



## **South Atlantic Natural Capital Project: Cultural Ecosystem Services on Ascension Island**



University of  
**Kent**

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FINAL REPORT

NATURAL CAPITAL ASSESSMENT

SOUTH ATLANTIC OVERSEAS TERRITORIES

**South Atlantic Natural Capital Project: Cultural Ecosystem  
Services on Ascension Island**

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**South Atlantic Environmental Research Institute – SAERI**

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## 1. INTRODUCTION

*“Instead of being simply a paradise, the island became the medium or metaphor for a much more fundamental questioning of the nature of existence, societies and the self and consequently for fictional or experimental constructions of new societies and analysis of old ones. (...) ...the theme of life on a desert island was, from the start, invested with environmental, cultural, religious and moral significance...”*

*(Grove, 1995: 225-227)*

Ascension Island is an isolated island of the South Atlantic: 7°56 south the Equator, about 1000 miles from Africa and 1400 miles from Brazil, and 800 miles from the nearest island, St. Helena. With an area of 34 square miles and no inland water bodies, this young volcanic island is dominated by its highest peak, Green Mountain, which is 858m above sea level and covered in a tropical rainforest. It is surrounded by more than 40 craters and cinder lava cones, from which flows of distinct lava types and eruption styles spread towards the sea, forming rugged lava plains.

Ascension was first discovered in 1501 and has been permanently inhabited since 1815, when a British garrison of Royal Marines was established to secure Napoleon's exile in St. Helena. Since then, its geographic location has proven strategic for various reasons and in diverse situations. In the 1830s, the Island was a stopping point for passing ships, in particular functioning as a base for ships patrolling the African coast against the slave trade, following a British anti-slavery policy (Avis, 2001). The opening of the Suez Canal drastically reduced the number of ships calling on Ascension, turning it into a 'sleepy backwater' until 1899, when the Eastern Telegraph Company brought ashore the first submarine cables and made a relay station on Ascension, which would reaffirm its strategic geographic position for communications between Europe, Africa and, later, also South America (*Ibid.*, 2001). Along with its global communications role, the Island also started being used for astronomical observations, pointing to its future role monitoring space expeditions. In 1964, the BBC set up a radio relay station broadcasting to both Africa and South America and in the same decade, the US Apollo space programme led to the construction of a NASA tracking station along with a Cable & Wireless Earth Station. Ascension was known as 'The Rock' by those sent here to work in these stations, or at the US military base established at the same time (Kovalchik, 2014). It is believed by some that images from the successful landing of Apollo 11 on the moon, with the famous Neil Armstrong communication, were first received there, at the NASA site.

Simultaneously, a series of historical events aspired to turn Ascension's inhospitable landscape into a more accommodating one. In the 1830s the Garrison started a farm up in Green Mountain to better feed those stationed there, soon initiating an experiment that would change Ascension's landscape forever. Under the guidance of Joseph Hooker—later director of Kew Royal Botanical Gardens—the largest terraforming experiment in the world was conducted in an attempt to increase rainfall on the Island, and thus improve water supply for the Garrison. The introduction of non-native species from around the world created a mosaic tropical cloud forest that had a profound impact on the island and its native species.

Like other islands, Ascension's remoteness and isolation enabled the evolution of a particular ecosystem, both unique and fragile, typically rich in species endemism and poor in species richness. Endemic species of ferns, mosses and grasses evolved there along with endemic invertebrates, land crabs and seabirds. Since the discovery of Ascension, however, the fate of



Figure 1. Ascension Island Coat of Arms

those species was inevitably linked to the history of human settlements. Ascension's plant diversity today reflects the interaction between natural and cultural landscapes; due to the impact of introduced species on endemic plant populations (Gray et al., 2005) and the 'terraforming' process that transformed Green Mountain into a cloud forest (Wilkinson, 2004; Gray, 2004). Other legacy effects of human settlement on Ascension's natural history include the presence of feral donkeys and sheep.

The notion that Ascension's natural environment comprises a cultural landscape is supported and further detailed within the Natural and Built Heritage section of this report. Here, it is perhaps best illustrated by Ascension's coat of arms which incorporates key cultural elements of its natural history: the seabirds flying above the waves and a stylised green mountain on the central shield, the green turtles at each side on top of a rock where parsley fern grows, topped by a helmet and sailing ship — see Fig. 1.

Nowadays, two centuries after the first settlement, there is still no right of abode on Ascension: "Ascension is a working island. That means that everyone on island is here to work or to be with someone who works"<sup>1</sup>. As such, nobody is officially from Ascension, everyone is on a fixed-term working contract, typically for 24 months, or a dependent of someone who is. Still, contracts may be renewed such that some people may live on Ascension for many decades; but, nonetheless, anyone over 18 who does not have a job, and is not the partner of someone who does, must leave the island. Regardless of how many years one may have lived there, everyone is a temporary visitor on Ascension Island.

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<sup>1</sup> On Ascension Island Government website: <https://www.ascension-island.gov.ac/working-here/living-on-ascension/> [accessed 3<sup>rd</sup> May 2018].

## 2. CULTURAL ECOSYSTEM SERVICES & NATURAL CAPITAL ASSESSMENT

This report provides an assessment of cultural ecosystem services and benefits resulting from interactions between people and the natural environment on Ascension Island. It is part of a series of Cultural Ecosystem Services (CES) assessments undertaken across the UK South Atlantic Overseas Territories, including the Falkland Islands, St. Helena and Tristan da Cunha. Specifically the study was commissioned by the South Atlantic Environmental Research Institute (SAERI) as part of a programme of Natural Capital Assessment (NCA) being implemented by the UK Joint Nature Conservation Committee (JNCC) and conducted by the SAERI. Funded by the Foreign and Commonwealth Office (FCO) managed Conflict, Stability and Security Fund (CSSF), the work sits under its Environmental Resilience programme which includes objectives to integrate natural capital considerations into economic and social development planning. The particular case for this assessment arose from a consultation workshop held on Ascension in June 2018, followed by a smaller Advisory Group meeting, which resulted in priority areas being identified by on-island key stakeholders for further study. Cultural ecosystem services on Ascension Island was highlighted as one of these priority areas.

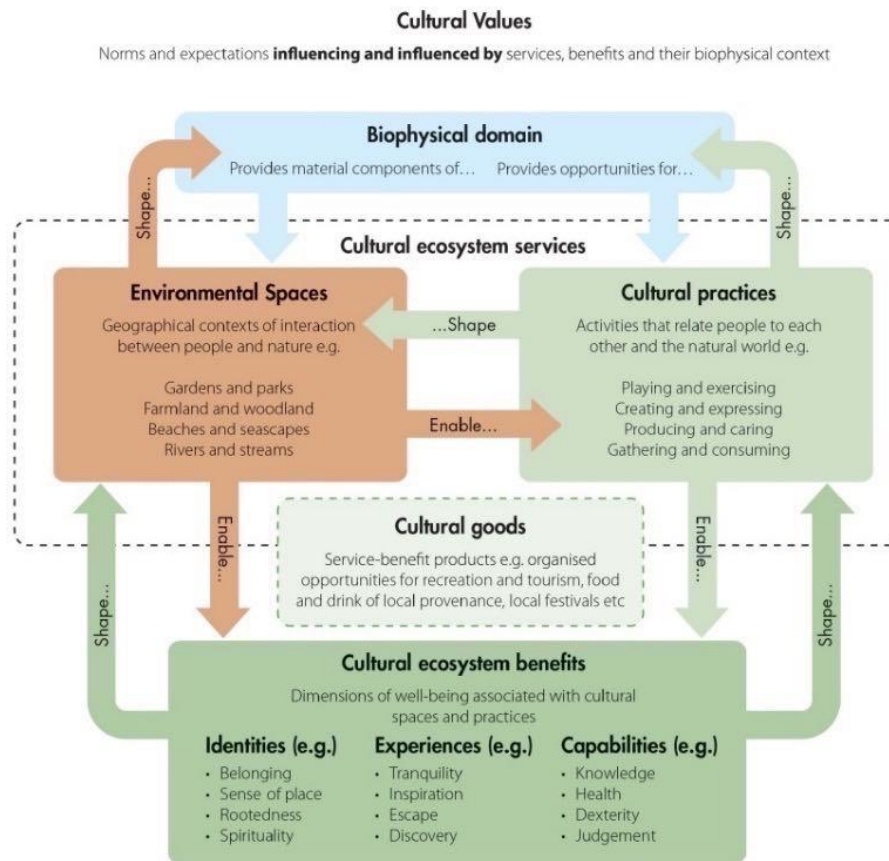
The Natural Capital Assessment process involves thinking systematically about the complexity of managing interdependent environmental processes in terms of their implications for human well-being. Accounting for cultural ecosystem services within this practice of natural capital assessment specifically invites consideration of the natural environment as an object of cultural concern and interest. The focus is on building up understanding of the many and diverse ways people interpret and affiliate with the natural environment, assigning it significance. As such, cultural ecosystem services assessment draws attention to, and emphasises, a highly relational approach to the study of natural assets, and the shared - though by no means uncontested - values that cohere in, through and around them.

A general framework for understanding cultural ecosystem services, and their placement within a 'value chain' linking the biophysical domain to human well-being, is depicted in Fig. 2 overleaf. This framework informs the overall approach taken by the study of the Ascension Island natural environment. The study of CES in NCA includes general consideration of the way people draw out and construct different 'pictures' of the natural environment in terms of its distinguishing features and attributes, and how patterns and elements in nature are qualified and evaluated by people, for example, through judgements of state, condition, taste, preference and quality. At least part of the interest in exploring NCA from the vantage point of culture is that it provides an indication of what people emphasise and prioritise in their local and nearby environments, and where sensitivities concerning the management and planning of natural resources may reside.

Although these generalised understandings of natural capital - and their social and spatial expression - are important to NCA, the overriding and larger concern of Assessment is to understand and empirically characterise the particular ways the natural environment functions as an asset to human well-being. In this respect, CES are described by Fish *et al.* (2016) as the *"contributions that ecosystems make to human well-being in terms of the identities they help frame, the experiences they help enable and the capabilities they help equip."* An important dimension of NCA from the perspective of well-being is to understand and document the range of activities - or 'cultural practices' - enacted by people with respect to the natural world. The study of these practices - which in principle encompass a diverse constellation of physical embodiments and mental apprehensions of the natural world - are important since they represent the *"mechanism by which transactions between the biophysical domain and human well-being arise"* (*ibid.*). That is to say, just as cultural practices materially shape patterns and



arrangements in nature, so do they condition the environment as a resource of benefit to people. As such, analytical study of these cultural practices is of primary importance to the conduct of NCA from a cultural starting point.



*Figure. 2: Conceptual framework for the assessment of cultural ecosystem services, from Fish et al. (2016)*

To explore local culture and the CES associated with terrestrial and marine environments on Ascension Island, this study builds on the above framework for the design and implementation of a three-fold methodology for the assessment, mapping and valuing of CES on Ascension Island. Following the established methodology for CES assessment within the wider NCA project, the report presents findings on:

- the characterisation of Ascension’s natural environment, including the aspects that people value the most in terms of the elements relevant for its biodiversity, natural and built heritage;
- a participatory mapping approach of Ascension’s landscape according to the most significant places for the perceived ‘essence’ of its natural environment, ‘work’ and ‘leisure’ activities, as well as the landscape’s elements associated with ‘negative’ aspects of Ascension’s environment;

- the cultural practices, associated with work and leisure activities, performed on distinct environment spaces;
- the cultural benefits obtained from distinct interactions with Ascension's natural environment in terms of the experiences and capabilities that contribute to human's well-being; and, finally,
- the emergent patterns on the distribution of cultural practices, benefits and values, as norms and preferences, across distinct social and demographic groups of the sampled population.

In the next section, we describe the methodology used and, in the subsequent sections, results are presented starting by the characterisation of Ascension's natural environment followed by a mixed qualitative-quantitative analysis of the main cultural practices related to Ascension's environment and the perceived benefits associated with these.

### 3. METHODOLOGY

The CES assessment results from the implementation and analysis of a survey, based on face-to-face interviews with a representative sample of Ascension's residents over 16 years old, between January and February 2019. The survey and mapping approach were designed by the University of Kent in consultation with SAERI and adapted by the project researcher to the local context of Ascension Island.

The survey was complemented over the course of one-month's field work, during which the interviews were conducted, with informal discussions with key stakeholders on the culture, history and environment of Ascension Island. Participant observation of the main cultural practices that bring people outdoors, together with field visits to relevant sites across the Island, and a review of selected bibliographic resources on Ascension's history, such as Avis (2001) and Hart-Davis (2016), were also used to inform the study.

The survey includes four mapping exercises to collect spatial evidence on the elements of Ascension's landscape that people value in terms of their significance for the perceived 'essence' of Ascension's natural environment; the cultural practices people perform in distinct environmental spaces, associated either with their 'work' or 'leisure' activities; and the elements of the landscape linked to 'negative' aspects of Ascension's natural environment. The survey instrument, including mapping exercises, can be found in the Annex.

