

COMMENT OPEN



A case for protecting the value of ‘surfing ecosystems’

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Surfing is a Cultural Ecosystem Service providing health, social and economic benefits to millions of surfers and thousands of coastal communities worldwide. We explain why ‘surfing ecosystems’ (surf breaks and their surrounding environments) are valuable natural assets, yet their sustainability is compromised by mounting threats. We discuss international conservation frameworks and propose recommendations to advance the protection of surfing ecosystems.

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SURFING ECOSYSTEMS

The United Nations Decade of Ocean Science for Sustainable Development (2021–2030) has a clear mission: to generate “The Science We Need for the Ocean We Want”. The ultimate goal is for new knowledge to help achieve UN Sustainable Development Goal 14—“Conserve and sustainably use the oceans, seas and marine resources for sustainable development”. As part of the quest to better understand and protect our oceans, an emerging body of scholarship, across disciplines and geographies, is turning its attention to the importance of ‘surfing ecosystems’^{1–4}.

Surfing ecosystems—surf breaks and their surrounding environments—can be defined as the spaces and interactions between multiple components of coastal environments where surfing takes place, including elements like waves, reefs, currents, sediment, flora, fauna and humans. Surfing ecosystems deliver important wellbeing, cultural, ecological and financial benefits to millions of users and thousands of communities worldwide^{5,6}. However, such values are rarely considered in coastal legislation, policies or planning guidelines, while climate change and other growing anthropogenic pressures are contributing to the deterioration or complete loss of surfing amenity⁷.

Building on recent research findings, this comment aims to draw attention from scholars and policymakers into the importance of surfing values and the merits of environmental protection mechanisms that specifically safeguard surfing ecosystems (Fig. 1). We do so by explaining the benefits and threats associated with surfing ecosystems, and discussing international examples of how conservation frameworks can help preserve surfing values as an integral part of vibrant coastal landscapes across the world.

SURFING BENEFITS

Across 144 countries, there are 7884 reported surf breaks, with the United States and Australia accounting for the largest proportion (16% and 10%, respectively)⁸. The world’s surfing population is estimated at 50 million⁴, with the demand continuously rising, partly accelerated by surfing’s inclusion as an Olympic sport in 2021, and a COVID-driven search for health-promoting lifestyles⁹. In Australia, surfing is the second-most practiced water-based sport, and among the top five nature-based physical activities, only after walking, running, swimming and cycling¹⁰.

Positive mental and physical health outcomes have been well-documented among surfing participants, including those with chronic conditions, such as post-traumatic stress disorder, autism and cystic fibrosis⁵. From a societal standpoint, surfing has been

shown to contribute to greater community cohesion, stronger intra-family relationships and healthier lifestyle choices¹¹. Because of their multiple wellbeing benefits, surfing is often framed as part of ‘blue health’ and ‘blue spaces’, i.e., health-enabling environments centered around water⁵.

Surfers not only benefit from the ocean, but they can also play an important role in ocean stewardship and citizen science¹², as first-hand-observers of environmental change¹³. Further, the presence of surfing ecosystems has been linked to accelerated economic growth⁶, increased property values¹⁴, fixation of rural employment and improvement in local infrastructure and public services¹⁵. Few large-scale studies exist on surfing’s financial contributions, but a pre-pandemic estimate put global travel expenditure between \$32 billion and \$64 billion USD⁴. In the UK alone, the overall input of the surfing industry into the national economy has been estimated at £5 billion (2013 prices)¹⁶.

As the field of “surfing economics”^{17–19} further develops, robust valuations of the market and non-market values of surfing ecosystems could better inform coastal management plans, conservation policies and benefit-cost-analyses. This knowledge may be applied to inform a range of interventions, from access paths, shark-protection systems and beach clean ups, to large-scale erosion protection structures, artificial reefs, wave pools and surf-protected areas²⁰.

