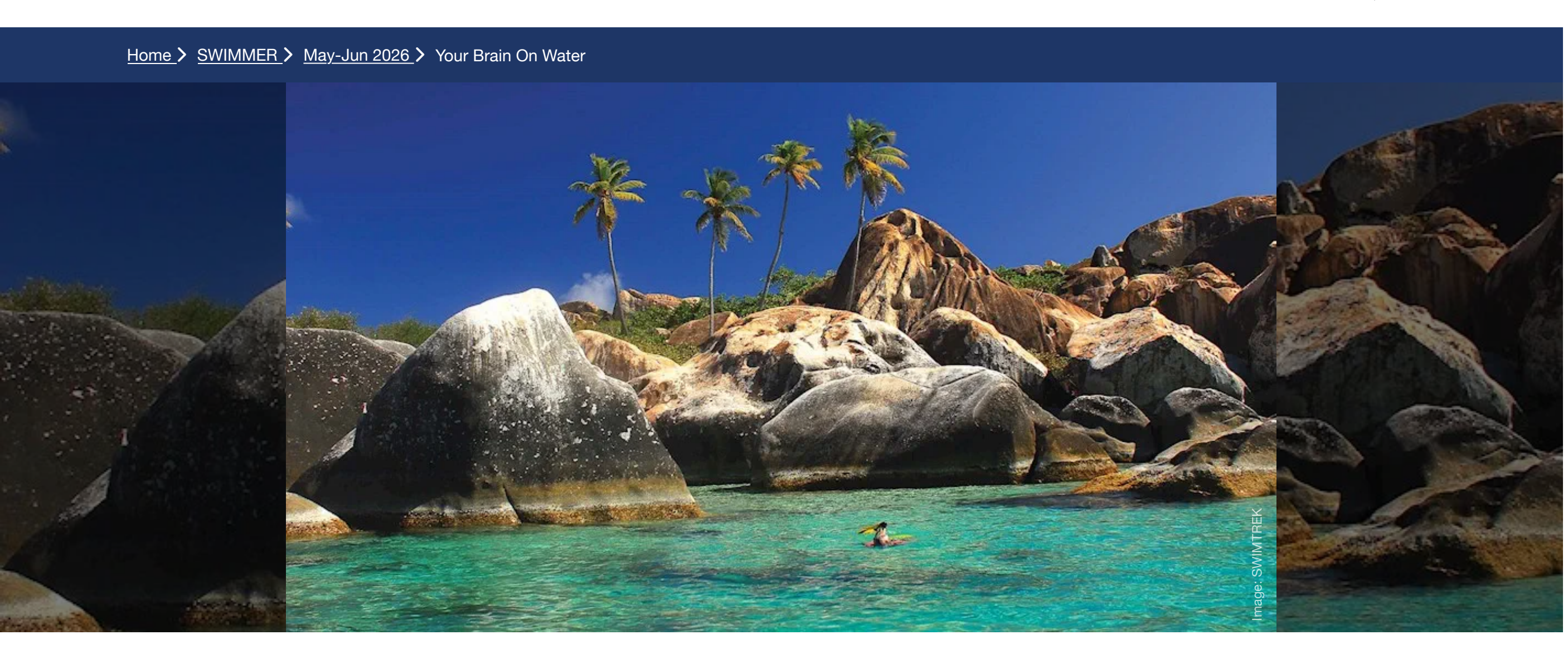
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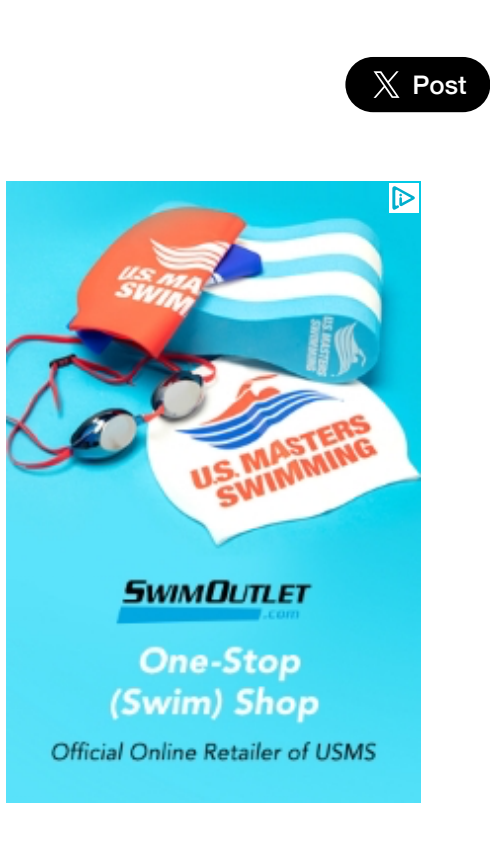
Your Brain on Water

