EXPLORING THE INFLUENCE OF URBAN WETLANDS ON SENSE OF PLACE WITH SPECIAL REFERENCE TO THE ADJACENT COMMUNITY OF BELLANWILA - ATTIDIYA MARSH

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Abstract: Urban wetlands represent vital yet frequently neglected ecosystems in urban planning. They underpin biodiversity and cultivate emotional, cultural, and social connections among neighbouring communities. However, rapid urbanisation surrounding the Bellanwila–Attidiya Marsh has altered how residents perceive and experience the wetland, raising questions about how these perceptual changes influence their sense of place. This study investigates how the visual landscape characteristics of the wetland shape the sense of place of the adjacent community, interpreted through residents' ecological and wellbeing perceptions. A mixed-method approach was employed, integrating qualitative insights on ecological awareness and wellbeing experiences with quantitative correlations between visual landscape attributes and components of sense of place. The findings indicate that ecological and wellbeing perceptions form an interpretive context through which residents engage with visual attributes. Visual qualities particularly visual complexity, legibility, and imageability showed significant associations with sense of place. Despite ongoing ecological and cultural decline driven by urbanisation, the wetland continues to hold cultural and spiritual significance. These results highlight the need for conservation strategies that preserve meaningful visual qualities while reinforcing ecological integrity and community wellbeing, thereby strengthening long-term community–wetland relationships

Keywords: *Sense of place; Urban wetlands; Landscape perception; Visual landscape attributes.*

1. Introduction

Urbanisation is a global phenomenon that continues to threaten natural habitats and reshape the identity of urban landscapes (Gayani et al., 2022). As cities expand, the uniqueness and historical significance of local districts often diminish, eroding residents' sense of identity and connection to place (Xu et al., 2022). Among the most vulnerable natural ecosystems are urban wetlands, which, despite providing vital ecological and social functions, have suffered dramatic losses worldwide. Nearly 87% of the world's wetlands have disappeared in the last 300 years, with the rate of loss accelerating to four times faster in the 20th century than previously, resulting in the disappearance of over 70% of wetlands present in 1900 (Ramsar Convention on Wetlands, 2012; Davidson, 2014).

Historically, wetlands have been mischaracterised as wastelands, leading to their drainage for urban development and use as dumping grounds for waste (Kotagama & Bambaradeniya, 2006). However, recent interdisciplinary research has revealed that wetlands are among the world's most valuable and vulnerable environments, supporting diverse flora, fauna, and human communities. In urban contexts, wetlands offer critical ecosystem services such as flood mitigation, water purification, and microclimate regulation while also serving as spaces for recreation, cultural practices, and psychological respite for city dwellers. Despite these benefits, the acquisition of wetlands for city expansion and flood-control projects disproportionately impacts traditional wetland users, disrupting established socio-ecological relationships (Hettiarachchi et al., 2019).

A crucial but often overlooked dimension of wetland conservation is the relationship between wetland ecosystems and the adjacent communities that interact with them daily. Specifically, there is a need to understand how the characteristics of wetlands and the changes wrought by anthropogenic activities influence the "sense of place" experienced by these communities. Sense of place a complex, multidimensional concept encompasses the meanings, attachments, and dependencies that individuals and groups develop in relation to their environment. While widely discussed in disciplines such as environmental psychology, sociology, landscape architecture, and geography, the term's usage is diverse and sometimes ambiguous (Altman & Low, 1992; Cross, 2001; Tuan, 1977). Scholars have studied sense of place through three interrelated place dimensions: place identity (cognitive meanings), place attachment (affective bonds), and place dependence (functional reliance), can be used to quantify and assess the sense of place of communities who reside in different environments (Proshansky et al., 1983; Jorgensen & Stedman, 2001).

Recent theoretical advancements have further emphasised the dynamic and reciprocal relationship between people and place, highlighting how environmental changes such as those affecting wetlands can reshape cognitive, emotional, and behavioural responses within communities. The benefits associated with wetlands are often taken for granted, and little

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consideration has been given to their unique qualities and potential positive effects on human health, identity, and community cohesion (Horwitz & Finlayson, 2011). In the context of urban wetlands, sense of place is influenced not only by the physical and visual characteristics of the landscape, but also by evolving ecosystem services, cultural practices, social interactions, and personal experiences. Urban wetlands such as the Bellanwila–Attidiya Marsh are undergoing rapid ecological and cultural transformation due to urbanisation, altering how adjacent communities perceive, experience, and relate to the wetland. While existing research focuses on biophysical degradation and ecosystem services, little is known about how these environmental changes influence residents' sense of place, or how ecological perceptions, wellbeing experiences, and visual landscape characteristics interact to shape place-based meaning. This gap limits the ability of planners to incorporate lived experience, cultural value, and perceptual dimensions into wetland management.

1.1. RESEARCH QUESTION AND OBJECTIVE

The study explores how residents interpret ecological change, wellbeing benefits, and visual attributes, and how these interpretations collectively shape their sense of place in a rapidly transforming urban wetland landscape. To address this gap, the research asks: "**How does the Bellanwila–Attidiya urban wetland shape the sense of place of its adjacent community?**" The objective formed to answer this question is "to examine how visual landscape characteristics of the Bellanwila–Attidiya urban wetland shape the sense of place of the adjacent community, interpreted through residents' ecological perceptions and wellbeing experiences." To achieve this objective, the study first explores the dimensions of how residents perceive ecological conditions and wellbeing benefits associated with the wetland.

