

Human-nature relationships and deep connections: An exploration of how a women's swimming group increased their relationship to nature, to themselves and to other women

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Abstract: Scholarly interest in has grown over time to address how vegetation ('green space') and water bodies ('blue space') contribute to health and wellbeing and to social connectedness (Bates & Moles, 2022, 2023; Finlay et al., 2015) and potentially impact health and behaviour through the provision of aesthetic spaces for relaxation, socialisation and physical activity (Geneshka M et al., 2021). During the enforced lockdowns of COVID19 green and blue space became a focus of individual and small group activity. Using a qualitative methodology, this research sought the views of thirty-nine women, located in an Australian, Victorian bayside suburb who formed in response to COVID19 restrictions and who continue to swim regularly. The research sought to understand how and if individual health and wellbeing and human connections increased or changed as a result of their belonging to the swimming group. Findings affirm that access to blue space during and beyond the COVID19 increased women's health and wellbeing. Findings also affirm that the blue space evoked and engendered in the women new 'entanglements' and connection with the blue space.

Keywords: wellbeing, blue spaces, swimming, women

1. Introduction

1.1 Background for the study

The period of COVID19 is instructive in how the use of blue spaces can become, and became, contexts for the development of individual wellbeing and community connections. The worldwide pandemic COVID19 served as a disruption to human-nature and human-human relationships but also the impetus for new directional relationships to emerge. There is agreement that the global spread of COVID19 had a profound effect on all aspects of society, including mental health and physical health (Britton & Foley, 2021; Holmes et al., 2020; Pouso et al., 2021) as it did on people's access to and appreciation of blue spaces.

The interrupted access to nature focussed people's attention on the 'nearby nature' available during the spatial constraints imposed by a range of lockdown measures across different countries and populations (Atkinson, 2021; Maharja et al., 2023). Scholars (Britton & Foley, 2021; Doughty et al., 2023) concur that the intentional use of nearby blue spaces and the immersive engagement available through swimming mitigated the negative mental health impacts resulting from the restrictions imposed by local and national authorities during COVID19. Importantly,

literature notes (Becker & Browning, 2021; Richardson et al., 2021) that not all people have access to natural environments, of particular interest to this study, aquatic environments.

In Australia, one State's population, Victoria, endured one of the longest aggregated periods of strict lockdown in the world. During the period of March 2020 and October 2021, Victorians spent two hundred and sixty days in lock down. Ending when the vaccination rates reached 70% on August 2021, Victorians endured four phases of lockdown with significant gradings of restrictions (Edwards et al., 2022). Initial restrictions included cancelling major sporting events, requiring entire economic and education sectors to work from home, and calling recently retired health professionals to return to work. At their most restrictive, requirements involved only leaving the household for four acceptable reasons: shopping for essentials; for medical or compassionate needs; exercise in compliance with the public gathering restriction of two people; curfews across Melbourne from 8 p.m. to 5 a.m; a 5 km radius travel restriction and a permit system for any residents, not working from home that still needed to travel to work outside of their 5 km radius (Biddle et al., 2023; Macreadie, 2022).

1.2 Blue spaces, swimming and placed based connections

Scholars have written about the 'entanglement' of individuals, swimming and waters. For example, Bates and Moles (2024), drawing on immersive and multisensory ethnography, found that 'waves shape interactions, encounters, relationships, and connections' (p. 69).

Olive (2024) and Moles (2021) ethnographic research into outdoor swimming add to the corpus of blue space research by emphasising the ecological, cultural, and bodily relationality of swimming. Olive (2024) and Moles (2021) underscore water as not simply the *context* of an individual or social activity, but rather a felt and lived experience of being *with* the sea that shapes and reshapes one's sense of self, one's relationship with others and one's relationship with the non-human world. Further, Foley's (2017) empirical studies of Irish outdoor swimmers conclude that in a human-nature bidirectional relationship 'the swimmer literally shifts from being a subject to becoming a co-subject within the object'. The swimmer's movements influence the behaviour of the water around them, creating ripples, waves, and currents. Conversely, the properties and movements of the water, such as its resistance, buoyancy, and flow, directly impact the swimmer's actions and performance, their appreciation for biodiversity and ultimately a symbiotic relationship where both swimmers and the water ecosystem are entangled, influencing each other's health and sustainability. Often these changing perspectives lead to the memorialising of these relational encounters with nature in, for example, messages, photos and conversations with others (Bates & Moles, 2023).

