

# The *Blue Mind Rx*: Wild Waters Can Be Lifelong Medicine for All People

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Please download and share text, links, and images in any way that advances this conversation.

Use @BlueMindRx #BlueMind #WaterIsMedicine #ElAguaEsMedicina and [www.BlueMindRx.com](http://www.BlueMindRx.com) as well as images and video from the [Press & Media Kit](#) on social media to share this statement.

Contact us at [BlueMindRx@gmail.com](mailto:BlueMindRx@gmail.com) if you'd like to contribute a translation of the *Blue Mind Rx* statement.

# The *Blue Mind* Rx: Wild Waters Can Be Lifelong Medicine for All People

Dear Friends and Colleagues,

Many of us have personally experienced and/or witnessed the positive cognitive, emotional, psychological, social, and spiritual impact wild waters can have. In that light, we thought you would be interested in this effort.

A strong, diverse group of global leaders is emerging to change the conversation about the true value of our ocean and wild waterways for good.

Please share this [statement](#) about the scientifically defensible benefits of healthy, wild waters for human health and well-being with doctors, psychologists, other health professionals, and associated researchers. The document supports physicians and their patients in integrating nature—specifically aquatic environments—in treatment plans, provides updates for use in conservation, and bolsters transdisciplinary communication and collaboration.

The [statement](#), a growing [list of endorsers](#) including (but not limited to) physicians, mental health professionals, neuroscientists, nurses, and many past presenters at the Annual Blue Mind Summits, and [supporting literature](#) can be found below.

Endorsements can be added directly as comments on the document or emailed to [BlueMindRx@gmail.com](mailto:BlueMindRx@gmail.com). This is an ongoing effort that was originally included as part of our [commitment](#) to the [Our Ocean Conference](#) held at the Department of State in Washington, D.C. on September 15-16, 2016. This is a living document and we continue to collect endorsements and integrate the latest scientific research as it emerges.

To endorse, include your full name, relevant information (affiliation is optional), and location. For example:

Paul K. Piff, PhD, Assistant Professor of Psychology & Social Behavior, University of California, Irvine, CA, USA  
Molly Steinwald, MS, Executive Director, Environmental Learning Center, Vero Beach, FL, USA  
Andrew Stern, MD, Associate Professor of Neurology, University of Rochester School of Medicine, NY, USA

The statement, endorsements and relevant literature will be shared at [www.bluemindrx.com](http://www.bluemindrx.com) for all to circulate during the coming year.

Just as health practitioners include exercise, a good diet, sleep, music, relaxation, yoga, and – increasingly – nature in their Rx toolkit, they now have peer-reviewed research to support a prescription for regularly scheduled time near, in, and on, healthy waters.

As science, environmental, and outdoor educators teach students about the importance of ecological, economic, and cultural diversity, they can also include emotional diversity in their programs, lessons, and curricula.

Our hope is that doing so will help reverse the under-valuing of wild waters; expand this important conversation to new sectors; improve access to effective, non-invasive therapies; inspire deeper lifelong connections to natural areas; and build wider support for the actions and policies that drive restoration and protection.

Thank you,

Natalie and J.

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# The *Blue Mind* Rx: Wild Waters Can Be Lifelong Medicine for All People

## The *Blue Mind* Rx Statement

Our wild waters provide vast cognitive, emotional, physical, psychological, social, and spiritual values for people from birth, through adolescence, adulthood, older age, and in death; wild waters provide a useful, widely available, and affordable range of treatments healthcare practitioners can incorporate into treatment plans.

The world ocean and all waterways, including lakes, rivers, and wetlands (collectively, blue space), cover over 71% of our planet. Keeping them healthy, clean, accessible, and biodiverse is critical to human health and well-being.

In addition to fostering more widely documented ecological, economic, and cultural diversities, our mental well-being, emotional diversity, and resiliency also rely on the global ecological integrity of our waters.

Blue space gives us half of our oxygen, provides billions of people with jobs and food, holds the majority of Earth's biodiversity including species and ecosystems, drives climate and weather, regulates temperature, and is the sole source of hydration and hygiene for humanity throughout history.

**Neuroscientists and psychologists add that the ocean and wild waterways are a wellspring of happiness and relaxation, sociality and romance, peace and freedom, play and creativity, learning and memory, innovation and insight, elation and nostalgia, confidence and solitude, wonder and awe, empathy and compassion, reverence and beauty — and help manage trauma, anxiety, sleep, autism, addiction, fitness, attention/focus, stress, grief, PTSD, build personal resilience, and much more.**

Chronic stress and anxiety cause or intensify a range of physical and mental afflictions, including depression, ulcers, colitis, heart disease, and more. Being on, in, and near water can be among the most cost-effective ways of reducing stress and anxiety.

We encourage healthcare professionals and advocates for the ocean, seas, lakes, and rivers to go deeper and incorporate the latest findings, research, and insights into their treatment plans, communications, reports, mission statements, strategies, grant proposals, media, exhibits, keynotes, and educational programs and to consider the following simple talking points:

- Water is the essence of life: The ocean, healthy rivers, lakes, and wetlands are good for our minds and bodies.
- Research shows that nature is therapeutic, promotes general health and well-being, and blue space in both urban and rural settings further enhances and broadens cognitive, emotional, psychological, social, physical, and spiritual benefits.
- All people should have safe access to salubrious, wild, biodiverse waters for well-being, healing, and therapy.
- Aquatic biodiversity has been directly correlated with the therapeutic potency of blue space. Immersive human interactions with healthy aquatic ecosystems can benefit both.
- Wild waters can serve as medicine for caregivers, patient families, and all who are part of patients' circles of support.
- Realization of the full range and potential magnitude of ecological, economic, physical, intrinsic, and emotional values of wild places requires us to understand, appreciate, maintain, and improve the integrity and purity of one of our most vital of medicines — water.

## The *Blue Mind* Rx: Wild Waters Can Be Lifelong Medicine for All People

The *Blue Mind* Rx includes (but is not limited to) safe and supervised participation in swimming, board sports, floating, soaking, diving, boating, voyaging, fishing, paddling, interacting, beach and coast walks, wildlife watching, and other blue space activities as best practices for health and wellness.

Extending this conversation to new sectors, constituencies, and areas of research and educating the public about the true value of healthy, wild waters is of utmost priority.

As NASA scientists search the universe they use a simple mantra "Follow The Water", it is source, matrix, and sustenance of all known life.

Healthy waters also enhance our quality of life in many important ways.

A more complete understanding of the full value of the aquatic environment will build a stronger, deeper, wider, and enduring *Blue Mind* movement and underline the importance of restoration, conservation, and protection efforts.

By improving education about the health benefits of water, providing adequate safety and skills training, and improving access for all communities, a healthy ocean and wild waters can be lifelong medicine for all people.

# The *Blue Mind* Rx: Wild Waters Can Be Lifelong Medicine for All People

## Manifiesto de beneficios medicinales para una *Mente Azul*: Las aguas naturales pueden ser la medicina vital para todo

Las aguas salvajes o naturales de nuestro mundo proporcionan grandes beneficios cognitivos, emocionales, físicos, psicológicos, sociales y espirituales para todos los seres humanos. .

Desde el nacimiento, pasando por la adolescencia, la edad adulta, la vejez, y hasta la muerte, las aguas naturales ofrecen una gama de tratamientos útiles y a nuestro alcance, por lo cual los médicos profesionales pueden incorporarlas en sus planes de tratamiento.

Los océanos del mundo y las corrientes de agua, incluyendo lagos, ríos y pantanos (colectivamente todo el espacio azul), cubren más del 71% de nuestro planeta. Mantenerlos sanos, limpios, accesibles y biodiversos es fundamental para la salud y el bienestar de la humanidad.

Nuestro bienestar mental, y nuestra diversidad y resiliencia emocionales también dependen de la integridad ecológica global de nuestras aguas – además de fomentar otras diversidades ecológicas, económicas y culturales más ampliamente documentadas.

El espacio azul provee la mitad de nuestro oxígeno, proporciona puestos de trabajo y comida para miles de millones de personas, contiene la mayor parte de la biodiversidad del planeta, tanto en especies como en ecosistemas, determina el clima y el tiempo, regula la temperatura, y ha sido la única fuente de hidratación e higiene para la humanidad a lo largo de la historia.

