

Blue health inequality and environmental justice

10. The shadows of risk and inequality within salutogenic coastal waters

Sarah L. Bell, Julie Hollenbeck, Rebecca Lovell, Mat White and Michael H. Depledge

Introduction

Water has a far-reaching history as a 'sacred substance' (Völker and Kistemann, 2011), as reflected in the plethora of Roman baths, Christian springs and holy wells that continue to hold both spiritual and cultural significance in contemporary society (Gesler, 2003). Perhaps for the first time in the UK, efforts were made to examine the health benefits of inland mineral waters from the 16th century onwards (with the growth in balneology). This scientific interest was extended to the salutogenic potential of coastal waters from the late 18th century with the introduction of coastal sea bathing hospitals intended to treat diseases such as scrofula (Fortescue Fox and Lloyd, 1938). The growth in modern medicine rendered many of the sea-based treatments promoted by these kinds of institutions effectively obsolete in the mid-20th century. However, in recent years interest has emerged in the extent to which coastal environments could help promote public health where non-communicable diseases, including the variety of illnesses associated with a lack of physical activity and poor mental health, are the new priority challenges (Wheeler et al., 2014; White et al., 2017).

Much of the earliest evidence that living in coastal settings encouraged greater levels of recreational physical activity, mainly walking, came from Australia (Ball et al., 2007; Humpel et al., 2004), a country where the majority of the population lives near the coast and weather conditions encourage spending time out of doors. Nevertheless, similar findings have been found in New Zealand (Witten et al., 2008), the US (Gilmer et al., 2003) and the UK (White et al., 2014b). Although there is some evidence that this extra activity may translate into healthier weight, even among children living at the coast (Wood et al., 2016), the evidence is equivocal. In terms of mental health, there is a growing body of research to suggest that living in coastal settings, visiting them frequently or simply having a coastal view from home is associated with increased life satisfaction (Brereton et al., 2008) and decreased risk of anxiety and depression (Nutsford et al., 2016; White et al., 2013a). In part, these mental health benefits may reflect the fact that, on average, visits to coastal settings are associated with greater feelings of mental restoration and feeling relaxed than any other nature or predominantly urban setting (White et al., 2013b). These combined benefits of physical activity and mental health, alongside other factors, help account for findings suggesting that population health tends to be better at the coast (White et al., 2013a, 2014).

Despite this growing evidence of a positive association between human health, wellbeing and coastal living, we know relatively little about the distribution and salience of such benefits – and risks – among different individuals, groups and communities within society. Indeed, we are only just beginning to understand how the physical characteristics of the coast (the particular array of sights, sounds, smells and tactile opportunities) and its shifting sociocultural meanings may play a role in shaping these outcomes for different people. This has important implications for research, practice and policy; if certain people are unable to access ‘healthy’ coastal encounters – or experience disproportionate levels of risk at the coast – there are fundamental issues of environmental justice and health inequality that need to be addressed.

In this chapter, we adopt a predominantly qualitative, narrative approach to these issues, making space for individuals to reflect on their coastal experiences in their own terms, and exploring the varying embodied, sociocultural and environmental dynamics that shape them. First, we explore the coastal encounters of people with sight impairment within the UK, based on initial findings from Bell’s ‘Sensing Nature’ study. Second, we draw on Hollenbeck’s ‘Sea to Me’ study of ethno-racial constraints to marine visitation in Miami, Florida, to examine processes of sociocultural segregation and marginalisation at the coast. Finally, stepping back from these detailed case studies, we share insights from work recently undertaken by Depledge, Lovell and colleagues for the UK Government Foresight programme’s ‘Future of the Sea’ initiative, to demonstrate the more widespread challenge of securing and maintaining equitable, healthy encounters with the coast in the face of global climate change. Throughout, we take care to identify both the risks and benefits to human health and wellbeing of varied scales of coastal encounter, and the distribution of such outcomes among different groups and populations across contemporary society.

Sight loss, sighted norms and the sea: risk and impairment at the coast

Much has been made of the visual properties of aquatic environments (e.g. the colours, light reflections, the sense of space – see White et al., 2014) as a potential mechanism behind some of their benefits, but clearly these are not the only possible sensory encounters. The multisensory immersive properties of the coast have gained increasing research attention over the last few years, with researchers highlighting positive physical and emotional transformations through time spent at the coast, be it within the sea or beside it. Study participants have identified sensations of embodied freedom experienced through physical immersion in the water (Straughan, 2012), a sense of perspective through encountering the ‘oceanic horizon’ (Bell et al., 2015) and a heightened spatial awareness generated by the ‘unceasing mobility’ (Ryan, 2012: 9) of the coast, including its rhythmic yet sometimes unpredictable dynamics of light, sound, surface, depth and texture.

