



Mapping Man's relationships to Nature: a relational approach to well-being from cultural ecosystem services on Kalamos Island, Greece.

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SUMMARY

This research project explores the complex and dynamic relationships between humans, ecosystems and how they may contribute to (or detract from) well-being. I begin by examining the many layers of this relationship in a relational framework which points towards an understanding of well-being which is both produced by and enabling senses of place. Thus, well-being and place are linked through emergent networks made of specific practices, identities and capabilities that are created there. This provides the context for applying this framework through a mixed methodological approach which is less rigid than the traditional quantitative approach that tend to assess well-being on basis of objective, predefined criteria (Atkinson and Scott, 2015; Smith & Reid, 2017). In my study, well-being depends on associations people make with nature. It is, as I argue, both personally and socially defined.

In the methodology section, chapter four, I further explain why and how I complemented my relational approach with participative GIS mapping and semi-structured interviews. This included identifying areas perceived by the local residents as being culturally significant and then linking them to different aspects of well-being; but also, the perceived threats to the ecosystem or cultural dis-benefits to well-being, the cultural ecosystem services (CES) which would potential be lost and their link to well-being. I analysed and aggregated the geographical patterns of CES between the categories of local inhabitants using a geographical information system (GIS) into a map. In this map, the areas delineated as important were done so by participants only. It can therefore be considered as a map co-constructed by them.

In chapter five, my research findings are described and analysed to connect emergent themes and to provide an explanation of how well-being emerges through interactions with nature in a non-linear and a place-based perspective. Results indicated that the CES participants understood them were not always linked to physical aspects of the environment but rather to more intangible values, the inner significance landscape had acquired for residents. Furthermore, the associations residents made with nature and its relation to well-being are not predefined but constantly changing depending the cultural practices that ceased or are re-created, affecting the meaning given to a place.

Finally, in chapter six, I open the discussion to understand the wider implications of the relational approach applied in this thesis, as well the use of participatory mapping of CES in order to provide different ways of relating to landscapes and implications for nature conservation strategies. Such maps, as I will argue, are not based on fixed boundaries predefined by “dominant knowledge-power” but are in need of creating efforts to include and empower resident communities. I argue in the end, that future research may investigate the role of other actors, as they too experience a kind of well-being from nature, but probably in ways that are different from local people. Practically, this study could be used in the context of the Kalamos and Kastos Sustainable Development Project to capture the meanings and values that residents assign to nature, to integrate them into future land management decisions. Furthermore, in the context of Rewilding Europe initiatives this data can be used to set rewilding targets that are accepted and valued by the community.

I. INTRODUCTION

This thesis investigates the diverse ways humans interact with ecosystems using cultural ecosystem services. To understand how this works in practice, I have explored human-ecosystem interactions from the perspective of Kalamos residents in Greece. This perspective, as I will argue here, is unheard in the dominant organization of land use on Kalamos that is facing incompatible practices. Not only will this thesis give space to residents' perceptions of nature, it will also contribute to a wider research project called "*The Kalamos and Kastos Sustainable development project*". This project is implemented by a local conservation organization that is affiliated within the European Rewilding Network.

This organization, named Terra Sylvestris, is currently operating in the Kalamos and Kastos islands in the inner Ionian archipelago of Southern Greece. These islands are part of the Natura 2000 GR2220003 site and are particularly suited for large scale habitat restoration due to the small human population and large bird and fish populations. The Natura 2000 GR2220003 site is the second largest marine protected area in Greece and hosts a variety fish spawning grounds such as the Mediterranean sardine (*Sardina pilchardus*), and other mammals such as dolphins and the monk seal (*Monachus monachus*) which is an endangered species (Bearzi et.al 2006). The "*Kalamos and Kastos islands Sustainable development project*" (KKSDP), is a private conservation project run by the non-governmental, non-profit organization, Terra Sylvestris. Their main goal is to conserve the biological diversity of the islands and surrounding seascapes through rewilding projects followed by ecotourism initiatives as a means for local development and involvement in nature conservation (Karfakis, 2015).