Participants were selected using chain-referral sampling, starting with contacts from the Conservation Department of Ascension Island Government and contacts established with locals at the Saints Club, a main gathering place in Georgetown. Participants also contacted the researcher directly, following an article published in the local weekly newspaper (*The Islander*) and emails sent to the main employers on Ascension, including Interserve, Babcock and Wolf Creek. In total 72 surveys were completed, 24 resulting from the latter sampling method.

Survey data were analysed using a mixed qualitative and quantitative approach and combined with participant observation data to examine how Ascension's residents interpret their natural environment. We assessed the benefits people obtained from distinct interactions with the environment, particularly those supporting a sense of belonging, tranquillity, exhilaration and sense of achievement, as well as their contribution to respondents' well-being in terms of overall satisfaction, purpose and anxiety levels. In this respect, the assessment extends



understanding of CES beyond recreation-based activities, associated with tourism and aesthetic values to include the full range of cultural practices – recognising, particularly, the importance of work and subsistence practices in shaping environmental spaces and human-environment relationships.

The assessment also analyses the variability of cultural benefits and values on Ascension Island in relation to ethnicity, gender, education level and age, and further, considers how CES are distributed across space. In this last respect, quantitative mapping is important to the practice of Natural Capital Assessment, and for CES largely falls into two categories: mapping using landscape features (e.g. certain habitats are associated with certain CES), and mapping using volunteered information, either from surveys or web-volunteered data (e.g. nature photographs uploaded to a publicly-open website such as Flickr or Instagram). Mapping using landscape features such as habitats or natural designations, can be referred to as a ‘potential-for-CES’ mapping. It is a fairly straightforward approach suitable for areas that have been surveyed extensively (such as EU countries) and can lead to time and space comparable results mainly from a natural science perspective – assuming one is willing to disregard the social and individual complexities inherent in the production/provision of CES. As such, this type of mapping has been incorporated in continental or national surveys and assessments (e.g. Maes et al. 2018) but is not compatible with the objectives of this project.

We used a participatory mapping approach, based on the four mapping exercises included in the survey, which was established for the Falkland Islands’ CES assessment (Bormpoudakis et al. 2019) and adapted for use on Ascension Island. Using Geographic Information Systems to process the data collected in the mapping exercises, the outputs help identify the most important areas to the community and may inform practical management decisions, such as to enhance supporting infrastructures or protect sensitive areas for the community’s well-being.

Nonetheless, a spatially explicit approach to CES may hold several limitations, of which perhaps the most important is the mapping of places as discrete locations on a two-dimensional map. In this context, because places exist at varying scales and may overlap each other, places represented as points on a map should not be understood as discrete well-delimited areas but rather as a simplified representation of complex socio-ecological processes that assign significance to converging characteristics, i.e. those which confer to places their tangibility, within diverging spatial and social typologies, which confer distinct significances to a place.

## 4. RESULTS

### 4.1 SAMPLE DEMOGRAPHICS

*“I was born and brought up on the island and am happy to call Ascension ‘my home’ even though I know I will have to leave one day!” (A62)*

Overall, a total of 72 questionnaires were completed, mostly based on face-to-face interviews and corresponding to nearly 10% of Ascension’s population<sup>2</sup>. A general demographic profile of the respondents is set out in Table 1.

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<sup>2</sup> Based on census data of Ascension population from March 2018.

<b>Gender</b>		<b>%</b>
Female	34	<b>47.2</b>
Male	38	<b>52.8</b>
<b>Place of residence</b>		<b>%</b>
Georgetown	35	<b>48.6</b>
Travelers Hill	21	<b>29.2</b>
Two Boats	14	<b>19.4</b>
Other *	2	<b>2.8</b>
<b>Age</b>		<b>%</b>
16 – 24	10	<b>13.9</b>
25 – 34	17	<b>23.6</b>
35 – 44	15	<b>20.8</b>
45 – 54	13	<b>18.1</b>
55 – 64	15	<b>20.8</b>
>65	2	<b>2.8</b>
<b>Up-Bringing</b>		<b>%</b>
St. Helena	28	<b>38.9</b>
UK	29	<b>40.3</b>
Ascension	12	<b>16.7</b>
Other	3	<b>4.2</b>
<b>Level of education</b>		<b>%</b>
Higher Education	27	<b>37.5</b>
Secondary	28	<b>38.9</b>
Vocational	17	<b>23.6</b>
<b>Total Result</b>	<b>72</b>	<b>100.0</b>

*Table 1: Sample population demographics, as percentage of surveyed population. \**  
*Includes people who live at US base and Residency*

Broadly put, residents of the Island’s three main settlements participated in this study, with nearly half of respondents coming from the Island’s largest settlement, Georgetown. The sample is also representative of distinct population groups in terms of gender, age, place of upbringing and education level. In particular, according to census data from March 2018, the sample is robust in terms of its gender representation, covering approximately 11% of Ascension’s female population and 8% of its male population; and with respect to ethnic identity, securing 8% of St. Helenian and 22% of UK-British population.

Cutting across this diversity, it is salient to note that our sample reflects the shared economic context to residency on this Island. As noted above, to live on Ascension residents must be employed by one of the recognised employers or otherwise a direct dependent of someone who is. Our survey is thus principally of people in full-time employment who have moved to Ascension as a result of a job appointment. They are economic migrants. Indeed, less than 20% of our respondents grew up on Island and still fewer were actually born there.

Within this economic context, the sampled population presents two distinct social groups or tendencies, which are likely to be representative of wider settlement dynamics on the island.

First, the sample captures a cohort of residents, mainly UK born (76%), who moved to the Island to take up specialist/technical roles. These are people typically educated to tertiary and who live on the Island for the period of one working contract, two years or less. In contrast, the sample also captures a cohort of residents, overwhelmingly from St. Helena (89%) who, through renewing their contracts, have lived on the Island for 10 or more years. These are people typically educated to secondary or vocational level.

In the following sections, we provide a qualitative analysis of survey responses for the characterisation of Ascension's natural environment and a qualitative and statistical analysis of cultural practices and benefits obtained from interactions with Ascension's natural environment. All responses were anonymised such that, where relevant, direct quotes from interviews are included with a code AX, where X corresponds to a unique identification number assigned to each respondent (e.g. A62).

## 4.2 ASCENSION'S NATURAL ENVIRONMENT: EXPLORING ASSOCIATIONS

### Key messages

- Respondents emphasised ideas of 'beauty' and 'uniqueness' when describing Ascension's natural environment, often along with evoking its 'barren' and 'moon-like' environment.
- Ascension is understood as a diverse landscape containing a juxtaposition of extremes – from barren to lush, which is quickly changing.
- Three main landscapes capture the 'essence' of Ascension's natural environment: the coast and ocean; the volcanic landscape; & Green Mountain. These landscapes are also important signifiers of heritage.
- Characteristic native animals of Ascension are turtles, land crabs and frigate birds, amongst other seabirds and marine life, but also donkeys, the latter introduced in early settlement periods.
- Characteristic plants include endemic species, as Euphorbia, and invasives, such as Mexican Thorn, which is also a threat to the heritage value of volcanic landscapes. The visible impact of invasive species is often noted by long staying residents.
- Built heritage includes an array of historical structures which accrue value partly through their historical relationship to their environmental setting.
- Negative views of Ascension relate to concerns about the island's waste management, the perceived deterioration of both its natural and built heritage as well as the deterioration of structures and places that support island social life (e.g. beach huts and devil's ashpit) or its accessibility (e.g. Pier Head and runway).

The Ascension environment evokes strong and emphatic feelings in people. It is an environment that is loved and appreciated by those who live here: "from day one, I fell in love with this place, people would give anything to live in a place like this" (A6); "I just feel so blessed to be here, in a place that I adore" (A2); or, "I love Ascension, I've been here all my life. It is different, it has changed during the years but it is still where I'd like to be" (A34).

The words "barren", "wild", "rugged", "diverse" or "isolated" are among the words most commonly used by respondents to describe Ascension's natural environment – see Fig. 3 – though it is appeals to the environment's "uniqueness" and "beauty" that are most prominent, as in: "Ascension's natural environment to me is beautiful and unique in its own way" (A62);

peaceful  
rocky breathtaking  
very diverse rugged  
wild  
interesting beautiful  
mexican thorn diverse donkeys  
marine unspoilt barren  
dusty hot  
greener dry unique  
lush varied  
it's like the moon volcanic  
a lot changed arid  
green mountain  
stunning isolated

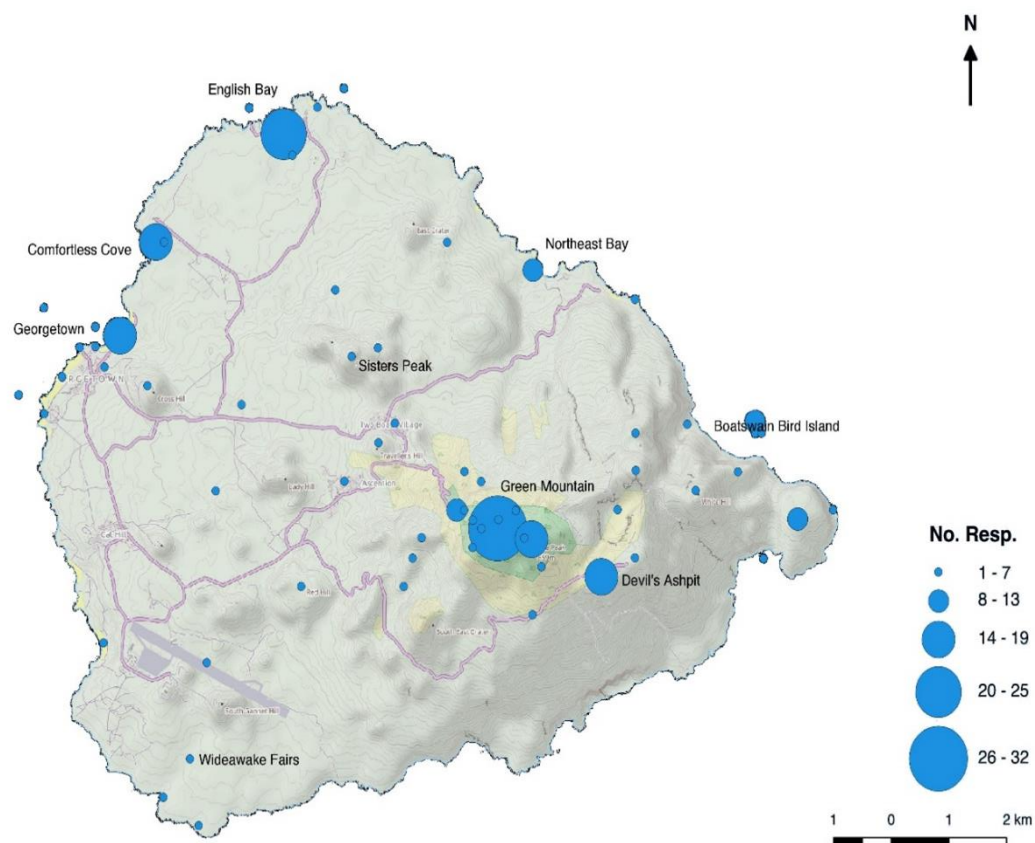
Figure 3. Words and expressions most used to describe Ascension's natural environment.

ed in the respondents' choice of what we could call the paradigmatic or iconic places of the natural environment. The survey asked respondents to name three places that "capture the essence of the FI environment". Overall, three main features of landscape are emphasised: the coast and ocean (81 mentions), the volcanic landscape (84 mentions) and the Green Mountain (72 mentions) – see Map 1.

In general, “the ocean”, “the coast” and, in particular, “beaches” – figure strongly as part of Ascension’s perceived ‘essence’. The Pier Head provides one important way this close relationship with the ocean is expressed,

“basically because it connects us with the outside world” (A36) or “it’s the real life part of the island, as ships come and go, and bring things on to the island, and you can see sharks and turtles and what not from there” (A53). The coast and the underwater marine environment are also highlighted, “the coast, ‘cos the island is so small, all the boundary between land and sea is important” (A3) and “the ocean, whether it be scuba diving or fishing – over by Triangles... the lava tubes and caves” (A44); or “beyond Catherine Point, there’s a ship sunk, a Normandic Steam Vessel, and there’s an underwater forest, a lava forest: it’s stunning” (A7); and, next to North Point, at the “Triangles, the volcanic underwater caves are full with lobsters and octopus” (A19).

In conveying these associations, the connection between the coast and ocean with recreational practices, such as snorkelling, diving, fishing, camping and BBQing, is noteworthy. In particular, one of the most commonly referred-to beaches, English Bay, is an important part of Ascension’s social life, often mentioned “for social purposes” (A2) and as a place where people go to relax and spend time with family and friends, “there’s the beach and BBQ area, you can go swim in the ocean, and it’s a nice family spot if you want a day out” (A48). Other beaches that figure prominently associated with Ascension’s ‘essence’ include Long Beach, where “the turtle holes and turtle ponds are part of Ascension’s historical relation to the environment” (A41); and Comfortless Cove, also linked to recreational practices and to a “rugged beauty, more than rugged (...) it’s a beautiful desolation” (A24); but also North East Bay, because “it’s probably the most natural beach” (A14); Panam Beach, as “we used to camp there overnight and stay at the beach hut” (A5); and Shelley Beach that, despite being secluded, hides its “brine pond with endemic shrimp, in like some sort of primordial soup” which, as added by a respondent, “more should be made of this unique wonder” (A68).



