:

- BlackOut Restaurant, Israel. nalagaat.org.il/en/blackout
- Dining in the Dark, produced by Fever, with multiple worldwide locations. dininginthedarkexperience.com

FLOATATION SPAS

Float sessions using a sensory deprivation tank average 90 minutes and include guidance from staff.

Destinations:

- Lift/Next Level Floats in Brooklyn, NY and Huntington, Iowa. liftfloats.com

Float Locator

See floatationlocations.com to find centers nearest to your ZIP code.

DARK RETREATS

Overnight stays include extended dark immersion and food delivered to your lightproof room, as well as spiritual support.

Destinations:

- Sky Cave Retreats, Oregon. skycaveretreats.com
- Spirit Balance Retreat, Germany. spiritbalance.de/en/soul-methaphysical/darkness-retreat
- Gut Saunstorf, Germany. kloster-saunstorf.de/en/darkness-retreat