However, there are many pressures on the terrestrial and marine environment at present. Because Kalamos, Kastos and surrounding islands are not densely populated, the area is perceived as a goldmine for large scale wind and solar farms. In addition, industrial fish farms are competing to gain a foothold on the area, backed by corporate interests and governmental policies which have been accused of negligence and corruption (Bearzi et.al 2006, Karfakis, 2015, Gonzalvo et.al, 2011, Fryatt, 2017). In 2011, most of the marine reserve was designated as an industrial aquaculture production zone which was met but strong protests by the local population (Karfakis, 2015). From public assemblies of local communities that have taken place to academic studies on the management of fisheries, there has been a call for more strict legislation concerning the Natura 2000 GR2220003 biological reserve (Gonzalvo et.al, 2011).

The KKSDP aims to involve the community, as stakeholders, in decision making about future land management decisions (Karfakis, 2015). Therefore, using local knowledge to assess the different cultural services provided by nature/wildlife in the Kalamos and Kastos islands will be important. There has been a call by many social scientists to engage in more active, down to earth science which includes local knowledge in managing a natural area (Lynam et.al, 2007, Cowling et al, 2008, Reed 2008). As Raymond argues, the scientific community should "*identify local priorities for management; emphasize empowerment, equity and learning; and systematically integrates multiple knowledge systems into environmental decision making*" (Raymond, 2009, p.1302). Indeed, the UNESCO World Heritage Conference (2003) as well as the Millennium Ecosystem Assessment (MEA, 2005) have been urging scientists to consider nature in a more exhaustive way. That is, cultural values usually take second place to biophysical or economic ones when it comes to conservation and environmental management. However, the UNESCO WHC (2003) and the MEA

(2005) argue that sustainable resource management must set targets that are accepted and valued by the community. To this end, the KKSDP project aims to discover which natural areas matter to the people living on Kalamos and Kastos island and why. In this context, there is a need for research to investigate the different places, localities and landscapes on this island and assess them in terms of the associations that are perceived as valuable by local people; as well as the benefits linked to their well-being.

One way to understand the meanings that people assign to nature and the ways that nature is of value to them, is by means of “cultural ecosystem service” (CES). Understanding what is meant by the concept cultural ecosystem services is just as important as knowledge concerning the features of the physical landscape (Fish et.al 2016, Plieninger 2013b, Chan 2012). The definition of ecosystem services that I use here is provided as follows:

*“cultural ecosystem services are the contributions 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. This approach leads to the idea that they many cultural goods and benefits associated with ecosystems arise from a series **of cultural practices** and the related cognitive, non-cognitive and embodied **interactions** occurring between people and a broad range of (culturally constructed) environmental spaces”* (Fish et.al, 2016, p.212).

As shown in Figure 1, a landscape or seascape can be converted into services which are themselves linked to personal, societal or economic well-being. This research projects aims to explore how the landscape and seascape around Kalamos and Kastos have cultural significance for the local population of the islands and what benefits these services provide for their personal well-being.



Figure 1. Schema of the relationship between marine areas, ecosystem services and human well-being. (Busch et.al, 2011).

MEA	Millennium Ecosystem Assessment
CES	Cultural Ecosystem Services
KKSDP	Kalamos and Kastos Sustainable development project
PGIS	Participatory Geographical Information Systems Mapping

Figure 2. List of abbreviations.

1. Relevance of the study & problem statement

My research fits into a wider research project called “*The Kalamos and Kastos Sustainable development project*” (KKSDP) implemented by Terra Sylvestris. The goal of this larger project is to conserve the biodiversity of the island seascape which is under threat because of unsustainable fishing practices such as dynamite fishing which destroys the coral and industrial fish farming (Gonzalvo et. al 2011). The latter is particularly problematic firstly because of the noise pollution and waste dumped in the water; and because farmed and wild fish compete over spawning habitats (Bearzi, 2006). Because the conditions for the development of farmed fish eggs and wild fish eggs are similar, one excludes the other and therefore industrial fish farming negatively affects the biodiversity of the fish species around the island (Bearzi 2006, Gonzalvo et.al, 2011, Karfakis, 2015). The aim of the KKSDP is to replace this with more sustainable activities in the form of ecotourism or the amelioration of traditional practices such as fishing so that the ecosystem may restructure itself. Ultimately, Terra Sylvestris plans to create a “*sustainable model of development and ecosystem management*” which would account for the next 30 years (Karfakis, 2015). KKSDP also wishes to involve the local community in habitat restoration. This includes raising awareness to the importance of the marine reserve on one hand, but also using local knowledge to identify and assess benefits of natural areas in the form of CES (Karfakis, 2015). This is relevant for the KKSDP because it sheds light on the fact that certain landscapes can have cultural significance that is equal if not more important for people than only its economic value.