Map 1: Places that capture the 'Essence' of Ascension's natural environment.



### The Volcanic Landscape



*Photo 2: The volcanic landscape: Daly's Crags (photo JC).*

The land from Daly's Crags to Sister's Peak is also singled out as characteristic of Ascension's essence. This is a volcanic landscape dominated by the Sisters Peak's lava domes and surrounded by clinkered lava fields - "hot", "dry", "rugged" and "barren". A common perception is that this is an enduring landscape, one "pretty much unspoiled by human interference: it seems that we are in another planet" (A7). The volcanic landscape is further associated with native seabird colonies. The Letterbox peninsula, on the far east coast, is remarkable for its "views, lava formations and rocks" (A2), being also a main nesting site for the endemic frigatebird, amongst other native species: "[it's] very intense and difficult to get there, but seeing all birds is amazing!" (A12), as "since they eradicated the cats, this is again an important nesting place for all the seabirds" (A52). Another important bird nesting site lies at the Wideawake Fairs, near Shelley Beach and Mars Bay; a volcanic plain covered in old guano and dotted by Sooty terns, also known as Wideawake birds. This nesting ground is "a striking landmark on the island, with all the birds and history" (A54) and, as explained by one respondent, "you go down there and the birds come to you, you get a close encounter with wildlife" (A29).

The Devil's Ashpit and the old NASA site, sitting between the volcanic and green landscape, embody another aspect of Ascension's 'essence', illustrated by the practice of taking picnics, BBQs and camping: "out there is like it's untouched, since NASA moved out, it's really calm and relaxing and again you think you are in a different world, not Ascension" (A47); "[we used to] go there for picnics, go out on weekends and public holidays, go camping on scouts campground" (A5); "because you can see all around and you can see all the different landscapes, you can look to Boatswain Bird and Letterbox" (A37). Both places are now "run down a bit...", explains a respondent, "it used to be a place where families would go to have a picnic and relax, cook there, have BBQs, but now has more rats and people stopped going" (A6).

### Green Mountain

Finally, the 'essence' of Ascension's Island is undoubtedly tied to the natural and cultural significance of Green Mountain. All participants stated Green Mountain as part of Ascension's 'essence', a main landmark that, in the words of one respondent, "very much feels like the heart of the island in some way" (A63) not only because of all the history it embodies, the biodiversity it hosts and the contrasts it offers, but also because it is the place from which the whole island is visible. In this context, respondents often referred to the National Park but also, in particular, to the Dew Pond, the Red Lion, Breakneck Valley and the Garden Cottage, as well as frequently mentioning Green Mountain's walks.

Despite that, as pointed out by several respondents, Green Mountain is "not natural but human made" (A2), its importance for respondents is clearly tied to its wildlife and history: "love to look at the variety of plants which are not normally seen growing next to each other" (A57);

“it's where most endemic species are and there's really good balance between endemics and introduced species, as well as a completely different climate from rest of the Island” (A12). As such, the value of Green Mountain seems also be strongly associated with its contrast to the rest of the island and, at times, with a notion of escaping or of ‘being somewhere else’, “because it’s different to the rest of island, everything else is rock and barren, while there is lush and green” (A51), Green Mountain is like being in “a completely different place” (A45, A56, A57).



Photo 3: *Ficus tree at GM Peak (photo JC)*



Photo 4: *Bamboo at Dew Pond (photo JC).*

#### 4.2.2 Heritage associations with the Ascension environment

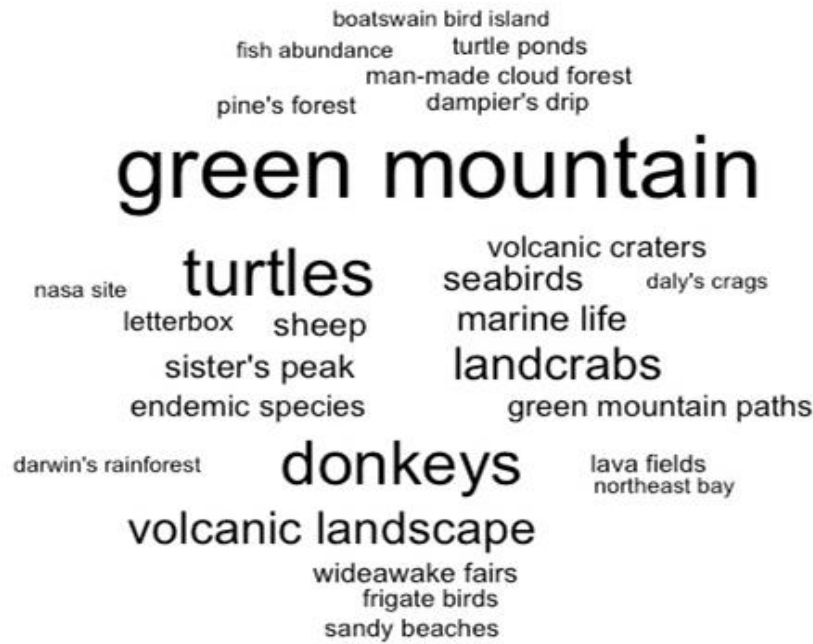
Each of these quintessential Ascension environments is thought by respondents to signify important aspects of the Island’s natural heritage (See Fig. 4)

Among respondents, *Green Mountain* is the Island’s most common signifier of heritage. As noted above, the tropical rainforest that now completely covers Green Mountain is the result of an experiment that saw more than 200 exotic species shipped to Ascension. The top of Green Mountain, where before only a handful of ferns, mosses and some grasses species were found, most of them endemic to Ascension, quickly became a tropical forest with very particular characteristics — a unique mixture of endemics and introduced species.

Perhaps unsurprisingly, Green Mountain is often referred to as being a ‘man-made’ rainforest, with its importance being strongly associated to its history and role in ‘re-engineering’ the Island. It thus straddles an ambivalent place at the intersection of a cultural and natural landscape. This contrasts with the associations made with the Island’s volcanic landscape, its lava fields and volcanic craters. Although slightly less prominent, these are understood to provide glimpses of what the Island used to be like: “the volcanic features are what the island

*Photo 3: Ficus tree at GM Peak (photo JC)* ” (A23).





*Figure 4: Most significant aspects of Ascension's natural heritage*

Beyond heritage association with whole landscapes, we explored what animal and plant species people generally associated with Ascension (See Fig. 5.1 and 5.2). In terms of animal species, green turtles are prominently cited, as are land crabs and frigate birds. Notable too in the responses are ‘donkeys’, the legacy of early settlement activity which, as one respondent put it, “have been here for years and although introduced, very much feel like part of the island” (A63).



*Fig. 5.1 Animal species associated with Ascension's natural environment*



*Fig. 5.2 Plant species associated with Ascension's natural environment*

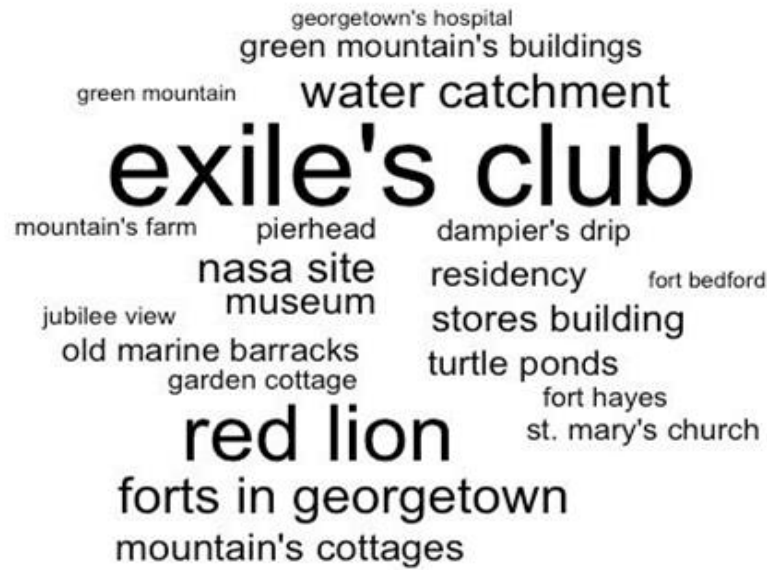
In terms of plant species, the “Mexican thorn” is the single most mentioned plant species, and is interesting in our context for it is the most aggressive invasive plant. For instance, the once barren red lava cones are being slowly invaded by vegetation, while the most aggressive invasive plants may threaten endemic species as well as perhaps the uniqueness of this once desert-island and what would be considered essential parts of its natural heritage. Thus: “the volcanic landscape, the Sister's peak and all areas that are now being covered by vegetation, those are natural sculptures, while vegetation and invasive species would make it look just like any other place” (A12). In the survey there are various allusions to “endemism”, arguably reflecting the extent to which the debate around native and invasive species has been popularised across civil society.



*Photo 5: Mexican thorn along the road between Georgetown and Two Boats (photo JC).*

In terms of built heritage, respondents point to an impressive historical array of structures built in different epochs to serve different purposes; from its military role and farming structures to the arrival of the BBC and space expeditions. Within this, many structures and buildings on Green Mountain’s hold strong cultural values for those living on Ascension — see Fig. 6, such as the Red Lion, the old Marine Barracks and all cottages up Green Mountain (e.g. Garden Cottage and Bate’s Cottage). As noted by respondents, amongst other remarkable buildings are Georgetown’s Hospital, the old water tank, the three forts in Georgetown, Thornton Fort, Bedford Fort and Hayes Fort, the old NASA site and all the radar sites across the island.

In Georgetown, the Exile’s Club is the building most mentioned by respondents as representative of Ascension’s built heritage, with important associations made between the building and both its colonial heritage, “the Exile's building is a really important reminder of Ascension's segregation history, people wouldn't be allowed in the Exile's building, as only white people could go in” (A41), and its environmental setting: “that's a big part of Ascension's history and heritage, people used to go there, seat at the balcony, have coffee and watch the sea from there” (A6); “the Exile's club has a historical value, it passed the test of time, people used to sit on the veranda and look out the sea, that's a shame that it hasn't been in use anymore” (A53).



*Figure 6: Important elements of Ascension's built heritage.*

Similarly, the turtle ponds once used to keep green turtles before these were shipped to the UK, or eaten in soup by the garrison, are not only representative of Ascension's built heritage but also of its relationship with the natural environment. The turtle ponds remind of “an industry that thank god is gone” (A52) but, after being abandoned for their original purpose, the ponds were also used as a safe place to swim, figuring in the historical memory of St. Helenians, who back then were not allowed in the Exile's pool: “the turtle ponds, when we were children that was the pool and it was lovely” (A37); or, as stated by another respondent, “the turtle ponds are important for historical reasons, they are planning to recover it, make it as it used to be. And we used to swim there... as the Exile's pool wouldn't allow us to swim in their pool, I've lots of good memories there” (A5)



*Photo 6: Georgetown: Bate's water tank (photo JC).*

Finally, a particularly interesting association is made between cultural value and pathways that navigate people through the physical environment. As one respondent puts it, “a lot of the walks are sort of important, they are there for a reason, they are part of the Island’s heritage, especially around the mountain areas and the areas out towards NE cottage and down to the Dampier’s Drip, there’s so much heritage and history there” (A16). The exceptional engineering of the water system commissioned by Captain William Bate, Ascension’s Commandant from 1828 until 1838, also remains an object of admiration: “The water catchment in Green Mountain, was built in the 1830s and how they gathered water then was such a great idea!” (A12) or “The water catchment up the mountain, how did they manage to build that? If cleaned, it would still work again” (A14)

#### ***4.2.3 The Down Side: Negative associations with place and environment***

We asked respondents about places in Ascension’s natural environment that they somehow feel negative about, for instance places considered important but changing for the worse, that are neglected or are in some way unpleasant or threatening. The most mentioned negative aspects of Ascension’s environment, represented in Fig. 7, did not refer exclusively to the ‘natural environment’ as such, nor necessarily to well-defined places, but more generally pointed towards the island’s waste management<sup>3</sup> and the perceived deterioration of both its natural and built heritage.

In particular, the One Boat dump was the most mentioned place, as even “just looking at it from afar is very unpleasant” (A64). Respondents claimed it’s “really ugly, visually the worst place on island with all plastic flying around” (A3), but also that it “demonstrates our inability to deal with our own waste, and the potential pollution risk is evident” (A66); eventually reflecting that “the waste management on the island is not great”, adding that, “the One Boat dump is a shame really” (A53), and for some even “a national embarrassment” (A41). The accumulation of litter around the island and, in particular, along the coast is one of the most mentioned negative aspects of Ascension’s environment and a problem highlighted by several respondents.