Although ‘bodies of difference’ are mentioned in passing within this work (Foley, 2017; Foley and Kistemann, 2015), there has been relatively little focus on the coastal experiences of people living with sensory impairments, for whom such unceasing mobility and unpredictability may be somewhat less enlivening or freeing. We explore this here in the context of people with diverse forms of sight impairment, considering how such individuals negotiate the delicate balance between embodied pleasurable immersion and risk exposure that often characterises time spent

at the coast. Importantly, we consider how both physical *and* social elements shape the extent to which these individuals experience a sense of risk or wellbeing at the coast.

To do so, we draw on early findings from a two-year in-depth qualitative study, ‘Sensing Nature’, exploring people’s experiences of ‘nature’ (including but not limited to the coast) with a focus on registered blind and partially sighted adults in England, with congenital or acquired sight conditions, including individuals at diverse life stages. Although the project is still in progress at the time of writing, we reflect here on some initial perspectives emerging within the study interviews – insights which are important in shaping our understanding of risk and joy as simultaneous outcomes (Foley, 2017) of time spent at the coast for varied individuals, groups and communities.

Many of the Sensing Nature study participants described the sense of pleasure experienced through time spent at the coast, noting that although they might not be able to see all – or any – of the details of the seascape, they’re *‘still picking up on those other things like the sound ... zoning into that sound, maybe just sitting there and just trying to find peace in that moment’* (congenital, partially sighted, male, 40s). Others described the immersive opportunities created by the combined auditory, olfactory and tactile coastal experience; *‘Oh the smell of seaweed, I just love the smell of seaweed, you know, ozone and ooooooh, just touching the sand, hearing the sea, probably paddling’* (acquired impairment, light perception, female, 60s).

Such immersive experiences are, however, contingent on particular social, emotional and physical qualities of coastal encounter, together with participants’ own embodied skills, dispositions and spatial memory. For example, one participant in her 30s explained that she tends to feel less impaired in nature, particularly along a familiar stretch of coastal path along chalk downland near to her childhood home:

It’s probably the environment in which I feel least impaired, compared to say moving around urban environments. So I probably feel most comfortable still walking out on the old trails... I don’t need my white stick, you know, at the most I might take a couple of walking poles, and actually it’s nice, I probably feel most – in scare quotes – “normal” in nature ... and the great thing about those trails is they’re kind of managed enough to be really easy to navigate ... and that’s really great because to be honest, I can switch off at a certain level as long as my feet are on that surface.

(Acquired sight impairment, female, 30s)

The combination of familiar paths, clearly defined path textures and boundaries, and the absence of crowds enabled this participant to venture out without her mobility cane – a device that she has embraced to support her mobility through urban environments but which brings with it a sense of being ‘different’, seemingly singling herself out from fully sighted ‘others’.

This is not to say that all participants wanted smooth managed paths to access nature; many emphasised the importance of being able to push themselves, to learn to negotiate more challenging terrains and to have the opportunity to experience a sense of adventure and achievement:

That's the nice thing, because you can sort of feel that [fully sighted] people need to go climbing the Himalayas or doing some massive like Land's End to John O'Groats trip or something, but for me, just walking a mile [along the coastal path] from my house on my own and back, I can get the same thrill.

(Acquired sight impairment, male, 50s)

This participant discussed the time and effort needed to build the confidence, embodied sensory awareness and cane skills to achieve this, and the value in others supporting and being patient through this gradual process of finding a sense of independence in nature. He expressed frustration at the tendency for others to compromise one of the few opportunities he still has to pursue a spirit of exploration or spontaneity:

People's reactions to me make me want to stay away from a lot of things... They can be very overprotective. And very, "Oh no, you don't want to go down that route". Or, "You won't find anything down there". You know, all those sort of negative things. "Look shut up, I'm just exploring!" You know, you can never explore anything.

In this way, the privileging of sighted knowledge over this participant's own sense of autonomy hindered much-valued opportunities to explore and learn about his local coastal environment, while also underestimating the intricate skills he had developed over time to do so.

