

Greening the Tube: Paddling Toward Comprehensive Surf Break Protection

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Past attempts to protect surf breaks have failed for various reasons. Without better surf break protections, more surf breaks will be lost. Addressing this issue requires redefining the term “surf break” to include its three components—the submerged lands under the wave zone, a wave corridor which allows an unimpeded right of way for swells to reach the wave zone, and beach access. Sufficient surf break protection requires that policymakers employ a strategy which accounts for all of these components.

Commentators have recommended using the designation of “surf reserves” to protect surf breaks. But these reserves would not protect all three components of the surf break. Additionally, surf reserves do not provide any legal protections for surf breaks by themselves. Others have recommended using existing legal frameworks to protect surf breaks. But these strategies do not adequately protect surf breaks because again they fail to account for all of the components of a surf break.

Instead, I recommend using the more expansive definition of a surf break as a guide to develop adequate protections. Policymakers could enact new legislation which protects all three components of a surf break or expand existing protections to extend to all three. Alternatively, they could cobble together protections for one or more of the components that can sufficiently account for all three of them. This paper challenges alternative surf break protection schemes by arguing that they have historically defined surf breaks too narrowly to protect them. By using my proposed holistic definition to better understand what protecting surf breaks requires, policymakers can devise more effective surf break protection strategies.

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I. INTRODUCTION

Named after remnant railroad structures in Southern California, Trestles is a collection of surf breaks that has been called “America’s most consistent wave zone.”¹ But it is also the latest set of surf breaks threatened by development.² The list of surf breaks sacrificed to development is long and growing.³ But surfers hope Trestles will be different — this time they are not going to give up their treasured surf spot without a fight.⁴ Surfers are using a novel strategy to protect Trestles — listing it on the National Registry of Historic Places. But will this strategy be enough to protect Trestles?

Surf breaks are uniquely amphibious and prone to external threats. They also tend to straddle the divide between public and private property. Because of these unique characteristics, traditional legal mechanisms and frameworks tend to be ill equipped to adequately protect surf breaks.

¹ MATT WARSHAW, ENCYCLOPEDIA OF SURFING 649 (2003).

² Tony Perry, *Surfers, Marines in a Tussle Over Trestles*, L.A. TIMES, Feb. 18, 2013, <http://articles.latimes.com/2013/feb/18/local/la-me-trestles-20130219>; see also *Trestles Toll Road Shot Down*, TRANSWORLD SURF (June 20, 2013), <http://surf.transworld.net/1000162816/news/trestles-toll-road-shot-down/>.

³ See *Extinct Waves*, SAVE THE WAVES, <http://www.savethewaves.org/extinct> (last visited Sept. 18, 2013) (listing “extinct” surf breaks); see also *Endangered Waves*, SAVE THE WAVES, <http://www.savethewaves.org/endangered> (last visited Sept. 18, 2013) (listing currently “endangered” surf breaks).

⁴ Many environmentalists and surfing enthusiasts see the fight over Trestles to be as much about drawing a proverbial line in the sand to preserve protected areas generally as it is about protecting Trestles specifically. See Joel R. Reynolds & Damon K. Nagami, *Lines in the Sand: Contrasting Advocacy Strategies for Environmental Protection in the Twenty-First Century*, 1 U.C. IRVINE L. REV. 1125, 1129 (2011) (“In the case of San Onofre, a broad coalition of organizations aligned to ‘draw a line in the sand’ and develop a coordinated, multifaceted statewide campaign to stop the toll road and protect the park.”).

Surf break protection requires fundamentally redefining the term “surf break.” This paper attempts to define surf breaks in a more holistic way in an attempt to better take into account their unique characteristics and their expansive and sometimes equivocal boundaries. Next, this paper considers the current protections for surf breaks around the world and evaluates their effectiveness as applied to this more holistic definition. This paper also considers several options for proactively applying other existing legal mechanisms to surf break protection, such as marine protection areas, and national park protections.⁵ Finally, it argues for adopting a flexible “middle way” for protecting surf breaks. This approach allows policymakers to decide between enacting new legislation capable of protecting surf breaks, or using a patchwork of existing tools and legislation to protect surf breaks.

II. WHAT ARE SURF BREAKS AND WHY SHOULD WE PROTECT THEM?

In order to understand the aims of surf break protection, it is worthwhile to first consider the unique character of waves and surf breaks. “Waves” are disturbances in some form of medium caused by transfers of energy.⁶ These transfers take the form of waves, recognizable by their alternating crests and troughs.⁷ Surfing waves are waves created by wind energy in a water medium.⁸ These “wind waves” are formed when wind travels over water for some period of time.⁹ This wind action causes swells to form which travel through water until the submerged land beneath them is shallow enough to make them break.¹⁰ Under otherwise neutral conditions, waves break when they travel over a water body with a depth one-third greater than the size of the waves.¹¹ For the purposes of surfing, there are three types of rideable waves: tsunami or “tidal”

⁵ This paper focuses on legal mechanisms and designations for protecting surf breaks proactively, whether these legal mechanisms exist or need to be developed. Accordingly, this paper does not consider whether, for example, NEPA or the PTDA can protect a surf break from the proposed construction of a breakwater or jetty. For a discussion of these and other reactive legal mechanisms available under U.S. law, see Wendy Oram & Clay Valverde, Note, *Legal Protection of Surf Breaks: Putting the Brakes on Destruction of Surf*, 13 STAN. ENVTL. L.J. 401 (1994).

⁶ Water waves have three primary energy sources: wind, earthquakes, and the gravitational pull of the moon and sun. WILLARD BASCOM, WAVES AND BEACHES – THE DYNAMICS OF THE OCEAN SURFACE 1 (1980).

⁷ *Id.* Bascom calls water waves “undulating forms that move along the surface of the sea.” *Id.*

⁸ *See id.* Surfers usually ride ocean wind waves, but sometimes lakes, such as the Great Lakes, can produce rideable wind waves. *See also id.* at 103-11 (discussing tidal bores and seiches — surfable “waves” not produced by winds).

⁹ *Id.* at 42 (explaining that one of the factors that determines the size of wind waves is “the duration of the time the wind blows”).

¹⁰ *Id.* at 216-19.

¹¹ Warsaw, *supra* note 1, at 685.

waves, ground swell waves, and wind swell waves.¹² Surfers rarely ride tsunami tidal waves,¹³ and in general they prefer ground swell waves — waves created by winds far away from shore — due to their consistency and form.¹⁴

The topographic geomorphological transition between open ocean and the wave zone — the surf break — determines a wave's characteristic features. For example, if the ocean floor transitions from deep to shallow over a relatively short distance, common at reef surf breaks, this abrupt transition from deep to shallow causes the wave to slow quickly and pitch forward in a “tubing” wave.¹⁵ Alternatively, a wave, which breaks after a smooth, gradual, angled transition from deep to shallow water, will be slow and crumbly.¹⁶ Some surfers prefer the tubing, faster waves which break over shallow reefs and similar bottoms, while others prefer the more crumbly, slower waves that break over more gradually transitioning coastal bottoms.¹⁷

Because the submerged lands below surf breaks determine the characteristics of a wave and cause the actual breaking of it, protecting surf breaks requires protecting the submerged lands beneath them. For instance, protecting a wave that breaks over a reef would entail protecting the reef itself. But protecting a surf break requires more than simply protecting the submerged lands beneath it. Wave protection also requires ensuring that nothing hinders a swell's march towards that surf break. If a breakwater is permitted to stop a swell from reaching a surf break, it essentially does not matter how well you have safeguarded the submerged land — the surf break no longer produces breaking waves, which means that the break is no more. The third and final component of a surf break is access. Without public access to a wave, it does not matter whether it is protected or not.

Next, the question is: why protect surf breaks? As a sport, surfing's economic worth and influence has traditionally been discounted and undervalued, probably as a result of its image as an “alternative” sport practiced by beach bums and freeloaders.¹⁸ This undervaluation is not surprising considering that the economic impact of surfing on coastal communities has historically been

¹² NATHAN TODD COOL, *THE WETSAND WAVECAST GUIDE TO SURF FORECASTING* 20 (2003).

¹³ This feat only seems possible in Gilligan's Island episodes. *Gilligan's Island: Big Man on a Little Stick* (CBS television broadcast Feb. 20, 1965); see also COOL, *supra* note 12, at 20 (pointing out that “it is rare that we would ever surf [tsunami waves].”).

¹⁴ *Id.* (explaining that wind waves are choppier than ground swell waves).

¹⁵ Warshaw, *supra* note 1, at 685.

¹⁶ *Id.*

¹⁷ Surfers who ride shorter surfboards — shortboarders — tend to prefer tubing waves, while surfers who ride longer surfboards — longboarders — tend to prefer slower, crumbly waves. Likewise, advanced riders tend to prefer tubing waves more than beginners do.

¹⁸ Chad Nelsen et al., *Paradise Lost: Threatened Waves and the Need for Global Surf Protection*, 65 J. COASTAL RES. 904, 904 (2013).

understudied and unknown.¹⁹ One reason for the difficulty in gauging the impact of surfing on the economy is the fact that surfers sometimes come from other places to surf their home breaks. Furthermore, surfers have traditionally lacked the lobbying power of other similar water sports.²⁰

But that trend is changing. Surfers are organizing and making their voices heard and increasing their influence.²¹ These new advocates make several arguments for why we should protect surf breaks. Most predictably, these new advocates argue that we should protect surf breaks because they are valuable as a recreational resource to those who use them for surfing. To describe this value, some commentators point to the recreational amenity value of surf breaks, and they argue that surf breaks should be protected because of this value.²² Others point to surfing's substantial economic and social values to coastal communities as reasons they should be preserved.²³ Still others argue that surf breaks should be protected because of the commerce they bring to coastal communities.²⁴

Despite being historically undervalued and understudied, a few case studies have calculated the economic impact that surf tourism has on coastal communities. A 2007 study found that the "economic impact" of surfing at Trestles—i.e., the total spending by surfers in San Clemente, California, when they visit to surf Trestles—is between \$8 to 13 million per year.²⁵ The study also

¹⁹ *Id.* at 905 (explaining that as of 2013 only two peer-reviewed studies had been published that examined the economic impact of surfing on coastal communities).