1.3 Blue Spaces, wellbeing, and emerging connections with others

Various researchers have written extensively on the links between environment and wellbeing. A corpus of writing has shown that spending time in nature, engaging with nature directly and indirectly, and a strong sense of nature connectedness (a psychological/emotional connection with nature) have each been shown to positively impact well-being (Richardson et al., 2021; White et al., 2021). Those who have researched natural or man-made areas that feature bodies of water, the focus of this study, have increasingly recognised their significant contributions to human wellbeing (Burlingham et al., 2022; Foley, 2015; Olive & Wheaton, 2021). For example, researchers (Denton & Aranda, 2020; Massey et al., 2020) have documented the positive human physical, cultural, economic and psychosocial well-being effects to individuals of blue spaces. For example Manero et al (2024), Britton and Foley (2021) and Gibbs et al. (2022) have researched

the impact of surfing on embodiment, emotion, sport and leisure practice and therapeutic intervention and argue the capacity of surfing to facilitate wellbeing.

Similarly tracking the connection between the swimmer and the immersive environment of blue space Foley et al.'s (2015), Bates and Moles (2022), Denton and Aranda (2020) and Olive and Wheaton (2021) conclude that swimming in general, is a committed 'healthy act' drawn from an emotional geography and expressed through relationships, with place, with family and with others. Further, as an 'embodied, emplaced and temporal experience' (Denton and Aranda, 2020), swimming has the potential to create a new or reinvigorated sense of selves, others, and the natural environment. The conclusion is that a swimming brings 'the whole self' to the activity and that 'being' in the water induces a way of 'knowing' both themselves and the water not present in the individuals and communities earlier (Denton & Aranda, 2020; Wheaton & Liu, 2024).

Greenwood and Fletcher (2021), drawing on discourses of social capital to understand open water swimming events, theorise that open water swimming can facilitate a durable social impact beyond the event and contribute to the development of social capital among event participants. This theorising could be extended to groups of swimmers who are not gathered for an 'event' and who can equally develop a sociality, community and camaraderie.

Literature evidences the human-nature relationship as a conduit to enhanced human-human connections. For example, Moles (2021) argued that swimming can not only affect an individual's 'way of knowing and being', but it can also extend the human-nature connection to a more expansive human-human connection, creating a new 'entanglement' with others who share the blue spaces. Olive and Wheaton (2021) examining relationships between blue spaces, sport, physical activity, and wellbeing have interpreted blue spaces as friendly therapeutic landscapes composed of play and communication, with physical, social, and spiritual benefits, which emerge from both individual and community experiences and that enable social interaction and allowed individuals to be part of a group.

Bates and Moles (2022) and Watson (2017) impress the personal agency animated within and between individuals who access blue spaces, in this consideration, swimming. Emphasising that 'new entanglements' occur spontaneously when swimmers encounter each other, when immersed in the seas or when recognising the familiar branded swimwear and swimming attire, Bates and Moles (2022) and Watson (2017) underline that interaction with others is not of itself a requirement of communing for human-human connections to be established. They argue that sharing the water, 'being alongside' other swimmers is enough to create an 'embodied mutuality' and a context for other serendipitous casual or deeply felt encounters and connections beyond the swim time.

Thus far little research has been conducted within the Australian, Victorian context on the nexus between blue spaces, swimming and wellbeing. This qualitative mix method research fills this gap. Thirty-nine women were invited to share their experience of belonging to an all-women swimming group and the impact of this experience on their relationship with blue space, wellbeing, and social connections. The research explored the women's experiences and provides insight into how the blue space can be leveraged as a conduit to enhanced human-nature and human-human connections and wellbeing.

2. Method

After the research received university ethics approval (HRE23-119), purposeful sampling was used to invite participants to complete a survey. The invitation to express interest in participating in the research was posted to *WhatsApp*. Those who expressed were prompted to use my

WhatsApp number and supply an email address. This email address became the single source of communication with participants. This preserved participant privacy and preserved the ethic of participant consent. The survey was distributed to participants via a QR Code link emailed to the provided participant email address. The QR Code gave participants access to the *Information to Participant, Consent Form and Survey*.

The survey, created with the use of Qualtrics®, comprised both multi-choice and open-ended questions. The multi-choice questions collected data pertaining to the participants' profiles, while the open-ended questions invited participants to share their experiences of belonging to *The Jellies*. Additionally, *The Jellies'* moderator gave permission for the group's *WhatsApp* messages to be accessed during the week of 10 to 16 July 2023. These messages provided a snapshot of both the volume and topics of interaction between *The Jellies* members. This served as a form of data triangulation (Terry & Hayfield, 2021).