**Los neurocientíficos y los psicólogos añaden que el mar y las vías navegables salvajes son fuentes de felicidad y relajación, de sociabilidad y de romance, de paz y libertad, de juego y creatividad, de aprendizaje y memoria, de innovación y perspicacia, de euforia y nostalgia, de confianza y soledad, de maravilla y asombro, de empatía y compasión, de reverencia y belleza – y ayudan a gestionar los traumas, la ansiedad, del sueño, el autismo, las adicciones, la forma física, la atención y concentración, el estrés, el dolor, el trastorno de estrés postraumático, aumentan la resiliencia personal, y mucho más.**

El estrés crónico y la ansiedad causan o intensifican toda una serie de dolencias físicas y mentales, como la depresión, las úlceras, la colitis, enfermedades cardiovasculares, y otras. Estar sobre, dentro o cerca del agua puede ser una de las maneras más económicas de reducir el estrés y la ansiedad.

Animamos a los profesionales sanitarios y a los defensores de los océanos, mares, lagos y ríos a desarrollar un análisis e ir más profundo en sus investigaciones para incorporar los últimos descubrimientos, y pesquisas en sus planes de tratamiento, comunicaciones, informes, principios organizativos, estrategias, propuestas de subvención, material audiovisual, exposiciones, charlas, y programas educativos: y sería ideal que tengan en cuenta los siguientes argumentos:

- El agua es la esencia de la vida: el mantener los océanos, ríos, lagos y humedales sanos es esencial para nuestros cuerpos y mentes.
- La investigación científica muestra que la naturaleza es terapéutica, y promueve la salud general y el bienestar, también que el espacio azul, tanto en zonas urbanas como rurales, contiene beneficios cognitivos, emocionales, psicológicos, sociales, físicos y espirituales.

# The *Blue Mind* Rx: Wild Waters Can Be Lifelong Medicine for All People

- Todas las personas deben tener acceso seguro a las aguas sanas, salvaje y biodiversas para mantener un nivel de bienestar activo, y acelerar el proceso de una curación o una terapia.
- La biodiversidad acuática ha correlacionado directamente con la potencia terapéutica que provee el espacio azul. Las interacciones humanas inmersivas con los ecosistemas acuáticos sanos pueden beneficiar a ambos.
- Las aguas salvajes pueden servir como medicina para ayudantes de cualquier servicio, familiares de pacientes, y todas las personas que se encuentran en el círculo de apoyo de un paciente. .
- Para aprovechar la magnitud potencial de toda la gama de beneficios ecológicos, económicos, físicos, intrínsecos, y emocionales de los lugares salvajes, debemos entender, apreciar, mantener y mejorar la integridad y la pureza de una de las medicinas más esenciales: el agua.

La Medicina que provee la *Mente Azul* incluye (pero no se limita a) las siguientes actividades como prácticas recomendadas para la salud y el bienestar: la natación, deportes de tabla, flotar, bañarse, bucear, pasear en bote, viajar por mar, pescar, remar, interactuar, caminatas por la playa y la costa, observación de animales salvajes, y otras actividades en el espacio azul.

Es de máxima prioridad extender esta conversación a varios sectores, grupos y áreas de investigación, así como educar al público sobre el verdadero valor de las aguas sanas y salvajes.

Los científicos de la NASA que buscan vida en el universo utilizan una simple mantra: “sigue el agua”, como fuente, matriz y sustento de toda vida conocida.

Las aguas sanas también mejoran nuestra calidad de vida en muchos aspectos importantes.

Una comprensión más completa de la totalidad del valor del medio ambiente acuático hará más fuerte, más profundo, más amplio, y perdurable el movimiento de la *Mente Azul*, subrayando la importancia de los esfuerzos de restauración, conservación y protección.

Si mejoramos la educación sobre los beneficios del agua para la salud y facilitamos el acceso para todas las comunidades, el océano y las vías fluviales salvajes podrán ser una medicina vital para todos.

# The *Blue Mind Rx*: Wild Waters Can Be Lifelong Medicine for All People

## *Blue Mind Rx* Endorsements to Date

### Individuals

- Alonso Aguirre, DVM, PhD, Chair, Department of Environmental Science and Policy, George Mason University, VA, USA
- Abigail Alling, Founder & President, Biosphere Foundation, USA/Southeast Asia
- Susan Allison-Dean, MS, RN, AHN-BC, Founder of The Nature Nurse, Armonk, NY, USA
- Bill Arigi, MFT, Licensed Marriage and Family Therapist, Kentfield, CA, USA
- Timothy Beatley, PhD, Teresa Heinz Professor of Sustainable Communities, School of Architecture, University of Virginia, VA, USA
- Bruce E. Becker, MD, MS, FACSM, Former Director, National Aquatics & Sports Medicine Institute, Washington State University; Clinical Professor, University of Washington School of Medicine, WA, USA
- Lisa M. Belisle, M.D., M.P.H., Physician, Central Maine HealthCare; Host, Love Maine Radio, ME, USA
- Milton Bluehouse Jr, Environmental mediator and facilitator, Ganado, AZ, USA
- Suzanne E. Bott, PhD, AICP, Environmental Psychologist & Land Planner, College of Architecture, Planning, & Landscape Architecture, University of Arizona, USA
- Mary Brechtel, DC, DACBN, Associate Professor in Family Medicine, University of Texas Medical Branch, Galveston, TX, USA
- Casey Brechtel, DVM, PhD, CAC, Veterinarian and Veterinary Chiropractor, Galveston, TX, USA
- Tom Brightman, MES, Lecturer, Master of Environmental Studies Program, University of Pennsylvania, Kennett Square, PA, USA
- Kyle Cahill, Director, Sustainability & Environmental Health, Blue Cross Blue Shield of MA, Boston, MA, USA
- Larissa Carvalho Tavares, Eng<sup>o</sup> Agrônoma e Tec. Meio Ambiente, Florianópolis, BRAZIL
- Bruckner Chase, Chief Executive Officer, Bruckner Chase Ocean Positive Inc, Ocean City, NJ, USA
- Robin Clarke, Environment and Health Care Writer, Cape Cod, MA, USA
- Matt Claybaugh, PhD, President & CEO, Marimed Foundation, Kaneohe, HI, USA
- Céline Cousteau, Director/Producer, CauseCentric Productions, Stone Ridge, NY, USA
- Liz Cunningham, Author of *Ocean Country* and *Talking Politics*, founder of KurtHahn.org, Berkeley, CA USA
- Sachi Cunningham, MJ, Assistant Professor of Journalism, San Francisco State University, CA, USA
- Thomas J. Doherty, Psy.D., Licensed Psychologist, Lewis & Clark Graduate School, Portland, OR, USA
- Caro Dratva, Development Director, Marine Conservation Institute, Glen Ellen, CA, USA
- Jake F. Dunagan, PhD, Director of Design Futures, [verynice.co](http://verynice.co), Professor of Foresight, California College of the Arts, CA, USA
- Leila Dunne Monroe, Founding Partner & Attorney for Oceans, Clear Resource Law, San Francisco, CA, USA
- Marcus Eriksen, Research Director, PhD, The 5 Gyres Institute, Los Angeles, CA, USA
- Brett Fitzgerald, Environmental Educator, Builder & Designer. EarthBuilt Associates. Fort Collins, CO, USA
- Captain Joel F. Fogel, Member Chair, The Explorers Club & President, Waterwatch International, Ocean City, NJ, USA
- Victoria Galbraith, Registered Practitioner Psychologist, Director at SEAcotherapy, UK
- Nahid D. Gani, PhD, Assistant Professor of Geology, Department of Geography and Geology, Western Kentucky University, KY, USA
- M. Royhan Gani, PhD, Associate Professor, Western Kentucky University, KY, USA
- Dianne Gray, Hospice and Healthcare Communications, Elisabeth Kubler-Ross Foundation, Naples, FL, USA
- Michael M Goodblatt, MD, Family Physician in Anchorage, AK, USA
- Elizabeth Handy, MS, LCPC, Psychotherapist and Faculty at George Washington University Department of Medicine, Washington, DC, USA
- Angela Haren, Founding Partner, Clear Resource Law, Washington, DC, USA
- Nancy M. Higgs, RN, BSN, WaterWayBabies, Houston, TX, USA
- Ayana Elizabeth Johnson, PhD, Brooklyn, NY, USA
- Laura K Jordan-Smith, PhD, Founder & Director, World Below the Waves, La Jolla, CA, USA
- Peter Kahn, Editor-in-Chief, Ecopsychology, Professor of Psychology & Environmental and Forest Science, University of Washington, Seattle, WA, USA
- Layne Kalbfleisch, M.Ed, PhD, Pediatrics, George Washington University School of Medicine and Health Sciences, Washington, DC, USA
- Graeme Kelleher, AO, FTSE, FEIANZ, Ocean Elder, Canberra, ACT, AUSTRALIA
- Petra Kelsey, MD, Resident Physician, Department of Family Medicine, University of Wisconsin, Madison, WI, USA
- Dacher Keltner, PhD, Faculty Director Greater Good Science Center, Thomas and Ruth Ann Hornaday Professor of Psychology, University of California, Berkeley, USA
- Carol S.Kerr, M.Ed, LPC, LCDC, CEAP, Psychotherapist, Galveston, TX, USA
- Kathi Koontz, Director, California Whale Rescue, Ross, CA, USA
- Laura Parker Roerden, Founding Director, Ocean Matters, MA, USA
- Gretchen A. Pianka, MD, MPH, FAAP, Pediatrician, Midcoast Pediatrics, Brunswick, Maine, USA
- John La Puma, MD, Director, Chef Clinic Culinary Medicine, Santa Barbara, CA, USA
- Toben Lafrancois, PhD, Adjunct Assistant Professor of Natural Resources & Ecology, Northland College, WI, USA
- Lizzi Larbalestier, MA, ICF: PCC Executive Coach, Director and Coherence Facilitator at Going Coastal - Liquid Ontology for a Fluid World, Cornwall, UK
- Rebecca Schwartz Lesberg, Director of Conservation, San Diego Audubon, CA, USA
- Pam Longobardi, Distinguished University Professor of Art, Georgia State University, Atlanta, USA
- Rod Mast, Executive Director, Oceanic Society, Ross, CA, USA