²⁰ *See id.* at 904.

²¹ *See, e.g.*, SAVE THE WAVES, <http://www.savethewaves.org> (last visited Sept. 18, 2013); SURFERS AGAINST SEWAGE, www.sas.org.uk (last visited Sept. 18, 2013); SURFRIDER FOUND., <http://www.surfrider.org> (last visited Sept. 18, 2013); *see also* Bradley E. Scarfe et al., *Sustainable Management of Surfing Breaks: Case Studies and Recommendations*, 25 J. COASTAL RES. 684, 684 (2009) ("Despite their large numbers worldwide, surfers as a coastal interest group have largely been ignored during coastal management decision making. Surfers are, however, increasingly being considered in coastal management decisions as the social, economic, and environmental benefits of high-quality surfing breaks are realized.").

²² Neil Lazarow et al., *Dropping In: A Case Study Approach to Understanding the Socioeconomic Impact of Recreational Surfing and its Value to the Coastal Economy*, J. AM. SHORE & BEACH PRESERVATION ASS'N, Fall 2007, at 21 ("Results of a study into the market and nonmarket values of surfing at Bastion Point, Kirra, and South Stradbroke Island, as well as a national survey in Australia, and national surveys in the United States and Chile are presented and compared with existing studies. Surfing amenity is found to have significant economic, social and cultural importance.") [hereinafter Lazarow et al., *Dropping In*].

²³ *See* Neil Lazarow, Marc L. Miller & Boyd Blackwell, *The Value of Recreational Surfing to Society*, 5 TOURISM MARINE ENV'TS 145, 149-55 (2009) [hereinafter Lazarow, Miller & Blackwell, *Value*].

²⁴ *See* Neil Lazarow & Chad Nelsen, *The Value of Coastal Recreational Resources: A Case Study Approach to Examine the Value of Recreation Surfing to Specific Locales*, 2007 COASTAL ZONE PROCEEDINGS, available at http://www.csc.noaa.gov/cz/CZ07_Proceedings/PDFs/Tuesday_Abstracts/2767.Lazarow.pdf.

²⁵ *See* Chad Edward Nelsen, *Collecting and Using Economic Information to Guide the Management of Coastal Recreational Resources in California* 14-15 (2012) (unpublished Ph.D. dissertation, University of California Los Angeles), available at <http://public.surfrider.org/>

found that the annual “economic value” of surfing at Trestles — i.e., the value surfers are willing to pay to surf at Trestles — is estimated at \$26 million per year.²⁶

Advocates of surf break protection also cite the worth of the surf industry to argue for the economic importance of surfing, and by extension surf breaks, to the economy. A 2009 study by the Surf Industry Manufacturers Association (SIMA) found that even during the economic downturn of 2008, the surf industry experienced sales of \$7.22 billion in the United States alone during that year.²⁷ The annual worth of the surfing industry worldwide has been conservatively estimated to be around \$15 billion.²⁸

Sense of place is another value which surfers indivisibly link to surf breaks.²⁹ This value is reflected in the fact that most surfers feel affinity for a home break even if that break is not geographically the closest one to where they live.³⁰ “Surfing capital” is another concept which commentators have introduced to describe the somewhat intangible value surfers place on surf breaks and surfing.³¹ “Surfing capital” has been described as the symbolic ownership of the sport of surfing, encompassing a surfer’s connection with local surf breaks as well as the other personalized components of the sport.³² Finally, surf breaks have both tangible and intangible value to the coastal towns associated with those breaks.³³

The natural aesthetic beauty of waves is another reason to advocate for their protection. One commentator summed up the aesthetic value of waves as

files/nelsen/Nelsen_2012_CA_beachsurfecon_dissertation.pdf.

²⁶ Chad Edward Nelsen, *The Surfonomics of Trestles*, SURFRIDER FOUND. (Oct. 26, 2012), <http://www.surfrider.org/coastal-blog/entry/the-economics-of-surfing>. This value was determined by using a metric called the “Travel Cost Model.” Nelsen, *supra* note 25, at 12 (“The travel cost method (TCM) is a revealed preference method. TCM is based on the premise that visitors reveal their willingness-to-pay to visit a site through travel time and costs.”).

²⁷ *Surf Industry Riding Out the Economic Storm - Findings of SIMA’s Retail Research Show Resiliency of the Surf/Skate Industry*, SURF INDUSTRY MANUFACTURERS ASS’N (Jul. 9, 2009), <http://www.sima.com/news-information/news-detail/id/68.aspx>.

²⁸ See Lazarow, Miller & Blackwell, *Value*, *supra* note 23, at 149.

²⁹ See BRIE SHEROW, UNIV. OF ILL., SURF BREAK PROTECTION: PLANNING IMPLICATIONS OF THE NZCPS AND THE NEED FOR A COLLABORATIVE APPROACH 19 (2011), available at http://www.urban.illinois.edu/academic-programs/mup/capstones/2011/Sherow_report.pdf.

³⁰ Daniel T. Kaffine, *Quality and the Commons: The Surf Gangs of California*, 52 J. LAW & ECON. 727, 730-31 (2009) (explaining the surfing phenomenon of localism as follows: “many longtime surfers feel that they own a break after surfing it for years” and “[l]ocals may or may not live at or near the spot, but their regular surfing means they are accepted as particularly knowledgeable or experienced by the local surfing community”); see also Daniel Nazer, *The Tragicomedy of the Surfers’ Commons*, 9 DEAKIN L. REV. 656, 679 (2004).

³¹ Lazarow et al., *Dropping In*, *supra* note 22, at 22.

³² *Id.*

³³ SHEROW, *supra* note 29, at 19 (explaining that, e.g., the big wave surf break “Mavericks” has an “emotional value” to the Half Moon Bay community as a part of that community’s regional identity).

follows: “[w]aves are captivating not just to surfers, sailors, and oceanographers, but to nearly anyone who has looked upon an incoming swell; waves have served as the muse to artists, writers, filmmakers, photographers, and poets.”³⁴ This aesthetic value is potentially just as evident to those who sit at the beach and stare off into the horizon, as it is to someone who has never been to the beach but who has seen Hokusai’s painting “the Great Wave off Kanagawa Nami-Ura” or Van Gogh’s “Fishing Boats at Sea.”³⁵

Furthermore, waves are also environmentally valuable. Waves provide necessary environmental functions for our planet.³⁶ Waves, like wetlands and rainforests, provide valuable environmental services,³⁷ including climate stability.³⁸ Accordingly, protecting surf breaks ensures the functioning of these environmental services.³⁹ Likewise, it seems like protecting local surf breaks might help preserve the Earth’s meteorological and oceanographic functions more than not doing so. At the very least, protecting waves on the local scale can help ensure the continued global function of these protective cycles.

Finally, surf breaks are also valuable as possible sources of renewable energy.⁴⁰ Because of the great amounts of energy existent in surf break impact zones, they could be harnessed in order to provide renewable, clean energy to coastal communities.⁴¹ Of course, surfers would prefer any attempt to harness the energies of their favorite surf spots be done in a way which does not affect the surfability of these surf breaks.⁴²

III. THREATS TO SURF SPOTS

The threats to surf spots are many and varied, manmade and natural. The most

³⁴ WARSHAW, *supra* note 1, at 684.

³⁵ Hokusai’s painting features the awesome power of a massive tubing wave, while Van Gogh’s features peaceful rolling waves on a sunny day.

³⁶ DR. TONY BUTT, SURFERS AGAINST SEWAGE, THE WAR REPORT: WAVES ARE RESOURCES 5 (2010).

³⁷ See J.B. RUHL, STEVEN E. KRAFT & CHRISTOPHER L. LANT, THE LAW AND POLICY OF ECOSYSTEM SERVICES 24-25 (2007) (including waves as ecosystem services that “sustain and fulfill human life”); J.B. Ruhl, *Valuing Nature’s Service’s: The Future of Environmental Law?*, 13 NAT. RESOURCES & ENV’T 359, 360 (1998).

³⁸ BUTT, *supra* note 36, at 5. (“If you took all the waves away, clearly something would go wrong with the natural energy balance of the planet. Of course, there is no way of knowing exactly what would happen, but there would probably be some kind of re-adjustment to achieve the same energy balance, without waves. This might mean radical changes in atmospheric circulation patterns, ocean currents, cloud cover, precipitation or even seismic activity – who knows? Whatever the case, the Earth would quickly adjust itself to a stable state and be ‘happy’ again. We, as a species, on the other hand, might find it impossible to exist.”).

³⁹ *Id.*

⁴⁰ *Id.* at 29.

⁴¹ *Id.*

⁴² *Id.* (explaining that “we should be careful that [harnessing wave energy] doesn’t cause any adverse affects on the waves themselves”).

obvious human threat to surf spots is coastal development, particularly the construction of coastal protection structures. For instance, the construction of breakwaters prevents swells, and thus waves, from reaching otherwise surfable reef surf breaks and sandbar surf breaks.

One of the most famous examples of a coastal construction project killing a surf break was Killer Dana's demise in 1966, not that far from Trestles.⁴³ Killer Dana was a famous surf break off Dana Point in southern Orange County, California, that produced the biggest surf in southern California during south swells.⁴⁴ Killer Dana's death was the direct result of the construction of a breakwater to create Dana Point Harbor.⁴⁵ The breakwater effectively switched off the swells that had made the break off Dana Point so popular with surfers.⁴⁶

Other human activities also threaten surf breaks. Coastal dredging — the removal of sand from offshore in order to re-nourish a degraded beach — can sterilize a surf spot.⁴⁷ Similarly, the destruction of coral can adversely impact the surf breaks that exist over coral reefs.⁴⁸ Pollution, such as litter, sewage, and fertilizers also threatens the surfability of surf breaks.⁴⁹ Furthermore, manmade and natural erosion threatens primarily sandbar-bottom surf breaks.⁵⁰ Likewise, disappearing access to beaches threatens surf breaks.⁵¹

Sometimes coastal development does not eliminate a surf spot but changes it. Construction of jetties, for example, might transform a single long point break into several shorter ones. A possible drawback of this transformation might be that the new point breaks all break in the same direction — right to left, or left to right — whereas the previous one might have broken both right and left. Purists might argue that construction of the jetties ruined the previous surf spot, and they are right—the previous spot has ceased to exist. But jetties often make long clean waves in the place of whatever wave they replace.⁵²

⁴³ Oram & Valverde, *supra* note 5, at 402-03.