The second most mentioned place associated with negative perceptions is the runway. The damaged airstrip, once one of the longest in the world, was closed to larger aircraft in 2017, leaving Ascension more isolated, leading tourism to decrease, small businesses to close down, and forcing many residents to leave. Simultaneously, in an unfortunate coincidence, the RMS St. Helena which passed by Ascension every month on her way from London to Cape Town, also left the seas after a last journey in early 2018. A sense that the island has been abandoned and has fallen into disrepair is pervasive amongst the population.

Third, Green Mountain’s historical structures and buildings, such as the old Marine Barracks, the water system, the Red Lion and all the different cottages, are often mentioned as associated with negative feelings due to their state of abandonment: “all the buildings on Green Mountain, there’s five cottages up there, lovely old buildings, all run down” (A52); “the cottages around Red Lion are in a complete state of disrepair, you can’t access those at all and the Garden Cottage is in such a state you don’t really want to go there” (A25). Respondents often highlight these linked to their exceptional value, “the Red Lion and Garden cottage up the Mountain, are

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<sup>3</sup> Waste management on the island is currently being addressed, with a new strategy, incinerator and recycling centre.

georgetown swimming pool  
 nasa site  
 exile's club  
 abandoned buildings  
 beach huts  
 red lion  
 runaway  
 one boat dump  
 litter along coast  
 devil's ashpit  
 invasive species  
 green mountain's cottages  
 litter  
 pierhead  
 turtle ponds

*Figure 7: Places and aspects of Ascension's environment that people feel in some way negative about.*



*Photo 6: Dump with WWII vehicles & household appliances at Wideawake Fairs (photo JC).*

of particular value and are at exceptional risk” (A8); and the “Red Lion is very important (...) as well as all the cottages around there, all have quite significant historical value” (A25); as well as referring to the old farm, “the mountain used to be a working farm, with pigs and fresh vegetables, barn and all those structures used to be functional, and there were lots of families living there” (A6); and “they have the soil there, and some people have their allotments but you don’t see what they get from there” (A47).

These sentiments also apply to the Exile’s Club and Georgetown’s swimming pool, both facilities now closed: “the Exile’s building being degraded... it has beautiful views, we used to sit on the balcony” (A16), and “that could be made into something... people associate it with colonial times, and Georgetown pool also needs to be restored” (A40). The turtle ponds, a special site for many respondents, also give rise to a certain sense of desolation amongst respondents: “the turtle ponds, because that was my safe even, everything, and now we can’t go there” (A45) or, as one respondent vented, “the turtle ponds... so much nonsense has been done on this island, I hope they are repairing this” (A52).

Similarly, the Pier Head, a central part of Ascension’s life, gives cause for concern “everything is wrong with it!” (A52) as well as the “dilapidated beach huts” (A41), such as the one in North East Bay and in Panam Beach, “they could put a lot more effort on the beach huts – it’s the only escape people have, the AIG one is just falling apart and Panam beach hut as well” (A25). While the old NASA site and the Devil’s Ashpit, places where people used to go and have picnics or go camping, are also now a “historical place, beautiful but run down and abandoned” (A7). One respondent explains, “because of how it’s overgrown now and the level of rats up there mean you can’t really enjoy it there anymore, back in the 1990s it was much clearer” (A29), while nowadays, as another respondent adds, “it’s not looked after but people used to spend a lot of time up there, now there’s a lot of rats, you look around and you see rats everywhere” (A30),

The deterioration of these sites, used for recreational practices connected to the natural environment, is to some extent linked to the state of neglect or abandonment felt after the runway’s closure as well as to the rapid spread of invasive species, such as guava and Mexican thorn. As mentioned by respondents: “now there’s weeds and thorns everywhere, before there used to be more grass, but now it’s gone because of all the invasive species” (A6), a problem that may also raise strong feelings, “all over – I hate the way the Mexican thorn has invaded Ascension” (A57). In this context, long staying residents in particular point to an environment that is changing quickly and dramatically: “It’s a lot different than when I first came here, all the Mexican Thorn wasn’t here then, it was a lot more barren then” (A30). Some consider that “humans have made detrimental environmental impacts” (A2) and regard Ascension’s environment as “in need of enhancement and protection”. The related impact of donkeys is also mentioned, as this respondent adding, “it’s a beautiful place, there’s no doubt about it, a lot of it is totally unspoilt and natural and people in Ascension’s take care of the environment, but I have to say I don’t like the donkeys, they are a menace, and the other thing is the Mexican thorn. Those are the only things in my opinion that spoil the place” (A52). The donkeys are considered “a menace” and play a role in accelerating the spread of Mexican thorn – by feeding on the young leaves and seedpods – but it is also worth reiterating that there are those who recognise them as an important part of Ascension’s natural heritage.



## 4.3 PRACTICES: THE LIVED ENVIRONMENT

### Key Messages

Ascension's natural environment permeates people's work and leisure activities. Key results show that:

- An outdoors way of life is pervasive across the sampled population, figuring in the daily working routines of almost half of the respondents and in the leisure time of nearly three quarters.
- There are some social differences in patterns of work and leisure based interactions with the outdoors:
  - Those who work outdoors and do so as part of everyday routines are much more likely to be male, St. Helenian and educated to a secondary school/vocational level. Men are also more likely to work across the island as a whole.
  - Those who frequently spend outdoors for leisure are much more likely to be recent arrivals from the UK and educated to tertiary education. They also enjoy their free time across the island as a whole.
- People experience a variety of positive feelings while being outside in the natural environment. Outdoors work is notably associated with feelings of freedom and achievement, while outdoors leisure is notably associated with feelings of tranquility and exhilaration.

Ascension's natural environment permeates people's lives and their daily activities, both while working and in their leisure time, and is reflected on how people speak about it: "[Ascension's natural environment] is my work as well as my leisure, is where I'm active as well as where I'm relaxing. The island is so small that the environment is where we live" (A3). The relationship established with the natural environment is to a large extent defined by the practices that take people outdoors, how frequently and which places are chosen, how these places are perceived and the quality of experiences those enable. The environment is not just the background of daily activities but an active presence in daily life, revealed by particular experiences and how they contribute to people's well-being.

#### 4.3.1 *Working outdoors*

We asked respondents about their employment status, occupation and how often going outside featured in their typical work routines. Nearly half of the sampled population work outdoors regularly i.e. everyday or most days (14%) – see Table 2. There's a diverse range of activities that bring people outdoors as part of their work – see Fig. 8 below. Of those who work outdoors everyday, 60% have jobs in management, security, cleaning, waste management and as technicians; while people working in conservation, or construction and maintenance, make up 60% of those who work outdoors most days.





Figure 8: Activities that bring people outdoors as part of their work.

There is also a significant relation between gender (Chi-square test,  $p\text{-value} < 0.05$ ) and how often respondents work outdoors, as 72% of those who work outdoors everyday are men while 77% of those who never work outdoors are women. Management and governmental officer positions are largely dominated by UK-born people (91%), while St. Helenians are responsible for the majority of technical, administration, construction and maintenance jobs (86%). Around 57% of respondents, both male and female, report working outdoors either in or around Georgetown, Travellers Hill or Two Boats; and 42% report working further afield or all over the island – see Table 3. However, tasks that involve working all over the island and in or on the sea are held in their majority by men (63%).

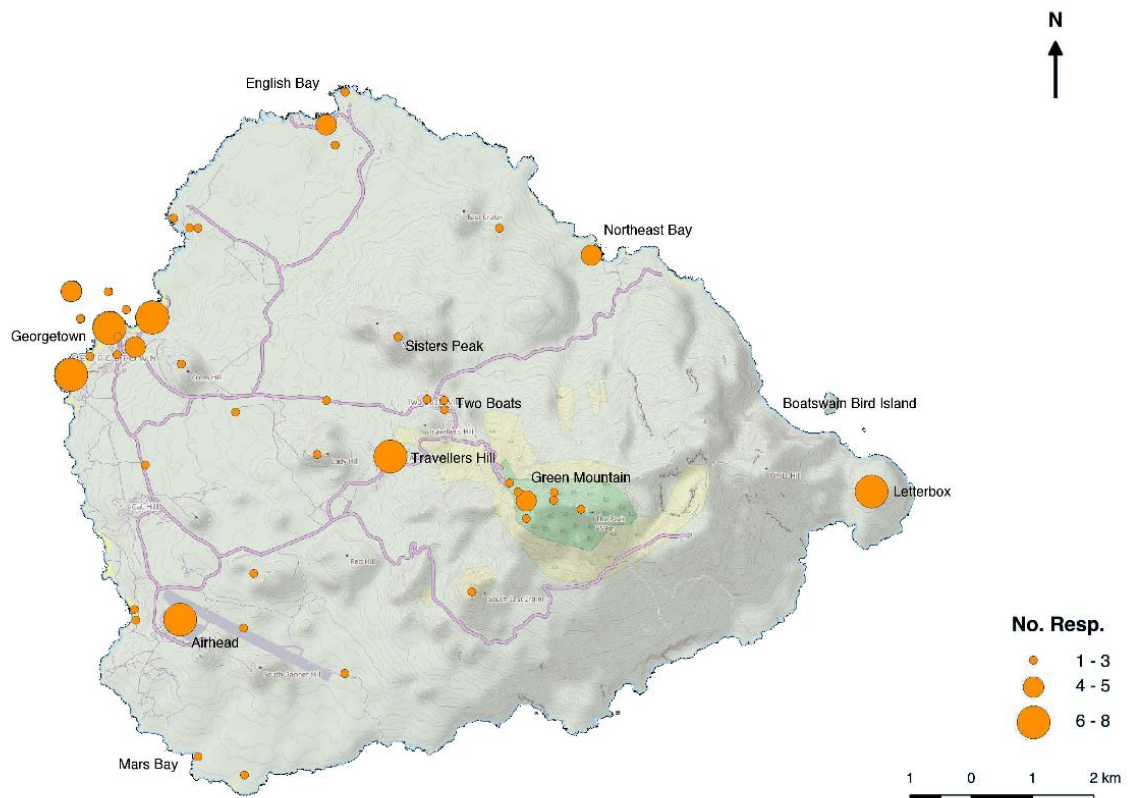
		Everyday	Most days	Quite often	Very rarely	Never
Gender	Female	7	6	3	6	10
	Male	18	4	6	3	3
Ethnicity	Other	0	0	1	0	1
	St. Helena	17	5	3	6	8
	UK	8	5	5	3	4
Ed. Level	Higher Ed.	5	6	5	3	5
	Secondary	12	2	2	6	5
	Vocational	8	2	2	0	3
Age	16 – 24	3	2	0	2	3
	25 – 34	4	3	4	3	2
	35 – 44	6	1	3	1	3
	45 – 54	7	3	1	1	1
	55 – 64	5	0	1	2	3
	> 65	0	1	0	0	1
Total		25	10	9	9	13

Table 2: Frequency table for how often respondents work outdoors per gender, ethnicity, education level and age.

		In town	Wider vicinity	Further afield	All over island	On the sea
Gender	Female	13	4	5	9	2
	Male	15	9	2	14	5
Ethnicity	St. Helena	19	8	2	13	3
	UK	8	5	4	9	4
	Other	1	0	0	0	0
Ed. Level	Higher Ed.	7	4	4	9	4
	Secondary	13	6	3	9	3
	Vocational	8	3	0	5	0
Age	16 – 24	3	2	1	4	1
	25 – 34	6	3	4	8	2
	35 – 44	3	4	0	4	2
	45 – 54	11	3	0	2	2
	55 – 64	4	0	2	5	0
	> 65	1	1	0	0	0
<b>Total</b>		<b>28</b>	<b>13</b>	<b>7</b>	<b>23</b>	<b>7</b>

*Table 3: Frequency table for location of outdoor work by gender, ethnicity, education level & age.*

In terms of significant places for work outdoors, the Pier Head and Traveller's Hill score highly as working places along with Catherine Point, often mentioned for the ocean views. Indeed, the general importance of the views and the constant presence of the ocean are two features that appear highly valued in relation to outdoor work places. Green Mountain represents another place of particular significance to people, with the Dew Pond and Red Lion as the most



frequently mentioned areas of the Mountain on the ground of their wildlife diversity and their role for endemics as well as being places to entertain visitors.