Several participants touched on the tendency for adverse social encounters to compromise pleasurable or meaningful coastal encounters, largely through the lack of 'sighted' awareness of the dignity of risk and what constitutes appropriate assistance. The example above highlights the detrimental impacts of overprotective, almost infantilising responses. At the other end of the spectrum exists a lack of consideration that people might not be able to see to move out of the way of fast moving objects, be they runners, dogs off leads, cyclists or mobility scooters. This was particularly apparent during a walking interview along a seaside promenade (a shared space for walkers, scooters and cyclists) on the south coast:

I could go running here on my own if I knew that there wouldn't be any people or that people would just automatically get out of my way or there would be no dog leads... It's that really interesting thing of, often environments aren't disabling for me but the people populating them are.

(Acquired sight impairment, female, 30s)

Others highlighted the tendency for people to stare at 'differential mobilities' (Parent, 2016) developed to negotiate more difficult coastal terrains:

Walking in the presence of other people, I get quite self-conscious about it, because I do adopt strange strategies for walking. There's the dipping about with the walking pole. And sometimes I will actually bend down and feel what it is I'm going to actually step down into. Or sometimes I'll, I'll get down, you know, sort of, and scramble down something, almost on my backside. Or, you know, scramble up on my hands and, and

knees. And I don't want to be watched doing that. And people do, they will stand aside, but they will watch with interest as you do your thing. And I, I really don't like it.

(Congenital sight impairment, female, 60s)

By standing and staring – an act that we are otherwise largely discouraged from doing from a young age – an uneven power dynamic is established between people who are fully sighted and those with sight impairment, rendering the latter almost hyper-visible at a time when full attention is needed to negotiate challenging coastal terrain. Recognising that some 'onlookers' may be unsure about their needs in such situations, participants felt they should simply ask at the outset whether they need assistance, rather than trying to appraise the situation in silence.

These examples demonstrate how opportunities for wellbeing at the coast can be compromised by embedded social (*sighted*) norms, expectations and misinformed notions of risk that fail to recognise, value or cater for alternative ways of sensing or moving through the world (Saerberg, 2010). Such ableist norms and perspectives are often taken for granted and rarely reflected upon by mainstream society (Kitchin, 1998). Yet they can implicitly act to exclude so-called 'bodies of difference' from pleasurable and/or meaningful experiences at the coast as people come to feel out of place through negotiating such settings with adapted mobility strategies. While landscape architects, planners and environmental managers may be aware of the need for more inclusive *physical* environments, the disabling influence of these more intangible social environments – i.e. norms, discourses and sociocultural attitudes – often go unnoticed (Tregaskis, 2004).

Ethno-racial segregation and the sea: risk and marginalisation at the coast

In light of growing evidence that coastal engagement can contribute to health and wellbeing, it is troubling that these so-called 'healthy blue spaces' (Foley and Kistemann, 2015) are increasingly inaccessible to and/or underutilised by socially, economically or environmentally disadvantaged groups, particularly ethno-racial minorities. Research conducted in the US shows that Black and Hispanic Americans visit aquatic nature settings far less than White or Asian Americans (Leeworthy, 2001). Theories of why race and ethnicity may constrain nature visitation range from structural limitations (e.g. discrimination/racism, proximity, transportation, access points, costs, time), to agentic choices (e.g. preference, disinterest), as well as various sociocultural hypotheses (e.g. marginality, ethnicity, assimilation, discrimination – see Stodolska et al., 2014).

Historically, this research has focused on terrestrial spaces (e.g. local and national parks, mountains, wildlands, 'green spaces' – see Stodolska et al., 2014), with few studies examining use of the recreational marine environment among disadvantaged and minority populations (for example, see Burdsey, 2013). A hallmark study in this area was Wolch and Zhang's (2004) phone survey investigating cultural diversity and recreational marine use and preference in Los Angeles, California; African-Americans perceived fewer constraints to marine access than all other ethno-racial groups in their study, yet visitation still lagged behind other racial groups. They observed that both race and class 'matter', producing class-based, ethno-racial differential recreation patterns. They supposed that cultural preference or 'regional histories of racism and perceptions

of places as coded by race/ethnicity in ways that discourage beach use' (Wolch and Zhang, 2004: 438) might account for low rates of visitation by minority populations.