⁴⁴ Warsaw, *supra* note 1, at 148.

⁴⁵ Oram & Valverde, *supra* note 5, at 403.

⁴⁶ *Id.*

⁴⁷ See generally Is Florida's "Beach Re-nourishment" Killing the Beaches?, SURFER MAG. (July 22, 2010), http://www.surfermag.com/features/fl_bch-erosion/ (explaining the many effects dredging and beach renourishment projects have on beaches and sandbars).

⁴⁸ If you harm a component of a system, you risk harming and possibly losing that system. Coral reefs form the backbone of many surf breaks. As that coral goes, so go these breaks.

⁴⁹ BUTT, *supra* note 36, at 20.

⁵⁰ Longshore drift, erosion caused by construction of erosion control structures, erosion due to coastal development, erosion due to damming rivers upstream of rivermouths.

⁵¹ Access is an issue for several reasons. For instance, private property owners sometimes work to block the public's legal access to surf breaks. What good is a break if you can't get to it? See *infra* note 76.

⁵² "Well-shaped waves often form on sandbars in front of or adjacent to jetties." Warsaw, *supra* note 1, at 305. But even when jetties form new sandbars with good waves over them, storms can wash these sandbars away. *Id.* ("Storm surf will often create a wave-forming sandbar deposit near a jetty; the next storm might rearrange the sandbar or erase it altogether.").

Despite some incidental benefits to surfers, like the longer tubes at Superbank formed as a result of the Tweed River sand bypass system, development typically harms rather than helps surf spots.⁵³ In his 1966 documentary, *The Endless Summer*, filmmaker Bruce Brown introduced the wave at Cape St. Francis to the world.⁵⁴ Brown christened the break at Cape St. Francis “the perfect wave.”⁵⁵ However, by the time Brown returned to do a sequel in 1994, coastal development had stripped the wave of some of its perfection.⁵⁶ Coastal development’s drawbacks are similarly felt at surf breaks around the world.⁵⁷

One problematic aspect of coastal development is that construction projects that threaten surf spots often protect other coastal resources. For instance, breakwaters protect houses and boats by ensuring that swells never reach them.⁵⁸ Dredging and beach re-nourishment reverses beach erosion and protects coastal properties and recreational beaches by removing sand from sandbars that might form surf breaks.⁵⁹ Jetties and groins work to slow down longshore drift beach erosion by building large metal or rock structures through the heart of

⁵³ The Tweed River sand bypass system is an interesting example of an engineering project that resulted in an undeniable overall improvement to area surf breaks. Surfers initially opposed the project because they feared it would ruin Kirra, a world-class surf spot on Australia’s Gold Coast. The project, which pumps sand from the Tweed River to beaches north of the river, was designed to control coastal erosion north of the Tweed. The unusually long sandbars formed as a result of the project now comprise a region of surf breaks called the “Superbank.” The resulting long sandbars produce long rides for surfers. As a result of the Tweed River sand bypass, surfers can now ride all the way from Snapper Rocks to Kirra — a distance of almost two kilometers — because of the long, connected sandbars formed by the bypass. The project did have some negative environmental effects on animals that lived on the reef, which is now buried in sand. *See* TWEED RIVER ENTRANCE SAND BYPASSING PROJECT, <http://www.tweedsandbypass.nsw.gov.au> (last visited Nov. 7, 2013). Furthermore, efforts are under way to “restore” Kirra. *See Campaigns: Kirra, Gold Coast, QLD*, SURFRIDER AUSTRALIA (Aug. 19, 2013), <http://www.surfrider.org.au/campaign/kirra-gold-coast-qld> (“Gold Coast City Council (GCCC) recently announced plans to extend Kirra groyne by 30 metres to its former length in an attempt to improve surf amenity at the world famous Kirra Point surf break.”).

⁵⁴ *THE ENDLESS SUMMER* (Cinema V 1966).

⁵⁵ *Id.*

⁵⁶ *THE ENDLESS SUMMER II* (New Line Cinema 1994).

⁵⁷ Elsewhere in the world, lack of control by the local communities threatens surf breaks. PETER HELLER, *KOOK: WHAT SURFING TAUGHT ME ABOUT LOVE, LIFE, AND CATCHING THE PERFECT WAVE* 151-52 (2010) (explaining the losing battle local communities are facing in Mexico as they try to deal with inevitable progress: “Cerritos was leaving a bad taste in my mouth. The Surf was fun, the “progress” pretty rough. The same drama was happening all along the coasts of Mexico, had been happening for decades.”). *But see id.* at 305-06 (explaining how the indigenous village at Barra had a surprising autonomy over their village and access to the surf break there).

⁵⁸ *Breakwater (structure)*, WIKIPEDIA, [http://en.wikipedia.org/wiki/Breakwater_\(structure\)](http://en.wikipedia.org/wiki/Breakwater_(structure)) (last visited Nov. 7, 2013).

⁵⁹ Beach renourishment is a temporary solution. COMM. ON ENGINEERING IMPLICATIONS OF CHANGES IN RELATIVE MEAN SEA LEVEL ET AL., *RESPONDING TO CHANGES IN SEA LEVEL: ENGINEERING COMPLICATIONS* 75 (1987) [hereinafter COMM. ON ENGINEERING]. Beach renourishment is also disfavored by some due to its deleterious environmental impacts on coastal ecosystems. *ENCYCLOPEDIA OF COASTAL SCIENCE* 159 (Maurice L. Schwartz ed., 2005).

sandbars.⁶⁰

In fact, there seems to be a troublingly sharp divide between protecting surf breaks on the one hand and protecting other coastal resources on the other. This divide stems from surfing's seeming diametric opposition to other coastal protection schemes and other coastal uses, such as swimming and navigation.⁶¹ For instance, beachgoers want sand on their beaches. To satisfy this demand, a state or local government might have to dredge a sandbar offshore. Dredging sand from a sandbar, which causes waves to break, can harm or even destroy that surf break.⁶² Likewise, a coastal planner might decide a breakwater is required off a city's shore to protect houses and people, but this breakwater might completely block the waves off the city's coast.⁶³

Even when it seems like a surf break's existence complements the protection of a coastal community, man's flawed decision-making can intervene to threaten both. Such was the case in Madeira, Portugal. The local government effectively destroyed Ponta Jardim, a legendary big-wave point break, when it built a large seawall and road directly through the heart of the break.⁶⁴ The break and surrounding geomorphological features had served as a natural buffer zone and coastal protection feature for millenia.⁶⁵ Construction of the seawall at Ponta Jardim destroyed the wave and destabilized the area by eliminating the buffer zone that the surf break provided.⁶⁶ Furthermore, the seawall could exacerbate

⁶⁰ COMM. ON ENGINEERING, *supra* note 59, at 73. But the drawbacks of jetties and groins are numerous. For instance, erosion downdrift of a groin field often accelerates as a result of groin placement. *See id.* Jetties usually protrude so far out into the ocean that they can block all the sediment from being transported, causing sand starvation on the downdrift side. ROGER H. CHARLIER & CHRISTIAN P. DE MEYER, COASTAL EROSION: RESPONSE AND MANAGEMENT 212 (1998).

⁶¹ Swimming tends to be at odds with surfing because swimmers can be injured when swimming in surfing areas. Surfing is at odds with navigation when yachtsmen and boaters advocate for navigation structures like harbors and marinas to the detriment of surf breaks. *See, e.g.*, Scarfe et al., *supra* note 21, at 689 (explaining that "[a]lthough the Mission Bay jetties improve surfing quality, a proposal to further improve vessel navigability almost destroyed the surfing break"); *see also id.* at 686 ("The consistency of swell makes the estuary bar often impossible to navigate, requiring the construction of a break-water and boat ramp at the end of the Manu Bay surfing break during the 1960s."). Yachting has traditionally had a stronger lobby than surfing as well. Nelsen et al., *supra* note 18, at 904 (pointing out that in the UK, for example, "the Royal Yachting Association (RYA) has a powerful and well-respected position on protecting and promoting their members' interests and concerns").

⁶² *See Is Florida's "Beach Re-nourishment" Killing the Beaches?*, *supra* note 47.

⁶³ Breakwaters are starting to become disfavored now that their environmental and economic costs are better known. For example, a breakwater off Singer Island, Florida was defeated amid worried about its effectiveness, cost and environmental effects on sea turtles. Adam Playford, *County Kills Singer Island Breakwater Project, Siding with Environmentalists*, PALM BEACH POST, Mar. 23, 2011, <http://www.palmbeachpost.com/news/news/county-kills-singer-island-breakwater-project-sidi/nLq2X/>.

⁶⁴ BUTT, *supra* note 36, at 18.

⁶⁵ *Id.*

⁶⁶ *Id.*

future coastal erosion in the area rather than reduce it.⁶⁷

The difficulty of determining the value of a surf break is another threat to surf breaks. At the same time, valuations are anathema to some surf enthusiast purists who claim that valuations will permit undesirable cost-benefit comparisons and possible sales of waves as resources.⁶⁸ Regardless, when it comes to decision-making based on politics and prioritization, advocates should know at least a rough estimate of the economic value of the threatened resource they champion. A fishery steward can point to the economic value of a fishery calculated using previous season's seafood sales. Similarly, someone arguing for protecting homes and real estate values can point to recent sales and to property appraisals in order to value these properties. Unfortunately, estimating a surf break's value tends to be much harder to do.⁶⁹

Finally, sea level rise due to climate change remains an unpredictable "wild card" threat to surf breaks.⁷⁰ Regardless of its unpredictability, climate change is expected to increase sea level rise in the future.⁷¹ This threat is especially likely to affect surf breaks in areas with low-lying surrounding beaches and waterfronts — areas including coastal areas of Florida, Louisiana, and North Carolina.⁷² Surf breaks with higher surrounding beaches may be more resilient to sea level rise.