### Working outdoors and well-being

The majority of respondents agree they often experience a variety of positive feelings while working outside: Tranquillity (66%); Freedom (79%); Exhilaration (68%); and Belonging (74%) though it is Achievement that resonates most strongly. Achievement is a feeling that 85% agree they experience whilst working outside, with 43% agreeing strongly – See Fig.9. In terms of social patterns, we found:

- A statistically significant relationship between experiencing feelings of Tranquillity and gender (Fisher's test,  $p\text{-value} < 0.05$ ), with 91% of women experiencing it when working outdoors compared to only 48% men.
- A significant relationship between the experience of Tranquillity and the number of years respondents have lived on Ascension (Fisher's test,  $p\text{-value} < 0.05$ ). The majority of respondents who have lived on Ascension either less than a year, or more than 20 years, strongly agree that they experience Tranquillity whilst working outdoors.
- Ethnicity significantly affects whether people experience a sense of belonging and

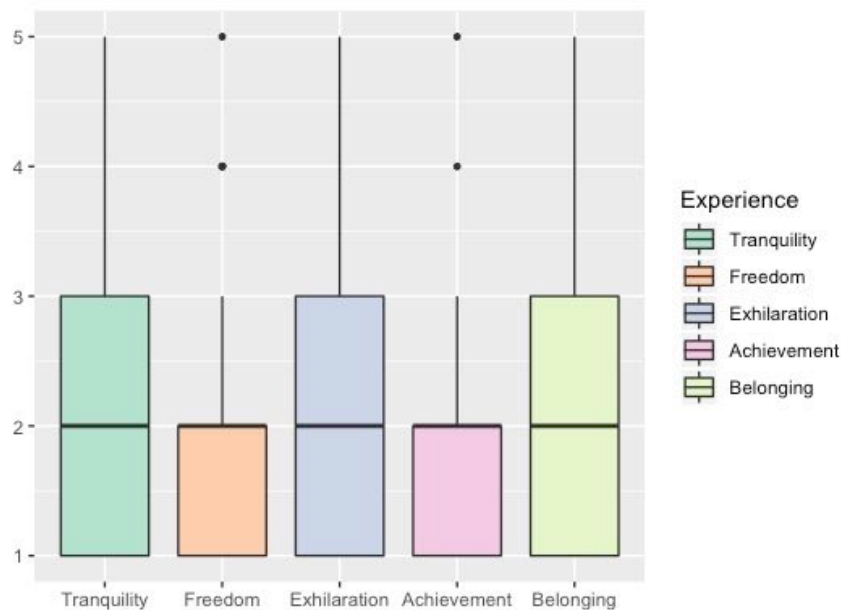


Figure 9. Boxplot of feelings experienced while working outdoors in a Likert scale: where 1 is strongly agree and 5 strongly disagree.

attachment whilst working outside (Fisher's test,  $p\text{-value} < 0.01$ ), where 90% of UK-born respondents agree they often experience those feelings compared to only 61% of St. Helenians.

In terms of the frequency and location of outdoor work, there is also a statistically significant relationship between the frequency of outdoor work and experiencing a sense of Achievement (Fisher's test,  $p\text{-value} < 0.05$ ), reflecting how it decreases with the frequency of work outdoors. Moreover, it's worth noting, the majority of people who work outdoors most days report experiencing Exhilaration (90%) and Tranquillity (70%), while those who work outdoors everyday report highly a sense of Freedom (84%) and all report to experience a sense of

Achievement (100%) — see Fig. 10. The location of outdoor work, on the other hand, presents a statistically significant relation with the experience of Tranquillity (Fisher's test,  $p\text{-value} < 0.05$ ) and Freedom (Fisher's test,  $p\text{-value} < 0.05$ ). Self-reported feelings of Tranquillity, Freedom, and indeed Exhilaration, are stronger the further from town respondents work - see Fig. 11.

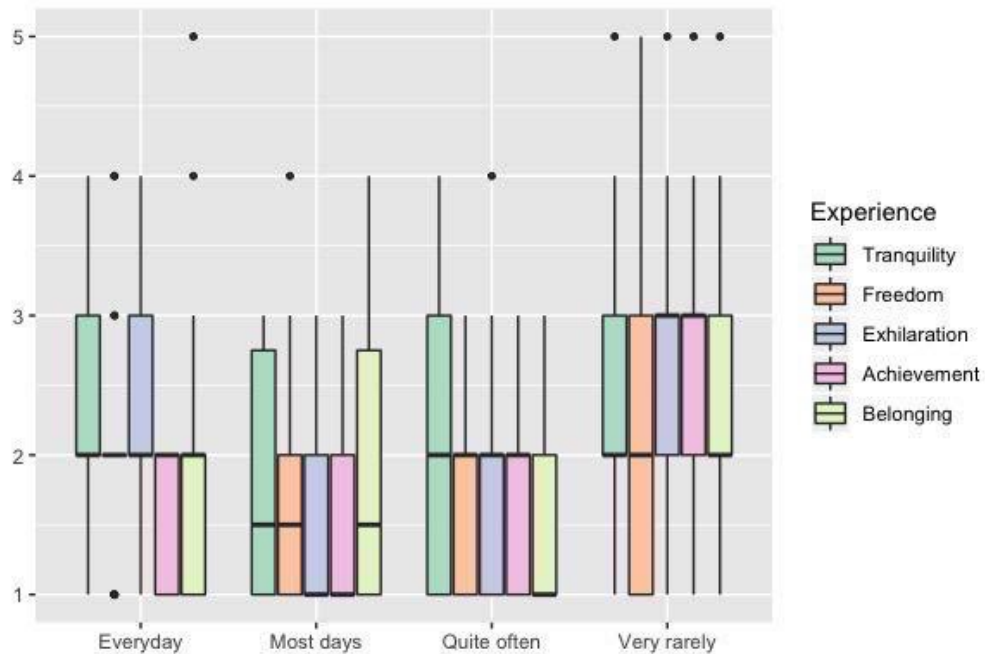


Figure 10. Boxplot of feelings experienced per frequency of work outdoors in a Likert scale from 1 to 5, where 1 is strongly agree and 5 strongly disagree.

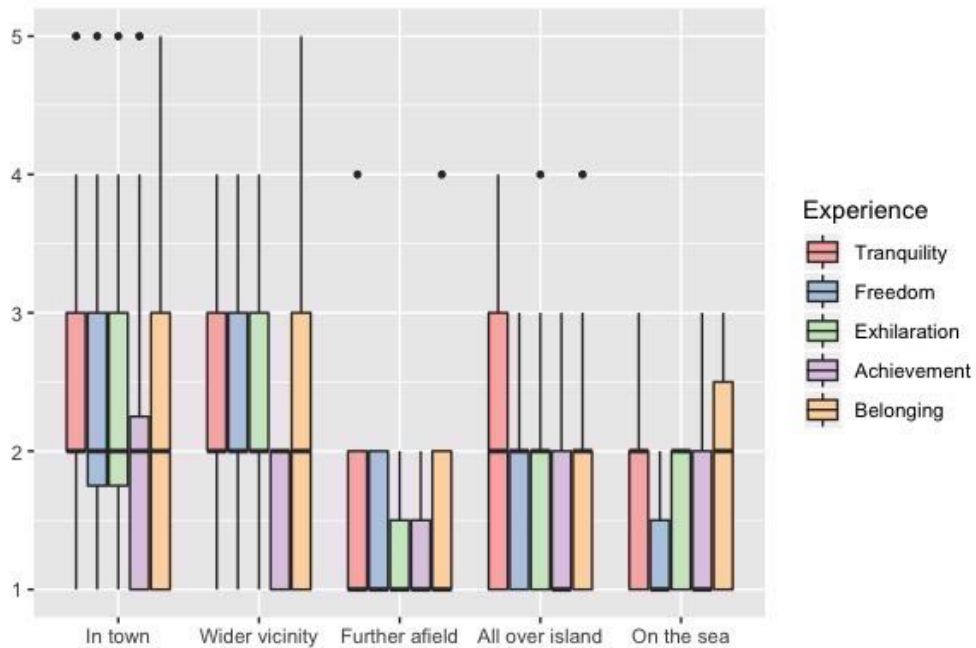


Figure 11. Boxplot of feelings experienced per location of work outdoors in a Likert scale from 1 to 5, where 1 is strongly agree and 5 strongly disagree.

#### 4.3.2 *Leisure outdoors*

We asked participants if spending time outdoors was a feature of their leisure time and, if ‘yes’, how frequently. The results clearly show Ascension Island as a place where people enjoy their free time outdoors, with all respondents reporting they spend leisure time outdoors including nearly half doing so everyday – see Table 4. The survey finds also that the majority of respondents spend leisure time all over the island (60%) as well as in the sea (61%), highlighting the importance of the ocean and related leisure activities, such as swimming, diving and fishing for Ascension’s residents – see Table 5. Nonetheless, there are some social dynamics to outdoor leisure that are worth noting.

- Spending leisure time outdoors is far more frequent among UK-born respondents than St Helenians and a feature of everyday routines for the majority of people aged between 25 and 44 as well as those with tertiary education. Younger (<25 yrs) and older (>45 years) respondents recreate outdoors less frequently, as do those with secondary or vocational education. This asymmetry is perhaps not surprising taking into account respondents with secondary/vocational education correspond to 80% of those working outdoors everyday.
- The frequency of leisure outdoors also presents a statistically significant relationship with the number of years respondents have lived on Ascension (Fisher’s test, p-value < 0.05), where 93% of those who have lived less than two years on the island enjoy leisure time outdoors either everyday or most days against only 51% of those who have lived here for more than 10 years.
- We observed a statistically significant relation between where leisure time is spent and ethnicity (Fisher’s test, p-value < 0.05), with 74% of respondents who spend leisure time outdoors mostly in town or on its wider vicinity being St. Helenians.

In terms of Significant Places for leisure outdoors, Comfortless Cove, English Bay and Long Beach are amongst the places most often mentioned. These places highlight the importance of people’s relationship with the coast, the ocean and, in particular, with Ascension’s sandy beaches for social and recreational activities. The beach huts are particularly important for these practices, places like the Clinker Club or Turtle Shell Beach Hut, some of which also part of Ascension’s historical heritage such as the Drunks Hideaway, where people find a refuge from day to day life and spend time with friends and family, despite that many of them are now falling into disrepair.

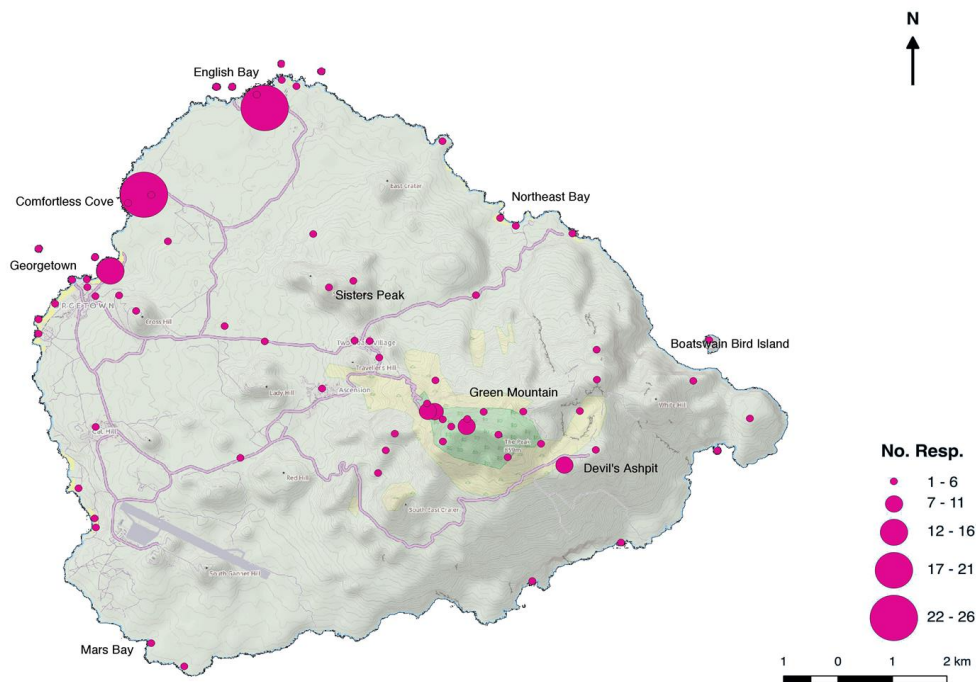
It is not only sandy beaches that are significant leisure locations for people on Ascension, the Devil’s Ashpit and the old NASA site are also particularly important for respondents (24%), reflecting the significant practice of having picnics, BBQs and camping. Moreover, Green Mountain is another significant place for leisure, with 35% respondents mentioning the Garden Cottage, the Red Lion, Elliot’s Path, Breakneck Valley or, more generally, Green Mountain National Park as places which are particularly special or important for them. Here, there’s a convergence of main land leisure practices on the island, as people go to have picnics, as well as for hiking across the historical paths. Finally, the Pier Head is also a central gathering place, “for fishing, in the evening” (A15), but also as “we always go there for fishing and if you go on a Saturday or Friday night you always find people you can have chat with” (A30) and “it’s great there, you have the sea right there, the fish swimming around and the people gather at Pier” (A49). These practices represent a key aspect of Ascension’s social life and make a significant contribution to social cohesion.