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- Carol Milner, Founder and Chairman Biosphere Association, UK
- Victor Mincec, PhD, Project Scientist, Department of Cognitive Science, University of California, San Diego, CA, USA
- Laura H. Mitchell, PhD, MFT, Director, Sky Mountain Institute - Ecopsychology & EcoArts Therapy Training Programs, CA, USA
- Wallace J. Nichols, PhD, Research Associate, California Academy of Sciences, CA, USA
- Thomas F. Norris, President, Bio-Waves Inc., Encinitas, CA, USA
- Craig Norton, MA, Chief Operations Officer, Marimed Foundation, Kaneohe HI, USA
- Jack O'Neill, Founder of O'Neill, Lifetime Surfer, Surfboard + Wetsuit Designer + Manufacturer, Santa Cruz, CA, USA
- Timothy O'Shea, CEO + Co-Founder, CleanFish, fish you can trust®, Advisory on Coastal Commission, Ocean Protection, State of California, USA
- Paul A. Paez, DC, Director, Paez Chiro Care, Encinitas, CA, USA
- Paul K. Piff, PhD, Assistant Professor of Psychology & Social Behavior, University of California, Irvine, CA, USA
- Yat-Long Poon, MAS, Adjunct Professor of Biology, San Diego Miramar College, CA, USA
- Luis Antonio Ramos, PhD, DVM, Ecology Adviser, Fundación Zoológica de El Salvador - FUNZEL, San Salvador, El Salvador
- Kellie Raydon, ND, MSOM, Physician & Integrative Women's Health Residency Supervisor at A Woman's Time, Portland, OR, USA
- Carlton F. Roos, MD, Neuroradiologist, Mountain Pro Imaging, Seattle, Washington, USA
- Dori Rosenberg, PhD, MPH, Assistant Investigator, Group Health Research Institute, Seattle, WA
- Bill Rosenblatt, Ed.D. Licensed Psychologist, formerly Director of Behavioral Medicine Monmouth Medical Center, Morristown Memorial Hospital, Adjunct Professor, Monmouth University, Former Chairman of the Board of Directors, Surfriider Foundation, NY, USA
- Judith Rubin LCSW, Psychotherapist, Retired Veterans Administration Mental Health Social Worker, San Francisco, CA, USA
- Ilene S. Ruhoy, MD, PhD, Medical Director, Board-Certified Neurologist, Center for Healing Neurology, Seattle, WA, USA
- Leslie E. Ruyle, PhD, Assistant Director & Assistant Research Scientist, Center on Conflict & Development, Texas A&M University, TX, USA
- Sara Sage, MS, LMHC, Counselor, Elkhart, Indiana, USA
- Darren Schreiber, JD, PhD, Senior Lecturer in Politics, University of Exeter, UK
- Bernadette Schmuker, LMT, Integrative Sports & Body Mechanics Therapist through Hydrophysiotherapy, Ensenada, Baja California, MEXICO
- Jason Scorse, PhD, Associate Professor, Director, Center for the Blue Economy, Middlebury Institute of International Studies, Monterey, CA, USA
- Zachary Slobig, Independent Journalist, Pulitzer Center Grantee, CA, USA
- Natalie Spear, CMT, CYT, NOAA Sea Grant Knauss Fellow at USEPA, Washington, DC, USA
- Molly Steinwald, MS, Executive Director, Environmental Learning Center, Vero Beach, FL, USA
- Daniel Stephenson, MD, Orthopaedic Surgeon / Sports Medicine Specialist, Torrance Orthopaedics and Sports Medicine, Torrance, CA, USA
- Gregory Verutes, Science Education Lead, Natural Capital Project, Stanford, CA, USA
- Andrew Stern, MD, Associate Professor of Neurology, University of Rochester School of Medicine, NY, USA
- Michael Stewart, Co-founder, Sustainable Surf, CA, USA
- Benjamin Thwaites, MS, Program Director, Northwest Passage Ltd., WI, USA
- Casper van de Geer, Manager, Local Ocean Trust: Watamu Turtle Watch, Watamu, KENYA
- Mark Van Thillo, Chief Operations Officer, Biosphere Foundation, USA/Southeast Asia
- Rhian Tilley, Relational-Integrative Psychotherapist, currently affiliated with universities in Cardiff, Wales, UK
- Susana Vega, CNM, MSN, Nurse-Midwife, Millennium Pregnancy and Gynecology, Woodbridge, VA, USA
- Sylvia K. Vitazkova, PhD, Owner and Director, InBodied Living & Co. Wellbeing Coaching and Consulting, Wildlife Conservation, Barrington Hills, IL, USA
- Amir Vokshoor, MD, Neurosurgery, PSJHC - Spine Institute, Marina del Rey, CA, USA
- Sebastian Völker, PhD, Consultant Strategic Data Management, Association of Statutory Health Insurance Physicians, Westfalen-Lippe, GERMANY
- Lori R. Weiner, MSW, LCSW, Student Affairs Case Manager, University of California San Diego, CA, USA
- Kristen Weiss, PhD, Early Career Fellow in Science Communication, Center for Ocean Solutions, Stanford University, CA, USA
- Florence Williams, Independent journalist and author, Washington, DC, USA
- Toine Wilke, MSc, Co-founder, Seagreen Foods, Amsterdam, Netherlands
- J. E. Williams, OMD, FAAIM - Florida Integrative Medical Center, Former Academic Dean, East West College of Natural Medicine, FL, USA
- Sarah W. Wyckoff, MA, Holistic Multi-modal Transformative Facilitator, Freeheart Ranch, San Diego, CA, USA
- Michael Wynn DO, Board Certified Neurology/Vascular Neurology, Salem, OR, USA
- Alisa Zych, MS, Wildlife Biologist, Cardiff by the Sea, CA, USA

## Organizations & Institutions

- Associação Ambiental Ocean Revolution, Moçambique
- Biosphere Foundation, USA/Southeast Asia
- Blue Mind Life, CA + VA, USA
- California Whale Rescue, Ross, CA, USA
- Coastal Watershed Council, Santa Cruz, CA, USA