2. Project objectives

Academically, my research project feeds into the KKSDP as a relational approach to cultural ecosystem services that is based on a bottom-up exploration of how local actors relate to the landscape and seascape around the islands. This approach is relevant academically as it moves beyond an economic/instrumental approach that has been predominant in the literature so far. This is increasingly being pointed out in ongoing debates concerning environmental services as being too limited and incomplete (Chan et.al, 2016; Fish et.al 2016; Plieninger 2013b, 2010; Fagerholm & Kayhko, 2009). A more relational approach focuses on fluid relationships between actors that are more inclusive and less set-in stone. Concretely, this means understanding that the inputs human beings receive from ecosystems are not unidirectional nor are they linear. On the contrary, ecosystems are constantly being re-shaped as they are socially constructed through societal interactions that we humans take part in.

My contribution to this relational approach will explore a more process-oriented view to “*Cultural Ecosystem Services*” (CES) with a focus on human well-being from nature. Recognizing the interdependence of ecosystems and human well-being is important to understand what well-being is and what it requires. Helne and Hirvilammi maintain that if we continue to base well-being on economic indicators, we underestimate what it takes to lead good lives and challenge how future generations will be able to survive at all (2015). In the Millennium Ecosystem Assessment (MEA), human well-being is divided in five parts: the basic material for a good life, security, health, social relations and the freedom of choice and action (2005, p. VI). It then stresses the fact that the experience of human well-being, as benefits provided by ecosystem, are completely context dependent. In other words, human intervention in an ecosystem is capable of amplifying or reducing the experience of well-being. So not only is human well-being a benefit that is linked with

the services that an ecosystem provides (which is subject to change) but also assessing these benefits is a matter of subjective experience and perception (Busch, 2016). This explains why studying the impacts of changes in ecosystems on different aspects of human well-being remains a challenge in current research. Some direct linkages have been made between regulating services, provisioning services and determinants of economic well-being exist (such as income, employment, safety, etc.). Cultural ecosystem services have also been linked with determinants of social well-being, such as leisure time, health, social relations. However, there also exist many indirect linkages between all ES and all determinants of economic and social well-being which form complex linkages which can have both positive and negative consequences. These complexities remain relatively unexplored.

In the context of this study it is interesting to discover how residents perceive the expansion of fish farms in the seascape surrounding Kalamos. The ban of offshore fish farms could lead to the increase in fish and coral biodiversity. After a certain time, the scenery would regain its wild aesthetic appearance. The effect would potentially be an increase in psychological well-being. At the same time, the ban of offshore fish farms could lead to loss of employment in the area which could lead to a decline in psychological well-being. It is clear that the introduction of offshore fish farms will trigger biological and social change in the region. Busch (2016) in his examination of the effect of offshore wind farms of the coast of Germany remarks:

“The significance of ecosystem benefits for human well-being is best demonstrated in situations of change, where a shift takes place in the ecosystem services provided, where the range of available benefits might conceivably alter, and where trade-offs may be required between different benefits and consequently different impacts on human well-being” (Busch, 2016, p.191).

Assessing whether this change is desirable or not relates to an understanding of what kinds of benefits are important for human well-being relating to a given ecosystem. This will further our understanding in how changes in ecosystems relates to changes in cultural benefits which may have a relation with (community) well-being. This what this research project aims to do in the context of Kalamos.