NVivo 10® software was used to conduct a thematic analysis of the data. This analysis involved several key steps: becoming familiar with the data; generating initial codes; searching for themes; reviewing themes; and defining and naming semantic and latent themes (Terry & Hayfield, 2021). Semantic themes included coding data at a descriptive or surface level of participant characteristics such as context, participant age, employment status, cultural background, number of swimming days, motivation for joining *The Jellies*. Coding at the latent level required going beyond the surface level to a deeper level so as to capture deeper, implicit meanings in the data such as contextual codes (e.g. understanding membership within the context of wellbeing), metaphorical codes (e.g. blue space as a symbol of connection) and axial (e.g. relationship between employment and participation) codes. Thematic coding at the latent level reported under two themes: *Blue spaces, swimming and new entanglements* and *Blue spaces, wellbeing and the 'new entanglements' with others*.

Pseudonyms (an assigned number for each participant) have been used throughout the reporting of data.

3. Findings

3.1 Context

The Jellies is a group of women located in one of Melbourne's bayside suburbs. The suburb is categorised as a area of socio economic advantage. *The Jellies* was formed during the COVID-19 pandemic in 2020. During COVID-19 restrictions, limited exercise was allowed to within a five-kilometres radius from the family dwelling. Membership to the group is via word-of-mouth and is formalised, as noted by one participant, through an informal 'welcome' to the *WhatsApp* space. The group numbers 354 women; however, the number who actively participate has been stated to be between 80 ('I'm not sure how many are regulars ... I'd say around 80' – P11) and 150 ('Of 300+ on the app, probably only 1/4 swim regularly' – P2.)

3.2 Participant profile

Thirty-nine women expressed interest in participating in the survey, became members of the spherically formed *WhatsApp* group and responded to the survey posted to the *WhatsApp* page during the week of 3rd to 25th July 2023. The participants' ages ranged from 30+ to 80+ years, and membership in the group was between one and four years (Table 1). The age group most represented was 50–59 years (middle adulthood) (Table 1).

Table 1. Participants by age

Age	N
30-39	1
40-49	6
50-59	18
60-69	8
70-79	5
80-89	1
	39

3.3 Blue spaces, swimming and placed based connections

The consistent participant view was that swimming had renewed, reinvigorated or established a connection with the blue space. The immersive experience of swimming had provided a renewed connection to, valuing and appreciation of water as a conduit to wholistic wellbeing. Typical of this view was expressed by P8. For P8 swimming was a sensory experience that engaged her whole self: positive emotions, embodiment and emplacement:

I see the sunset in the mornings, feel the water on my body, and smell the sea nearly every day. I feel healthier both physically and certainly mentally. The benefit for me has been enormous. My partner nearly pushes me out the door to go swimming – he sees how happy it makes me!

Similar to P10's reflection P3 commented on a new sensibility and connection with water not present prior to her participation in the swimming group. For P3 the blue space had evoked in her a curiosity and interest in the aquatic ecosystem:

I have developed a deep curiosity and increased interest in what's under the water – plants & animals.

Participant 10 also commented on how her connection with water has fostered a deeper, more expansive relationship with the environment. However P10's insight included an ecological rationality that prompted a new sense of stewardship for the aquatic ecosystem:

I find being "IN" the environment every day (when I used to live locally) and now fortnightly (since I moved to [place]), makes me more aware and careful with the environment. I am more interested in researching and finding out the benefits of water on us humans and also the wildlife in the ocean.

In contrast to participants who discovered new connections, curiosity and an expanded sense of responsibility with and for the blue space, P5's reflection captures how long-term residency and immersion in an environment reinvigorated in her a strong sense of identity, rootedness, and connectedness that had been forgotten:

I've lived here 25 years and never felt so at home, so in tune with my natural surroundings and so connected. (P5).

While for some participants, swimming created in them 'the buzz of cold-water swimming' (P14) and 'a new interest in and respect for the aquatic world' (P3), other participants remarked on the symbiotic relationship between the immersive experience of swimming and mindfulness. P7's comment illustrated this view:

An appreciation for nature (being much more aware of noticing the sky, birds, flora and fauna). Remembering to be in that moment more – when you're in the

sea it's right now. Helps put into context what to focus on and makes the things you might worry about diminish. (P7)

Eager to share the 'joyful vibes' of their surroundings, 29 photos drawn from the participants' *WhatsApp* postings, depicting images of the water, the sunrises and the late-night moonscapes were posted to *WhatsApp* in one week. Affirming the participants' desire to share their emerging connections with the aquatic ecosystem data indicated that participants used *WhatsApp* to post photos of the water, sea life and aquatic features ('I love the pics' – P8).