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- Colorado Ocean Coalition, Boulder, CO, USA
- Fabien Cousteau Ocean Learning Center, Inc. New York, NY, USA
- HealthMatters Chiropractic, TX, USA
- Kids 4 Planet Earth, CA, USA
- La Duna Centro Ecológico, La Paz, Baja California Sur, México
- Lonely Whale Foundation, NY + WA + CA, USA
- Northwest Passage Ltd., WI, USA
- Ocean Conservation Research, CA, USA
- The Ocean Foundation, Washington, DC, USA
- Ocean Matters, MA, USA
- Oceanic Society, Ross, CA, USA
- Ocean Revolution Cmique, Sociax, Hant Comcaac
- Ocean Revolution, Washington DC, USA
- Operation Surf, CA, USA
- Paez Chiro Care, CA, USA
- Plastic Oceans Foundation, Los Angeles, CA, USA
- SEETurtles.org, Portland, OR, USA
- Sky Mountain Institute, CA, USA
- SLOWCOAST: Authentic Coastal Spirit, Davenport, CA, USA
- Surfing Heritage & Culture Center, San Clemente, CA, USA
- Sustainable Surf, San Francisco, CA, USA
- The 5 Gyres Institute, Los Angeles, CA, USA
- The Wahine Project, Monterey, CA, USA
- WILDCOAST, Imperial Beach, CA, USA

# The *Blue Mind* Rx: Wild Waters Can Be Lifelong Medicine for All People

## Selected *Blue Mind* Rx Peer Reviewed Research and Summaries

Aguirre, A. A., and E. S. Weber III (2012) Living Ocean, an Evolving Oxymoron. In R.A. Meyers (ed.), *Encyclopedia of Sustainability Science and Technology*, Springer, New York, pp. 6179-6202.

*There is growing evidence that the ecological integrity of marine ecosystems is under increasing threat. Symptoms of collective human impacts on the marine environment include harmful algal blooms, overfishing, loss of breeding/nursery habitats, and the spread of persistent chemical pollutants. Many populations of marine mammals, marine birds, and sea turtles are exposed to pollutants from agricultural runoff, human sewage, and pathogens with a terrestrial origin. Unprecedented numbers of emerging and re-emerging diseases have been documented in recent times in the marine environment. However, all these symptoms of poor ecological health represent an opportunity to humanity to change our ways and behaviors towards the ocean.*

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Alling, A., M. Nelson, S. Silverstone, and M. Van Thillo (2002) Human Factor Observations of the Biosphere 2, 1991-1993, Closed Life Support Human Experiment and Its Application to a Long-Term Manned Mission to Mars. *Life Support and Biosphere Science* 8:71-82.

*We left the two year experiment inside Biosphere 2 with a profound understanding, both intellectually and on a bodily, organic level, that the living ecosystems inside Biosphere 2 were virtually synonymous with our own health and survival: If the biosphere was healthy, we were healthy. ... We became more sensitive to minute differences in colors of coral organisms and plant leaves, aware of sunlight and cloud cover, humidity and moisture levels, and other basic life support requirements. This interest in our environment was pervasive – we wished to enhance the vitality and well-being of our life support system, which in turn brought harmony to our life. Evolution has evolved humans amongst innumerable species that provide Earth its life-giving properties, and a delight in nature is basic to every healthy human from whatever culture. The idea that humanity will be able to travel or live and work for years in space without plants and other life forms is nonsense. This is a concept that ignores the core of our being as humans and which, if carried out, cause alienation and despair to the crew. Putting reliance on physical-chemical technologies and robots is not the path to long term sustaining and sustainable life support systems for space. Though we may take initial steps in space with such systems, and with highly automated systems growing hydroponic food crops, these approaches will not themselves evolve into nor replace the complex life support biospheric systems which are needed, ecologically and psychologically, for living long-term off our Home Planet.*

*The engineering and design of Biosphere 2 faced tasks such as ensuring that all by-products of technical systems (out-gassing of paints, glues and the use of steel, chemicals, etc.) would be recycled safely within the facility's air, water and soil systems. The daily operations also required new ideas about intelligent management of the total system, such as how to decrease global daily CO<sub>2</sub> in the atmosphere or how to raise the ocean pH. The inhabitants of Biosphere 2 were both managers of the closed system – meeting daily to determine which tasks would benefit the total system the most in terms of efficient operations – and we were part of the experiment observing the system processes. Biosphere 2 was thus not only a mini-scale laboratory to study the Earth's biosphere system, but a test-bed and accelerator for developing a noosphere. Through this process, information exchange was rapid and accelerated leading to more intelligent responses for survival. We learned how to exist in this new biosphere – which in turn was evolving as a new biosphere-technosphere creation – and which, through experience, became an extension of ourselves.*

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Amoly E., P. Dadvand, J. Forns, M. López-Vicente, X. Basagaña X, J. Julvez, M. Alvarez-Pedrerol, M. Nieuwenhuijsen, and J. Sunyer (2014) Green and blue spaces and behavioral development in Barcelona schoolchildren: The BREATHE Project. *Environmental Health Perspectives* 122:1351–1358.

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*We generally estimated beneficial associations between behavioral indicators and longer time spent in green spaces and beaches, and with residential surrounding greenness. Specifically, we found statistically significant inverse associations between green space playing time and SDQ total difficulties, emotional symptoms, and peer relationship problems; between residential surrounding greenness and SDQ [Strengths and Difficulties Questionnaires] total difficulties and hyperactivity/inattention and ADHD/DSM-IV total and inattention scores; and between annual beach attendance and SDQ total difficulties, peer relationship problems, and prosocial behavior. For proximity to major green spaces, the results were not conclusive. Conclusion: Our findings support beneficial impacts of contact with green and blue spaces on behavioral development in schoolchildren.*

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Barton, J., and J. Pretty (2010) What is the best dose of nature and green exercise for improving mental health? A multi-study analysis. *Environmental Science & Technology* 44(10): 3947-3955.

*Green exercise is activity in the presence of nature. Evidence shows it leads to positive short and long-term health outcomes. This multistudy analysis assessed the best regime of dose(s) of acute exposure to green exercise required to improve self-esteem and mood (indicators of mental health) ... Dose responses for both intensity and duration showed large benefits from short engagements in green exercise, and then diminishing but still positive returns. Every green environment improved both self-esteem and mood; the presence of water generated greater effects. Both men and women had similar improvements in self-esteem after green exercise, though men showed a difference for mood. Age groups: for self-esteem, the greatest change was in the youngest, with diminishing effects with age; for mood, the least change was in the young and old. The mentally ill had one of the greatest self-esteem improvements. This study confirms that the environment provides an important health service.*

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Becker, B. E. (2009) Aquatic therapy: Scientific foundations and clinical rehabilitation applications. *American Academy of Physical Medicine and Rehabilitation* 1: 859-872.

*The aquatic environment has broad rehabilitative potential, extending from the treatment of acute injuries through health maintenance in the face of chronic diseases, yet it remains an underused modality. There is an extensive research base supporting aquatic therapy, both within the basic science literature and clinical literature. This article describes the many physiologic changes that occur during immersion as applied to a range of common rehabilitative issues and problems. Because of its wide margin of therapeutic safety and clinical adaptability, aquatic therapy is a very useful tool in the rehabilitative toolbox. Through a better understanding of the applied physiology, the practitioner may structure appropriate therapeutic programs for a diverse patient population.*

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Bratman, G. N., J. P. Hamilton, K. S. Hahn, G. C. Daily, and J. J. Gross 2015. Nature experience reduces rumination and subgenual prefrontal cortex activation. *Proceedings of the National Academy of Sciences* 112(28):8567–8572.

*More than 50% of people now live in urban areas. By 2050 this proportion will be 70%. Urbanization is associated with increased levels of mental illness, but it's not yet clear why. Through a controlled experiment, we investigated whether nature experience would influence rumination (repetitive thought focused on negative aspects of the self), a known risk factor for mental illness. Participants who went on a 90-min walk through a natural environment reported lower levels of rumination and showed reduced neural activity in an area of the brain linked to risk for mental illness compared with those who walked through an urban environment. These results suggest that accessible natural areas may be vital for mental health in our rapidly urbanizing world.*

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Carter, H. H., A. L. Spence, C. J. A. Pugh, P. Ainslie, L. H. Naylor, and D. J. Green (2014) Cardiovascular responses to water immersion in humans: impact on cerebral perfusion. *American Journal of Physiology - Regulatory, Integrative and Comparative Physiology* 306(9): 636-640.