Being in, on, around, or under the water has many mental health benefits

By **Elaine K. Howley**

Post



You ever get that feeling, like you were just made for water and it's your happy place? You're certainly not alone.

"There's a transcendence that comes with long exposure to water, and it's something ancient and timeless," says Matthew L. Moseley, a long-distance open water swimmer and water rights activist in Boulder, Colorado, who released a book-length love letter to water titled "Words on Water: Droplets of Wisdom From Rivers, Lakes, and Oceans" on March 22, UN World Water Day.

"After I've been in the water for two or five hours, I start to have my mind in a different place and it brings a certain clarity of what's important to me right now and what's not. I love that Zen feeling about being in the water for a long time.

"I think a lot of people can get that sensation in short distances or even floating in the ocean by the beach. But for me, it's this very deep kind of transcendence, like I'm stepping out of myself and into my aqua-self and I belong here. This is kind of my home, and that's why I love it so much. I want to protect it."

If you found yourself nodding in agreement while reading any part of his thoughts, pause for a second and ask yourself why. For many of us, water really does have a way of setting our minds at ease, but what's the story behind that comfort and connection? What's going on in our brains when we're in or near water?

The quest to answer that big question became the life's work of Wallace J. Nichols, a marine biologist who penned the blockbuster 2014 book "Blue Mind: The Surprising Science That Shows How Being Near, In, On, or Under Water Can Make You Happier, Healthier, More Connected, and Better at What You Do."

Nichols passed away in 2024, but his work lives on through the Blue Mind Movement and a network of researchers, psychologists, neuroscientists, and conservationists spreading the word that we really are better in, on, or by the water. Their work aims to describe the exact mechanisms of that connection and provide the scientific evidence that will persuade everyone that our oceans, rivers, lakes, seas, ponds, and other waterways are worthy of preservation.

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There's plenty of science to help make that argument; those good feelings are rooted in basic brain chemistry and biology.

First, when you enter water—which is typically cooler than your body temperature—you're triggering the mammalian dive reflex, an ancient response that we share with whales, seals, and other marine mammals, says Catherine Franssen, a neuroscientist, consultant, and assistant professor in the School of Life Sciences and Sustainability at Virginia Commonwealth University.

The dive reflex is designed to help you hold your breath underwater and it lowers your heart rate to slow oxygen consumption.

Immersion in cool water also activates the parasympathetic nervous system, which helps soothe you from head to toe. Whereas stress triggers the sympathetic nervous system, which is often referred to as the fight-or-flight response, by flooding your body with adrenaline and readying you to flee a danger or strike back when threatened, the parasympathetic nervous system works in opposition by slowing your heart rate, reducing blood pressure, and enhancing digestion and metabolic processes. Because of these responses, it's often referred to as the rest-and-digest system.

Meanwhile, your brain is working overtime as you enter an aquatic world, Franssen says, as a cascade of hormones and neurotransmitters start flowing.

"Swimming creates this chemical cocktail in our brain that we love," Franssen says. These include dopamine, serotonin, and endorphins, all of which are released by both physical activity and immersion in water. These powerful chemicals provide motivation, pleasure, mood stabilization, emotional regulation, euphoria, and even pain relief, Franssen says.

"That pain relief extends both physically and emotionally, so that calm, happy, clear feeling you get after swimming, it's not just a metaphor. It's actually biological," she says.