THREATS

Surfing can be understood as a Cultural Ecosystem Service², because of its multiple contributions to people’s welfare, and its dependence on the natural environment. Indeed, the formation of good-quality waves depends on a delicate set of conditions, including, among others, groundswells (long-period groups of waves generated by distant storms) and geomorphological features of the seabed and the shore, such as presence of reefs, headlands or sandbars²¹. All of these elements are subject to changes that can result in the deterioration or complete loss of surfing amenity, as documented by a growing number of observations over the last decades²².

In the 2000s, illegal dumping of construction material at Ocean Beach, California, impacted the world-class surf breaks of South Sloat, leading to a law suit against the City of San Francisco²³. In Perth’s north, the capital of Western Australia, three surf breaks were lost in 2022 to the construction of the new Ocean Reef marina, prompting petitions from local community groups for the construction of an artificial surfing reef²⁴. In 2005, two European

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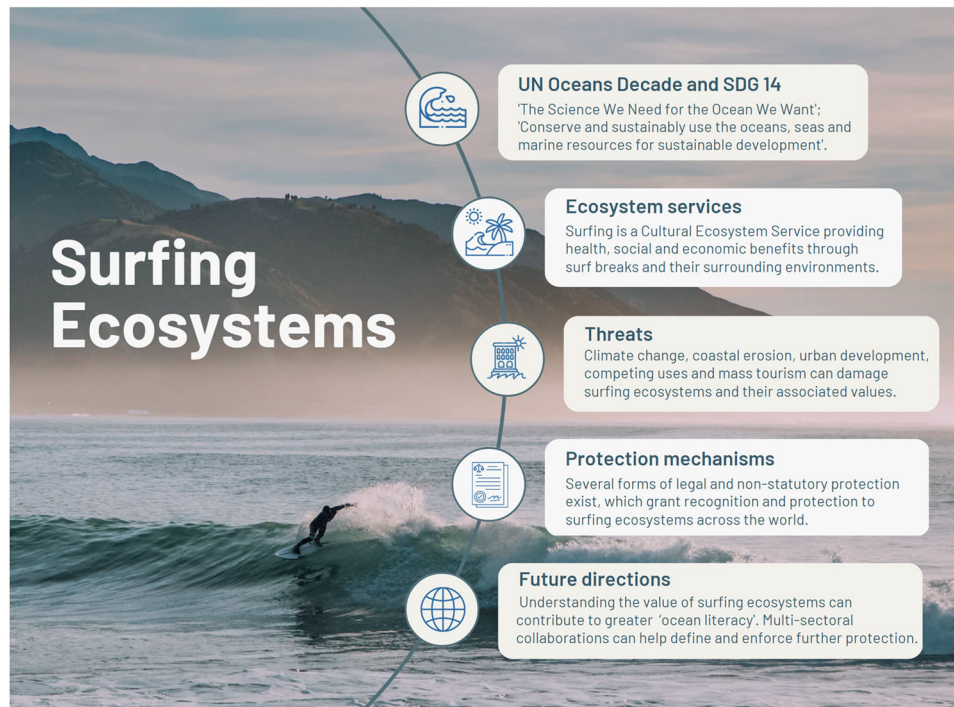


Fig. 1 Surfing Ecosystems: values, threats and protection.

waves were lost due to building and dredging activities in Jardim do Mar (Madeira, Portugal) and Mundaka (Basque Country, Spain). While the disappearance of the Mundaka wave was only temporary, in both cases, the loss was associated with a significant slowdown in local economic growth⁶. Observations across the Pacific Inlands, Indonesia and Latin America, among other areas, show that threats to surfing ecosystems may come surfers themselves, when tourism influxes are excessive and poorly managed²⁵.