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*We speculate that water immersion may amplify effects on cerebral blood flow velocity, including those associated with exercise training. This study provides an evidence base for future studies to examine the potential additive effect of exercise in water as a therapy to enhance cerebrovascular function and brain health.*

*Episodic increases in cerebrovascular perfusion and shear stress may have beneficial impacts on endothelial function that improve brain health. We hypothesized that water immersion to the level of the right atrium in humans would increase cerebral perfusion. This study provides an evidence base for future studies to examine the potential additive effect of exercise in water on improving cerebrovascular health.*

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Charen, T. (1951) The Etymology of Medicine. *Bulletin of the Medical Library Association* 39(3): 216–221.

*The intention of this article is to reflect upon the origin of the word medicine, to find the ultimate etymological source from which the rivers of this all-reaching science have sprung.*

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Cracknell, D., M. P. White, S. Pahl, and M.H. Depledge (In Press) Aquariums as restorative environments and the influence of species diversity. *Landscape Research*.

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Cracknell, D., M. P. White, S. Pahl, W. J. Nichols, and M. H. Depledge (2015) Marine biota and psychological well-being: A preliminary examination of dose–response effects in an aquarium setting. *Environment and Behavior* 1–28.

*Exposure to natural environments can have calming and stress-reducing effects on humans. Moreover, previous studies suggest that these benefits may be greater in areas with higher species richness. This study took advantage of a “natural experiment” to examine people’s behavioral, physiological, and psychological reactions to increases in levels of marine biota in a large aquarium exhibit during three stages of restocking: Unstocked, Partially stocked, and Fully stocked. Increased biota levels were associated with longer spontaneous viewing of the exhibit, greater reductions in heart rate, greater increases in self-reported mood, and higher interest. Higher biota levels, even in managed settings, may be associated with important well-being and health benefits, particularly for individuals not able to access the natural analogues of managed environments.*

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Del Canale, S., D.Z. Louis, V. Maio, X. Wang, G. Rossi, M. Hojat, and J.S. Gonnella (2012). The relationship between physician empathy and disease complications: an empirical study of primary care physicians and their diabetic patients in Parma, Italy. *Academic Medicine*, 87(9) 1243-1249.

*Patients of physicians with high empathy scores, compared with patients of physicians with moderate and low empathy scores, had a significantly lower rate of acute metabolic complications (4.0, 7.1, and 6.5 per 1,000 patients, respectively,  $P < .05$ ). Logistic regression analysis showed physicians’ empathy scores were associated with acute metabolic complications: odds ratio (OR) = 0.59 (95% confidence interval [CI], 0.37–0.95, contrasting physicians with high and low empathy scores). Patients’ age ( $\geq 69$  years) also contributed to the prediction of acute metabolic complications: OR = 1.7 (95% CI, 1.2–1.4). ... These results suggest that physician empathy is significantly associated with clinical outcome for patients with diabetes mellitus and should be considered an important component of clinical competence.*

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Depledge, M. H., and W. J. Bird (2009) The Blue Gym: health and wellbeing from our coasts. *Marine Pollution Bulletin* 58: 947–948.

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*Coastal areas have always attracted humans. Whether permanent residents or visitors, the presence of the sea motivates outdoor activity and enhances wellbeing. It reminds us of our intimate relationship with natural ecosystems. The Blue Gym programme attempts to not only encourage physical activity and time spent outdoors to help improve health and wellbeing, but also to make people aware of the value of the marine environment. It has the potential to increase understanding of our coasts, allows us to view threats in an appropriate context, and also generates support for preserving the richness and beauty of our seas and the ocean. We neglect these human health aspects of our coasts at our peril.*

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Donnelly, A. A., T. E. MacIntyre, G. Warrington, N. O'Sullivan, D. Harrison, E. R. Igou, M. Jones, C. Gidlow, R. Cloak, I. Lahart, N. Brick, and A. M. Lane (2016) Environmental influences on Elite Sport Athletes Well Being: From Gold, Silver and Bronze to Blue Green and Gold. *Frontiers in Psychology* 7:1167.

*The benefits of exercising in natural environments are recognized, but less is known about the effects on performance and health in elite athletes. Although some Olympic events take place in natural environments, the majority occur in the host city, usually a large densely populated area where low exposure to natural environments is compounded by exposure to high levels of air, water, and noise pollution in the ambient environment. By combining methods and expertise from diverse but inter-related disciplines including environmental psychology, exercise physiology, biomechanics, environmental science, and epidemiology, a transdisciplinary approach will facilitate a greater understanding of the effects of the environment on Olympic athletes.*

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Elliott, L.R., M. P. White, A. H. Taylor, and S. Herbert (2015) Energy expenditure on recreational visits to different natural environments: Implications for public health. *Social Science and Medicine* 139: 56-60.

*Physical inactivity poses a significant challenge to physical and mental health. Environmental approaches to tackle physical inactivity have identified natural environments as potentially important public health resources. Despite this, little is known about characteristics of the activity involved when individuals visit different types of natural environment. Visits to countryside and urban greenspace environments were associated with more intense activities than visits to coastal environments. However, visits to coastal environments were associated with the most energy expenditure overall due to their relatively long duration.*

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Fleming L.E., M.H. Depledge, N. McDonough, M.P. White, S. Pahl, M. Austin, A. Goksoyr, H. Solo-Gabriele, and J.J. Stegman (2015) The oceans and human health. In: *Oxford Research Encyclopedia of Environmental Sciences*. Oxford: Oxford University Press.

*The effects of climate change on sea level and weather can cause health effects ranging from drowning, injury, and severe mental health impacts (e.g., depression) from flooding to mass population migration and economic impacts.*

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Foley, R., and T. Kistemann (2015) Blue space geographies: Enabling health in place. *Health & Place* 35: 157-165.

*Drawing from research on therapeutic landscapes and relationships between environment, health and wellbeing, we propose the idea of 'healthy blues pace' as an important new development Complementing research on healthy green space, blue space is defined as; 'health-enabling places and spaces, where water is at the centre of a range of environments with identifiable potential for the promotion of human wellbeing' Using theoretical ideas from emotional and relational geographies and critical understandings of salutogenesis, the value of blue space to health and wellbeing is recognised and evaluated. Six individual papers from five different countries consider how health can be enabled in mixed blue space settings. Four sub-themes; embodiment, inter-subjectivity, activity and meaning, document multiple experiences within a range of healthy blues paces. Finally, we suggest a considerable research agenda – theoretical, methodological and applied – for future work within different forms of blue space. All are suggested as having public health policy relevance in social and public space.*

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Gesler, W. M. (1992). Therapeutic landscapes: medical issues in light of the new cultural geography. *Social Science & Medicine*, 34(7): 735-746.

*One particular aspect of the physical environment that has been a source of healing for many societies is water.*

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Hunter, M. R., and A. Askarinejad. (2015) Designer's approach for scene selection in tests of preference and restoration along a continuum of natural to manmade environments. *Frontiers in Psychology* 6: 1228.

*It is well-established that the experience of nature produces an array of positive benefits to mental well-being. Much less is known about the specific attributes of green space which produce these effects. In the absence of translational research that links theory with application, it is challenging to design urban green space for its greatest restorative potential. This research produced a systematic approach to meet the challenge of identifying which specific physical attributes of an environmental setting are most likely to influence preference and restoration responses.*

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Kahn, P. H., R. L. Severson, and J. H. Ruckert (2009) The human relation with nature and technological nature. *Current Directions in Psychological Science* 18(1): 37-42.

*Does it matter for the physical and psychological well-being of the human species that actual nature is being replaced with technological nature? As the basis for our provisional answer (it is "yes"), we draw on evolutionary and cross-cultural developmental accounts of the human relation with nature and some recent psychological research on the effects of technological nature. Finally, we discuss the issue—and area for future research— of "environmental generational amnesia." The concern is that, by adapting gradually to the loss of actual nature and to the increase of technological nature, humans will lower the baseline across generations for what counts as a full measure of the human experience and of human flourishing.*

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Kalbfleisch, L., M. DeBettencourt, R. Kopperman, M. Banasiak, J. Roberts, and M. Halavi (2013) Environmental influences on neural systems of relational complexity. *Frontiers in Psychology* 4: 631.