In line with Terra Sylvestris’ goal of community involvement, my research project aims to assess these cultural ecosystem benefits through participatory methodological approaches. Specifically, this will be done through Participatory Geographical Information Systems Mapping (PGIS) which presents a way of seeing landscape which is not based on biophysical indicators but rather on the positive or negative associations of nature residents of Kalamos described.

3. Research Questions

The subsequent chapters work together to answer the following question:

GRQ: *How do local residents of Kalamos associate with nature around them, and how do such associations relate to the wellbeing of these residents?*

In order to answer this general research question, I will first investigate:

- (1) In what ways do residents of Kalamos perceive nature? How do these perceptions relate to cultural ecosystem services (CES)?

The second sub-question links residents' perceptions of nature to the feeling well-being they get from nature around them:

- (2) In what ways are these cultural ecosystem services related to people's wellbeing from nature?

Finally, the third sub-question can help visualize which areas are important for residents in terms of cultural ecosystem services and different aspects of well-being:

- (3) And how are these perceptions of nature and related forms of well-being dispersed spatially?

II. CONCEPTUAL FRAMEWORK: A RELATIONAL VIEW ON CULTURAL ECOSYSTEM SERVICES.

In this research project I focus on three core concepts: sense of place, cultural ecosystem services, and wellbeing. I address all three concepts on basis of a relational approach. I will start by discussing the term 'sense of place' which describes how we, in general, experience or make sense of the environment. Then I will transition to a discussion about how we more specifically take benefits from the natural environment in the form of CES, and then relate this to 'wellbeing'.

1. Sense of place.

The concept of sense of place has been defined in three parts encompassing the physical environment, the individual and the sociological processes that take place when the individual experiences the environment (bi, 2003, Hausmann et.al, 2016). However, it has been argued that research overemphasizes the individual and sociological side, while completely underplaying the role of the environment in the definition of sense of place (Stedman, 2003). Sense of place then, becomes a more a social construction where meaning is not intrinsic to the landscape but rather is the result of human experiences in it. This is view is supported by Tuan (1977, p.6): "*What begins as undifferentiated space becomes place when we endow it with value*". In this way, it is possible for a single place to have multiple meanings and be different places for different people according to their social and cultural experiences within it (Eisenhauer et.al, 2000).

Despite the socially constructed definition of sense of place that has been articulated by Tuan (1977) and Eisenhauer et.al (2000) among others, a opposite trend has also merged which argues sense of place develops in relation to aspects of the physical environment. Stedman asks, "*are we really likely to attribute wilderness meanings to a suburban shopping mall?*" (Stedman 2003, p.673). In doing so, he is underlining the fact that sense of place it least partially based on some material, biological aspects of the surrounding environment. Past work by Ryden also takes this view. In his book "*Mapping the invisible landscape*" he describes sense of place as "*grounded in those aspects of the environment which we appreciate through the senses and through movement: color, texture, slope, quality of light, the feel of wind, the sounds and scents carried by that wind*" Ryden (1993, p.38). To be clear, these authors don't argue for a deterministic view of place which is solely defined by the physical features that are already there. Rather, they call for a broader understanding of the concept of sense of place which encompasses the relationship between the physical aspects of the environment and the meanings attributed to it.

Building on work on therapeutic landscapes and environmental psychology (Hartig and Staats, 2006), health geographers have tried to develop a more nuanced understanding of the different ways well-being can be related to place through various practices and processes (Conradson, 2005). Conradson (2012, p.26) claims "*geography's distinctive contribution to this broader field of endeavour is to further our understanding of the relationship between socio-ecological context, however conceived, and wellbeing.*" This implies a shift away from place as a simply material setting towards a more relational understanding in which well-being arises from the interactions between human and non-human elements of places. This research project is in line with Stedman's definition of sense of place as "*physical attributes or features of a place influences the symbolic meanings of the landscape*

which are in turn associated with evaluations and attachments” (2003, p.675). This understanding implies that the meanings associated with places are derived from the experiences we have in those places, which are themselves enabled or constrained by certain aspects of the physical environment. For example, a certain space in a forest can be perceived as a sacred area because of the rituals that take place there. These experiences are enabled by attributes of the environment such as clearing in trees or the fact that certain species of fauna grow there. This is an understanding of place as a process with physical, social and emotional facets. Thus, Hausmann et.al (2016) argue that sense of place is an important element which should be incorporated in our understanding of how an ecosystem contributes to human well-being. The MEA (2005) also underlines that sense of place, understood as the relationship that people have with ecosystems is an essential condition for human well-being.