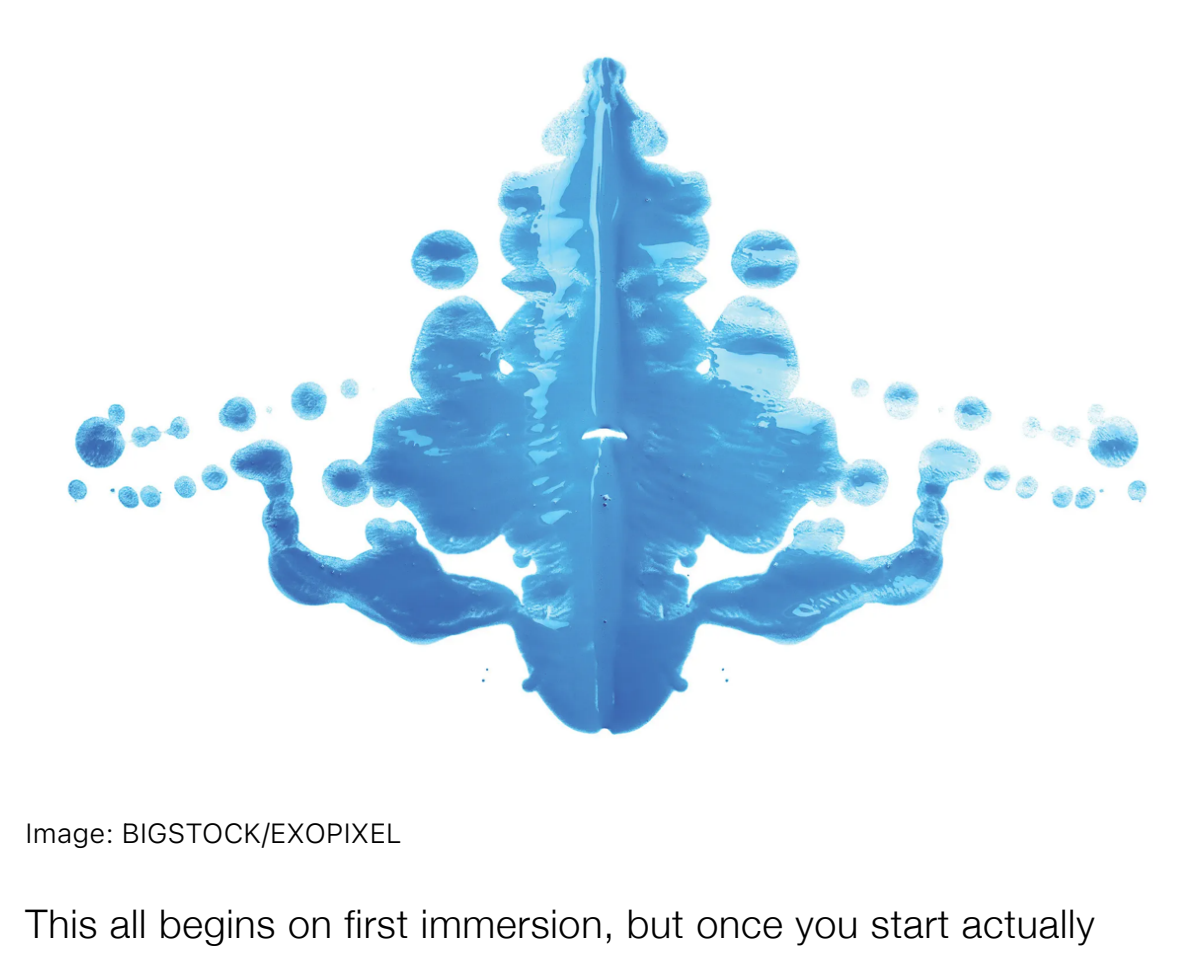


Image: BIGSTOCK/EXOPIXEL

This all begins on first immersion, but once you start actually swimming, you engage muscles, tendons, and bones to move you forward. Alongside the internal chemical shifts, that physical activity can create a state of "effortful calm," Franssen says.