*Constructivist learning theory contends that we construct knowledge by experience and that environmental context influences learning. This experiment is a first step toward examining the psychophysical underpinnings of performance. The importance of this is increased in light of recent evidence that intelligence can be linked to visual discrimination. Color supports contextual sense-making by boosting salience resulting in faster problem solving. When visual complexity reaches 2-relations, color and visual contrast relinquish salience to other dimensions of problem solving.*

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Kim, S., S. Kaplowitz, and M.V. Johnston (2004) The effects of physician empathy on patient satisfaction and compliance. *Evaluation & the health professions*, 27(3), 237-251.

*Patient-perceived physician empathy significantly influenced patient satisfaction and compliance via the mediating factors of information exchange, perceived expertise, interpersonal trust, and partnership. Improving physician empathic communication skills should increase patient satisfaction and compliance.*

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Kuo, M. (2015) How might contact with nature promote human health? Promising mechanisms and a possible central pathway. *Frontiers in Psychology* 6: 1093.

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*The 21 pathways identified here include environmental factors, physiological and psychological states, and behaviors or conditions, each of which has been empirically tied to nature and has implications for specific physical and mental health outcomes. While each is likely to contribute to nature's impacts on health to some degree and under some circumstances, this paper explores the possibility of a central pathway by proposing criteria for identifying such a pathway and illustrating their use. A particular pathway is more likely to be central if it can account for the size of nature's impacts on health, account for nature's specific health outcomes, and subsume other pathways. By these criteria, enhanced immune functioning emerges as one promising candidate for a central pathway between nature and health.*

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Laws, E. A., L. E. Fleming, & J. J. Stegeman (2008) Centers for oceans and human health: contributions to an emerging discipline. *Environmental Health* 7(2): 1.

*Recognizing the growing need for interdisciplinary basic and applied research addressing the linkages between human health and the ocean, in 2004 the National Science Foundation (NSF) and the National Institute of Environmental Health Science (NIEHS) jointly funded grants establishing four Centers for Oceans and Human Health (COHH). These centers are: (i) the Oceans and Human Health Center at the University of Miami, (ii) the Pacific Research Center for Marine Biomedicine at the University of Hawaii, (iii) the Pacific Northwest Center for Human Health and Ocean Studies at the University of Washington, and (iv) the Woods Hole Center for Oceans and Human Health at the Woods Hole Oceanographic Institution, the Marine Biological Laboratory, and Massachusetts Institute of Technology. Through an internal competitive process, the National Oceanic and Atmospheric Administration (NOAA) in the same year designated three NOAA centers of excellence in oceans and human health under their Oceans and Human Health Initiative (OHHI): (i) the West Coast Center for Oceans and Human Health at the Northwest Fisheries Science Center in Seattle, Washington, (ii) the NOAA Center of Excellence in Oceans and Human Health at the Hollings Marine Laboratory in Charleston, South Carolina, and (iii) the NOAA Center of Excellence for Great Lakes and Human Health at the Great Lakes Environmental Research Laboratory in Ann Arbor, Michigan. The NOAA initiative also includes external competitive grant, distinguished scholar, and traineeship programs.*

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Nutsford, D., A. L. Pearson, S. Kingham, and F. Reitsma (2016) Residential exposure to visible blue space (but not green space) associated with lower psychological distress in a capital city. *Health & Place* 39: 70–78.

*Urban neighbourhood features which may improve physical and mental health are of growing importance. This study investigated whether increased visibility of nature (green and blue space) was associated with lower psychological distress in the capital city of Wellington, New Zealand. Higher levels of blue space visibility were associated with lower psychological distress. Further research is needed to confirm whether increased visibility of blue space could promote mental well-being and reduce distress in other cities.*

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Papathanasopoulou, E., M.P. White, C. Hattam, A. Lannin, A. Harvey, and A. Spencer (2015) Valuing the health benefits of physical activities in the marine environment and their importance for marine spatial planning. *Marine Policy* 63: 144-152.

*The first attempt to put monetary values on the benefits to health from recreational activities in the marine environment including sailing, surfing, canoeing etc. The importance of quantifying non-market benefits for marine spatial planning is highlighted and a standardized approach for valuing the health benefits of aquatic physical activities is developed. The potential savings by the national health service from individuals using the blue gym and an approach to informing cost-benefit analysis of marine plan options are presented.*

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Piff, P. K., M. Feinberg, P. Dietze, D. M. Stancato, and D. Keltner (2015) Awe, the small self, and prosocial behavior. *Journal of Personality and Social Psychology* 108(6): 883–899.

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*Awe arises in evanescent experiences, and involves positively valenced feelings of wonder and amazement. Although many stimuli can inspire awe, from beautiful buildings to elegant equations, the prototypical awe experience, at least in Western cultures, involves encounters with natural phenomena that are immense in size, scope, or complexity; perceptions of vastness that dramatically expand the observer's usual frame of reference in some dimension or domain (e.g., the night sky, the ocean). Many of the experiences people cherish most are triggers of the emotion we focused on here— awe. Our investigation indicates that awe, although often fleeting and hard to describe, serves a vital social function. Across several studies, awe was found to increase people's tendencies to be more kind, generous, ethical, and helping toward others. By diminishing the emphasis on the individual self, awe may encourage people to forego strict self-interest to improve the welfare of others.*

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Quoidbach J., J.Gruber, M. Mikolajczak, A. Kogan, I. Kotsou, and M.I. Norton (2014) Emodiversity and the emotional ecosystem. *Journal of Experimental Psychology* 143(6): 2057-66.

*Bridging psychological research exploring emotional complexity and research in the natural sciences on the measurement of biodiversity, we introduce—and demonstrate the benefits of—emodiversity: the variety and relative abundance of the emotions that humans experience. Two cross-sectional studies across more than 37,000 respondents demonstrate that emodiversity is an independent predictor of mental and physical health—such as decreased depression and doctor's visits—over and above mean levels of positive and negative emotion. These results remained robust after controlling for gender, age, and the 5 main dimensions of personality. Emodiversity is a practically important and previously unidentified metric for assessing the health of the human emotional ecosystem.*

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Sandifer, P. A., and A. E. Sutton-Grier (2014) Connecting stressors, ocean ecosystem services, and human health. *Natural Resources Forum* 38(3): 157-167.

*Ocean and coastal ecosystems provide many critical ecosystem services that support human health and well-being including providing food, storm protection, and carbon sequestration. Environmental stressors acting individually or concurrently and synergistically are reducing the ability of coastal ecosystems to provide key ecosystem services that may result in decreases in human health and well-being. Some impacts to human health and well-being that may result from the effects on coastal and ocean ecosystem services of five example stressors: rising temperatures, nutrient enrichment, ocean acidification, habitat destruction and the concomitant loss of biodiversity, and extreme weather events. Research and related actions to improve our understanding and management of coastal ecosystems include the need for natural and biomedical/public health scientists, and their respective professional organizations, to work together to increase understanding of the connections between healthy and degraded coastal and marine ecosystems and human health, and for policy and decision-makers to account for these impacts when considering trade-offs among management alternatives.*

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Schitter, A. M., M. Nedeljkovic, H. Baur, J. Fleckenstein, and L. Raio (2015) Effects of passive hydrotherapy WATSU (WaterShiatsu) in the third trimester of pregnancy: results of a controlled pilot study. *Evidence-Based Complementary and Alternative Medicine*, 2015. Chicago.

*WATSU [Water Shiatsu] was found to significantly lower participants' levels of stress and pain and to improve their mental health-related quality of life and mood. In comparison to the passive control group, participants in the intervention group reported reduction in perceived stress from day 1 to day 8 ( $P = 0.036$ , Cohen's  $f = 0.57$ ). Qualitative data indicate that WATSU was appreciated as enjoyable and deeply relaxing. No negative side effects were reported. Conclusion. Our findings support the notion that WATSU yields therapeutic benefits for pregnant women and warrant further research.*

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Straughan, E.R. (2012) Touched by water: the body in scuba diving. *Emotion, Space and Society* 5.1.