Hollenbeck's (2016) 'Sea to Me' study, conducted in Miami, Florida, explored why the local Black community exhibited low recreational marine environment visitation, when just a generation before beach going was considered mainstream and desirable (Bush, 2016). Participants in this study, predominantly African-American, described the ocean positively (specifically using terms with connotations of health and wellbeing, including freedom, liberation, peace, tranquillity, stress reliever, joyful, therapeutic, reset, comfort, soothing, spiritual) and expressed interest in visiting. With the exception of young men (aged 18–30), participants claimed that neither perceived racism nor discrimination prevented their visitation, noting instead that visiting the sandy beaches and tropical waters just a few miles from their homes simply did not occur to them. Exploring this further, Hollenbeck (2016) concluded that the legacy of historic racism continues to constrain the local Black population from engaging with the marine environment in three historically interconnected ways: intergenerational transmission of the risks associated with coastal and marine visitation, beach-making and segregation, and desegregation and disconnection.

Intergenerational transmission

Similar to other coastal cities in the US, historically people of colour were restricted from visiting coastal areas in South Florida until 1965 (and beyond). Visiting some coastal towns without a permit, particularly at night when these towns were closed to Black people ('Sundown towns'), could mean fines, physical force and imprisonment for those who violated these laws and customs. The legacy of these restrictions affected future generations. For instance, one participant in the case study described his lack of coastal visitation as a 'generational curse'. Given the trauma endured by his mother working in the city of Miami Beach in the 1950s–1960s, where she feared being caught after dark, she did not introduce her son to the marine environment. Similar constraints – related to fear and social risk, underpinned by spatio-temporal exclusion – were noted by other study participants, who recalled their parents' reluctance to have them 'out of their sight' as children. This hints at an intergenerational transmission of fear – perhaps an ethno-racial 'strategy' developed to protect their children from abusive encounters with authorities or those outside their neighbourhood.

Between the 1920s and 1970s, Black Miamians were avid beachgoers. However, it was only legal for people of colour to visit one beach, Virginia Key Beach, from 1945 to the mid-1960s (Bush, 2016; Connolly, 2014). Reflecting trends within the broader environmental justice literature (Dean Hardy et al., 2017), this so-called 'Black beach' was undesirable to 'Whites', as it was far from the popular Miami Beach, narrow and steep, and situated off a channel known for treacherous waters and undertows. Demonstrating how systemic sociocultural processes of exclusion and segregation can magnify exposure to physical risks within the marine environment, numerous reports detail Black swimmers drowning off Virginia Key Beach, many of whom were new to ocean engagement. Nearly every participant in the case study knew of someone who had drowned in such outdoor aquatic environments. For this reason, drowning was a primary fear-based constraint to visitation, in addition to fears of dangerous sea life, and the 'unknowability' of the ocean, waves and other ocean phenomena. Negative stories of travel and leisure, transmitted through Black social

networks, reinforced a legacy of fear, lack of awareness and inexperience with Miami's coastal regions, and the marine environment in general.

Beach-making and segregation

Second, the birth of Miami exclusionary segregationist policies and practices, in concert with the purposeful design of its recreational coastal areas as 'America's playground' for White tourists, has resulted in Black residents not living, playing or relaxing 'anywhere near' Greater Miami's coast today (Connolly, 2014: 5, 49). Instead, Black communities are situated in Miami's interior. Many of these communities are criminogenic environments with multiple insecurities and hyper-segregation (>80% racial segregation across numerous indicators). Participants in Hollenbeck's (2016) study were acutely aware of two Miamis, separated by physical bridges: '*when you compare The Beach and you compare it with the inner-city ... it's totally two different worlds*' (247). What this participant refers to is mainland Miami, an area they considered the 'real' Miami, versus '*Their-Ami*', which is how some locals referred to the 'other' coastal Miami or The Beach (Connolly, 2014: 118–119). Many participants considered The Beach the domain of tourists and the rich. They described the bridges between Miami's mainland and Miami Beach as delineating the 'real/authentic' versus the 'fake/inauthentic'. In this case, the bridges took a moral or righteous symbolism that constrained access. Reflecting a psychological constraint to visitation, all felt that what lay on the beachside, *Their-Ami*, was material and artificially inflated, while the 'real Miami', where they lived, existed on the landside.