IV. WHAT "PROTECTION" MEANS

In order to analyze current and proposed protections of surf spots, it is important to define what is required to adequately "protect" a surf break. As explained, there are three components of a surf break: the submerged lands under the breaking waves, the unimpeded right of way of swells from the open sea to the impact zone, and access to the break.⁷³ In order to sufficiently protect

⁶⁷ *Id.* ("The wall has not only seriously damaged one of the world's best surf spots, but it has also artificially modified a previously natural coastline, which could set of [sic] a chain of events leading to instability and erosion in the future.").

⁶⁸ *Id.* at 15-16. ("Putting a monetary value on a wave is probably best done just for curiosity or as an academic exercise, as it carries a huge risk of being taken the wrong way by the wrong people. As soon as you put a specific value on a surf break, some people will start to imply that it is potentially for sale.").

⁶⁹ See discussion *supra* Section I.

⁷⁰ But it seems like smart planning designed to lessen the impacts of climate change on future coastal developments could similarly function to indirectly protect surf spots as well. For instance, setback requirements could protect developments by requiring them to be out of the sea level rise zone, and they could protect surf spots by making sure that development does not occur close enough to a surf break so as to endanger it.

⁷¹ See, e.g., GARY T. MITCHUM, FLA. CLIMATE INST., SEA LEVEL CHANGES IN THE SOUTHEASTERN UNITED STATES PAST PRESENT, AND FUTURE i (2011), available at http://www.seclimate.org/pdfpubs/201108mitchum_sealevel.pdf.

⁷² ENCYCLOPEDIA OF COASTAL SCIENCE, *supra* note 59, at 838-39.

⁷³ See discussion *supra* Section I.

a surf break, a protection scheme must protect all three components. Otherwise, a surf break remains vulnerable via attacks to its unprotected component(s). For example, legislation might protect the area 500 yards seaward of the mean high tide line.⁷⁴ This legislation alone would not be enough to adequately protect a surf break because it is silent as to the other two components of the break — access, and the unimpeded right of way for swells from open sea to the surf break impact zone.

Practically speaking, adequate protection of the submerged lands under a surf break might also require active management of the zone to protect the resource.⁷⁵ Access would require less management, but constant vigilance would be necessary to ensure that zealous private property owners do not illegally block access and that pandering local governments do not allow such obstructions.⁷⁶ Ensuring the continued unimpeded right of way for swells to reach a surf break would probably require the least amount of continued monitoring or management.

V. CURRENT PROTECTIONS

Current surf break protection strategies range from land use planning requirements and dedicated surfing reserves to wholly reactive protection schemes. This section explains some of these existing surf break protections and analyzes the effectiveness of these protections in achieving comprehensive surf break protection.⁷⁷

A. Procedural Requirements: New Zealand

New Zealand has adopted perhaps the most progressive approach to protecting surf breaks, at least when it comes to incorporating surf break

⁷⁴ Similar to how New South Wales has delineated its surfing reserve boundaries. See N.S.W. DEP'T OF LANDS, NATIONAL SURFING RESERVES (2008), available at http://www.lpma.nsw.gov.au/_data/assets/pdf_file/0007/80485/National_Surfing_FINAL_web.pdf.

⁷⁵ Integrated Coastal Zone Management (ICZM) strategies could be implemented. See generally Scarfe et al., *supra* note 21, at 697. States that lack management resources are at an obvious disadvantage and will probably be less effective regarding this aspect of protection.

⁷⁶ Surf rider and other non-profit surfer advocacy groups are constantly playing defense against attempts by local governments and private landowners to block public beach access. See, e.g., Peter Fimrite, *Surfers Sue Over Blocked Beach Access*, SFGATE, Mar. 13, 2013, <http://www.sfgate.com/bayarea/article/Surfers-sue-over-blocked-beach-access-4349486.php> (reporting allegations that a landowner tried to block public access to a beach when the landowner “painted over billboards advertising the beach to the public, erected locked gates in front of Martin’s Beach Road, hired armed guards to keep people out and did it all without permits, in violation of the California Coastal Act”).

⁷⁷ This section focuses only on explicit surfing protections. The case could be made for extending the Public Trust Doctrine to protect surf breaks, but because that doctrine does not explicitly aim to protect surf breaks, it and others like it are not considered in this section. See, e.g., Oram & Valverde, *supra* note 5, at 437.

protection in coastal development planning decisions. In fact, New Zealand is the first country to protect its surf breaks by requiring consideration of surf breaks in coastal development decisions.⁷⁸ New Zealand's primary planning document, the New Zealand Coastal Policy Statement (NZCPS), states national policy regarding development of coastal resources under the Resource Management Act (RMA) of 1991.⁷⁹ Essentially the NZCPS states the policies adopted in order to achieve the goals of the RMA.⁸⁰

Prior to 2010, the NZCPS was silent as to surf breaks. In 2010 New Zealand amended the NZCPS to include preservation of surf breaks, especially surf breaks of national significance, among its goals.⁸¹ Due to lobbying by the Surfbreak Protection Society (SPS),⁸² the 2010 amendments to the NZCPS included formal protection of seventeen surf breaks of national significance and mandated consideration of surf breaks in coastal development decisions.⁸³

New Zealand's Board of Inquiry relied on the "Wavetrack method stoke meter"⁸⁴ to decide which surf breaks to list in 2010.⁸⁵ This metric rates surf breaks from 1-10 based on a break's quality, with 10 being an optimum surf break.⁸⁶ The Board listed all the surf breaks in New Zealand that achieved 10/10 on the stoke meter, and one "high performance big wave break" which scored 8/10.⁸⁷ In all, the Board listed 17 of the 470 breaks rated by the stoke meter.⁸⁸ New Zealand acknowledges that these ratings are subjective and may favor

⁷⁸ SHEROW, *supra* note 29, at 8-9, 11.

⁷⁹ N.Z. DEP'T OF CONSERVATION, NEW ZEALAND COASTAL POLICY STATEMENT 2010 5 (2010), available at <http://www.doc.govt.nz/documents/conservation/marine-and-coastal/coastal-management/nz-coastal-policy-statement-2010.pdf> [hereinafter NZCPS].

⁸⁰ *Id.* ("The New Zealand Coastal Policy Statement (NZCPS) is a national policy statement under the Resource Management Act 1991 ('the Act'). The purpose of the NZCPS is to state policies in order to achieve the purpose of the Act in relation to the coastal environment of New Zealand.")

⁸¹ *Id.* at 17, 19.

⁸² SHEROW, *supra* note 29, at 10 ("The [2010] decadal review of the NZCPS gave the grassroots advocacy group Surfbreak Protection Society (SPS) the opportunity to lobby for surf break policy.")

⁸³ NZCPS, *supra* note 79, at 26.

⁸⁴ PETER B. MORSE & PAUL BRUNSKILL, NEW ZEALAND SURFING GUIDE (2004).

⁸⁵ N.Z. DEP'T OF CONSERVATION, NZCPS 2010 GUIDANCE NOTE POLICY 16: SURF BREAKS OF NATIONAL SIGNIFICANCE 5 (2010), available at <http://www.doc.govt.nz/Documents/conservation/marine-and-coastal/coastal-management/guidance/policy-16.pdf> ("A score of 10 is regarded as optimum surf. This approach identified 16 out of 470 listed breaks as having a 10 stoke or surf quality rating. The Wavetrack method is a descriptive rating developed and used by surfers in New Zealand and elsewhere as an indication of the quality of a wave. It is a subjective assessment, with results perhaps favouring more difficult breaks.")

⁸⁶ *Id.*

⁸⁷ *Id.* ("For the purposes of Policy 16, a surf break that rates 10 on the stoke meter has been included in the NZCPS 2010 surf break schedule with one exception: at Papatowai, which rated 8 on the stoke meter. Papatowai was included because of its growing international profile as a high performance big wave break.")

⁸⁸ *Id.*

more difficult surf breaks.⁸⁹

While procedural requirements that consider preservation of surf breaks in coastal development planning and decision-making is a step in the right direction, such requirements are not really substantive surf break protections. Instead, they are merely procedural requirements.⁹⁰ Additionally, commentators have pointed out that New Zealand's protections only apply to the coastal component of the surf break, where protections which extend to the Exclusive Economic Zone (EEZ) could better protect surf breaks.⁹¹ Likewise, New Zealand's scoring system has been criticized because it has resulted in protection for more famous surf breaks while ignoring the more vulnerable but lesser known surf breaks.⁹² Because of these shortcomings, New Zealand's approach is merely a useful tool that could be utilized in other countries to complement other legal protections that are designed to more substantively protect surf areas.

B. Surfing Reserves

The World Surfing Reserves (WSR) program is an international program of surf reserves, which "proactively identifies, designates and preserves outstanding waves, surf zones and their surrounding environments around the

⁸⁹ *Id.* Notably absent from the list were any of the surf breaks in the Auckland area. Commentators are hopeful that breaks from that region will be listed in the second listing phase. Edward Rooney, *Them's the Breaks*, AUCKLANDER, Apr. 28, 2011, <http://www.theauckland.co.nz/news/thems-the-breaks/1053011>.

⁹⁰ In fact, decisions have already been made which seem to undermine the goal of New Zealand's Surf Break protections. See Al Gillespie, Op-Ed., *Surf Hotspots Getting Tough Break*, N.Z. HERALD, Aug. 15, 2013, http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10912395 ("In the last few weeks, this secondary status [of surfers] has been reinforced with two further decisions. These relate to the decision to renew the dredging consent of 10,000 cubic metres per year from the channel that impacts upon the bar at Whangamata and the decision to allow the dumping of some 400,000 cubic metres of dredging per year, in front of a series of nationally important surf breaks in Southland, namely 50,000 in front of Aramoana/ 'the Spit', and 350,000 in the path of Whareakeake and Karitane.").