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*The paper positions itself within the conceptual context of embodiment in order to consider corporeality in terms of its visceral and material capacities that effect and direct movement, as well as the experience of the sensuous via an engagement with the diving environment. In doing so, it draws upon work within the social sciences that has acknowledged the importance of an embodied engagement with environments that are seen as therapeutic or restorative for their ability to instil a sense of well-being and calm through a re-centering of the self. Drawing out the meditative capacities of scuba diving, the paper considers the aquatic world as, for some divers, a therapeutic landscape.*

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Völker, S., and T. Kistemann (2011) The impact of blue space on human health and well-being—Salutogenetic health effects of inland surface waters: A review. *International Journal of Hygiene and Environmental Health*, 214(6): 449-460.

*Water is one of the most important physical, aesthetic landscape elements and possesses importance e.g. in environmental psychology, landscape design, and tourism research, ... the aim of this review is to provide a systematic, qualitative meta-analysis of existing studies that are relevant to this issue. ...Benefits for health and well-being clearly related to blue space can be identified with regard to perception and preference, landscape design, emotions, and restoration and recreation. Additionally, direct health benefits have already been stated. The studies included in the review are mostly experimental studies or cross-sectional surveys, focusing on students as the subject group.*

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Völker S., and T. Kistemann (2013) "I'm always entirely happy when I'm here!" Urban blue enhancing human health and well-being in Cologne and Düsseldorf, Germany. *Social Science & Medicine* 78:113-24

*Water is one of the most important landscape elements. In settled areas, planners rediscovered urban blue in the form of rivers as a soft location factor in post-industrial times. Although the recognition of the need for recreational or 'healthy' places like urban green or urban blue in cities is increasing, current urban planning is mostly conducted without taking beneficial health issues into account. In this paper an extended concept of therapeutic landscapes is used to analyse two promenades on the river Rhine in the centres of two German cities (Cologne and Düsseldorf). A complex of qualitative and quantitative methods from diverse disciplines is applied to obtain a multi-dimensional image of salutogenic health processes. The results show that the promenades are favourite places to spend leisure time and to engage in recreational activities, in addition to providing restoration from everyday stresses. Water is a strong predictor of preference and positive perceptive experiences in urban environments. Users of the promenades also report strong emotional attachments to the place. Urban blue space may be interpreted as a therapeutic landscape in various ways. The study forms a contribution to planning issues, particularly considering benefits for human health, and enhances current research concerning therapeutic landscapes.*

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Völker, S., and T. Kistemann (2014) Developing the urban blue: Comparative health responses to blue and green urban open spaces in Germany. *Health & Place* 35: 196–205.

*Recently, new perspectives upon healthy urban open spaces propose that open spaces can be regarded as urban green or blue spaces. However, there has so far been very little research into blue environments and their benefits for mental well-being. Our article focuses on the effects of water in cities, "urban blue" (as compared to "urban green"), on human health and well-being. Although we found many similarities, some health-enhancing effects for users turned out to be prominent for urban blue in the four conceptual therapeutic landscape dimensions: experienced, symbolic, social and activity space. These effects include enhanced contemplation, emotional bonding, participation, and physical activity. The results suggest that urban blue as a health-promoting factor needs more detailed and accurate determination and examination of its general and local health-enhancing effects.*

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Völker, S., J. Matros, and T. Claßen (2016) Determining urban open spaces for health-related appropriations: a qualitative analysis on the significance of blue space. *Environmental Earth Sciences*, 75: 1067.

*Blue space can be regarded as a key component of urban development as it contributes to sustainability, landscape contextualisation, environmental quality, quality of life and human health. However, existing studies on urban blue spaces do not differentiate between size and type of space and do not explain the mechanisms of how urban blue spaces interact with appropriations that affect health. In our study, we chose seven urban open spaces in Germany with different types of urban blue (in the cities of Bielefeld, Gelsenkirchen, Dusseldorf, Cologne). We conducted standardised qualitative interviews with n = 211 urban blue space visitors, assessing their health-related appropriations of those spaces (use, experience, social, meaning). Via Correspondence Analysis, we profiled these seven spaces. Our results show that blue experience is an important appropriation in urban open spaces. The amount of green and blue space has a significant influence on health-related appropriative processes. Health-related appropriations shift with the profile of the blue urban open space and the proportion of land the blue space covers. Even in cities with few water features, urban blue induces intensive (restorative) experiences, creates meaning, attracts urban dwellers, promotes physical activity, and diversifies health experiences in urban contexts. We identify implications for public health, urban planning and landscape design. This paper is a valuable contribution to the current research trend in Germany to analyse the significance for human health and well-being of bodies of water in urban areas.*

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Walsh, R. 2011. Lifestyle and mental health. *American Psychologist* 66(7): 579–592.

*Mental health professionals have significantly underestimated the importance of lifestyle factors (a) as contributors to and treatments for multiple psychopathologies, (b) for fostering individual and social well-being, and (c) for preserving and optimizing cognitive function. Consequently, therapeutic lifestyle changes (TLCs) are underutilized despite considerable evidence of their effectiveness in both clinical and normal populations. TLCs are sometimes as effective as either psychotherapy or pharmacotherapy and can offer significant therapeutic advantages. Important TLCs include exercise, nutrition and diet, time in nature, relationships, recreation, relaxation and stress management, religious or spiritual involvement, and service to others. This article reviews research on their effects and effectiveness; the principles, advantages, and challenges involved in implementing them; and the forces (economic, institutional, and professional) hindering their use. Where possible, therapeutic recommendations are distilled into easily communicable principles, because such ease of communication strongly influences whether therapists recommend and patients adopt interventions. Finally, the article explores the many implications of contemporary lifestyles and TLCs for individuals, society, and health professionals. In the 21st century, therapeutic lifestyles may need to be a central focus of mental, medical, and public health.*

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Wheeler, B. W., M. White, W. Stahl-Timmins, and M. H. Depledge (2012) Does living by the coast improve health and wellbeing? *Health & Place*, 18(5): 1198-1201.

*This study analysed small-area census data for the population of England, which indicate that good health is more prevalent the closer one lives to the coast. It also found that, consistent with similar analyses of greenspace accessibility, the positive effects of coastal proximity may be greater amongst more socio-economically deprived communities. The authors hypothesise that these effects may be due to opportunities for stress reduction and increased physical activity.*

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White, M., A. Smith, K. Humphries, S. Pahl, D. Snelling, and M. Depledge (2010) Blue space: The importance of water for preference, affect, and restorativeness ratings of natural and built scenes. *Journal of Environmental Psychology* 30(4): 482–493.

*Both natural and built scenes containing water were associated with higher preferences, greater positive affect, and higher perceived restorativeness than those without water. Effect sizes were consistently large. Intriguingly, images*

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*of “built” environments containing water were generally rated just as positively as natural “green” space. We propose a number of avenues for further research including exploration of the mechanisms underlying these effects.*

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White, M. P., I. Alcock, B. W. Wheeler, and M. H. Depledge (2013) Coastal proximity, health and well-being: Results from a longitudinal panel survey. *Health & Place* 23: 97-103.

*The association between self-reported health and coastal proximity was examined. Panel data was used to control for individual level time-invariant heterogeneity. Individuals reported significantly better health when they lived nearer to the coast. The effects were present for both general and mental health. While individual effects were small, they may be important at the community level.*

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White, M. P., S. Pahl, K. Ashbullby, S. Herbert, and M. H. Depledge (2013) Feelings of restoration from recent nature visits. *Journal of Environmental Psychology* 35 40–51.

*Exposure to natural environments can help restore depleted emotional and cognitive resources. However, investigation of the relative impacts of different natural environments among large samples is limited. Using data from 4255 respondents drawn from Natural England's Monitoring Engagement with the Natural Environment survey (2009–2011), we investigated feelings of restoration (calm, relaxed, revitalized and refreshed) recalled by individuals after visits to different natural environments within the last week. Controlling for demographic and visit characteristics we found that of the broad environmental categories, coastal visits were associated with the most restoration and town and urban parks with the least. In terms of specific environmental types two “green space” locations (woodlands/forests and hills/moorland/mountains) were associated with levels of restoration comparable to coastal locations. Urban playing fields were associated with the least restoration. Restoration was positively associated with visit duration (a potential dose–response effect), and visits with children were associated with less restoration than visits alone. There was little evidence that different activities (e.g. walking, exercising) were associated with differences in restoration. The data may improve our understanding of the “cultural ecosystem services” provided by different natural environments and help decision makers keen to invest scarce resources in those environments most associated with psychological benefits.*

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White, M.P., S. Pahl, K. L. Ashbullby, F. Burton, and M. H. Depledge (2015) The effects of exercising in different natural environments on psycho-physiological outcomes in post-menopausal women: A simulation study. *International Journal of Environmental Research and Public Health* 12: 11929-11953.