Desegregation and disconnection

Third, following desegregation in the mid-1960s, local Black recreational marine visitation ebbed. Since all public spaces were legally desegregated, funds to maintain Virginia Key Beach were transferred to a former 'Whites only' beach down the road, Crandon Park (Bush, 2016; Connolly, 2014). Virginia Key Beach soon fell into disrepair and disfavour, ultimately succumbing to closure in the 1980s (reopening in 2008). Though there are dozens of recreational beach areas in South Florida, participants in the case study could only name two: Virginia Key Beach and the new *de facto* Black beach, Haulover. Hollenbeck (2016) concluded that with the closure of Virginia Key Beach, lacking information and direct intervention, Black beachgoers did not alter their sociocultural patterns and practices to include visitation to formerly all-White recreational marine areas that were unfamiliar to them. Therefore, while Black Miamians may have had a rich history associated with Virginia Key Beach and beach going, visitation did not readily transfer to other beach areas. Participants in the case study repeatedly expressed the notion that 'Black folks don't visit the beach. The acceptance of this notion was generally held across participant groups and demographics, in spite of the fact that a number of participants in the sessions reported visiting marine environments in the past. Lee (2013: 107) described this as passive acceptance 'that African Americans are naturally and inherently disconnected with [the] natural environment' – a pattern seemingly mirrored within regional marine use data demonstrating that local Black visitation is not representative of the Black population within the Greater Miami catchment area (Hollenbeck, 2016).

Given the legacy of exclusionary, isolating and concentrating effects of racial segregation – combined with the intergenerational transmission of attitudes, beliefs and advice passed between family and friends, from generation to generation – today, people of colour in Greater Miami are largely removed from the brief moment in time in which they shared the culturally unifying activity of beach recreation at one of the Nation’s few segregation-era beaches. A tapestry of history, politics, capitalism, governance, culture and spatiality shaped a way of being in which community members stopped recreating in or near the ocean to engage in marine activities, with the impetus to do so largely slipping from their individual and collective consciousness. Understanding how best to engage with underrepresented groups, and alleviate their experiences of risk and marginalisation, has become increasingly important as national demographics change and health disparities persist.

Global challenges for coastal communities: risk and environmental change at the coast

Stepping out from our detailed case studies demonstrating sociocultural dynamics of risk and benefit at the coast, we focus now on the broader challenge of securing and maintaining equitable, healthy encounters with the coast in the face of global environmental change. As noted throughout this chapter, the salutogenic potential of coastal environments is mediated and moderated by myriad factors, from one’s individual health and capacities, through to the sociocultural norms of a community or place, and the socio-environmental implications of our changing coastlines. In this penultimate section, we draw on work recently undertaken for the UK Government Foresight programme’s ‘Future of the Sea’ initiative, to illustrate how opportunities for healthy coastal encounters rest on the state of the marine environment itself and the ways in which we respond – nationally and internationally – to the looming challenges of global environmental change. Indeed, as emphasised by Depledge et al.,

Communities along the coast are on the front line in facing climate change and marine pollution impacts, furthermore their economies are deeply embedded with coastal and other marine activities, making these communities particularly affected. Sea-level rise and extreme weather events, driven by climate change and ecosystem damage, expose coastal communities to flooding events now and in the future, damaging local economies, and threatening health and wellbeing. Continuing pollution of the sea has been underestimated as a threat to the health of coastal dwellers.

(2017: 4)

As such, the beneficial outcomes of environmental change in some areas, including more favourable climates that support increased coastal recreation, will be countered by the heightened risks looming over others. Much environmental change, whether global or local, anthropogenic or natural, poses a direct and specific threat to the health and wellbeing of those who live, work and spend their leisure time in marine and coastal environments. The threats are multiple, operate at a range of geographic scales and can be severe. Many of these threats are compounded and exacerbated by sociopolitical contexts, by processes of marginalisation and by

inequities in access to the resources and capacities needed to face and mitigate change. We touch on these here, examining the four main categories of environmental change in the coastal zone that pose significant risks to health and wellbeing globally: climate change, degraded ecosystems, marine and coastal pollution, and development of coastal zones.

First, coastal populations are on the front line in facing *climate change* (Fleming et al., 2015). Some of the most immediate environmental consequences of anthropogenic climate change, such as sea level rise and increased frequency and intensity of extreme weather events, will disproportionately affect coastal regions and communities. The severity of the threat to health is illustrated by recent extreme events such as Hurricane Katrina, which resulted in the deaths of 1800 people and the displacement of over two million people (Hartman and Squires, 2006). Notably, the burden of the disaster fell disproportionately on Black and poorer communities who lacked the social and economic capital to escape (Hartman and Squires, 2006).

Second, *coastal ecosystems* play a vital role in protecting and supporting the health and wellbeing of many millions of people. Inter-tidal habitats and coastal features such as salt marshes, mangroves and reef systems buffer the effects of sea level rises and storms by absorbing wave energy (Möller et al., 2014). The loss of these ecosystems, through climate change, inappropriate development and certain marine industries, threatens the integrity of coastal resilience and the wellbeing of coastal communities. The loss and damage of coastal habitats also threatens wellbeing through reduced economic and recreational opportunity, damage to industries such as tourism, and can result in adverse psychological impacts (Clark et al., 2014).