1.2 A relational approach to place-wellness.

Many researchers argue for a conceptualization of well-being that is situated and emergent (Sullivan, 2001; Stedman, 2003; Thrift, 2004; Raymond, 2009; Smith & Reid, 2017). They call for a more relational point of view on well-being and place. In Sullivan’s words “*all human activity, as well as any satisfaction found in it, is a matter of mutual transformation of the self and its world, human and nonhuman, organic and inorganic alike*” (2001, p.143). In cultural geography this means moving away from a conceptualization of well-being that is based solely of objective or subjective indicators and towards a more holistic representation that draws on the emergent human-ecological interactions (Smith & Reid, 2017). Geographical well-being scholarship must shift towards a more-than-human understanding of well-being, where humans and spaces are not separate entities but better understood as products of dynamic reconfigurations (Tucker, 2001 in Smith & Reid, 2017). From a relational point of view, the emergence of places is through “*intra-action*” that is through “*dynamic topological reconfigurations, entanglements, relationalities and re-articulations*” (Barad 2003, p.818). This means that sense of place is created as a process and should not be represented merely through separate components which often times are pre-determined. Although it is situated, it’s meaning is dynamic and subject to change. As such, human beings are not separate from our environment, nor entirely the product of our surroundings. Both evolve in relation to each other (Sullivan, 2001).

Practically, viewing place-wellness in relational terms has many implications for spatializing it in a way that provides insights into the complexity of its appearance and evolution (whether stable or unstable) (Smith & Reid, 2017). Such an approach moves past the more localized research on therapeutic landscapes (Conradson, 2005) to a more dynamic interplay between humans and their environment (Atkinson and Scott, 2015, Helne & Hirvilammi, 2015). To avoid such geographical determinism, participative mapping techniques have been useful because subjects define their own spaces without falling back on a pre-defined structure. It also allows for people to go more in depth about their lived experiences such as “energy” of a place in relation to other places around it. Mapping exercises spur open dialogues which have “*an important role to play in advancing socially inclusive and progressive understandings of wellbeing*” (Atkinson 2015, p.101). Raymond (2009), Tengberg et.al, (2012), Fagerholm et.al (2012) and Plieninger et.al (2013) among others have prioritized participative GIS mapping as an entry into more emotional geography which aims to understand how places are valued in relation to well-being and which places are perceived as

threatened. Such information is important to consider in health geography but also in land-use policies (Raymond, 2009).

In summary, my argument is that to better understand how certain places are linked to well-being it is useful to frame the relationship between these two concepts through a relational lens. This means examining the complex interactions that arise between a person and their surrounding social-environmental setting. Such an analysis of sense of place is multidimensional, it emerges from the interactions between people, people and material objects or between people and other living things (such as trees, animals). It implies that sense of place results from an embodied experience, and that a person's perception and interpretation of the environment has consequences for their well-being. Thus, sense of place can be considered an important ecosystem service that provides physical and psychological benefits to people (Hausmann, 2015).

The following paragraphs describe how the term "ecosystem services" has been conceptualised throughout history, then how "culture" has been integrated through the lens of an ecosystem framework. Then, I will discuss the difficulty of classifying culture ecosystem services due to their fluid and intangible nature. From this, I will focus specifically on the relational view of CES.

2. Ecosystem Services (ES).

The functions of ecosystems were first only studied in an ecological sense, completely disregarding how such processes affected humans. Lindeman in 1942 states "*the ecosystem is hence regarded as the more fundamental ecological unit*" (Linderman, 1942, p.402). In 1957, Odum described the flows of energy and matter that take place in ecosystems which lead to services and benefits for humans (Odum, 1957). Since then, it has been increasingly important in the debate about ecosystem services (ES) to distinguish between the ecological processes needed for the ecosystem to exist; its's function within a larger ecosystem; and the service it provides to humans and which type of goods humans can extract from it (Braat & de Groot, 2012). For example: reproduction (process) is the way a sheep population maintains itself (function). A part of that sheep population will be slaughtered (service) to feed people meat (goods).