3.4 Blue Spaces, wellbeing, and emerging connections with others

The *Jellies*, with over 300 members, have created a tight-knit community. The themes of 'belonging' and 'connection' were presented as multifaceted, encompassing the joy derived from shared activities, shared challenges and support during difficult times. Evident in the backdrop to the participants' engagement with each other and with the blue was COVID-19. The proximity of the blue space satisfied the travel restrictions imposed during COVID-19 ('I joined for exercise when gyms closed in COVID-19' P14). The closeness of the blue space also satisfied the participants' need for safety and exercise ('Someone to swim with, safety'. P12).

Participants linked their physiological and emotional wellbeing to their experience of swimming. P24's comment is illustrative of such comments:

The endorphins, the fresh air, the cheerful delight & excitement of enjoying life - great for the bod & mind & it's free!! (P24).

P11 indicated that the blue space not only provided an intermediary to a social emotional wellbeing but sustained her beyond the immediate immersion in the blue space and had become a critical link to positive wellbeing:

I have withdrawals when [I am] unable to go for my daily dip enjoying the enthusiasm, joyful vibes surrounding the space. (P11)

Belonging to a supportive group empowered confidence and encouragement within the participants, which in turn enabled the participants to challenge their swimming competence ('As I'm not a great swimmer but love the movement the group gave me the confidence to go further and further' P4).

Most participants commented on the emergence of a non-negotiable connection with the water, the ensuing connections with others and the nexus between both the water and the new connections:

[I] initially joined for safety in numbers to swim out in deep water then over time felt the emotional joy of being immersed in nature and then the social side as I met people. belonging to a group of like-minded ocean swimmers has made me love the water even more and made feel I have found my tribe. (P1)

Participants expressed the group's supportive environment ('I thought having company in the water would help me keep swimming'. P5) as motivating their wish to join the group. Participants described a supportive environment as characterised by a sense of proximate connection to others ('Connection with like-minded women in my local area' P8). Participants were also of the view that swimming with others not only provided new friendships and new learnings but also a few sense of personal resilience that could only come from the support of other ('a feeling of invincibility, that someone will always have your back' P1).

Participants were of the view that their shared experiences in and out of the water created a unique bond among the members. Sharing their personal experiences 'increased energy and

contributed to better mental health' (P22). Participants commented on the collective wisdom of the group ('The knowledge base this group has is extraordinary' P27) that assisted in navigating the challenges that accompany stages of the lifespan (I like being in female company. The girls I swim with are of a similar age and/or stage of life to me which has led to great conversations and shared understanding or challenges. P14).

Belonging to the group also assisted some participants navigate a difficulty period in their lives. P20 expressed this view when considering how her initial need for exercise morphed into the need for emotional support:

Firstly I joined because I'd stopped rowing and needed some exercise. Then, when my partner got sick and died in a 3-week period last year. The sea and the warmth of *The Jellies* became essential to my survival. I cannot tell you how important it has been to know that I can head down and have heavy or light conversations. (P20)

Participants noted that the group serves not only as a recreational space but also as a community that profoundly impacts the emotional well-being and lives of its members:

We have coffee, talk about issues affecting us, counsel each other, support each other, plenty of hugs, occasional tears, lots of laughs, encouragement. We have an offshoot plant-based dinner party where everyone brings a dish.

Similarly belonging to the group offered participants opportunities to extend their social networks and reduced any sense of social isolation felt beyond the swimming times ('making new friends and spending time socially as I am new to the area and don't really have social connections.' P12). Likewise, the connection between social connection and physical wellbeing was emphasised ('Without *The Jellies* I would not be swimming regularly and would not be realising the health and social benefits.' P13).

Social activities that have formed outside the regular swimming times embrace 'book clubs, riding group, long distance swimming events, snorkeling adventures, tennis groups, business groups, film nights, big gatherings and small gatherings' (P13).