Third, although water quality is slowly improving in some regions, *marine and coastal pollution* (whether chemical, biological or physical) and the resulting environmental changes pose a direct threat to health and wellbeing. This problem is both significant – for instance there is an estimated 6–12 million tonnes of plastics entering the marine environment *each* year (Jambeck et al., 2015) – and challenging to tackle since the actual sources of pollution can be far upstream to coastal and marine environments. The consequences and impacts of acute and more prolonged pollution events can disrupt industry and livelihoods. For example, in 2011, heavy rain in South Korea resulted in huge quantities of debris, including plastics, washing down the Nakdong River and settling on the beaches of Geoje Island. This event was estimated to have reduced visitor numbers by 63% and to have cost the local economy, to which tourism is a major contributor, approximately US\$29–37 million (Jang et al., 2014).

Finally, the *development of coastal zones* to cater for the migration of populations, industries and infrastructure towards the coast can accelerate the processes of environmental change noted above. Ongoing urbanisation and (poorly planned) development of coastal areas damage ecosystems, put pressure on finite resources and leave increasing numbers of people exposed to the impacts of climate change, extreme events and pollution. Key infrastructures such as power stations, ports and sewage treatment plants are often deliberately situated in coastal locations, leaving them vulnerable to sea level rises and flooding events (Neumann et al. 2015). Many coastal communities are relatively geographically isolated, distant from centralised services and without adequate access to vital infrastructure. This peripherality reduces access to education, employment and social opportunities, often leading to processes of exclusion and low self-esteem,

poor mental health and harmful behaviours particularly in younger people (Cave, 2010). This again contributes to increased vulnerability of coastal populations to environmental change.

Importantly, these forms of environmental change are interlinked and interdependent. Damage to coastal ecosystems through inappropriate development reduces the capacity of natural defences to mitigate the impacts of other processes of environmental change. Increased sea temperatures due to climate change may exacerbate the impacts of marine pollution (MacLeod et al., 2012). Socio-economic and cultural change must also be considered as both a driver and consequence of environmental change. Recognising that environmental changes are cumulative, often originating at multiple sources and scales (Turner et al., 2015), their influence on the balance of health, wellbeing and risk encountered at the coast can only be understood by examining the wider physical, sociocultural and political contexts in which they are occurring.

Concluding remarks

In this chapter, we have complemented the growing body of research advocating the salutogenic potential of coastal waters, with detailed case studies demonstrating how the benefits to health and wellbeing for some often emerge within shadows of risk for others. We have reflected on such dynamics at the individual level in the context of embodied risk and impairment, at the community level in terms of the magnification of risk through processes of social segregation and exclusion, and at national and global levels with regard to current and future processes of environmental change and the severe risks they pose for coastal living and livelihoods. The examples presented through the chapter demonstrate how the balance of risk (anticipated and experienced), health and wellbeing can be encountered differently through place and time for diverse individuals and communities, often exacerbating existing patterns of health inequality and environmental (in)justice.

While certain processes of detrimental environmental change may now be irreversible, the social processes that contribute to further change or to unnecessary experiences of risk or health inequality need not be accepted or unchallenged. That experiences of embodied risk continue to be heightened through social processes of exclusion, marginalisation and segregation is a matter of social justice and environmental equity, in which all citizens deserve safe, pollution-free environments as well as equal access to 'health-promoting' coastal environments.

References

- Ball, K., Timperio, A., Salmon, J., Giles-Corti, B., Roberts, R. and Crawford, D. (2007). Personal, social and environmental determinants of educational inequalities in walking: A multilevel study. *Journal of Epidemiology and Community Health*, 61, 108–114.
- Bell, S.L., Phoenix, C., Lovell, R. and Wheeler, B.W. (2015). Seeking everyday wellbeing: The coast as a therapeutic landscape. *Social Science and Medicine*, 142, 56–67.
- Brereton, F., Clinch, J. P., and Ferreira, S. (2008). Happiness, geography and the environment. *Ecological economics*, 65, 386-396.