These perceptions provide an experiential context through which visual landscape characteristics are interpreted and understood. The study synthesises insights from sociology, landscape architecture, and environmental psychology to develop a conceptual framework for sense of place, operationalised through place identity, attachment, and dependence. It investigates how the visual characteristics of the marsh, changes in ecological conditions, and the marsh's contributions to community well-being shape the sense of place for residents. Employing a mixed-methods case study approach (Explanatory Sequential Design) including surveys and semi-structured interviews, the study aims to provide nuanced, evidence-based insights into the socio-cultural value of urban wetlands. Ultimately, the findings seek to inform urban planning and wetland management policies that are sensitive to the lived experiences and place-based identities of adjacent communities, advocating for more inclusive and holistic approaches to urban ecosystem conservation

2. Literature Review

2.1. THE CONCEPT OF PLACE, PLACE MEANING, AND SENSE OF PLACE

The concepts of space and place have been extensively researched across disciplines. Relph (1976) defined place as a progressively shaped integration of nature and culture, while Tuan (1975) recognized it as a centre of meaning that could range in scale from individual objects to entire cities and nations. The phenomenological term "existential insideness," developed by Relph (1976), describes the deep, unconscious bond that people experience when they feel at home in their environment. Seamon (1979) extended this concept through the idea of "at-homeness", a state of familiarity with one's environment. The concept of sense of place became one of the key topics in landscape architecture, geography, sociology and environmental psychology (Cross, 2001). As frameworks developed over time, they frequently identified place identity, place attachment, place dependence, and placelessness as essential elements (Altman & Low, 1992; Tuan, 1977). Place attachment constitutes the emotional aspects, place dependence is functional support, and place identity is identifying oneself with an environment (Jorgensen & Stedman, 2006). Kaplan and Kaplan (1989) connected sense of place with preferences for visually and psychologically restorative environments.

Jorgensen and Stedman (2006) shifted toward an attitudinal framework that included conative, affective, and cognitive components and adopted a quantitative path-modelling approach to differentiate among them, examining how the physical and perceptual attributes of lakeshore properties predict these domains. This method allows them to trace both direct and indirect pathways from environmental features to subjective experience. Tuan (1974) coined the term "topophilia", which is an emotional connection to place. Cross (2001) identified six relationship types: biographical, spiritual, ideological, narrative, commodified, and dependent, illustrating the varied ways people value and relate to places. Relationships with places are not always positive. Relph (1985) acknowledged that place bonds can be weak or negative. Manzo (2005) argued that sense of place stems from both positive and negative experiences shaped by personal, social, and cultural factors. More recently, the concept of Topophobia was proposed by Trigg (2016), who defined it as discomfort or anxiety within specific environments which once again underlines the subjective experience of place.

2.2. SENSE OF PLACE, IMAGEABILITY AND LEGIBILITY

Imageability and legibility are essential to how people perceive and recall environments. Lynch (1996) highlighted how people can create mental maps by using features like paths, landmarks, districts, nodes, and edges, which strengthens place attachment. Although the two concepts are correlated, the imageability emphasizes the concept of symbols properties and the legibility deals with the organization structure (Abeynayake et al., 2022). According to McCunn and Gifford (2018), these components improve emotional security and the perception of the surroundings. (Abeynayake et al., 2022) Kaplan (1979) further noted that complexity, coherence, and mystery influence environmental perception. These factors were associated

with urban liveability by Ewing and Handy (2009), stating that well-balanced environments generate a sense of place in the urban setting.

2.3. SPECIFIC COMMUNITY STUDIES ON SENSE OF PLACE

Many studies address urban and rural areas in general, but fewer focus on specific types of communities. Acott and Urquhart (2014) identified how traditional practices like fishing contribute to community resilience and sense of place. Molle (2009) has pointed out that wetlands in North-Eastern Thailand are the core of local culture, food security as well as identity. Soini et al., (2012) classified sense of place among rural-urban fringe residents into four groups: Socially connected, Weak bonds, Roots and resources, and committed to place, each group had different patterns of attachment that were affected by their social and demographic backgrounds and how they saw the landscape.

2.4. IMPACT OF LAND USE AND LANDCOVER CHANGE ON SENSE OF PLACE

The importance of natural ecosystems, such as ponds and marshes, in creating a sense of place is highlighted by Kaplan and Kaplan (1989) their potential availability offers a reassuring sense of "Thereness," providing psychological satisfaction through their very presence, even when they are not frequently visited. They note that people's preferences for such natural spaces are often shaped more by visual appeal than ecological value, with wetlands and marshes appreciated for their aesthetic and symbolic qualities as much as for their environmental functions (Kaplan & Kaplan, 1989). But further research shows that aesthetic appreciation and ecological understanding become intertwined as communities develop lived experience with landscapes (Gobster et al., 2007)

Ramsar Convention (1971) states that the wetlands are any area of marsh, fern, peat lands or shallow water like lake or river. Kotagama and Bambaradeniya (2006) classified Sri Lanka's wetlands into inland freshwater, marine and saltwater, and man-made wetlands like irrigation tank and paddy field. Such ecosystems have special ecological and cultural significance, helping to determine the identity of the place. Usually noticed in or near cities, urban wetlands serve as essential for improving urban liveability through providing recreational opportunities, lowering urban heat, promoting biodiversity, and improving water quality (Ramsar Convention on Wetlands, 2012; Alikhani et al., 2021). They are places that enhance physical and mental well-being, bond communities, and create a sense of place, yet their social and health value is usually neglected (Carter, 2015). Since the colonial era, wetlands in Colombo have experienced significant ecological transformations, through urban encroachment, flood management, and land use changes, all of which have led to socio-economic consequences, restriction of community access, and environmental degradation (Hettiarachchi et al., 2014).