⁹¹ New Zealand's RMA has jurisdiction out to the twelve nautical miles from shore, while the EEZ extends 200 nautical miles. SHEROW, *supra* note 29, at 18. Sherow suggests extending policy would ensure protection of "surf break swell corridors." *Id.*

⁹² Evidence of Shaw Trevor Mead in Support of Written Submission and the Surfbreak Protection Society Inc. 3 (NZ Dep't of Conservation 2008), available at <http://www.doc.govt.nz/documents/getting-involved/consultations/current-consultations/nzcps/evidence/133-nzcps-evidence-5-7.pdf> ("I strongly support the protection of surfing breaks of national significance from inappropriate use and development. However, I believe that although the list of surfing breaks provided include some of NZ's national surfbreak treasures (all score 10/10 in the NZ Surfing Guide, with the exception of Papatowai (8/10), which is a big wave spot, there are other internationally and nationally significant surfing breaks that are more vulnerable that this list of reef breaks, i.e. surfing breaks that are natural sand features and thus more susceptible to damage than hard rock breaks.").

world.”⁹³ The WSR program currently lists four surf breaks as WSRs.⁹⁴ The program has a four-phase process for designating surf breaks as WSRs: nomination, selection, enshrinement, and management.⁹⁵ In order to be designated as a WSR, a surf break is evaluated according to certain criteria.⁹⁶ These criteria include: quality and consistency of the wave or surf zone; environmental characteristics; surf culture and history; and local community support.⁹⁷

In order to achieve its goal of surf break preservation, the WSR program stresses the importance of ongoing management post-enshrinement to adequately protect surf breaks.⁹⁸ Management under the WSR program involves the creation of a Local Stewardship Council (LSC) at each break, as well as implementing a Local Stewardship Plan at each break.⁹⁹ Nonetheless, WSR designation does not provide any legal protections on its own.¹⁰⁰ Instead, local legislation is required in order to protect a designated WSR in any legally meaningful way.¹⁰¹

Australia’s National Surfing Reserves (NSR) program served as one of the inspirations for the WSR program, and now NSRs are essentially Australia-specific WSRs — WSRs just with slightly less rigorous criteria.¹⁰² Australia has historically been a leader in surf break designation. For example, Australia established its first surfing reserve in 1973 — a land-based reserve at Bell’s Beach.¹⁰³ After a considerable gap, Australia established other surfing reserves

⁹³ *About World Surfing Reserves*, WORLD SURFING RESERVES, <http://www.worldsurfingreserves.org/about> (last visited Sept. 19, 2013).

⁹⁴ These four breaks are Malibu, United States; Santa Cruz, United States; Manly, Australia; and Ericeira, Portugal. *Dedicated Reserves*, WORLD SURFING RESERVES, <http://www.worldsurfingreserves.org/dedicated> (last visited Sept. 19, 2013).

⁹⁵ *WSR FAQ*, WORLD SURFING RESERVES, <http://www.worldsurfingreserves.org/wsr-faqs> (last visited Sept. 19, 2013).

⁹⁶ *Criteria & Evaluation*, WORLD SURFING RESERVES, <http://www.worldsurfingreserves.org/criteria-evaluation> (last visited Sept. 19, 2013).

⁹⁷ *Id.*

⁹⁸ *WSR FAQ*, *supra* note 95.

⁹⁹ *Dedicated Reserves*, *supra* note 94.

¹⁰⁰ This decision was a conscious one for WSRs. See *Save the Waves Coalition Initiates World Surfing Reserves Program at Malibu*, SURFER MAG. (Aug. 3, 2010), <http://www.surfermag.com/features/malibu-designated-first-ever-world-surfing-reserve/> (“The WSR has opted not to directly pursue [legal protection] since the wait for legislation can be so lengthy.”).

¹⁰¹ See, e.g., N.S.W. DEP’T OF LANDS, *supra* note 74.

¹⁰² *WSR FAQ*, *supra* note 95 (“National Surfing Reserves – Australia (NSR) is another pioneering program upon which the WSR initiative has modeled portions of its program.”).

¹⁰³ Brad Farmer & Andrew D. Short, *Australian National Surfing Reserves – Rationale and Process for Recognising Iconic Surfing Locations*, 50 J. COASTAL RES. 99, 100 (2007). But this designation is largely symbolic because the state of Victoria, unlike New South Wales, does not afford legal protections to its surfing reserves. See Stephanie Anderson, *Victoria Gets its First National Surfing Reserve*, ABC NEWS, Mar. 15, 2013, <http://www.abc.net.au/worldtoday/content/2013/s3716376.htm> (“New South Wales is the only state to recognise its nine surfing

under the NSR program at Maroubra in 2006 and Angourie in 2007.¹⁰⁴ As of 2013, Australia lists about a dozen NSRs.¹⁰⁵ Based on the current NSR criteria, some predict that approximately twenty-five Australian NSRs could be established.¹⁰⁶ In order to become an NSR, a surf break must meet three criteria similar to the WSR criteria: the wave must be national class quality; it must be considered sacred by the local and national surfing community; and it must have a significant history of use by the local and national surfing community.¹⁰⁷

Unfortunately, the designation of a surf break on the NSR list is largely symbolic in most of Australia. In order for an NSR to have any legal protections, it must be accompanied by state or national legislation to protect that NSR. New South Wales is the only state in Australia that provides legislation to protect its NSRs.¹⁰⁸ Australian Surfing Reserves are set aside and protected as their own class of Australian Crown Land protected under the Crown Lands Act of 1989.¹⁰⁹ This classification protects surf breaks in these reserves from the beach to 500 meters seaward of that mark.¹¹⁰

The NSR organization stresses that partnering with the Australian government was important to its success.¹¹¹ Furthermore, NSR explicitly proclaims that

reserves under the law.”).

¹⁰⁴ *Angourie*, NAT'L SURFING RESERVES, <http://www.surfingreserves.org/angourie.php> (last visited Sept. 19, 2013); *Maroubra*, NAT'L SURFING RESERVES, <http://www.surfingreserves.org/maroubra.php> (last visited Sept. 19, 2013).

¹⁰⁵ *Current Reserves*, NAT'L SURFING RESERVES, <http://www.surfingreserves.org/maroubra.php> (last visited Nov. 8, 2013) (listing eleven current reserves with one currently proposed for listing).

¹⁰⁶ *What is NSR?*, NAT'L SURFING RESERVES, <http://www.surfingreserves.org/what-is-nsr.php> (last visited Sept. 19, 2013) (“There are eight NSR’s in NSW (Manly will make nine), six planned for Qld, five for WA and anticipate about 25 Australia wide.”).

¹⁰⁷ *Id.*

¹⁰⁸ Anderson, *supra* note 103.

¹⁰⁹ Farmer & Short, *supra* note 103, at 102 (“[I]n October, 2006 the New South Wales Department of Lands approached the committee in August 2006 and proposed that a new category of Crown Land be enacted through their Regional Reserve Strategy called a ‘Surfing Reserve’. The reserves would follow the high water mark and extend 500 m seaward, thereby encompassing the actual surfing site. They would be formally gazetted as a Crown ‘Surfing’ Reserve and managed by a local committee appointed by the Minister for Lands. The committee accepted this proposal. As a result Angourie was the first such NSW surfing reserve and was gazetted at the 2007 dedication. It is also the world’s first surfing reserve to extend seaward and cover the actual surfing site.”); *see also* N.S.W. DEP’T OF LANDS, *supra* note 74 (“The NSW Department of Lands fully supports the National Surfing Reserve initiative and has been working in partnership with the community and the National Surfing Reserves Committee to create these reserves under the Crown Lands Act 1989. This Act offers legal protection to a National surfing reserve and highlights the significance of the Crown estate in the surfing culture and Australian lifestyle.”).

¹¹⁰ *See, e.g.*, Press Release, N.S.W. Gov’t, Manly-Freshwater Declared National Surfing Reserve (Sept. 25, 2010), available at http://www.lpma.nsw.gov.au/__data/assets/pdf_file/0017/136214/100925_Lands_Manly_Freshwater_National_Reserve_WEB.pdf (“The Manly-Freshwater National Surfing Reserve covers the area from Freshwater Beach to a point 500 metres east of Shelly Beach Headland.”).

¹¹¹ *What is NSR?*, *supra* note 106.

although they are advocates of surfing and surfers, they do not seek to exclude any user groups from these NSRs.¹¹²

In addition to its NSR system, Australia also features a Regional Surfing Reserves (RSR) program. These reserves are similar to NSRs but they protect less famous, lower profile surf breaks, which are nonetheless important to their communities.¹¹³ Based on the current criteria for listing RSRs, up to 100 Australian RSRs could be protected.¹¹⁴ Nevertheless, these breaks will only be dedicated if there is sufficient local community support to do so.¹¹⁵

In the United States, Hawaii has been a leader in protecting surfing areas. In 2010 Hawaii's Governor Linda Lingle established the state's first two surfing reserves by executive order.¹¹⁶ Governor Lingle's Executive Order was inspired by a failed bill that defined designated surfing reserves in Hawaii as: the coastal environment recognized for the cultural and historical quality and consistency of its surf and its long-term and ongoing relationship between the surf and surfers; and . . . the beach and adjacent surf zones from the high water mark and may include features of the marine and coastal zone that intrinsically enhance any aspect of the surfing experience.¹¹⁷

This Executive Order also lays out the legal authority for the Hawaii Department of Land and Natural Resources (DLNR) to manage water and coastal areas of the state¹¹⁸ and explains that the DLNR will designate these reserves historic landmarks under Hawaiian law.¹¹⁹ Regardless, the Executive

¹¹² *Id.*

¹¹³ *Id.*

¹¹⁴ *Id.*

¹¹⁵ *Id.*

¹¹⁶ Haw. Exec. Order No. 10-07 (Jun. 2, 2010), *available at* <http://archive.lingle.hawaii.gov/govgallery/news/executive-orders/Executive%20Order%2010-07%20Surfing%20Reserves.PDF>.