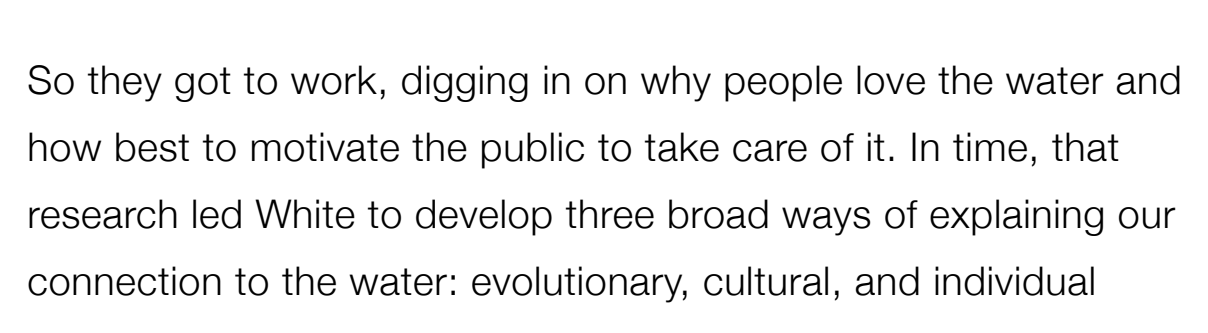
It's powerful stuff too because while swimming, you can unplug anxiety in ways that can be difficult to do on land. Swimming "occupies the body just enough to stop the rumination without overstimulating your mind," she says.

Because of that combination, we often get fewer intrusive thoughts while swimming and that mental clarity lingers for a time after our swim is over. Especially on long swims in open water, "you've got this rhythmicity of movement and stability of emotion and there's this low, consistent level of sensory input," Franssen says. This allows you to "cognitively relax. You don't have to constantly deal with brand new things. You go into a flow state and just exist in that space."

This is why many of us get our best, most creative ideas and insights while swimming or when in the shower. That cognitive relaxation and reduction of external stimuli creates a window of opportunity for the subconscious mind to speak up and be heard above the din of the everyday.

Moving meditation is another term many people use to describe the calm, peaceful space their brain seems to enter when they're swimming. And this is where neuroscience meets psychology. Mathew White, a health and environmental psychologist at the University of Vienna in Austria, describes that feeling of flow on a long swim as "acute mindfulness."

Swimming seems particularly well-suited to helping us get to that state of presence in the moment in part because it forces breath regulation. Indeed, any meditation practice starts with controlling your breath. In addition, the removal of other stimuli allows you to tune in to what's going on with your body and your breath as you let the world go and focus on moving forward through this wet medium.



So it's clear that we're wired to love being immersed, but why exactly that's the case isn't fully understood, even by those who've been studying this connection at length.

"I've been doing this for 15 years, and I'm afraid I've got more questions than answers," White says. "Every time we look at one thing, a new question comes up."

An avid outdoor swimmer and surfer, White grew up on the coast of the Isle of Wight and says he's always been fascinated by his own and other people's attraction to the water.

Eventually he teamed up with a doctor studying chemical pollution and destruction of the marine environment who was frustrated that the alarm-sounding approach wasn't capturing the attention it deserved.

The pair determined that reframing the conversation to show how these environments provide numerous benefits that would be irrevocably lost if they were destroyed might be a better way to gain traction for conservation efforts.

So they got to work, digging in on why people love the water and how best to motivate the public to take care of it. In time, that research led White to develop three broad ways of explaining our connection to the water: evolutionary, cultural, and individual history.

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> –Catherine Franssen, assistant professor in the School of Life Sciences and Sustainability at Virginia Commonwealth University

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Evolutionary

White says he's cautious about this aspect because he doesn't want to get ahead of the science. But he concedes: "I don't think we can deny it—clearly—we need fresh water to live. So that's an important attractor in terms of a biological need."

What's more, he says, "There's relatively good evidence that we're well-adapted as a species to spending time in water." He points to the controversial "Naked Ape" hypothesis, which, among other things, posits that humans evolved along the coastal margins of East African islands as a possible explanation for how we came to rely on and love the water so much.

"We know that species evolve quicker on islands to have fewer adaptations," White says. Plus, waste dumps near where fossils of early hominids have been unearthed suggest that shellfish was a major component of their diet.