- Burdsey, D. (2013). 'The foreignness is still quite visible in this town': Multiculture, marginality and prejudice at the English seaside. *Patterns of Prejudice*, 47 (2), 95–116.
- Bush, G.A. (2016). *White Sand Black Beach: Civil Rights, Public Space, and Miami's Virginia Key*. Gainesville: University Press of Florida.
- Cave, B. (2010). Health, wellbeing and regeneration in coastal resorts. In, J.K. Walton and Browne, P. (eds.), *Chapter 11. Coastal Regeneration Handbook*, Coastal Communities Alliance, 159–174. Available at: <http://www.coastalcommunities.co.uk/wp-content/uploads/2015/07/coastal-regeneration-handbook.pdf>, last accessed July 1, 2017.
- Clark, N.E., Lovell, R., Wheeler, B.W., Higgins, S.L., Depledge, M.H. and Norris, K. (2014). Biodiversity, cultural pathways, and human health: A framework. *Trends in Ecology and Evolution*, 29 (4), 198–204.
- Connolly, N.D.B. (2014). *A World More Concrete: Real Estate and the Remaking of Jim Crow South Florida*. Chicago, University of Chicago Press.
- Dean Hardy, R., Milligan, R.A. and Heynen, N. (2017). Racial coastal formation: The environmental injustice of colour-blind adaptation planning for sea-level rise. *Geoforum*, 87, 62–72.
- Depledge, M., Lovell, R., Wheeler, B.W., Morrissey, K., White, M. and Fleming, L. (2017). *Future of the Sea: Health and Wellbeing of Coastal Communities*. Foresight – Future of the Sea Evidence Review [online]. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/639432/Health_and_Wellbeing_Final.pdf, last accessed October 11, 2017.
- Fleming, L., Depledge, M., McDonough, N., White, M., Pahl, S., Melanie Austen, Goksoyr, A., Solo-Gabriele, H. and Stegeman, J. (2015). *The Oceans and Human Health*. Oxford Research Encyclopedias: Environmental Science. Oxford, Oxford University Press.
- Foley, R. (2017). Swimming as an accretive practice in healthy blue space. *Emotion, Space and Society*, 22, 43–51.
- Foley, R. and Kistemann, T. (2015). Blue space geographies: Enabling health in place. *Health & Place*, 35, 157–165.
- Fortescue Fox, R. and Lloyd, W.B. (1938). Convalescence on the coast. *The Lancet*, 232, 37–39.
- Gesler, W.M. (2003). *Healing Places*. Lanham, Rowman and Littlefield Publishers, Inc.
- Gilmer, M.J., Harrell, J.S., Miles, M.S. and Hepworth, J.T. (2003). Youth characteristics and contextual variables influencing physical activity in young adolescents of parents with premature coronary heart disease. *Journal of Pediatric Nursing*, 18, 159–168.
- Hartman, C.W. and Squires, G.D. (2006). *There Is no Such Thing as a Natural Disaster: Race, Class, and Hurricane Katrina*. Florence, KY, Taylor and Francis.
- Hollenbeck, J.A. (2016). Marine Access and Understanding in a Disadvantaged, Urban Coastal Community: Implications for Health, Well-Being and Ecosystem Management. *Ph.D. Thesis*, University of Exeter Medical School.
- Humpel, N., Owen, N., Iverson, D., Leslie, E. and Bauman, A. (2004). Perceived environment attributes, residential location and walking for particular purposes. *American Journal of Preventive Medicine*, 26, 119–125.
- Jambeck, J.R., Geyer, R., Wilcox, C., Siegler, T.R., Perryman, M., Andrady, A., Narayan, R. and Law, K.L. (2015). Marine pollution. Plastic waste inputs from land into the ocean. *Science*, 347 (6223), 768–771.