PROTECTION MECHANISMS

In recognition of the value and fragility of surfing ecosystems, environmental scholars are now calling for the creation of ‘surfing reserves’²⁶. Such reserves have the potential to preserve, not only human-centric values, but also critical bio-physical processes, such as sediment transport and marine habitat formation¹. To improve conservation outcomes, it is fundamental that surfing assets are considered in conjunction with other marine protection targets, given that these often co-located²². Most of the world’s high quality surfing waves occur within or close to marine biodiversity hotspots and key biodiversity areas²⁶.

The status of surfing reserves, as reflected in government policies or issued by non-government bodies (e.g., Save the Waves Coalition), can increase public awareness, often leading to positive conservation outcomes²². However, most of the world’s surfing reserves lack legal weight because they are not enshrined in state or national legislation.

In countries such as the USA, Australia and Spain, certain high-quality waves have been granted localized legal protection, typically through state-level laws, e.g., *California Coastal Act* and the New South Wales (Australia) *Crown Lands Act 1989*. In 2016, Spain’s Mundaka became the first European world-class wave to be legally protected, as part of the UNESCO-listed Urdaibai Biosphere Reserve¹. The iconic Bells Beach (Victoria, Australia), home to the world’s longest running professional surf contest, was declared a surfing reserve in 1973 and is now protected under the state’s *Heritage Act 2017*. Currently, only two countries, Aotearoa

New Zealand and Peru, have laws at the national level that specifically protect surfing ecosystems²².

Aotearoa New Zealand has granted protection to 17 Surf Breaks of National Significance by specifying them in the New Zealand Coastal Policy Statement 2010 (NZCPS)²⁷. During the scheduled 10-year review of the NZCPS 1994, surfers and surfing organizations provided recommendations for the definition and protection of surf breaks. Achieving legal status for surf breaks was possible given that the NZCPS is prepared under the *Resource Management Act 1991*, which mandates statutory planning to manage natural resources so as to enable social, economic and cultural well-being, in an environmentally sustainable manner²⁸. Under these provisions, impacts on surf breaks of regional and local significance are also restricted, but to a lesser degree compared to nationally significant sites⁷.

In Peru, growing concerns for the integrity of several iconic surf breaks, such as La Herradura and Cabo Blanco, gave rise to the ‘Ley de Rompientes’—approved in 2001, and complemented in 2013 with regulations on registration procedures²⁹. To date, 33 surf breaks have been included in the National Register for the Protection of Surf Breaks, meaning no other use rights can be granted to the same aquatic area, while restrictions apply to adjacent zones²⁹. The legal status of the emblematic Huanchaco surf break was one of the successful arguments against the construction of several breakwaters, whose original design would have impacted long-standing local surfing and fishing values²².

Expanding formal protections can help safeguard cultural, well-being and ecological values, including across low- and middle-income countries in an increased effort to meeting international conservation commitments²². However, the existence of laws and guidelines is not enough to preserve surfing ecosystems and their values. At a minimum, collaboration between civil society, experts and governments is required for defining ‘surf break significance’ criteria and collecting data to inform decisions on how protection should be granted³⁰. As it occurs with other forms of environmental law, adequate governance, implementation and enforcement are required for protection mechanisms to be effective³¹. While no study exists yet on the comparative effectiveness of

various surf protection measures, recent scholarly advances highlight the progress and potential of multiple legally enforceable approaches to help preserve surfing ecosystems around the world³².

SUMMARY

Surfing ecosystems are valuable natural assets providing personal and societal benefits to millions of people across the world. Because of their fragile nature and their synergy with ecological values, we argue for their greater protection under holistic coastal management policies and legislation. To advance in this journey, we contend that a better understanding of the value of surfing ecosystems can contribute to greater ‘ocean literacy’—a paramount objective of the Intergovernmental Oceanographic Commission³³. As we stride into the UN Ocean Decade, we concur with Touron-Gardic and Failler¹ that “There is currently a pivotal moment when public authorities, the private sector, the [surfing] sport and conservation communities can converge toward a common goal of environmental preservation and local empowerment.”

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COMPETING INTERESTS

The author declares no competing interests.

ADDITIONAL INFORMATION

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