Consuming a lot of shellfish, which is rich in omega-3 fatty acids, lean proteins, and other nutrients that can support the growth of a big brain and complex cognitive processes, could have contributed to the development of our species' high intellect.

Migratory history also follows the spiderweb of waterways around the globe, and it's no accident that most of the world's major cities are located alongside a large body of water.

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Cultural

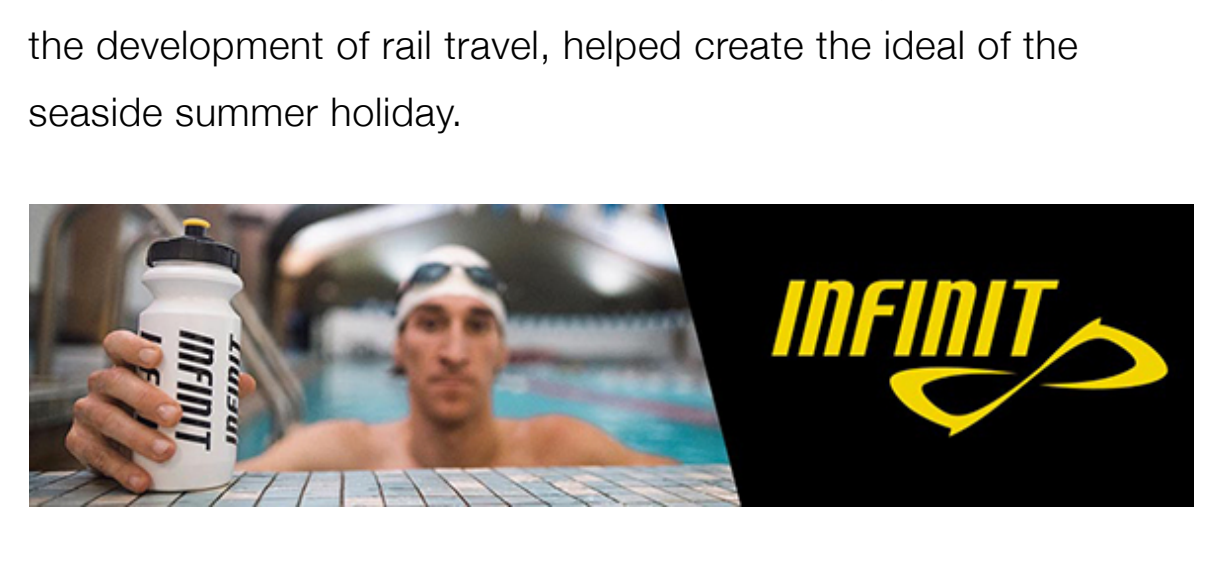
Culturally, humans have long been associated with the water, but even so, water can be a dangerous place. In some parts of the world, fear of accidental drowning prevented generations of people from accessing open water. But by the late 18th century, that began to change in some places, most notably the U.K. and parts of Western Europe.

This is in part because of a 1753 book by Richard Russell, "A Dissertation Concerning the Use of Sea Water in Disease of the Glands, etc." Russell was "a doctor who argued that bathing in sea water could cure a whole range of diseases based on case studies," White says. The British royal family took note of the good doctor's findings and set up 12 bathing-water hospitals around the coast of England.

"Similar things were happening in France, and during this time, there came an idea that this is a medical therapy with royal approval, which then attracted the rich people," White says.

In time, that rediscovered enthusiasm for getting into the water trickled down to poorer people, and an industry of seaside bathing sites and resorts developed that encouraged rest and relaxation by the sea.

The coinciding industrial revolution, which eventually led to the development of more leisure time for the working class as well as the development of rail travel, helped create the ideal of the seaside summer holiday.



Individual

These cultural and evolutionary forces can apply pressure, but ultimately, the choice to engage with water is an individual one, and not everyone has a positive association with water.
For those who enjoy the water, often there's a personal history of pleasurable time by the sea in a safe context. White's research suggests that many people's first real experiences of these places are positive because they're associated with family, care, and quality time and attention from parents.