- Jang, Y.C., Hong, S., Lee, J., Lee, M.J. and Shim, W.J. (2014). Estimation of lost tourism revenue in Geoje Island from the 2011 marine debris pollution event in South Korea. *Marine Pollution Bulletin*, 81 (1), 49–54.
- Kitchin, R. (1998) 'Out of Place', 'Knowing One's Place': Space, power and the exclusion of disabled people. *Disability and Society*, 13 (3), 343–356.
- Lee, K. (2013). Bourdieuan Analysis on African Americans' Underrepresentation at Parks and Outdoor Recreation. *Dissertation*. Texas A&M University.
- Leeworthy, V.R. (2001). *Preliminary Estimates from Versions 1–6: Coastal Recreation Participation. National Survey on Recreation and the Environment (NSRE) 2000*. Washington, DC, US Department of Commerce.
- MacLeod, C., Fallon, P.D., Evans, R. and Haygarth, P. (2012). Effects of climate change on the mobilization of diffuse substances from agricultural systems. *Advances in Agronomy*, 115, 41–77.
- Möller, I., Kudella, M., Rupprecht, F., Spencer, T., Paul, M., van Wesenbeeck, B.K., Wolters, G., Jensen, K., Bouma, T.J., Miranda-Lange, M. and Schimmels, S. (2014). Wave attenuation over coastal salt marshes under storm surge conditions. *Nature Geoscience*, 7 (10), 727–731
- Neumann, B., Vafeidis, A.T., Zimmermann, J. and Nicholls, R.J. (2015). Future coastal population growth and exposure to sea-level rise and coastal flooding – A global assessment. *Plos One*, 10 (3), e0118571.
- Nutsford, D., Pearson, A.L., Kingham, S. and Reitsma, F. (2016). Residential exposure to visible blue space (but not green space) associated with lower psychological distress in a capital city. *Health & Place*, 39, 70–78.
- Parent, L. (2016). The wheeling interview: Mobile methods and disability. *Mobilities*, 11, 521–532.
- Ryan, A. (2012). *Where Land Meets Sea: Coastal Explorations of Landscape, Representation and Spatial Experience*. Farnham, Ashgate.
- Saerberg, S. (2010). "Just go straight ahead". *The Senses and Society*, 5 (3), 364–381.
- Stodolska, M., Shinew, K., Floyd, M. and Walker, G. (eds) (2014). *Race, Ethnicity, and Leisure: Perspectives on Research, Theory, and Practice*. Leeds, Human Kinetics.
- Straughan, E. (2012). Touched by water: The body in scuba diving. *Emotion, Space and Society*, 5, 19–26.
- Tregaskis, C. (2004). Applying the social model in practice: Some lessons from countryside recreation. *Disability and Society*, 16 (6), 601–611.
- Turner, R., Abernethy, K., Woodhead, A. and Brown, K. (2015). *Health and hidden vulnerability in UK fishing dependent communities*. Environment and Sustainability Institute, University of Exeter.
- Völker, S. and Kistemann, T. (2011). The impact of blue space on human health and wellbeing – Salutogenic health effects of inland surface waters: A review. *International Journal of Hygiene and Environmental Health*, 214, 449–460.
- Wheeler, B., White, M.P., Fleming, L.E., Taylor, T., Harvey, A. and Depledge, M.H. (2014). Influences of the Oceans on human health and wellbeing. In, R. Bowen, Depledge, M., Carlarne, C. and Fleming, L. (eds), *Oceans and Human Health: Implications for Society and Well-being*. London, Wiley, 4–22.
- White, M.P., Alcock, I., Wheeler, B.W. and Depledge, M.H. (2013a). Coastal proximity and health: A fixed effects analysis of longitudinal panel data. *Health & Place*, 23, 97–103.

- White, M.P., Pahl, S., Ashbullby, K.J., Herbert, S. and Depledge, M.H. (2013b). Feelings of restoration from recent nature visits. *Journal of Environmental Psychology*, 35, 40–51.
- White, M.P., Cracknell, D., Corcoran, A., Jenkinson, G. and Depledge, M.H. (2014a). Do preferences for waterscapes persist in inclement weather conditions and extend to sub-aquatic scenes? *Landscape Research*, 39, 339–358.
- White, M.P., Wheeler, B.W., Herbert, S., Alcock, I. and Depledge, M.H. (2014b). Coastal proximity and physical activity. Is the coast an underappreciated public health resource? *Preventive Medicine*, 69, 135–140.
- White, M.P., Lovell, R., Wheeler, B., Pahl, S., Völker, S. and Depledge, M.H. (2017). Blue landscapes and public health. In, M. van den Bosch and Bird, W. (eds), *Landscape and Public Health*. Oxford, Oxford University Press, Chapter 5.2.
- Witten, K., Hiscock, R., Pearce, J. and Blakely, T. (2008). Neighbourhood access to open spaces and the physical activity of residents: A national study. *Preventive Medicine*, 47, 299–303.
- Wolch, J. and Zhang, J. (2004). Beach recreation, cultural diversity and attitudes toward nature. *Journal of Leisure Research*, 36 (3), 414–443.
- Wood, S.L., Demougin, P.R., Higgins, S., Husk, K., Wheeler, B.W. and White, M.P. (2016). Exploring the relationship between childhood obesity and proximity to the coast: A rural/urban perspective. *Health & Place*, 40, 126–136.