2.5. MEASURABLE DIMENSIONS OF SENSE OF PLACE

Jorgensen and Stedman (2001) suggested using conative (dependence), affective (attachment), and cognitive (identity) dimensions to measure sense of place. Shamai and Ilatov (2005) proceeded to incorporate physical interaction, culture and power relations in their study. Both studies confirm that place experience results from personal, social, and environmental factors, though variables like community characteristics and interpersonal relations remain under-explored (Jorgensen & Stedman, 2006). Stedman (2003) concluded that social connections and landscape qualities work together to promote place attachment and satisfaction, and he suggested more research in a variety of dynamic contexts.

2.6. NEED FOR A NEW METHOD OF SENSE OF PLACE STUDY

Soini et al., (2012) point out that there is a need to develop new components and variables for sense of place, which takes into consideration the character of the context because the characteristics of the rural-urban areas are dynamic and heterogeneous both in terms of the visual landscape and social structures. Studies on dynamic communities in diverse landscapes may satisfy this requirement. (Stedman, 2003).

By synthesising the above research from multidisciplinary fields, for this study, sense of place will be defined as: The deep, emotional connection and meaning that individuals or communities associate with a specific location comprising the psychological links between people and their landscapes, influenced by cultural, social, and personal experiences. This concept includes feelings of dependence, identity, and attachment to a place, as well as the visual and environmental qualities that contribute to these connections which is affected by a personal preference, either negative or positive.

3. Methodology

3.1. THEORETICAL FRAMEWORK

The Sense of place component model by Altman & Low (1992) and Jorgensen & Stedman (2006) along with the Millennium Ecosystem Assessment model, are adapted as a theoretical framework for this research. The primary theoretical model is based on the dimensions of sense of place (place identity, place dependence, and place attachment) as identified from the literature review (Figure 1.)

The Millennium Ecosystem Assessment (MEA) illustrates the relationships among the ecosystem services of the natural environment, the components of human well-being, and the strength of their linkages. (Figure 2) It states that, "Many people

value the sense of place that is associated with recognised features of their environment, including aspects of the ecosystem", with low intensity of linkages with the constituents of wellbeing. (Millennium Ecosystem Assessment, 2005).

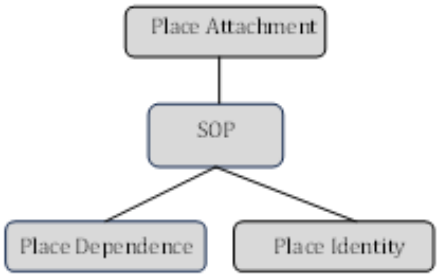

Figure 1. SOP dimensions
(*Source: Altman & Low, 1992; Jorgensen & Stedman, 2006)*

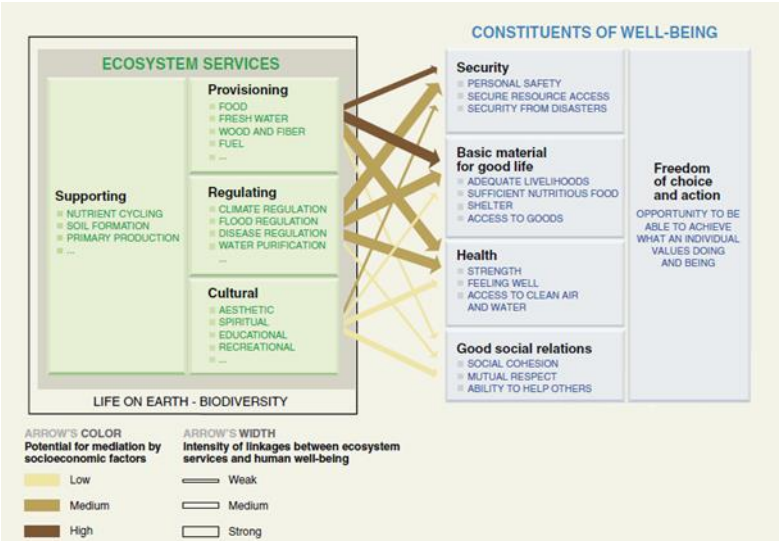

Figure 2. The Millennium Ecosystem Assessment (MEA) framework
(*Source: MEA, 2005)*

3.2. CONCEPTUAL FRAMEWORK

The conceptual framework adapts the MEA model to examine how SOP emerges through three interrelated perceptual dimensions. The first dimension comprises residents' perceptions of ecological conditions—observed biodiversity, water quality, and environmental changes. These perceptions form the experiential foundation through which residents interpret wetland value, capturing subjective awareness of ecological change rather than objective ecosystem measurements. The second dimension encompasses perceived well-being benefits derived from wetland proximity, including psychological restoration, cultural significance, and social interaction opportunities. This examines how ecological perceptions translate into experienced benefits. The third dimension involves visual landscape characteristics representing the sensory interface through which residents engage with ecological conditions. Ecological perceptions and wellbeing experiences jointly contextualise how visual characteristics are interpreted and valued. While ecological and wellbeing perceptions shape residents' experiences, this study quantitatively examines visual-SOP relationships, with ecological and wellbeing explored qualitatively as interpretive context.