		Everyday	Most days	Most weeks	Once a month
Gender	Female	14	10	9	1
	Male	18	8	12	0
Ethnicity	Other	1	2	0	0
	St. Helena	14	9	16	1
	UK	17	7	5	0
Ed. Level	Higher Ed.	16	8	3	0
	Secondary	8	9	11	0
	Vocational	8	1	7	1
Age	16 – 24	2	4	4	0
	25 – 34	9	5	3	0
	35 – 44	11	2	2	0
	45 – 54	2	5	6	0
	55 – 64	7	2	5	1
	> 65	1	0	1	0
Years on AI	< 1	6	3	1	0
	1 – 2	11	7	1	0
	2 – 10	2	3	3	0
	10 – 20	5	1	10	1
	> 20	8	4	6	0
<b>Total</b>		<b>32</b>	<b>18</b>	<b>21</b>	<b>1</b>

*Table 4: Frequency table for how often respondents spend leisure time outdoors per gender, ethnicity, education level, age and number of years living on Ascension.*

		In town	Wider vicinity	Further afield	All over island	In the sea
Gender	Female	21	5	6	19	19
	Male	13	3	8	24	25
Ethnicity	Other	2	0	0	3	3
	St. Helena	24	7	9	19	18
	UK	8	1	5	21	23
Ed. Level	Higher Ed.	11	2	5	18	20
	Secondary	16	5	7	14	17
	Vocational	7	1	2	11	7
Age	16 – 24	7	2	3	4	7
	25 – 34	6	0	4	12	15
	35 – 44	8	1	3	8	12
	45 – 54	5	3	1	9	4
	55 – 64	6	2	3	8	6
	> 65	2	0	0	2	0
Years on AI	< 1	3	0	2	7	8
	1 – 2	9	2	3	12	17
	2 – 10	3	0	3	5	5
	10 – 20	7	3	2	10	6
	> 20	12	3	4	9	8
<b>Total</b>		<b>34</b>	<b>8</b>	<b>14</b>	<b>43</b>	<b>44</b>

*Table 5: Frequency table for location where respondents spend leisure time outdoors per gender, ethnicity, education level, age and number of years living on Ascension.*



Map 3: Places reported as significant, special or otherwise relevant for respondents' leisure outdoors.

### Indoors and outdoors leisure activities

We asked respondents to select from a list of 35 outdoor leisure activities. For analytical purposes, we grouped these activities into nine categories based on the type of interaction and/or the relationship with the natural environment these represent, such as: (1) Movement, including all those activities which involve moving through the landscape, such as walking, long-distance hiking, cycling or motocross; (2) Contemplation of the environment, including all activities which involve immersion in the environment, such as camping, picnics, creative

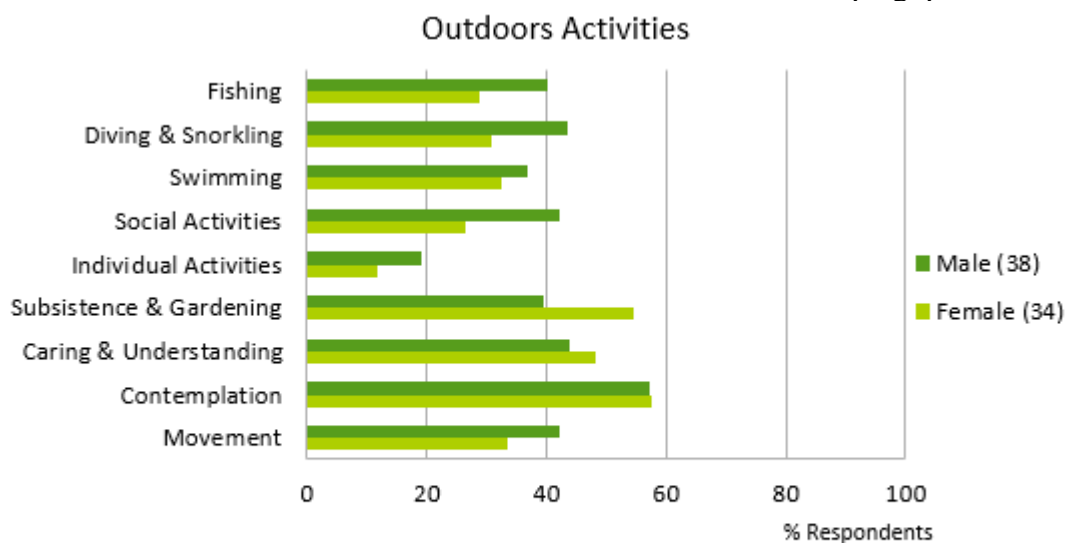
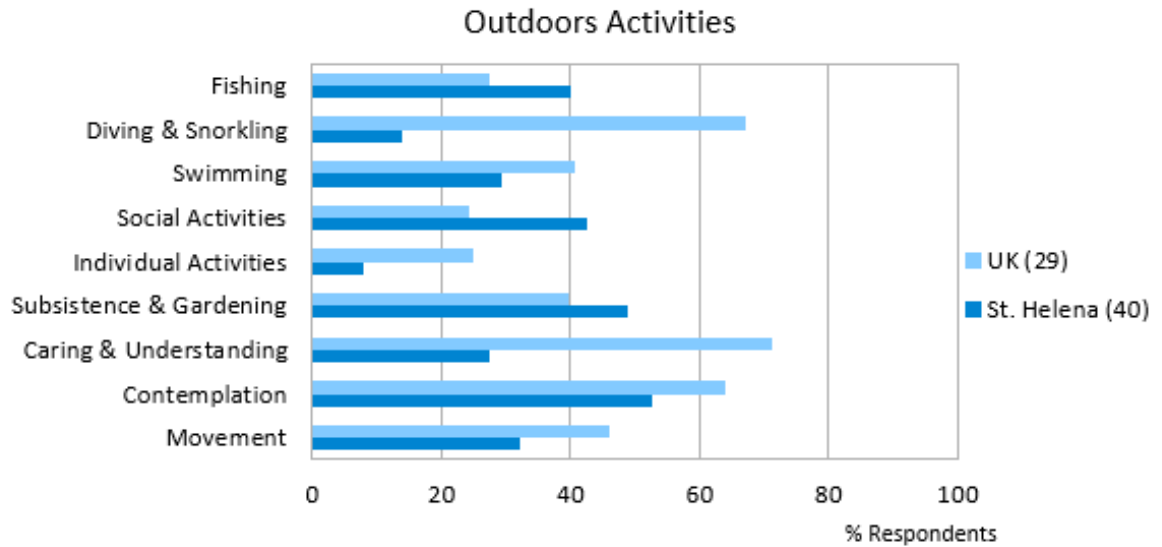


Figure 12.1: Outdoor activities enjoyed by percentage of respondents by gender.

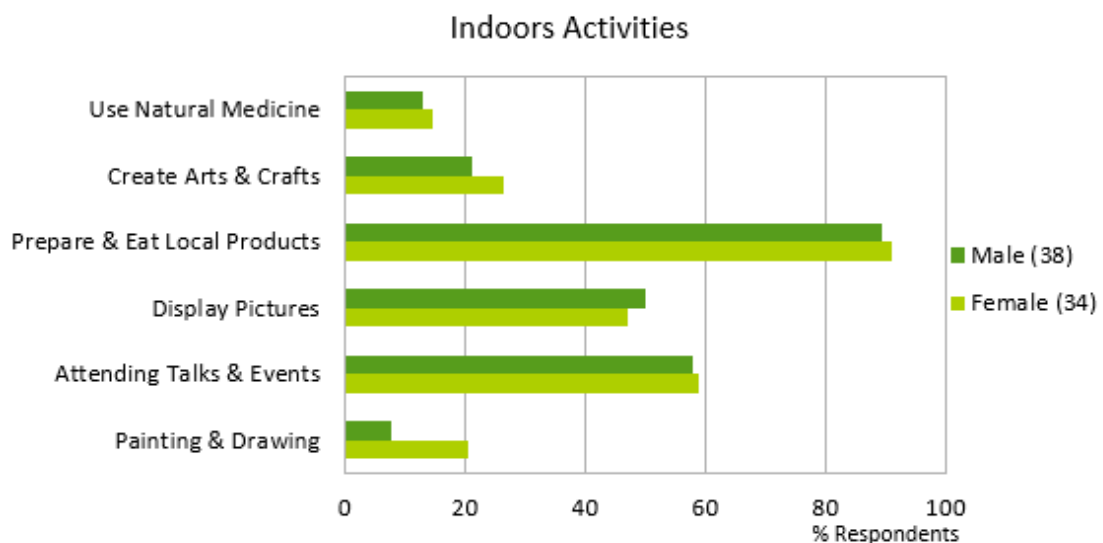




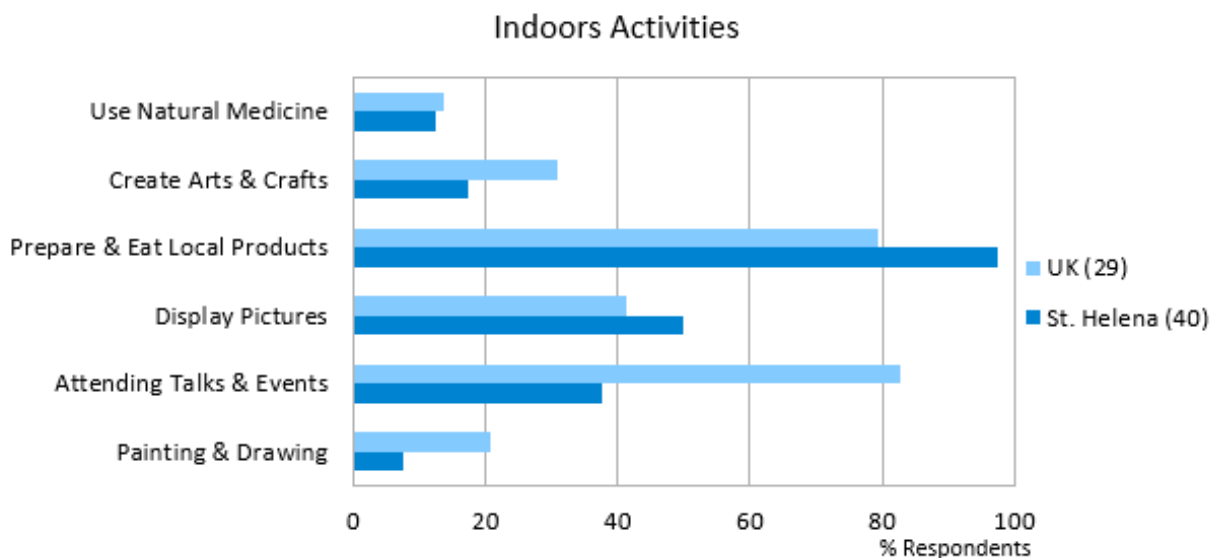
*Figure 12.2: Outdoor activities enjoyed by percentage of respondents by ethnicity.*

activities such as photography, or sitting and contemplation; (3) Caring & Understanding for the environment, referring to formal or informal conservation activities that involve wildlife watching or recording, as well as beach cleaning and tree planting; (4) Subsistence & Gardening, such as growing fruits and vegetables or foraging for food, wild fruits and medicine; (5) Individual Activities or sports, such as dog-walking, climbing or practicing yoga; (6) Social Activities or sports, such as outdoor team sports; (7) Swimming, both in the sea or in an outdoor pool; (8) Diving & Snorkelling; and (9) Fishing, including coastal rock fishing, inshore and offshore sea fishing, or spearfishing.

Major outdoors practices on Ascension include walking (92%), long-distance hiking (68%), having picnics and BBQs outdoors (92%), swimming both in the sea (68%) and in outdoor pools (63%), and coastal rock fishing (71%) — see Fig. 12.1 and 12.2. Not surprisingly, walking around nearby natural spots is a practice enjoyed by a large majority of respondents,



*Figure 13.1: Indoor activities enjoyed by percentage of respondents by gender.*



*Figure 13.2: Indoor activities enjoyed by percentage of respondents by ethnicity.*

both male and female, independent of their ethnicity and number of years living on Ascension. Long-distance hiking, such as letterboxing, is particularly enjoyed by those born in the UK (90%), while only 50% of St. Helenians go on long-distance walks. Practices of Caring & Understanding the natural environment, involving the active participation in conservation initiatives or the informal recording of wildlife, are activities also mostly performed by UK-born people, with 83% wildlife watching, 48% documenting wildlife and 83% getting involved in conservation activities such as beach cleaning. In terms of subsistence and fishing practices, 49% of St. Helenians respondents take part in Subsistence & Gardening and 40% in Fishing practices whilst rock fishing, in particular, is practiced by 85% of St. Helenians. In comparison, only 28% of respondents born in the UK practice any Fishing-related activity, but 67% of them use the marine environment for recreational activities as Diving & Snorkelling.

Nonetheless, for indoor-based activities, 90% of respondents enjoy preparing and eating local products, especially fresh fish such as tuna, grouper and wahoo. Other major indoor-based activities related with the natural environment involve attending talks or events (58%) and displaying pictures or photographs of Ascension at home (48%). The former being largely enjoyed by UK-born people (83%) compared with 38% of St. Helenians. Painting & Drawing natural scenes is mostly enjoyed by women (21%), against 8% men. Only 14% respondents use natural products with medicinal purposes — see Fig. 13.1 and Fig. 13.2.

### Leisure outdoors and well-being

The well-being benefit of spending leisure time outdoors is multidimensional. A large majority of respondents agree, to varying degrees, that they often experience feelings of Freedom (96%), Tranquillity (92%), Excitement (89%), Achievement (78%) and Belonging (79%) through outdoor leisure time – see Fig. 14 and Table 6. It is feelings of Tranquillity (58%) and Freedom (61%) that meet the strongest depth of agreement.