¹¹⁷ S.B. 2646, 25th Leg., Reg. Sess. (Haw. 2010), *available at* <http://www.surfingreserves.org/pdf/NSR%20-%20Hawaii%20Bill.pdf> ("A Bill for an Act Relating to Hawaii Surfing Reserves"—the Bill that failed to pass Hawaii's state legislature, which inspired the Governor's Executive Order).

¹¹⁸ Haw. Exec. Order No. 10-07 (Jun. 2, 2010), *available at* <http://archive.lingle.hawaii.gov/govgallery/news/executive-orders/Executive%20Order%2010-07%20Surfing%20Reserves.PDF>; *see* HAW. REV. STAT. § 26-15(b) (2013) ("The department shall manage and administer the public lands of the State and minerals thereon and all water and coastal areas of the State except the commercial harbor areas of the State, including the soil conservation function, the forests and forest reserves, aquatic life, wildlife resources, state parks, including historic sites, and all activities thereon and therein including, but not limited to, boating, ocean recreation, and coastal areas programs.").

¹¹⁹ HAW. REV. STAT. § 6E-31 (2013) ("Upon the recommendation of the department, the governor may declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the State to be state monuments and may reserve as a part thereof parcels of land the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected. When such objects are situated upon a tract covered by a bona fide unperfected claim or held in private ownership, the tract, or so much thereof as may be necessary for the proper care and management of the object, may be relinquished to the State, and

Order did not itself designate these areas as historic landmarks or give these reserves any additional legal protections.

C. Reactive Protection Campaigns: United Kingdom

In the United Kingdom, a group called “Surfers Against Sewage,” or SAS, has led the charge in protecting waves.¹²⁰ Despite its successes, SAS has had to rely on primarily reactive strategies to protect UK’s waves.¹²¹ Because the UK lacks substantive legal protections for surf breaks, the onus is constantly on SAS to be on guard in order to protect surf breaks.¹²² To this end, SAS has used media campaigns, grass roots organizing, petitions and online strategies.¹²³ SAS has launched a campaign called “Protect our Waves” (POW) to put pressure on the British government to enact specific legislation designed to protect surf breaks.¹²⁴ Regardless of its victories, SAS needs the UK to enact new legislation or some other strategy needs to be pursued in order to comprehensively protect surf breaks.

VI. ADAPTING EXISTING CONSERVATION STRATEGIES TO PROTECT SURF SPOTS

Now that the existing legal frameworks for surf break protections have been introduced and analyzed, this section focuses on applying other existing legal options to protecting surf breaks.

A. Marine Protected Areas

Marine Protected Areas (MPAs) could be established to protect surf spots. MPAs are defined by the International Union for the Conservation of Nature (IUCN) as “a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.”¹²⁵ Despite this definition, confusion exists over what exactly MPAs are.

the governor may accept the relinquishment of such tracts in behalf of the State.”).

¹²⁰ Nelsen et al., *supra* note 18, at 907 (“During its 23 year history, SAS has successfully protected numerous waves around the UK using a variety of campaign techniques . . .”).

¹²¹ *Id.*

¹²² *Id.*

¹²³ *Id.*

¹²⁴ *Id.* (“Protect Our Waves legislation could be delivered through a new Act of Parliament or amendments to existing legislation, and would cover the effects of inappropriate development on surfing zones, reducing the impacts of sewage pollution and stricter action to tackle marine litter.”).

¹²⁵ *Marine Protected Areas — Why Do We Need Them?*, INT’L UNION FOR CONSERVATION OF NATURE (Feb. 9, 2010), https://www.iucn.org/about/union/secretariat/offices/oceania/oceania_resources_and_publications/?4715/marine-protected-areas. This definition is the IUCN’s most recent definition of MPA, replacing its previous definition: “[a]ny area of intertidal or subtidal

To add to this confusion, MPAs are sometimes conflated with marine reserves,¹²⁶ despite marine reserves holding distinct definitions of their own.¹²⁷

Because there is no set formula for enacting or establishing MPAs, and because they can and often do overlap, MPA management tends to be complex. Partially in response to the confusion and disarray of the various MPAs around the United States, President Clinton issued an Executive Order which directed federal agencies and other interested entities to establish a national system of MPAs.¹²⁸ In 2009, the United States officially established the United States National System of Marine Protected Areas.¹²⁹ In 2013, the United States finalized its National Ocean Policy.¹³⁰ Although MPAs in the United States have been somewhat standardized, internationally MPAs still remain unstandardized.¹³¹

For convenience sake, this paper will evaluate MPAs according to the definition in President Clinton's 2000 Executive Order: "any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein."¹³² Under this broad definition, MPA is just a label for any protected marine area. State, federal, or local law can establish an MPA.

The Surfrider Foundation advocates using MPAs to protect surf breaks.¹³³ Surfrider argues that all areas of the ocean should be protected on some level.¹³⁴

terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment." WORLD COMM'N ON PROTECTED AREAS, THE WORLD CONSERVATION UNION, GUIDELINES FOR MARINE PROTECTED AREAS xviii (Graeme Kelleher ed., 1999).

¹²⁶ Donald C. Baur et al., *Putting "Protection" into Marine Protected Areas*, 28 VT. L. REV. 497, 506 (2012).

¹²⁷ "Marine reserve" typically refers to an area where all extractive and disruptive activities are prohibited. PEW OCEANS COMM'N, AMERICA'S LIVING OCEANS: CHARTING A COURSE FOR SEA CHANGE 31 (2003), available at http://www.opc.ca.gov/webmaster/ftp/pdf/docs/Documents_Page/Reports/pew_oceans_final_report.pdf (defining "marine reserves" as areas of the oceans "where all extractive and disruptive activities are prohibited").

¹²⁸ Exec. Order No. 13,158, 65 Fed. Reg. 34,909 (May 26, 2000).

¹²⁹ *About the National System of MPAs*, NAT'L MARINE PROTECTED AREAS CTR., <http://marineprotectedareas.noaa.gov/nationalsystem> (last visited Sept. 19, 2013) ("The United States has developed a national system of marine protected areas (MPAs) to advance the conservation and sustainable use of the nation's vital natural and cultural marine resources.").

¹³⁰ Juliet Eilperin, *White House Finalizes National Ocean Policy*, WASH. POST, Apr. 16, 2013, <http://www.washingtonpost.com/blogs/post-politics/wp/2013/04/16/white-house-finalizes-national-ocean-policy>.

¹³¹ However, the IUCN has proffered an international definition of MPAs. *Marine Protected Areas—Why Do We Need Them?*, *supra* note 125.

¹³² Exec. Order No. 13,158, 65 Fed. Reg. 34,909 (May 26, 2000).

¹³³ *Position Statement on Marine Protected Areas (MPAs)*, SURFRIDER FOUND., <http://www.surfrider.org/pages/surfrider-foundation-position-statement-on-marine-protected-areas-mpas> (last visited Sept. 19, 2013).

¹³⁴ *Id.*

Different areas could be subject to different protective limitations under a tiered system of MPAs.¹³⁵ This tiered system could protect some areas as “no-take” MPAs while allowing extractive uses in other areas.¹³⁶ According to Surfrider, this tiered system would allow for preservation, protection, and restoration of marine, estuarine, and beach habitats.¹³⁷ Because surfing is a non-extractive use, surfers would be able to use any tiers of the MPA system it envisions.¹³⁸ Fishermen and other extractive users would be restricted from using the tiers which are under the highest levels of environmental protection.

Some commentators argue that MPAs already benefit surfers by conserving ecological features that provide the foundation for waves.¹³⁹ At least one MPA designation has saved a surf break. The California Coastal Commission denied Pacific Gas & Electric Company’s proposal to do seismic testing near the Diablo Canyon Nuclear Power Plant.¹⁴⁰ If testing had been permitted, surfers from Cayucos to Montana de Oro would have been prohibited from entering the water.¹⁴¹ The Commission decided to deny the proposal at least in part because it would have impacted MPAs in the area, including Point Buchon Marine Reserve and White Rock Conservation Areas.¹⁴² Accordingly, commentators are hopeful that MPAs can provide similar surf break protections — even if merely coincidental — in the future.¹⁴³

MPAs are an attractive option for protecting waves because state governments typically already have the jurisdiction needed to establish an MPA over an entire surf break.¹⁴⁴ However, state law would not be able to protect the other half of the equation, the right of way of the swell to reach the area where it becomes a breaking wave — the wave corridor. The reason for this weakness is that the federal government has jurisdiction over areas more than three miles offshore under the Submerged Lands Act.¹⁴⁵ Because of this jurisdictional boundary, a state might not be the best-situated party to protect surf spot merely by designating it an MPA.¹⁴⁶

¹³⁵ *Id.*

¹³⁶ *Id.* “Extractive uses” are uses like fishing, where a resource is taken from the ocean; “no take” areas are areas where extractive uses are not permitted.

¹³⁷ *Id.*

¹³⁸ *Id.*

¹³⁹ Serge Dedina, *Why Marine Protected Areas Benefit Surfers*, SERGEDEDINA.COM (Oct. 25, 2012), <http://sergededina.com/2012/10/25/why-marine-protected-areas-benefit-surfers>.

¹⁴⁰ Chad Nelsen, *Will California’s Marine Protected Areas Protect Surfing Areas?*, SURFRIDER FOUND. (Jan. 18, 2013), <http://www.surfrider.org/coastal-blog/entry/will-californias-marine-protected-areas-protect-surfing-areas>.

¹⁴¹ *Id.*

¹⁴² *Id.*

¹⁴³ *Id.*

¹⁴⁴ Submerged Lands Act of 1953, 43 U.S.C. §§ 1301-1315 (2012).

¹⁴⁵ *Id.* §§ 1301(a), 1312.