Long-term friendships were created ('Strong friendships have formed and will stay' P17) and connections beyond the swimming times were personally enriched ('Fun to chat and engage in a different way. Cements friendships'. P15). 'Cementing friendships' was also a conduit to self-care and care of others and an opportunity to reflect on and understand life span challenges. For example P3 noted that belonging to the group was a way to 'to enjoy each other's company, to check in with each other, share a laugh/lives/ trials and joys'. P25 added to P3's view by highlighting the similarities in life experiences and the support that is offered to members:

Coffee catch ups give a great opportunity for chat. Many similar "things" going on in our lives. Support each other as required. Dinners also arranged for some trains... we just love each other's company. (P25)

Commenting further on the culture of welcome and inclusivity, participants were of the view that welcome, and acceptance facilitated camaraderie ('love the camaraderie felt after a swim.' P2), an unfettering sense of freedom not otherwise experienced in their day-to-day engagements ('sense of freedom as in no make-up, not dressed up for work etc., there's something liberating about it'. P7) and the absence of having to impress others ('Such a friendly non-judgmental group - no pressure or expectation to impress'. P24).

P4 commented on the relevance of a noncompetitive space and its link to inclusivity and free expression:

I like that it's somehow competition free ...talk about everything, size and shape does never mater ... all welcome.

Other participants stressed their views that an all-female group provided the safety and inclusiveness required for self-expression ('It is an important factor as I feel it is a safe and inclusive group to express myself and be heard.' P2).

This safety and freedom was extended to views of how women conducted themselves when swimming with women. Participants were of the view that swimming with other women provided a safe license to swim without swimsuits. This freedom aroused within the women a sensitivity to their emotional and intellectual 'in situ' awareness. P1's view is an example of the link between body positivity, privacy within a female centric group: 'All female helps makes it very relaxed, non-competitive and nonjudgemental - it's nice to have privacy as some like to swim nude!'. Similarly P10 summarised the freedom that accompanies an all-female group. Her view was that an all-female swimming group was an embodiment of a gendered act:

It's a major factor for me. Women being together partly naked (physically) seems to add to the rawness/ nakedness of our emotional and mental connection. I find the conversations with most men - it stays surface level, or I have to get through the ego to get to the real conversations. With these women - we go deep fast! No b** or ego, just 'here I am'. (Almost) naked, I bear all, this is all of me, this is all I have... and how can we use that for us to get what we need today on our swim in this beautiful ocean... do we need a laugh, cry, talk, silence? Women do this well! Jelly's do it best!!!

As an outlier activity *The Jellies* have a monthly private event held on the full moon. Participants commented that, in a World where body positivity is often compromised by social media, this event was significant in that it was a way to consolidate the culture of inclusivity and non-judgment. P18's comment summarised this majority viewpoint:

I believe it was set up by women for women (or anyone identifying as a woman). We have monthly swims held on a full moon where people have the option of wearing whatever they want or nothing at all. This is something only *The Jellies* are invited to and is a private event. It's important to me as I highly value the sisterhood we have. We come in all shapes and sizes and cultural differences, and I have never felt so welcome and loved in any other group. (P18)

P10 expressed her view that the power of *The Jellies* is its reach across generations of women and its ability to transcend across borders as a symbol of freedom for all women:

For me it's part of the package I love – sitting and continu[ing] the great conversations we had in the water.

4. Conclusion and further directions

4.1 Blue spaces, swimming and placed based connections

Overall data affirmed the potential of blue spaces as providing connections to place and to others. Mirroring scholars' (Atkinson, 2021; Britton & Foley, 2021; Maharja et al., 2023) findings that COVID19 focused people on 'nearby nature', participants used the local blue space to mitigate the imposed lock down measures. Joining *The Jellies* also satisfied the women's expressed need to feel safe. Confirming Becker and Browning's (2021) and White et al.'s (2021) studies geographic location and socioeconomic status has agency in an individual's access to natural environments. As argued by Richardson et al (2021) it is important to ensure that people from all socio-

demographic categories have the ability and means to access and engage with natural environments, green or blue. Unlike women from other disadvantaged suburbs and lower socioeconomic positions, the participants' economic status and geographic location afforded them the both the means and opportunity to access 'nearby nature' during COVID19. Consideration could be given by local authorities and public policy makers to how access to aquatic areas is given to those women whose location; physical and cultural location prohibits any access or possibility of engagement with *The Jellies*.