3.3. RESEARCH STRATEGY AND APPROACH

This exploratory research examines how urban wetlands influence sense of place in edge communities. While qualitative methods suit understanding perceptions and emotions (Kumar, 2011), the reviewed literature suggests a holistic approach. Quantitative data were collected through a cross-sectional questionnaire survey, producing numerical data for analysis. The quantitative analysis involved data screening to address missing responses, calculating response percentages for each category, and using IBM SPSS 26 to compute Spearman's rho correlations to examine associations between variables. To connect the quantitative and qualitative phases, respondents were categorized as mostly positive, mostly negative, or neutral based on their dominant perceptions, and one participant from each group (n = 3) was purposively selected to represent typical response patterns. A semi-structured interview was tailored to probe significant correlations, non-significant relationships, and contradictions and to generate qualitative data in the form of interview transcripts, documents, and photographic records. This data was analysed through coding and within-case thematic analysis to identify key themes

and patterns. Finally, quantitative and qualitative findings were integrated through interpretative explanation, allowing statistical associations to be contextualized and discussed in relation to participant narratives and observed site conditions.

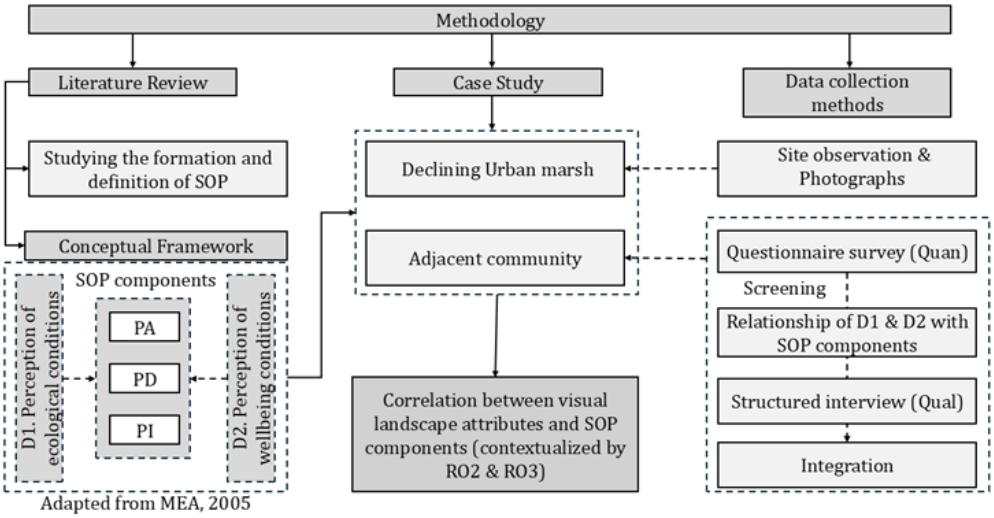

Figure 3. Methodological approach
(*Source: Compiled by Author)*

3.4. CASE STUDY

3.4.1. Site Location and Information

Figure 4. Boundary of Bellanwila Attidiya wetland
(Source: Google Earth)

Figure 5. Survey locations of the site
(Source: Google Earth)

Colombo, the only capital city accredited as a Wetland City by COP 13 (Ramsar Convention, 2018), owes this recognition partly to the Bellanwila-Attidiya Marsh, a 370-ha freshwater wetland within the Weras Ganga catchment. It is the only urban wildlife sanctuary in Sri Lanka and supports rich biodiversity, including 77 butterfly species, 168 bird species, 33 fish species, 27 reptiles, 27 mammals, 11 amphibians, and diverse dragonflies. Habitats include ponds, canals, grasslands, scrublands, and paddy fields. The marsh provides vital ecosystem services like flood drainage, recreation, and education. However, water pollution, illegal reclamation, and garbage disposal threaten its ecological and cultural value. Rapid urbanization has reduced its surface area and increased settlement pressure, weakening essential services.

3.4.2. Sampling

A total of 42 samples were taken including low and middle-income communities who ranged from 18 – 69 years of age. 62% of the sample was from the low-income community who earned less than Rs.26,931 per month, and the remaining was of the middle-income community who earned between Rs.26,931 and Rs.53,000 per month (Household income & Expenditure Survey, 2019). Out of the surveyed respondents, 86% have lived more than 10 years in the periphery of the marsh, which made it possible to gain a long term perspective on their spatial interactions.

3.5. DATA COLLECTION METHODS AND TOOLS

The study tested the suitability of indicators by administering a pilot questionnaire to randomly selected participants (n=10). A total of 42 responses were collected for the final questionnaire. A random sample was selected based on each

category of answers from the questionnaire for semi-structured interviews (n=3). The research used a direct technique and a bipolar approach, using a multidimensional scale based on related attributes of sense of place. The measurable dimensions of sense of place included place attachment, place dependence, place identity, social interaction, cultural and power relations, emotional attachment, and imageability (Jorgensen & Stedman, 2006; Shamai & Ilatov, 2005; Lynch, 1996). A 5-point Likert scale questionnaire was used to measure dimensions and indicators, followed by a semi-structured interview to clarify data, and the questionnaire was screened into positive, negative, and neutral responses.