¹⁴⁶ In Nantucket Sound, this federal-state jurisdictional boundary created a “hole in the

Another weakness of using MPAs to protect surf breaks is that this designation would probably not protect access to the waves. Under our definition, an MPA only includes the “marine environment.”¹⁴⁷ This definition would not be able to protect the wave resource by ensuring access to it. Without some sort of public access to a wave, its preservation becomes merely academic.¹⁴⁸

Another weakness of using MPA designation to protect surf breaks is that MPAs generally protect certain areas but they usually do not protect them for certain purposes, such as recreational surfing. Instead, protections might just coincidentally protect an area for surfing purposes. Likewise the protections called for under an MPA might prohibit use of the area for recreational purposes such as surfing.¹⁴⁹ This lack of specific surf break protection is a major weakness of using MPAs to protect surf breaks.

B. World Heritage Designation

World Heritage designation is another option for protecting surf breaks. In fact, the UNESCO World Heritage site program served as an original inspiration for the World Surfing Reserve Program.¹⁵⁰ Furthermore, World Heritage designation has been used to protect marine and coastal resources already. For example, some coral reefs have been designated World Heritage sites.¹⁵¹

doughnut” which allowed wind energy investors to obtain a federal permit under the Rivers and Harbors Act to build wind energy turbines in the middle of the Sound, despite it being an Ocean Sanctuary under Massachusetts state law. Baur et al., *supra* note 126, at 499-500.

¹⁴⁷ Exec. Order No. 13,158, 65 Fed. Reg. 34,909 (May 26, 2000).

¹⁴⁸ Beach access is a hotly debated and contested issue on its own. *See* Trepanier v. Cnty of Volusia, 965 So. 2d 276 (Fla. 2007); *City of Daytona Beach v. Tona-Rama, Inc.*, 294 So. 2d 79 (Fla. 1974); *Severance v. Patterson*, 54 Tex. Sup. Ct. J. 172 (Tex. 2010); *see also* S. Brent Spain, *Florida Beach Access: Nothing But Wet Sand?*, 15 J. LAND. USE & ENVTL. L. 167 (1999), available at <http://www.law.fsu.edu/journals/landuse/vol151/spain1.htm>; Erika Kranz, *Sand for the People: The Continuing Controversy Over Public Access to Florida's Beaches*, FLA. BAR J., Jun. 2009, at 10.

¹⁴⁹ California features Special Closure MPAs which prohibits access to certain areas. *Southern California Marine Protected Areas*, CAL. DEP'T OF FISH AND WILDLIFE, http://www.dfg.ca.gov/marine/mpa/scmpas_list.asp (last visited Sept. 19, 2013).

¹⁵⁰ *WSR FAQ*, *supra* note 102 (“United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites program was one of the original inspirations for the program. While the WSR program utilizes some aspects of the World Heritage Sites model, it combines this with more of a community-based, grassroots approach at the local level.”); *see also* Media Kit, Manly Council, Manly-Freshwater World Surfing Reserve Dedication (Mar. 10, 2010), available at http://www.worldsurfingreserves.org/sites/default/files/imce_uploads/Manly%20Council%20Media%20Kit%20World%20Surfing%20Reserve.pdf (“World Surfing Reserves is an international program based on models established by UNESCO’s World Heritage Program and National Surfing Reserves Australia.”).

¹⁵¹ E.g., the Great Barrier Reef off Australia’s coast and the Barrier Reef off of Belize. *Belize Barrier Reef Reserve System*, UNESCO WORLD HERITAGE CENTRE, <http://whc.unesco.org/en/list/764> (“The coastal area of Belize is an outstanding natural system consisting of the largest barrier

One problem with using world heritage classifications to protect surf breaks is that it might be difficult for these breaks to meet the requirements to be listed as a World Heritage site. Specifically, World Heritage sites are designated as such because of their universal value to humanity.¹⁵² Surf spots probably do not meet this requirement. Instead, most surf breaks are valuable primarily to surfers as recreational surf breaks. Accordingly, World Heritage designation is probably not the most attractive option available for protecting surf spots.

Furthermore, designation as a world heritage site does not itself provide any legal protection. Instead, the designation is more of recognition of a site's importance. UNESCO recommends that states undertake local legislation or other protective measures in order to protect World Heritage sites.¹⁵³ World Heritage designation is primarily helpful as a means of raising awareness for sites that should be protected — not for protecting these spots. This weakness is another reason why this strategy is not the best one for protecting surf spots.

The creators of the world surfing reserve program recognized the positive attributes of the UNESCO program but also saw room for improvement.¹⁵⁴ The incompleteness of the UNESCO program as applied to surf break protection remains extant, which is another one of the program's weaknesses. Furthermore, the Surfrider Foundation has looked at the possibility of getting surfing classified as an intangible cultural heritage as defined under UNESCO.¹⁵⁵ If Surfrider is successful, then it would probably be easier to get surf breaks designated under the World Heritage system. Again, while such designations provide awareness and education about what resources are considered priceless, they provide nothing in terms of legal protection.

reef in the northern hemisphere, offshore atolls, several hundred sand cays, mangrove forests, coastal lagoons and estuaries. The system's seven sites illustrate the evolutionary history of reef development and are a significant habitat for threatened species, including marine turtles, manatees and the American marine crocodile."); *Great Barrier Reef*, UNESCO WORLD HERITAGE CENTRE, <http://whc.unesco.org/en/list/154> ("The Great Barrier Reef is a site of remarkable variety and beauty on the north-east coast of Australia. It contains the world's largest collection of coral reefs, with 400 types of coral, 1,500 species of fish and 4,000 types of mollusc. It also holds great scientific interest as the habitat of species such as the dugong ('sea cow') and the large green turtle, which are threatened with extinction.").

¹⁵² *Convention Concerning the Protection of the World Cultural and Natural Heritage*, UNESCO WORLD HERITAGE CENTRE, <http://whc.unesco.org/?cid=175> (last visited Sept. 19, 2013) (requiring "outstanding interest" in order to list a site as a "natural heritage" site).

¹⁵³ *Id.* (calling on states "to take the appropriate legal, scientific, technical, administrative and financial measures necessary for the identification, protection, conservation, presentation and rehabilitation of this heritage").

¹⁵⁴ *WSR FAQ*, *supra* note 102.

¹⁵⁵ Grégory Le Moigno, Keynote Presentation at the Global Wave Conference 3: International Symposium on the Protection of Waves (Oct. 25, 2011), *available at* <http://www.globalwaveconference.com/keynotes/gregory-le-moigno-keynote>.

C. National Register of Historic Places

One strategy that has been pursued to save Trestles is a proposal to list the surf break on the National Register of Historic Places.¹⁵⁶ The National Register was established in 1966 with the passage of the National Historic Preservation Act (NHPA).¹⁵⁷ Adding Trestles to the Register would offer it some additional protections, but these protections would be largely procedural, and they would only apply to federal actions.¹⁵⁸ If Trestles were listed on the Register, federal agencies would be required to follow certain procedural requirements in order to pursue any actions that might affect Trestles.¹⁵⁹ These procedural requirements are known as the Section 106 process.¹⁶⁰ These requirements have been described as “stop, look, and listen” requirements.¹⁶¹

Section 106 has two requirements. First, the agency must consider the impact of the proposed action on historic properties.¹⁶² Second, the agency must seek comments from the Advisory Council on Historic Preservation.¹⁶³ The goal of Section 106 process is to “accommodate historic preservation concerns with the needs of Federal undertakings through consultation among the agency official

¹⁵⁶ The Application to list Trestles on the Registry is available online at: http://ohp.parks.ca.gov/pages/1067/files/ca_san%20diego%20county_trestles_nomination.pdf. “Trestles Historic District (Trestles) stretches 2.25 miles on property owned by the United States Department of the Navy operated as the Marine Corps Base at Camp Pendleton in San Diego County. Trestles’ contributing resources include seven surf breaks identified from north to south as Upper Trestles (Uppers), Lower Trestles (Lowers), Middles, Church, The Point, Old Man’s, and Dog Patch. This portion of California’s coastline bends sharply towards the east which causes the beachfront to be south-southwest. Trestles is located at the mouth of the San Mateo Creek within the larger boundaries of San Onofre State Beach, leased by the State of California under a fifty-year agreement with the Department of the Navy. Also included within the district boundary are the two noncontributing railroad trestles for which the district is named.” NAT’L PARK SERV., NATIONAL REGISTER OF HISTORIC PLACES REGISTRATION FORM 3 (n.d.) [hereinafter APPLICATION].

¹⁵⁷ 16 U.S.C. § 470a (2012).

¹⁵⁸ Trestles might be protected under NHPA even if it were not listed. In 1976, Congress amended the NHPA to apply to properties that meet the criteria of being listed but which have not yet been listed. Pub. L. No. 94-422, § 201, 90 Stat. 1313 (1976). On the other hand, section 4(f) of the Department of Transportation Act — a law which would usually add more procedural protections for surf spots like Trestles — does not protect Trestles because the TCA obtained an exemption from this law. Section 4(f) prohibits the Secretary of Transportation from approving any program or project which requires the use of “land from a historic site of national, State, or local significance . . . [unless] (1) there is no feasible and prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such . . . historic site resulting from such use.” Department of Transportation Act of 1966, 49 U.S.C. § 303(c) (2012).

¹⁵⁹ See Protection of Historic Properties, 36 C.F.R. §§ 800-800.16 (2013).

¹⁶⁰ 16 U.S.C. § 470(f) (2012); 36 C.F.R. § 800.1.

¹⁶¹ *Ill. Commerce Comm’n v. Interstate Commerce Comm’n*, 848 F.2d 1246, 1260-61 (D.C. Cir. 1988) (“Like section 102 of NEPA, section 106 of the Historic Preservation Act is a ‘stop, look, and listen’ provision; it requires federal agencies to take into account the effect of their actions on structures eligible for inclusion in the National Register of Historic Places.”).

¹⁶² 36 C.F.R. § 800.3.