The study also reveals, as in other studies (O'Donnell, 2007; Richardson et al., 2021; White et al., 2021) that connecting with natural environments develops in individuals an ecological relationality. This ecological relationality was evident as participants became more attuned, more curious and more conscious of the aquatic ecosystem and of their responsibility towards the aquatic ecological system. That participants continued in *The Jellies* beyond COVID19 indicates that access to the natural environment, in this study blue space, is a sustaining factor of wellbeing.

Further, verifying Bates and Moles' (2023) research into the use of media and immersive encounters, participants were eager to share their curiosity and new or renewed connections with water through the use of social media with frequent posting of images. This practice illustrates how technology amplified the participants shared joy and appreciation for natural surroundings, further interleaving participants and the environment.

Additional to expanding ecological relationality evoked in the participants was the accompanying magnification of participants' bodily relationality. Affirming previous research (Bates & Moles, 2024; Moles, 2021; Olive, 2024) that swimming has the potential to create an intimate physical connection with water participants experienced swimming as a whole-body activity, engaging the senses, breath, and movement. This physical experience of swimming and connection to the water deepened participants' awareness of their own body and its relationship to the surrounding environment, which in turn fostered a mindful, embodied interaction with water.

4.2 Blue Spaces, wellbeing, and emerging connections with others

Affirming the intensification of connections and the accompanying positive impacts on wellbeing, the study highlights the nexus between women, well-being and a sense of community. Echoing previous studies (Bates & Moles, 2024; Foley, 2017; Greenwood & Fletcher, 2021), swimming in the group become the context for the women's 'entanglement' with each other, with water and with their life experiences. A non-negotiable connection to the water and each other lead to increased happiness, resilience, and emotional support. The shared experiences and camaraderie were pivotal in improving mental health and creating long-lasting friendships. Developing into a 'sisterhood' that existed beyond the daily swimming times. The newly connected and connecting 'sisterhood' was evident as *The Jellies* provided for each other a strong sense of community and belonging. The shared activities, challenges, and support offered during difficult times created a tight-knit, supportive environment emphasise Olive's (2024) and Moles' (2021) studies that ecological relationality and cultural relationality are intertwined.

Similar to participants in other research (Bates & Moles, 2024), participants in *The Jellies* enjoyed encounters with blue spaces that 'produced different sensory and emotional experiences, shape[d] and strengthen[ed] friendships and communities, and entangle[d] understandings of risk, joy, and well-being' (pg. 66). *The Jellies* culture of inclusivity and non-judgment was highlighted as a key factor in participants' satisfaction. The safe, non-competitive, and welcoming atmosphere allowed members to express themselves freely, promoting body positivity and emotional openness. The all-female environment was particularly valued for fostering deep,

meaningful connections and for facilitating connections beyond swimming, with members engaging in various social activities and supporting each other through life's challenges. This extended social network helped reduce feelings of isolation, particularly pertinent during COVID-19, and provided a platform for shared understanding and mutual support. Together, the relational aspects of swimming underscored its holistic impact, linking ecological awareness, cultural meaning, and bodily experience in a way that enriches one's connection to both nature and community.

Further directions could include a comparative analysis of blue space interactions. For example, investigating the experiences of similar groups in different types of blue spaces (e.g., lakes, rivers, oceans) could reveal how various aquatic environments influence well-being and community dynamics. This could help develop tailored approaches for different settings.

Developing community programs and policies that encourage inclusive and sustainable engagement with blue spaces can benefit public health and environmental conservation. Undertaking such research can evaluate the effectiveness of such initiatives in promoting well-being and ecological responsibility. Investigating the environmental impact of increased human interaction with blue spaces is crucial. Studies could assess how swimming groups influence local ecosystems and identify strategies to mitigate any negative effects, ensuring a sustainable balance between recreational use and conservation. By exploring these directions, future research can deepen our understanding of the complex relationships between individuals, communities, and blue spaces, ultimately fostering more enriching and sustainable interactions with aquatic environments.

Additionally, examining the role of digital communication tools, such as *WhatsApp*, in enhancing community engagement and environmental appreciation could offer valuable insights into how technology can further strengthen social bonds and promote environmental stewardship. Similarly, exploring how the use of social media platforms like *WhatsApp* could contribute to Australian citizen science projects that use interactive technologies to monitor water quality monitoring (Capdevila et al., 2020; Muller, 2018; Zheng et al., 2017).

This paper has added to previous research, noted in the earlier sections of this paper, that has highlighted the role of the natural world, in this paper, blue space, in developing interwoven ecological, relational, and bodily connections, all contributing to wellbeing.

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Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to their containing information that could compromise the privacy of research participants.

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