Table 1. Description of the dimension of sense of place
(Source: Compiled by author)

Dimensions	Description
Place Attachment (PA)	Emotional connection to the wetland, Amount of time resided
Place Dependence (PD)	Reliance on the wetland for daily activities, accessibility and usage frequency, Local livelihoods supported by the wetland, Resources utilised for economic activities
Place Identity (PI)	Shared community values, Collective memory

Table 2. Description of the visual landscape attributes
(Source: *Compiled by author*)

Indicator	Description
Place Imageability	Memorable and describable features
Visual Complexity	Richness, diversity, and spatial organization of elements
Visual Coherence	Visually organizable aspects
Legibility	Features that allow to form a cognitive map
Mystery	Locations of transition from prospect to refuge

3.6. DATA ANALYSIS METHODS

3.6.1. Quantitative Data Analysis

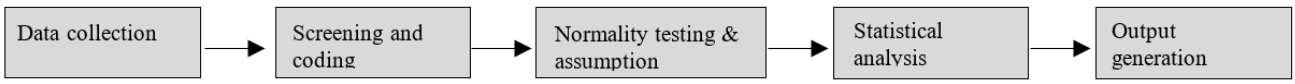

Figure 6. Quantitative data analysis method
(Source: Compile by author)

A quantitative analytical component was included to examine the associations between visual landscape characteristics and sense of place. Since both sets of variables were measured using ordinal Likert-scale items, a non-parametric statistical method was required. Internal consistency and scale reliability were evaluated using Cronbach's alpha. A Shapiro-Wilk test showed evidence of non-normality ($p<0.05$). Therefore, a Spearman's correlation test was used for variable correlation. Spearman's rho correlation was selected as the most appropriate tool because it measures the strength and direction of monotonic relationships between ranked variables without assuming linearity or normal distribution. To reduce subjectiveness and increase reliability, a ranking scale was used to measure legibility and mystery, as they showed high subjectivity from participants in the pilot study.

Figure 7. Locations of photographed areas
(Source: Google Earth)

Figure 8. Photographs used to test mystery
(Source: Compiled by author)

Figure 9. Photographs to test imageability
(Source: Compiled by author)

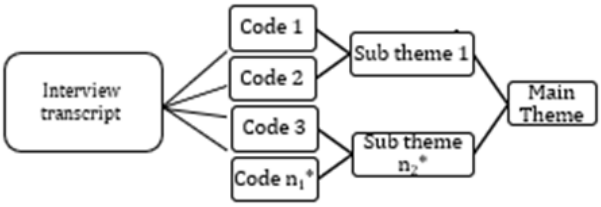

Figure 10. Thematic analysis framework
(Source: Compiled by author)

3.6.2. Qualitative Data Analysis and integration

A manual thematic analysis was carried out by developing initial codes from the interview transcripts and refining them to create final codes. These codes were then grouped and constructed as a thematic framework. To integrate quantitative and qualitative findings, a weaving approach was used, such that results are grouped together according to themes, allowing statistical associations to be contextualized through participant narratives (Fetters et al., 2013).

3.7 ETHICS AND LIMITATIONS

The consent of the participants was verified before proceeding with the questionnaire and the semi-structured interview, and participants were allowed to withdraw from the interview at any stage. The anonymity of the participants was protected throughout the research. Several limitations warrant acknowledgment. The small sample size (N=42) and limited qualitative component (n=3) restrict generalizability and depth of explanatory insights. Low reliability scores for safety (α=0.54), psychological impact (α=0.55), and cultural significance (α=0.55) scales suggest these measurements require refinement in future studies. The cross-sectional design captures perceptions at a single time point; longitudinal research tracking how sense of place evolves alongside ecosystem changes would strengthen causal understanding.".

4. Analysis and Results

4.1. QUANTITATIVE ANALYSIS

4.1.1. Summary Statistics

The results showed that the scale reliability (α) ranged from 0.54 (Safety) to 0.84 (Social Interaction). These values indicated that the scales range from moderate to good reliability (Hinton et al., 2014). P-values were used to determine the reliability of the correlations and statistical significance levels: $p < 0.01$ highly significant, $p < 0.05$ significant, and $p \geq 0.05$ not significant. The degree of freedom (N-2) was 40. Factors that showed strong and significant correlations across ATT, DEP, and IDE were considered more influential.

Table 3. Summary statistics for variables in the analysis (N=42)
(Source: Compiled by author)

Variable type	Measurement	Variable description	Cronbach's alpha ($\boldsymbol{\alpha}$)	Label	Mean	SD
Dependent variables	Sense of place	Place Attachment	0.85	ATT	3.74	0.89
		Place Dependence	0.79	DEP	3.62	0.93
		Place Identity	0.76	IDE	3.82	0.79
Independent variables	Landscape character	Visual complexity	0.73	COM	4.26	0.69
		Visual coherence	0.82	COH	3.73	0.83
		Legibility	0.88	LEG	3.97	0.78
		Mystery	0.69	MYS	4.23	0.49

Correlation values between 0.0–0.3 indicate a weak relationship, 0.3–0.7 indicate a moderate relationship.