¹⁶³ 36 C.F.R. § 800.1.

and other parties with an interest in the effects of the undertaking on historic properties, commencing at the early stages of project planning.”¹⁶⁴ The consultation requirement is primarily in order to identify historic properties which may be affected by federal agency actions.¹⁶⁵

The main drawback of using this strategy for general protection of surf breaks is that it only applies to federal actions. Furthermore, NHPA is predominantly a procedural protection.¹⁶⁶ If the agency follows Section 106 requirements, it could end up still going ahead with the action which could negatively affect historic property. Likewise, there are possible problems with making the argument that more than a select few surf breaks are “historic.”¹⁶⁷ Trestles has a long recorded history of surfing and other historic uses which are cited in the petition. But what about a site that is just as threatened as Trestles but does not have the same storied history?

D. Declaration as National Park

Another possible way of protecting surf spots would be to designate them as national parks. The National Park System protects areas worthy of preservation due to their national significance.¹⁶⁸ National Parks usually consist of terrestrial areas, but several units within the System include coastal or marine waters or are adjacent to them.¹⁶⁹ Furthermore, some protect coral reef ecosystems.¹⁷⁰

The National Park Service Organic Act created the National Park Service and established the resource management goals of the Service.¹⁷¹ The Act included the goal to “conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”¹⁷² National Parks and monuments are generally afforded the strongest protections of the areas protected under the National Park System,

¹⁶⁴ *Id.*

¹⁶⁵ *Id.*

¹⁶⁶ In this way, the NHPA is similar to the National Environmental Policy Act (NEPA). 42 U.S.C. §§ 4321-4370h (2012).

¹⁶⁷ 36 C.F.R. § 800.16(l)(1) (“Historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.”). The petition to list Trestles points out that surfers have been surfing at Trestles since 1933. See APPLICATION, *supra* note 156, at 5.

¹⁶⁸ See generally NAT'L PARK SERVICE, CRITERIA FOR NEW NATIONAL PARKS, available at <http://planning.nps.gov/document/Criteria%20for%20New%20Parklands.pdf>.

¹⁶⁹ Baur et al., *supra* note 126, at 525.

¹⁷⁰ *Id.*

¹⁷¹ National Park Service Organic Act, 16 U.S.C. §§ 1-460 (2012).

¹⁷² *Id.* § 1.

because strict preservation is its goal.¹⁷³ Accordingly, designating a surf break a national park seems attractive upon first blush.

Likewise, protecting surf breaks under the NPS is attractive because the Service at least takes into account the fact that threats to the Parks come from outside their boundaries.¹⁷⁴ However, despite this recognition, there is no legal authority to protect NPS units from threats outside of their boundaries.¹⁷⁵ Because of this shortcoming, designating surf breaks as national parks would only adequately protect them if the national park designation includes the submerged breaks, some area beyond the break to allow swells to reach the wave zone, and access. Otherwise, NPS protections would fail to adequately protect surf breaks.

E. Coastal Zone Management Act

States could also use the Coastal Zone Management Act of 1972 (CZMA) in an effort to protect surf breaks.¹⁷⁶ The CZMA offers monetary incentives in the form of federal grants to states which develop protection plans to protect coastal resources.¹⁷⁷ Because waves are coastal resources, protecting them could qualify states to receive incentives under the system.¹⁷⁸

But the CZMA is susceptible to the same concerns as using MPAs at the state level. Protections under the CZMA would only extend to the jurisdiction of the state protecting the resource. Accordingly, it seems like protections under the CZMA would need to be combined with another strategy or framework in order to adequately protect surf breaks.

VII. A MIDDLE WAY

The current protections designed to protect surf breaks are insufficient to do so for a variety of reasons.¹⁷⁹ Furthermore, it does not seem like any other existing legal protections can be applied to protect surf breaks. The unique

¹⁷³ Baur et al., *supra* note 126, at 528.

¹⁷⁴ *Id.* at 529.

¹⁷⁵ *Id.*

¹⁷⁶ 16 U.S.C. §§ 1451-1465 (2012).

¹⁷⁷ *Id.* § 1455.

¹⁷⁸ *See id.* § 1453(1). “Coastal zone” in the CZMA includes “the coastal waters (including the lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder), strongly influenced by each other and in proximity to the shorelines of the several coastal states, and includes islands, transitional and intertidal areas, salt marshes, wetlands, and beaches.” *Id.*

¹⁷⁹ It may be impossible to completely protect a surf break because of the myriad of uncontrollable phenomena that affect and determine its existence. For example, a river-fed surf break might be threatened from proposed dam projects on the river, but protecting a surf break in any of the ways examined in this paper would probably still not be enough to save the break if its sandbars are dependent on the river being able to flow freely.

character of surf breaks makes current protections insufficient. Specifically, the multiple components of surf breaks make it difficult to enact legislation, or to use existing legal frameworks, to protect them. Accordingly, new legislation uniquely designed to protect surf breaks is one option for adequately protecting surf breaks. Such new legislation designed to protect surf breaks would need to protect all three components of the surf break in order to be successful. Alternatively, a patchwork of existing protections and management strategies might be able to protect a surf break sufficiently. For instance, a surfing reserve which explicitly protects beach access could be coupled with the designation of a wave corridor.¹⁸⁰ These protections would together protect all three components of the surf break, even if they were not all promulgated in the same piece of legislation.

Besides surf-specific legal protections, it seems like artificial reefs might be a way to forge a middle ground between those hoping to protect surf spots and those concerned with protection of coastal land and resources. If the past is any guide, it seems unavoidable that more surf breaks will be lost. Artificial reefs could be used to control coastline erosion and to replace surf spots sacrificed to development.¹⁸¹ Reefs are currently being developed with these explicit aims in mind.¹⁸² However, reviews have been mixed regarding past attempts to engineer reefs that protect coastal resources and retain surfing conditions.¹⁸³ Future advances in artificial reef technology may allow for protection of surf spots

¹⁸⁰ The first step would be identifying wave corridors. See *Mapping the Swell Corridors in Auckland and Waikato*, SURFBREAK PROTECTION SOCIETY, <http://www.surfbreak.org.nz/?p=3134> (last visited Sept. 24, 2013) (explaining wave corridors and explaining the work that has been done to map wave corridors). Wave corridor identification and protection could proceed similar to proposed wildlife corridors. See, e.g., Wildlife Corridors Conservation Act of 2010, H.R. 5101, 111th Cong. (2010).

¹⁸¹ Policymakers could adopt a “no net loss” policy for surf breaks, similar to the “no net loss” wetlands policy the United States government adopted. Memorandum of Agreement Between the Department of the Army and the Environmental Protection Agency Concerning the Determination of Mitigation Under the Clean Water Act section 404 (b)(1) Guidelines (Feb. 8, 1990). But see R. Eugene Turner, Ann M. Redmond & Joy B. Zedler, *Count It by Acre or Function—Mitigation Adds Up to Net Loss of Wetlands*, ENVTL. L. INST. NAT’L WETLANDS NEWSLETTER, Nov.-Dec. 2001, at 5, available at <http://files.ali-aba.org/files/coursebooks/pdf/Ck081-ch18.pdf> (explaining the National Research Council’s Committee on Mitigating Wetland Losses finding that mitigation has failed to achieve this national no net loss policy).

¹⁸² John Hearin, *Preliminary Design of an Artificial Surfing Reef for Cocoa Beach, Florida*, 1 REEF J. 212, 212 (2009) (“This paper describes a preliminary design for a submerged artificial surfing reef (ASR) to be constructed off the coast of Cocoa Beach in Brevard County, Florida. The three main purposes of this reef are to provide Brevard County with a world-class surfing reef break to supplement its natural beach breaks, provide significant protection from beach erosion, and to provide a stable habitat for marine life.”), available at http://www.thereefjournal.com/files/17_Hearin.pdf; see also *Surfermag.com Interview: Prof. Kerry Black*, SURFER MAG. (July 22, 2010), <http://www.surfermag.com/features/kerryblckintrvu>.

¹⁸³ Nelsen et al., *supra* note 18, at 904 (“There have been attempts to create artificial surfing areas, most notable in Boscombe, England. The local council paid £3 million for a project that produced only a very low quality wave.”).

while allowing for the benefits of structures which typically alter surf breaks.¹⁸⁴

Regardless of which route is pursued to protect surf breaks, some existing management practices can be adopted in order to better protect surf breaks into the future. For example, governments in charge of growth management and development could follow New Zealand's lead and require consideration of surf breaks in coastal development decisions. Additionally, active management plans could be developed in order to better protect surf breaks.¹⁸⁵ These management plans could be accompanied by the establishment of local surf break councils similar to those currently established under the WSR and NSR programs. Likewise, these local management plans should incorporate integrated coastal zone management practices, such as those which promote the sustainable management of coastal zones.¹⁸⁶

VIII. CONCLUSION

Coastal development is expected to continue in the future. This development will necessitate new legislation in order to protect coastal resources for the user groups of those resources. Despite advancements in surf break protection, surf breaks remain vulnerable to coastal development and other threats due to the lack of legal force behind most protective measures. Furthermore, existing legal frameworks seem unable to be adapted to apply to surf breaks because of their unique characteristics. Specifically, surf breaks consist of three components: the submerged area over which waves break, the right of way for swells to reach the surf break, and access.

Adequate surf break protection requires protecting all three of these components. Protection could be achieved through new legislation that considers and protects all of these components, or a patchwork of protections could be cobbled together to achieve comprehensive protection. Regardless of which of these routes is pursued, future developments in artificial reef technology could provide a flexible alternative to strict protection of existing surf breaks. Likewise, local and other governments charged with coastal planning and growth management should take into account surf break protection in coastal development decisions. Additionally, management plans should be developed to ensure continued surf break protection which incorporate ICZM practices.

¹⁸⁴ Structures such as breakwaters and to a lesser extent, jetties and groins.

¹⁸⁵ See generally Scarfe et al., *supra* note 21.

¹⁸⁶ These sustainable ICZM practices were first advocated by findings of the UN Earth Summit of Rio de Janeiro in 1992. United Nations Conference on Environment and Development, Rio de Janeiro, Braz., June 3-14, 1992, *Rio Declaration on Environment and Development*, U.N. Doc. A/CONF.151/26 (Vol. II), Ch. 17 (Aug. 13, 1992), available at http://www.un.org/Depts/los/consultative_process/documents/A21-Ch17.htm.