We examined well-being results in relation to social variables. It is notable that the experience of Exhilaration presented a statistically significant relationship to both ethnicity (Fisher's test,  $p\text{-value} < 0.05$ ) and years living on Ascension (Fisher's test,  $p\text{-value} < 0.05$ ). 62% of UK-born respondents strongly agree they experience Exhilaration when recreating outdoors, compared with 22% of St. Helenians. Notably Exhilaration is high for respondents who have been living

on Ascension for less than a year, with 80% of those strongly agreeing they often experience it, while by the second year this figure drops to 42% and for those who live more than 10 years only 23% strongly agree with this statement.

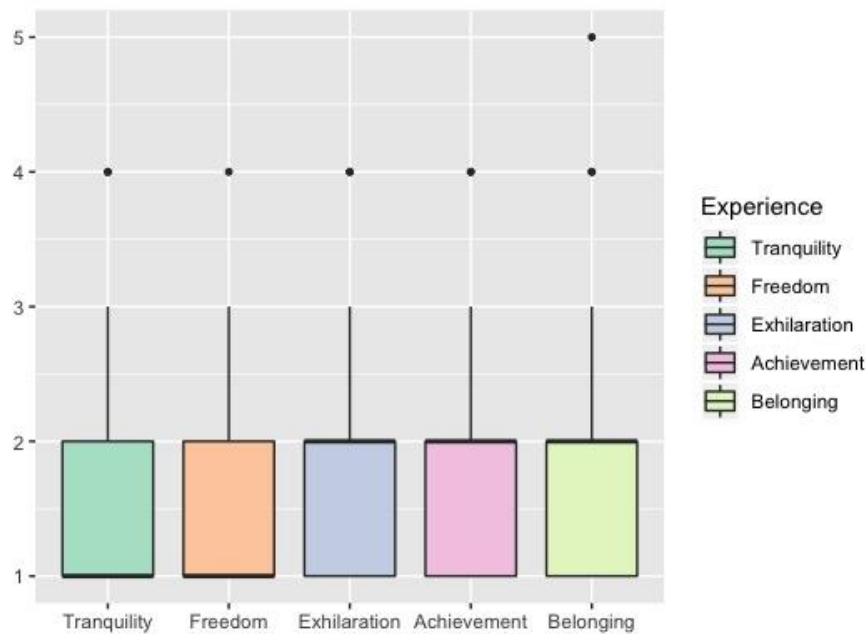


Figure 14: Boxplot of feelings experienced during leisure outdoors in a Likert scale: where 1 is strongly agree and 5 strongly disagree.

% Resp.	Str. Agree	Tend to Agree	Neither	Tend to Disagree	Str. Disagree
Tranquility	58.3	33.3	5.6	2.8	0.0
Freedom	61.1	34.7	2.8	1.4	0.0
Exhilaration	40.3	48.6	8.3	2.8	0.0
Achievement	48.6	29.2	19.4	2.8	0.0
Belonging	44.4	34.7	16.7	2.8	1.4

Table 6: Frequency table of feelings experienced by respondents during leisure outdoors (in number % of respondents).

We also examined the relationship between feelings experienced while being outdoors and the frequency of outdoor leisure – see Fig. 16. Respondents who spend time outdoors everyday scored consistently higher, strongly agreeing they often experience feelings of Tranquillity (69%), Freedom (75%), Exhilaration (47%) and Achievement (63%) when going outdoors. As the frequency of leisure outdoors drops, the rate of agreement also tends to decrease. In terms of location a large majority of respondents who spend their leisure time in or on the sea report experiencing Tranquillity (93%), Exhilaration (91%) and Achievement (84%), as well as

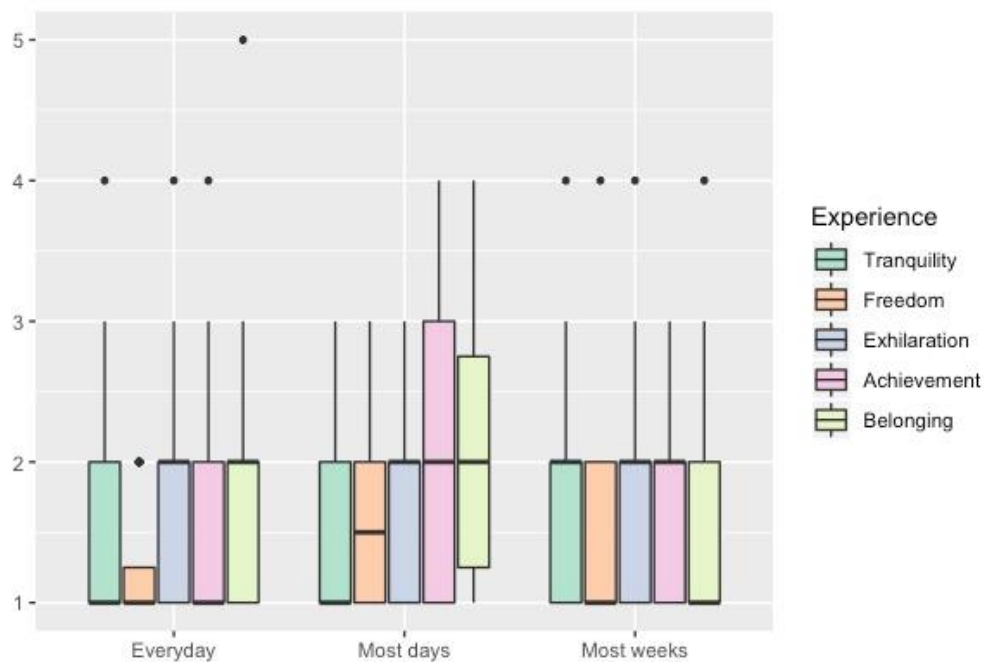


Figure 15: Boxplot of feelings experienced per frequency of leisure outdoors in a Likert scale from 1 to 5, where 1 is strongly agree and 5 strongly disagree.

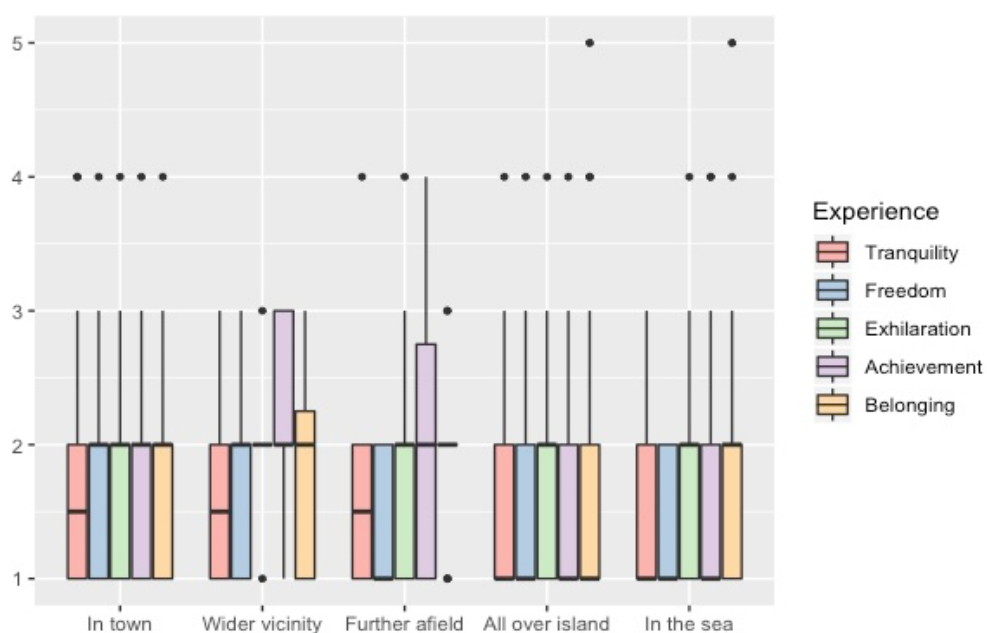


Figure 16: Boxplot of feelings experienced per location of leisure outdoors in a Likert scale from 1 to 5, where 1 is strongly agree and 5 strongly disagree

Freedom – which all respondents in this group agree is part of their outdoor experience — see Fig. 17. Perhaps unsurprisingly, respondents who spend their leisure time in town or on its wider vicinity are those who most report to not experience well-being association of any kind.

#### 4.4 SUBJECTIVE WELL-BEING AND THE ENVIROMENT

In the survey instrument we applied White et al. (2017)’s four fold characterization of subjective well-being (OECD 2013). We asked respondents how satisfied they were with life nowadays, how anxious they felt yesterday, to what extent they feel things they are doing in life are worthwhile and how happy they felt yesterday in a scale of 1 to 10, where 1 is not at all and 10 completely – see Table 6. The results show that 80% of respondents are satisfied with life (scored  $\geq 7$ ), with 26% scoring between 9 and 10 on level of satisfaction; 29% felt anxious the day before (scored  $\geq 5$ ), 89% feel that things they are doing in life are worthwhile and 76% felt happy the day before (scored  $\geq 7$ ). We didn't find a statistically significant relationship between the subjective well-being and gender, ethnicity, level of education or number of years living on Ascension.

The variation across these categories of well-being is depicted against frequency of work outdoors – see Fig. 18. Those who work outdoors most days or quite often show the highest levels of overall satisfaction, with 90% and 89% respectively scoring  $\geq 7$ , while those who work outdoors very rarely or never score lowest, with 33% and 31% respectively scoring  $\leq 7$ . Those who never work outdoors present the highest levels of anxiety, with 15% scoring  $\geq 9$ , and those who work outdoors quite often or very rarely also show a higher tendency to feel anxiety, with 44% and 33% respectively scoring  $\geq 5$ . Moreover, a large majority of those who work outdoors everyday or most days report low levels of anxiety, 72% and 80% respectively scoring  $\leq 4$ ; showing a pattern consistent with research that supports a relation between ‘being in nature’ and reduced levels of anxiety (e.g. White et al., 2017).

Positive experiences, such as happiness, evaluative satisfaction with life and eudaimonic well-being (worthwhile activities) do not present a significant relationship with the frequency of leisure outdoors – see Fig. 19. This may be due to the optional nature of leisure outdoors, noting that those who spend less leisure time outdoors tend to be those who work outdoors everyday or most days.

	<b>Mean</b>	<b>1 – 2</b>	<b>3 – 4</b>	<b>5 – 6</b>	<b>7 – 8</b>
Satisfaction	<b>7.7</b>	0.0	4.5	15.2	54.5
Anxiety	<b>3.0</b>	53.0	18.2	18.2	6.1
Worthwhile	<b>8.1</b>	0.0	0.0	12.1	50.0
Happyness	<b>7.8</b>	0.0	7.6	16.7	37.9

*Table 6: Well-being reported by respondents on a Likert scale from 1 to 10, where 1 is 'not at all' and 10 is 'completely' (in percentage of respondents)*

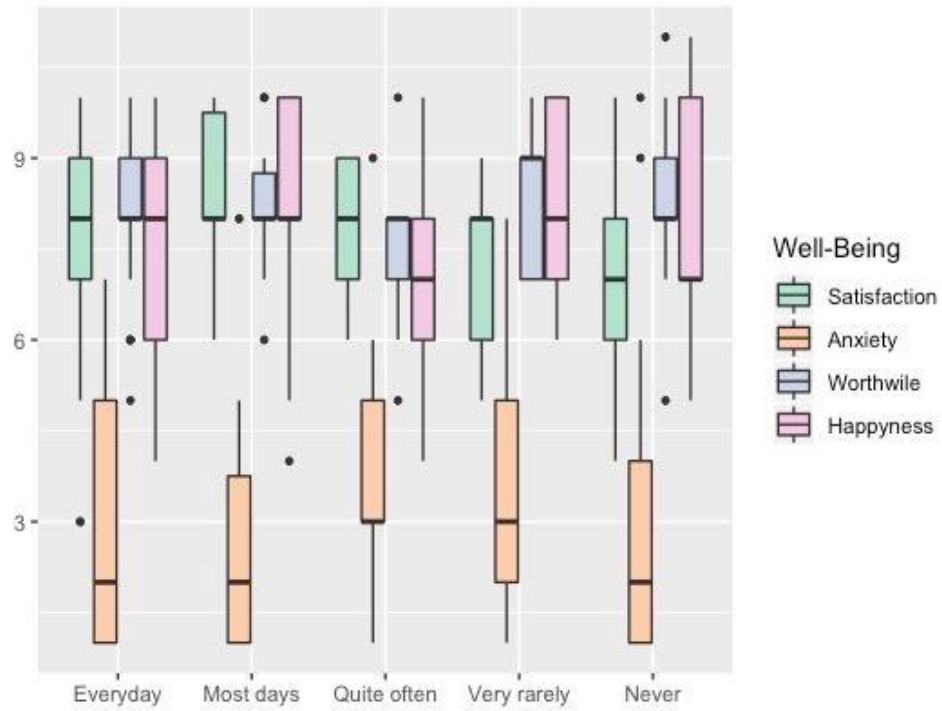


Figure 18: Boxplot of well-being categories tested and frequency of work outdoors, in a Likert scale from 1 (not at all) to 10 (completely).