Table 4. Correlation matrix: SOP dimensions and landscape character (N=42)
(Source: Compiled by author)

		COM	**COH**	**LEG**	**MYS**
Spearman's rho	**ATT**	.436*	.290	.393	.264

Sig. (2-tailed)	**ATT**	.004	.062	.010	.091
Spearman's rho	**DEP**	.486*	.354	.435*	.221
Sig. (2-tailed)	**DEP**	.001	.021	.004	.159
Spearman's rho	**IDE**	.486*	.284	.478*	.314
Sig. (2-tailed)	**IDE**	.002	.068	.001	.043

* Correlation is significant at the 0.05 level (2-tailed).

4.1.2. Landscape Visual Characteristics and Sense of Place

Visual Complexity has the strongest and most significant relationship with place attachment (rs[40]=0.436, p=0.004), while legibility also shows significance (rs[40]=0.393, p=0.010). Visual coherence and mystery show no statistical significance with place attachment. For place dependence, visual complexity demonstrates the strongest correlation (rs[40]=0.486, p=0.001), followed closely by legibility (rs[40]=0.435, p=0.004). Coherence shows weak significance (rs[40]=0.354, p=0.021), while mystery shows no statistical significance

Legibility showed the strongest positive correlation with place identity (rs[40]=0.478, p=0.001), followed closely by visual complexity (rs[40]=0.486, p<0.005). Visual coherence and mystery showed no significant correlation. Imageability rankings (Figure 11) revealed 79% chose location E – the site of the traditional "Dhiya Kapana" event (Figure 9) as most memorable, followed by B (14%), D (7%), and C (2%), with A as least memorable. All participants wanted to explore at least one undisclosed location, regardless of attachment levels. Mystery rankings showed 48% preferred A (Figure 8), 38% preferred D, and 16% preferred B, with C least preferred based on visual appeal and potential for exploration. (Figure 12)

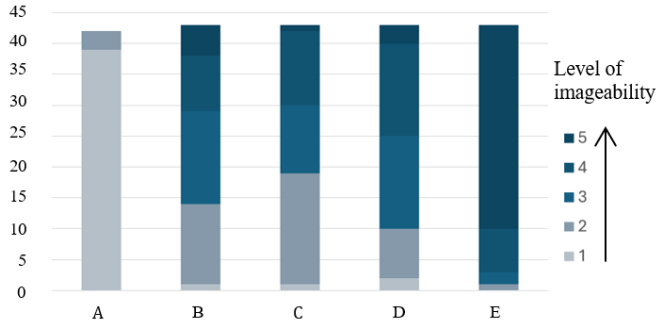

Figure 11. Bar chart for survey results of imageability
(Source: Compiled by author)

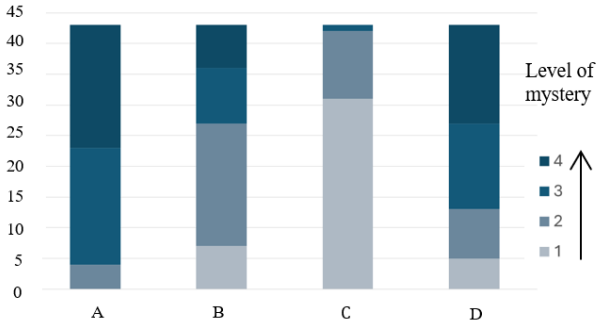

Figure 12. Bar chart for survey results of mystery
(Source: Compiled by author)

4.2. QUALITATIVE ANALYSIS

The thematic analysis presented 5 recurring themes related to the marsh. Strong cognitive perception and experiences, concerns, and issues regarding physical interaction with the marsh, the Importance of historical and cultural aspects, opportunities and concerns regarding wildlife and human interaction, and preference to the environment of the marsh.

Table 5. Summary of thematic analysis
(Source: Compiled by author)

Main Theme	**Sub Theme**	**Codes**
Strong cognitive perceptions and experiences	Sensory Experiences	- Rich sensory experiences and aesthetic appreciation of marsh landscape
	Emotional Connections	- Appreciation of natural serenity - Nostalgia for past marsh conditions
	Preferences	- Preference for natural environment over urban areas - Temporal preference for marsh visits - Seasonal preferences for wildlife observation
	Landscape Transformation	- Encroaching on marshland - Loss of agricultural land - Historical agricultural landscape
	High mental Imagery	- Mental imagery related to social activities and certain landmarks
Concerns and issues regarding physical interaction with the marsh	Accessibility	- Restricted public access to marsh areas - Removal of traditional access points - Desire for marsh conservation, restoration, and improved accessibility

	Recreational Use	- Social and recreational use of marsh - Lack of recreational appeal
	Resource Utilization	- Decline in the traditional use of marsh resources - Livelihood dependence on marsh resources
	Safety Concerns	- Safety concerns due to wildlife - Increased pollution and safety hazards
	Maintenance Issues	- Inadequate maintenance and conservation efforts
Importance of historical and cultural aspects	Traditional Knowledge	- Preservation of traditional knowledge and stories - Loss of traditional rituals
	Historical Significance	- Historical significance of the marsh
Situations on wildlife human interaction	Wildlife Observation	- Wildlife observation opportunities
	Human Impact on Wildlife	- Wildlife mortality due to vehicular traffic
	Impact on Human Health	- Reduction in mosquito nuisance
	Population Pressure	- Impact of population increase on marsh health
Preference for the environment of the marsh	Environmental Comfort	- Temperature regulation by marsh ecosystem - Perceived ineffectiveness of urban cooling methods
	Fewer Noise Levels	- Noise pollution contrast between marsh and urban areas