Franssen also cites the power of individual affinity in our relationship to water and says memory plays a role. For many of us, spending time at the beach or in or on the water coincided with happy, protected times with our families, and childhood bath-time typically featured the close attention of a parent or caregiver. That positive association provides powerful context cues that your brain connects with each time you visit the water.

"Putting those two pieces together—the rhythmic exercise component with the emotional safety and positive feelings we have toward the water—creates this wonderful experience and it's very easy for our brain to want to do that," Franssen says.

What's more, those fond memories drive many of us to return to the places we vacationed as children, White says, and this makes sense because the brain craves stability, harmony, and safety. If you're going to spend money on a relaxing holiday, you're likely to opt for a place that you associate with positive feelings and memories.

Not everyone loves the water, however. Memory can cut both ways, and a traumatic experience in the water can spoil someone's connection to it for life. Plus, context matters. "If you're trapped at sea in a small dinghy 50 miles off the coast, that's not such a calming experience, right?" White says.

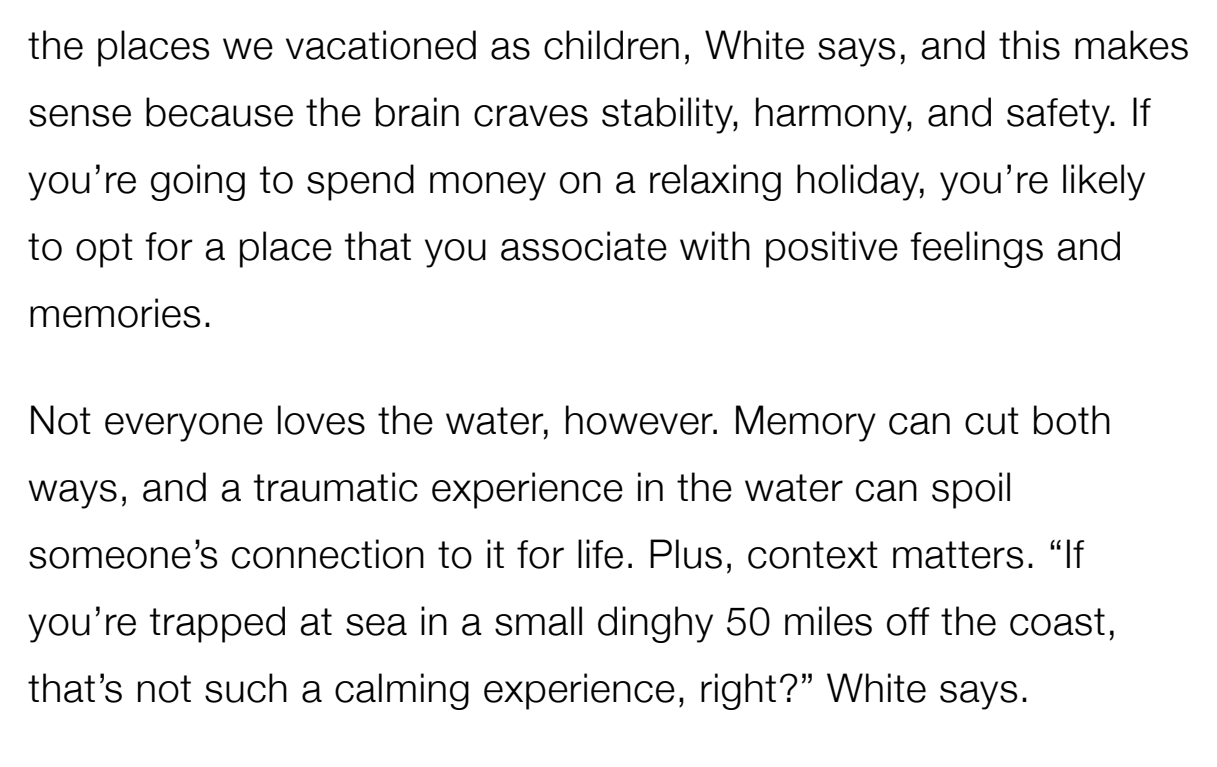


Image: BIGSTOCK/TROPICAL STUDIO

INFINIT
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Rather, there's a happy medium. When he's asked whether blue spaces or green spaces (natural locations on dry land that humans also have an innate connection to) are better, White says it's a trick question: "I think the answer to that is really clear—it's the margins." It's the transitional, littoral space between open sea and shaded forest where many of us will feel a particularly strong connection to the natural world around us.