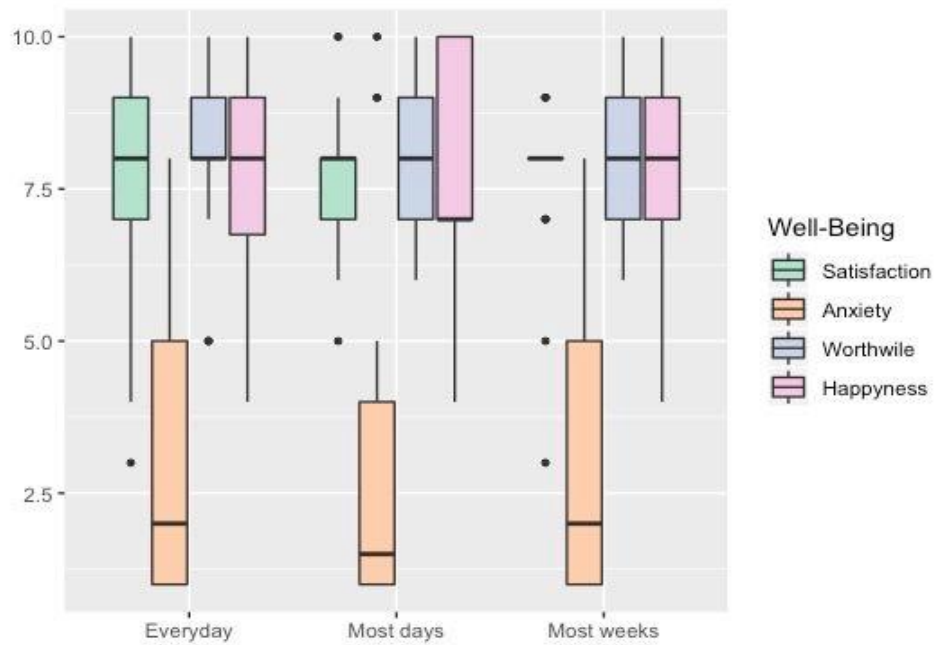


Figure. 19: Boxplot of well-being categories tested and frequency of leisure outdoors, in a Likert scale from 1 (not at all) to 10 (completely).

## 5. DISCUSSION & CONCLUSIONS

The study identifies aspects of Ascension's natural environment that are valued by the local communities in terms of its biodiversity, natural and built heritage, the perceived 'essence' of this environment and the cultural practices, that embody and shape people's relationships to Ascension's environment. As such, we identify three main aspects of the landscape that are of fundamental importance for a comprehensive characterization of people's relationship with Ascension's natural environment: *the coast and ocean*, *the volcanic landscape* and *Green Mountain*. These comprise different but interdependent environmental spaces, which support distinct cultural practices and interactions with the environment.

The significance of the coast and ocean is inexorable on an island with the characteristics of size and isolation that Ascension has, where the ocean's constant presence in day to day life tied to the abundance and diversity of marine life it hosts, sustains both subsistence and recreational cultural practices of fundamental importance to local community identities, such as rock fishing and diving, as well as crucial elements of Ascension's natural and built heritage, such as the marine and terrestrial biodiversity associated with Ascension's natural environment and the structures that support related activities. Amongst these structures are the beach huts and the pierhead which, linked to practices of fishing and BBQing, have a central role on Ascension's social life and contribution to the community's social cohesion; while the turtle ponds represent a historical relationship to the marine biodiversity and the sandy beaches are a primary location for leisure time and social activities.

On the other hand, Ascension's volcanic landscape and Green Mountain represent a juxtaposition of extremes, from the barren lava plains to the lush tropical forest, that is characteristic to both the "diversity" and "uniqueness" of Ascension's natural environment. Both are key aspects of Ascension's natural heritage, the first because its unique characteristics are "what makes Ascension, 'Ascension'" and the later because of the uniqueness of its historical "re-engineering". The volcanic landscape represents Ascension's association with a lunar landscape, how it must have looked like when it was first discovered and the habitat of endemic and native species. Green Mountain contrasts with the moon-like surroundings, provides an escape from day-to-day life, and arises from a successful 'terraforming' experiment that embodies the struggle to make human settlement possible on Ascension's otherwise inhospitable landscape. Today, both the volcanic landscape and Green Mountain support animal and plant species representative of Ascension's natural environment, such as Ascension frigatebirds and land crabs, and are linked to key cultural outdoor practices such as hiking, 'letterboxing', doing picnics and camping that, as this study shows, are strongly associated with local communities identities and experiences. Following a relational approach to the valuation of natural assets (Chan et al., 2012; 2016), this study shows that Ascension's natural environment is valued in diverse ways by those who inhabit it, as depicted in Map 4, with significant places for the 'essence', 'work' and 'leisure' of Ascension Island.

The study shows that Ascension's natural environment is part of local communities' daily routines, both during work and leisure activities. In particular, places representative of the 'essence' of its natural environment, and associated with its symbolic value, also appear related to cultural practices, highlighting how activities involving specific interactions with the environment contribute to define how the environment is perceived based on the practices through which it is experienced. Here, we observe that:



(1) *different environmental spaces are associated with different practices*, as sandy beaches are linked to recreational and social activities, such as snorkeling, diving, fishing and BBQing while the volcanic landscape is associated with hiking and ‘letterboxing’ and Green Mountain to relaxing, hiking, having picnics and camping;

(2) *different benefits arise from different activities*, as illustrated by the experiences of Freedom and Achievement being mostly associated with work outdoors while the experiences of Tranquility and Excitement with leisure outdoors;

(3) *different benefits arise from different environmental spaces*, even when performing the same activities, as the experiences of Tranquility, Freedom and Excitement are related to the location of outdoor work, being more often experienced when further afield than in town or in its wider vicinity, while the experiences of Achievement and Freedom are related to the location of leisure outdoors, being more often experienced further afield or all over the island;

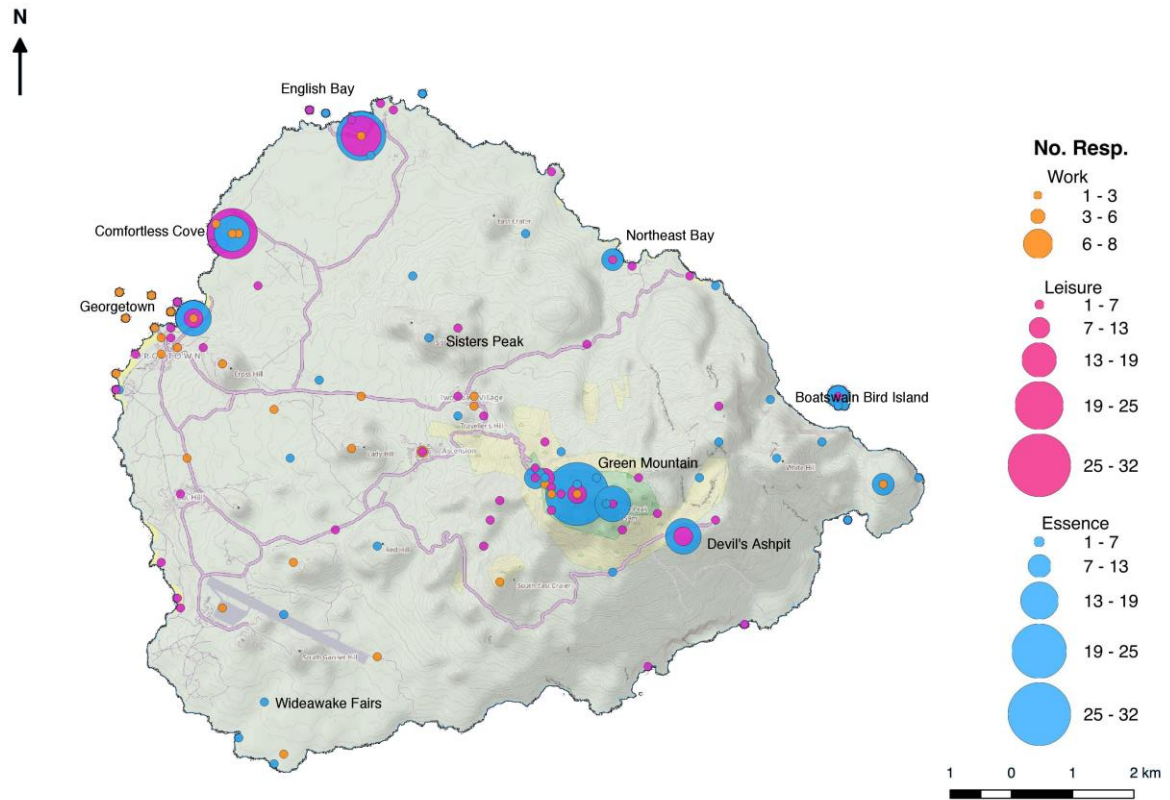
Moreover, we further observe emergent patterns across distinct social and demographic groups, adding to the above the following:

(4) *different practices are associated to different social and demographic groups*, as illustrated by men being more likely to work outdoors than women while, during outdoor leisure activities, diving, hiking and conservation activities are mostly practiced by UK-born people while fishing, gardening and social sports by St. Helenians;

(5) *different social groups may obtain different benefits arising from the same activities*, as observed in the distribution of benefits where, during work outdoors, women are more likely to experience Tranquility than men and feelings of Belonging appear related to ethnicity, being more often experienced by UK-born people than St. Helenians, while during leisure outdoors, those who lived on Ascension for two or less years were more likely to experience Excitement than those who lived for 10 or more years; and, finally,

(6) *different environmental spaces are associated to different social groups*, with figures showing that men are more likely to work outdoors further afield or all over the island while, during leisure outdoors, both St. Helenians and women are more likely to stay either in town or in its wider vicinity while UK-born people mostly spend their free time all over the island or in the sea.

In this context, we conclude that both work and leisure activities support interactions with the natural environment which contribute to local communities’ well-being, in particular, giving rise to cultural benefits that are of crucial importance to communities’ identities, experiences and capabilities. This contributes evidence to support the CES framework proposed by Fish et al. (2016), highlighting the importance of moving beyond approaches to CES as linked exclusively to recreational and aesthetic values, towards considering all cultural practices articulated in environmental spaces as primarily constitutive of CES and, as such, supporting a diversity of cultural benefits and relational values.



Map 4: Places significant for Ascension's 'essence', 'work' and 'leisure'

Moreover, our results suggest that different social and demographic groups associate to distinct cultural practices in different environmental spaces, highlighting the need to consider the distribution of cultural benefits across social groups, e.g. those reflecting distinct identities, and to take in account the diverse sets of values, norms and preferences such groups hold in CES assessments. Despite recent work on that direction (Brooks et al. 2014; Caceres et al. 2014; Chaudhary et al. 2018), such considerations have been largely overlooked in CES literature and broad ES assessments. This study thus contributes to a growing body of literature presenting evidence on the crucial importance of considering socio-demographic variables in environmental assessments, in which context, participatory mapping and survey methodologies are shown to be effective approaches to better understand the stratification of socio-ecological processes, increasing the validity and representativeness of such assessments.

Depicted as “unique” and “beautiful”, the diversity of Ascension’s landscape and how much it changed are key features highlighted by respondents in the characterization of its natural environment. Taking in consideration the above, perhaps it is not surprising that the characterization of Ascension’s environment is also mediated by social variables. St. Helenians tend to live on Ascension for longer periods than UK-born people, therefore holding a privileged position to notice changes in the environment and to be affected by those. Ascension Island is quickly changing, both in terms of its natural landscape due to the spread of invasive species, such as the Mexican thorn, guava and rats, and in terms of socio-economic processes triggered by a succession of different management strategies that lead, for example, to the abandonment of productive activities at the farm and its replacement by an unabridged reliance on the importation of basic goods, associated to the more recent socio-economic impacts of a stressed isolation with the simultaneous closure of the runaway and the RMS St. Helena service. Broad socio-ecological dynamics may drive changes on the environment, the society and human-environment relations, therefore it is important to understand CES not as static nor isolated interactions but as dynamic and interdependent relationships, which may be subject to change as much as the natural environment and society is.

In this context, we identify potential key areas for future work, including:

- (1) building on the findings of the present study, further examine other potential categories or sub-categories by which significance may be assigned to particular landscape features, specifically, animal and plant species, and develop the relational approach to the valuation of natural assets by extending its scope to the processes by which norms and values may be reproduced, e.g. oral history and local knowledge systems, contributing to further understand the dynamical processes behind CES;
- (2) recognizing the importance of understanding the dynamical processes behind CES which affect human-environment relationships, the distribution of benefits and the way values are assigned to particular landscape’s elements, use this study as a potential baseline for future assessments in order to assess the impacts and inform the implementation of management strategies adequate to the specificities of local socio-ecological dynamics and the needs of local communities;
- (3) acknowledging the importance of integrating socio-demographic variables in environmental assessments, more work is required to explore the impact of distinct environmental policies and management strategies on the distribution of environmental benefits and values across different socio-demographic groups.

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