Residents observed environmental changes in the marsh, including biodiversity loss, declining water quality, and landscape alterations from urbanisation. They noted better accessibility but also restricted areas and shifted resource use. The marsh is valued for its sensory appeal, tranquillity, beauty, and cultural significance, offering a stark thermal and acoustic contrast to the city. Concerns include poor maintenance, conservation, flood management, and human impacts on wildlife. In a mental image exercise (n=3), participants focused on natural elements like trees and water, the neutral added roads and houses, and the positive included local activities. Positive and neutral respondents depicted more visual elements, linking them to activities, experiences, and environment. Figure 13 shows sketches drawn by positive (A), neutral (B), and negative (C) respondents respectively

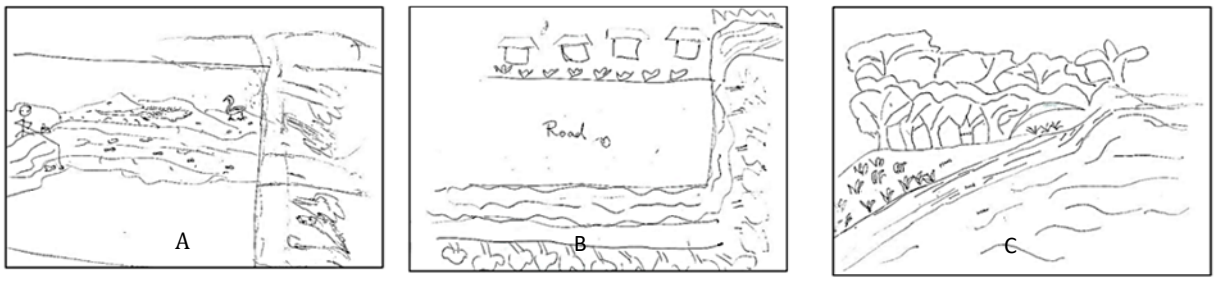

Figure 13. Sketches drawn by respondents
(Source: Compiled by author)

5. Integration and Discussion

5.1. PERCEPTION OF ECOLOGICAL CONDITIONS AND RELATION TO SENSE OF PLACE

Environmental awareness significantly influenced sense of place, particularly among low-income residents (62%) dependent on wetland resources, which is supported by the qualitative findings. Traditional ecological knowledge and livelihood dependence (fishing, medicinal plants, flowers) deepened place bonds. Pollution, illegal dumping, and urban encroachment reduced biodiversity and water quality, diminishing aesthetic and practical value. Examples include loss of species such as *Lunuwila Pan*, *Madu gaha*, and *Gok mota*, and visible degradation (floating debris, water discoloration). Despite these impacts, 81.4% were highly aware and concerned about ecological changes, reinforcing conservation attitudes.

5.2. PERCEPTION OF WELL-BEING CONDITIONS IN RELATION TO SENSE OF PLACE

Perceptions of well-being associated with the marsh further contribute to the contextual understanding of the sense of place among adjacent communities. Socio-cultural and spiritual associations emerged as particularly significant in shaping place-based meanings. Participants referred to historical narratives, traditional rituals, and cultural memories linked to features such as the old anicut and former paddy landscapes, which contributed to collective identity and symbolic attachment. A participant revealed that "…The anicut was connected to the area where there is the Bellanwila park now. And it relates to historical Portuguese stories". Interview participants who expressed more positive questionnaire responses often highlighted these historical and cultural associations as essential to their connection with the place.

Psychological well-being, particularly feelings of peace, stress reduction, and mental restoration, was widely reported, with 88.3% of respondents valuing the marsh as a calming urban environment. Participant narratives reinforced this perception, emphasizing exposure to nature, birds, and vegetation as sources of psychological comfort. Conversely, perceptions of safety generated mixed responses. Concerns regarding wildlife encounters, unsafe access routes, and roadkill incidents were frequently expressed, with 81.4% of respondents disagreeing that access paths were safe. Long-term residents, however, indicated a degree of adaptation to these risks, suggesting that perceived danger did not uniformly diminish place attachment. Together, these well-being perceptions—psychological, socio-cultural, and safety-related—contribute to the broader experiential context through which residents relate to the marsh and form meanings of place

5.3. INFLUENCE OF LANDSCAPE VISUAL CHARACTER ON SENSE OF PLACE

5.3.1. Visual Complexity and Temporality

According to the findings, visual complexity consistently exhibited a moderate connection at the 0.01 level of significance across all three feeling of place elements. ATT = 0.436 ($p < 0.01$), DEP = 0.486 ($p < 0.01$), and IDE = 0.486 ($p < 0.01$). Visual complexity influences the cognitive perception and experience of the marsh. 88.4% of respondents preferred to visit the marsh in the evening, while 62.8% preferred to visit in the early morning. Qualitative results show that the aesthetic and visually pleasant components of the marsh provide the community with a positive sense of place and visiting the marsh during these times enhances the experience by providing psychological benefits. The chance to see visually appealing aspects, flora and fauna is one of the main reasons for the preference of this time. A respondent, who collects medicinal plants, noted: “The marsh teaches you—you learn where each plant grows by season.” This demonstrates that complexity isn't merely aesthetic; it creates functional knowledge systems that deepen practical reliance on the landscape, explaining the strong dependence correlation." This also aligns with Altman and Low (1992) in stating that place temporality, including cyclical, linear features, also affects place attachment. where the temporality, together with visual complexity, can be an essential driver of the sense of place.