This strand provides access to the safety of land but also the bounty of the sea.

"Historically as a species, we spent most of our time in the shallows," White says. "We're talking 10 to 20 meters either way [into the water or up on land] that seems to be the sweet spot. It's being close to the land but also in water that seems to be the magic spot," White says.

White is careful to add that the blue mind lifestyle doesn't work for everyone. Indeed, someone who's had a negative experience in or around water is wise to be wary of aquatic spaces.

And he adds that open water can be more anxiety-inducing than the average pool. "But if you get over that anxiety, that's resilience-building and that can actually be good in the long run." Facing one's fears is a classic way to grow.

In speaking to Masters swimmers—most of whom get vast enjoyment from being in the water and clearly already embrace the blue mind lifestyle—White says he's preaching to the choir. But he encourages all of us to put some energy toward preserving the blue spaces we love so much.

His research is designed to help engage groups "that don't understand the potential benefits" that water can provide and then make concerted efforts to preserve these spaces. Some of his research has been picked up by the European Environment Agency, which provides objective, reliable, evidence-based data on the environment and climate to EU member states, institutions, and the public to help shape environmental policy. This work matters "because it costs money to keep the water clean," he says. "But when we do a cost-benefit analysis, you're getting a 10 to 1 or 100 to 1 return on investment."

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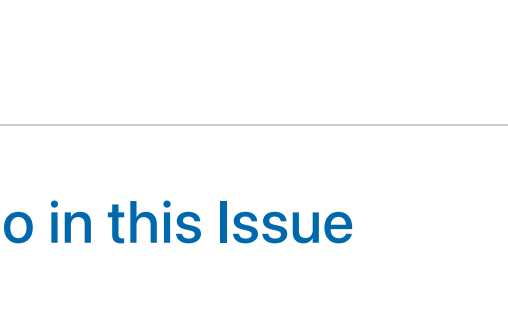
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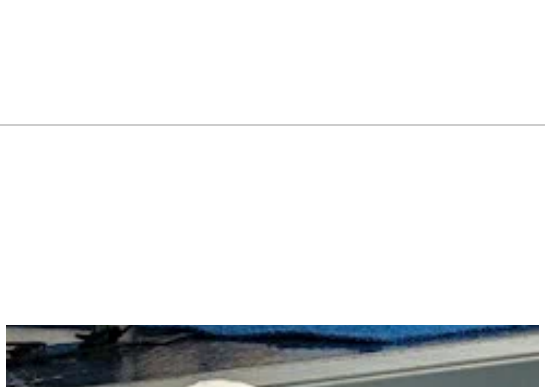
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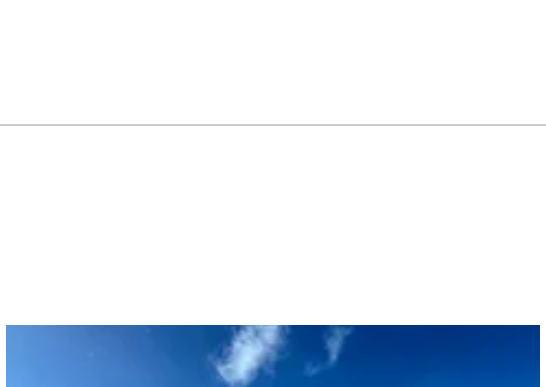
A Dream Come True

A Bone to Pick

About The Author

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Elaine K. Howley is an award-winning freelance writer and editor specializing in sports, health, and history topics. Her work has appeared in numerous print and online publications including AARP.org, *Atlas Obscura*, *espnW*, and *U.S. News & World Report*. A lifelong swimmer who specializes in cold water marathon swimming, she has contributed to *SWIMMER* magazine since 2009 and USMS.org since 2012. Contact her via her website: elainekhowley.com

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