*Experimental study showing participants “lost track of time” while exercising in simulated blue rather than green or urban environments and had strong preferences for exercising in blue space.*

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White, M.P., S. Pahl, B.W. Wheeler, L. E. F. Fleming, M.H. Depledge (2016) The ‘Blue Gym’: What can blue space do for you and what can you do for blue space? *Journal of the Marine Biological Association* 96: 5-12.

*The Blue Gym Initiative was created in the UK in 2009 to explore: (1) whether blue space environments might be positively related to human health and well-being; and (2) whether the public could be encouraged to preserve and protect these environments. Whilst the wider initiative considers all blue spaces including inland bodies of water (e.g. lakes, rivers and canals as well as the coasts and the ocean), to date the focus has been primarily on marine and coastal environments. An important early finding was the observation that individuals living near the coast are generally healthier and happier than those living inland; much subsequent work has tried to understand why this might be. A more recent focus has been on how to promote pro-marine behaviours (e.g. sustainable fish choice, reduction of plastic use, avoidance of littering). This strand is still very much work in progress but highlights the importance of understanding public awareness, values and attitudes and the power of visualization in communicating the marine sustainability issues.*

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## The *Blue Mind* Rx: Wild Waters Can Be Lifelong Medicine for All People

Wood, S.L., P. R. Demougin, S. Higgins, K. Husk, B. W. Wheeler, and M. P. White (2016) Exploring the relationship between childhood obesity and proximity to the coast: A rural/urban perspective. *Health & Place* 40: 126-136.

*Childhood obesity is one of the 21st century's most serious global health challenges. Research suggests that better access to 'greenspace' (e.g. parks) may encourage physical activity and reduce the risk of obesity amongst children. We extend earlier work by considering childhood obesity in relation to proximity to the coast, using data from England's National Child Measurement Programme. On average, children who live near the coast have lower odds of obesity. Coastal environments and access to them are changing in many areas, and research to explore potential impacts on child health is warranted.*

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Wyles, K.J., S. Pahl, and R. C. T. Thompson (2015) Factors that can undermine the psychological benefits of coastal environments: exploring the effect of tidal state, presence and type of litter. *Environment and Behavior* 1-32.

*Using both quantitative and qualitative methods, it was shown that litter can undermine the psychological benefits that the coast ordinarily provides, thus demonstrating that, in addition to environmental costs of marine litter, there are also costs to people. Litter stemming from the public had the most negative impact. This research extends our understanding of the psychological benefits from natural coastal environments and the threats to these benefits from abundant and increasing marine litter.*

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## Selected *Blue Mind* Rx Books

Beatley, T. (2014) *Blue Urbanism: Exploring Connections Between Cities & Oceans*. Island Press, Washington, D.C.

*What would it mean to live in cities designed to foster feelings of connectedness to the ocean? In Blue Urbanism, Beatley argues that, given all we've gained from the sea, city policies, plans, and daily urban life should acknowledge and support a healthy ocean environment. Urban citizens have many opportunities to interact meaningfully with the ocean, from beach cleanups to helping scientists gather data. Ultimately he explains we must create a culture of "ocean literacy" using a variety of approaches, from building design and art installations that draw inspiration from marine forms, to encouraging citizen volunteerism related to oceans, to city-sponsored research, and support for new laws that protect marine health. Blue Urbanism offers a comprehensive look at the challenges and great potential for urban areas to integrate ocean health into their policy and planning goals.*

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Louv, R. (2016) *Vitamin N: The Essential Guide to a Nature-Rich Life*. Algonquin Books, Chapel Hill.

*Vitamin N (for "nature") is a complete prescription for connecting with the power and joy of the natural world right now, with 500 activities for children and adults, dozens of inspiring and thought-provoking essays, scores of informational websites and down-to-earth advice.*

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Nichols, W.J. (2014) *Blue Mind*. Little, Brown & Company, New York.

*Blue Mind illustrates the crucial importance of our connection to water and provides a paradigm shifting "blueprint" for a better life on this 'blue marble' we call home.*

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Sapolsky, R. (2004) *Why Zebras Don't Get Ulcers*, Third Edition. Henry Holt and Company, New York.

*When we worry or experience stress, our body turns on the same physiological responses that a [non-human] animal's does, but we [often] do not resolve conflict in the same way—through fighting or fleeing. Over time, this activation of a stress response makes us literally sick. Combining cutting-edge research with practical advice, Sapolsky explains how prolonged stress causes or intensifies a range of physical and mental afflictions, including depression, ulcers, colitis, heart disease, and more. It also provides essential guidance to controlling our stress responses.*

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Selhub, E.M., and A. C. Logan (2012) *Your Brain On Nature*. Jon Wiley & Sons, Canada.

*Scientific studies have shown that natural environments can have remarkable benefits for human health. Natural environments are more likely to promote positive emotions, and viewing and walking in nature have been associated with heightened physical and mental energy. Nature has also been found to have a positive impact on children who have been diagnosed with impulsivity, hyperactivity and attention-deficit disorder.*

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## Why Endorse The *Blue Mind* Rx?

A concise guide for curious *Blue Mind* Rx newbies and talking points for introducing the statement to healthcare practitioners

- **Many patients are looking towards less invasive, complementary, and non-pharmaceutical solutions.** The more doctors and practitioners can offer in this arena, the more patients they will be able to serve effectively.
- The [peer-reviewed literature section](#) bolsters support for physicians who want to provide their patients with a broader range of options—**affordable and effective options.**
- When a patient feels that their doctor has empathy towards them, healing rates increase. Talking about and offering ***Blue Mind* Rx is an opportunity to connect empathetically with patients.**
- **By endorsing**, a patient who knows about *Blue Mind* Rx and wants to find a doctor who can support them in using nature/wild water in their personalized treatment may be more inclined to choose you.
- **As an endorser**, you are part of a united, transdisciplinary voice that advocates for patient well-being and for conservation that will continue to support such therapies into the future.
- **Endorsements of *Blue Mind* Rx help to normalize** the understanding of the relationship between our human health and healthy wild waters, and help set the tone for widespread acceptance and application of these concepts in health care, ranging from prenatal and pediatric to end-of-life and hospice care.
- **Endorsements of *Blue Mind* Rx will encourage research** into ways the medical field can refine the use of wild waters as medicine, so that treatment plans can be even more strategic in the future.

When you have discussions with physicians, we would love to hear what —if any— push-back you encounter. Likewise, if you are a physician, please let us know of any questions you may have. This dialogue will help us to keep in the loop of what the concerns are and will help us to add any literature to the document that may help answer those questions.

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## The *Blue Mind* Rx Press & Media Kit

### Videos:

[Resurface documentary film trailer](#)

[Between Two Harbors documentary film trailer](#)

### Press:

[Washington Post: Health & Science, 'Blue Mind' explores the calming effect that water has on people](#)

[Duke Magazine: An Alumnus Makes a Watertight Argument](#)

[New York Times: Veterans swimming with whale sharks as part of PTSD therapy](#)

### Sample Tweets:

100+ leaders endorse @BlueMindRx changing conversations about #OurOcean for good [www.BlueMindRx.com](http://www.BlueMindRx.com)

#OurOcean provides ecological, economic, intrinsic & emotional value #WaterIsMedicine [www.BlueMindRx.com](http://www.BlueMindRx.com)

Over 100 leading doctors, researchers & organizations agree #WaterIsMedicine [www.BlueMindRx.com](http://www.BlueMindRx.com) #OurOcean

@BlueMindRx #BlueMind #WaterIsMedicine #ElAguaEsMedicina and [www.BlueMindRx.com](http://www.BlueMindRx.com)

### Social Media Images:



Facebook Header



Instagram

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