5.3.2. Imageability

The results of the mental image sketching activity showed that the respondents found it easier to remember locations with more social interactions than locations with plain vegetation of specific flora (Eg: - Wel Atha trees). A participant stated, "Lot of things came to my mind. The marsh water with the fish, the walking bund, the trees, the animals, and the birds, people drinking water and the overall quiet surrounding". These findings with Lynch (1996), which noted that people have recalled the main paths and landmarks around the marsh, which they are familiar with. The respondents were able to remember the symbolic meanings of the landscape in addition to the structural properties such as edges, paths, and landmarks. The respondents had related the landmarks to specific events such as “Dhiya Kapana event” and had given meaning to the landmark. This conclusion aligns with Stedman (2003), where he stated that deep symbolic and emotional meanings that people construct with locations play a role in their sense of place. Through this study, it is confirmed that these meanings also contribute to enhancing overall imageability.

5.3.3. Legibility

Legibility has a moderate relationship with all three components of sense of place. ATT = 0.393($p < 0.010$), DEP = 0.435 ($p < 0.004$), and IDE = 0.478 ($p < 0.001$). The relationship is highly significant and therefore it is likely that there is a relationship between the two variables in the population as well as the sample. The respondents were able to remember areas of the marsh with manmade landmarks comparatively higher. Respondents identified several landmarks that they use to guide their way around the marsh. The significant landmarks include the old anicut, the footpath leading to the marsh, the bridge, and the fishing area near the walking path, which aligns with the findings of Abeynayake et al., (2022) because the participants used more of the structural properties to find legibility within the marsh. Therefore, it is evident that the paths, edges, and landmarks enhance the ease of understanding and navigating the Bellanwila-Attidiya marsh, and that legibility plays a crucial role in how residents identify with the landscape.

Old anicut | *Footpath leading into the marsh* | *Fishing area near the walking path* | *View of the bridge*

Figure 14. Significant landmarks identified by the respondents
(Source: Compiled by author)

5.3.4. Mystery and Visual Coherence

Mystery and visual coherence had weak correlations (ATT, DEP, IDE < 0.314) (Table 4), though some residents valued hidden or partially concealed areas for exploration. While some residents valued hidden areas for exploration, safety

concerns and personal preference limited mystery's appeal at the population level. Visual coherence was appreciated for harmony between trees, water, and paths but played a secondary role compared to complexity, imageability, and legibility. Interviews suggest residents value ecological authenticity over aesthetic order, which indicates coherence may be less valued in habitual natural settings. The results indicate that the visual characteristics of the marsh play a significant role in predicting the sense of place, with visual complexity, legibility, and imageability emerging as the most influential determinants. Importantly, these visual attributes function as perceptual pathways through which residents engage with ecological conditions—what they see shapes what they value and seek to protect, reinforcing the interconnected nature of visual, ecological, and wellbeing dimensions in place experience

6. Conclusion

This study examined how the Bellanwila–Attidiya urban wetland shapes the sense of place of its adjacent community through three interrelated perceptual dimensions: ecological perception, wellbeing experience, and visual landscape engagement. The findings indicate that residents' perceptions of ecological conditions form the foundational layer through which the wetland is interpreted. These ecological meanings are closely connected to perceived wellbeing benefits, particularly feelings of calmness, psychological relief, and emotional restoration associated with proximity to the wetland. Within this experiential setting, visual landscape characteristics—especially visual complexity, legibility and imageability emerge as significant contributors.

Importantly, the study demonstrates that visual attributes cannot be separated from the ecological and wellbeing contexts in which they are experienced. Visual complexity, for example, extends beyond aesthetics and supports functional and experiential knowledge systems that deepen residents' practical and emotional reliance on the marsh. Residents who perceived ecological decline tended to value visual cues that reinforced continuity, naturalness, and place identity, while those who experienced wellbeing benefits interpreted visual qualities as sources of psychological comfort and cultural meaning. Thus, sense of place arises through the intersection of environmental meaning, wellbeing experience, and visual perception.

In conclusion, The research highlights the multifaceted significance of urban wetlands in rapidly urbanising regions. It underscores the need for planning and management approaches that preserve visual qualities, maintain ecological integrity, and acknowledge the well-being value of wetland environments. Urban wetlands such as the Bellanwila–Attidiya wetland shapes residents' sense of place through an integrated perceptual relationship between ecological awareness, wellbeing experiences, and visual engagement. Recognising this interconnected experiential value is essential for urban wetland planning and management. Enhancing the visual, ecological, and cultural qualities that residents meaningfully engage with can help strengthen stewardship, support community attachment, and contribute to more socially grounded and resilient urban environments, particularly in the context of developing Ramsar-accredited wetland cities.

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