Ecosystem processes, functions, services and goods are all interlinked. However, it has been noted that the definition of ecosystem services is particularly complex because what is valuable for humans in an ecosystem may change over time even though the ecosystem processes and functions themselves may be perceived to remain stable (Braat & de Groot, 2012). Indeed, over the years there has been a shift from a purely ecological valuation of ES (Linderman, 1942; Golley, 1987) to a more instrumental one (De Groot et.al 2012, Farley, 2012; Cowling et.al, 2008). ES became "*conceptualizations of the useful things ecosystems do for people*" (Braat & de Groot, 2012, p.6). From the 1970s onwards, the services that nature provided were seen as largely economic. Rather confusingly, they were called "functions of nature" by the WWF and described as those "*functions of nature [that] have an economic value, since they represent ways to satisfy the needs of man*" (Braat et.al, 1979, p.21).

Although the term "ecosystem services" was formerly coined in 1981 by Ehrlich & Ehrlich, it was the Millennium Ecosystem Assessment (MEA), an initiative brought about by the United Nations, which popularized the term in 2005. What was novel about this framework was that it pointed out the non-material benefits that nature provides to people, namely in the form of well-being. One of the

UN's goals was to link ecosystem services to human well-being so that people can understand how disturbances in the ecosystem can lead to drops in well-being and vice versa. The concept of ecosystem services is now being used by numerous environmental NGOs (WWF, Forest Stewardship Council) and governmental agencies in policy making (Costa Rica). Multitudes of publications have used ecosystem services as a key word (Braat & de Groot (2012); Chan et.al (2012); Costanza et.al (2014). The MEA delineates four major categories of ES: (1) Provisioning services, which are natural resources (ex: water). (2) Regulating services, which are the mechanisms by which nature maintains the conditions for life on earth (ex: waste decomposition) (3) Supporting services, like pollination and nutrient recycling, that contribute to other services but don't necessarily have final value in and of themselves. And finally, (4) cultural ecosystem services, which represent a grouping of all the non-material benefits that ecosystems provide to people (MEA, 2005).

Of all the categories of ecosystem services, cultural ecosystem services (CES) are by far the least researched (Daniel et.al, 2012; Fish, 2016). The MEA defines them broadly as the "*nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation and esthetic experiences*" (MA, 2005, p.40). It refers to the intangible, emotional, psychological or other types of attachments we make with nature.

2.2 Assessing cultural ecosystem services within ES.

As mentioned above, from the 1970s to the early 2000s the relationship between sustainability and ecosystem services (ES) was foremost through the notion of natural capital. In this conceptualisation, sustainability means maintaining natural capital so that we can have a continued provision of interest of that capital in the form of ES. This is why, CES up until very recently were addressed only through two aspects: esthetics and recreation. These aspects are the most tangible, quantifiable and therefore simpler to assess methodologically (Chan et.al, 2012). According to Constanza, nature simply supplies a relentless stock of CES, which "*combine with built, human, and social capital to produce recreation, aesthetic, scientific, cultural identity or other cultural benefits*" (Constanza, 2011, p.2). Therefore, he understands the link between nature and culture to be unidirectional and unidimensional. Constanza's conceptualization of how CES contribute to well-being is based on a giver receiver relationship that neglects wider human-ecosystem interactions.

It has become increasingly clear to many researchers that the relationship between nature and CES is not that direct or linear, as CES involve less precise benefits that could be experienced indirectly and are rarely reflected by economic indicators (Fish et.al 2016, Plieninger 2013b, 2010, Fagerholm & Kayhko, 2009). To attempt to resolve this issue, other authors have introduced conceptual models like the TEEB diagram (The Economics of Ecosystems and Biodiversity project) with feedback loops to explain the impact of humans in the production of foods and services that flow from ecosystems (Braat & De Groot, 2012; TEEB, 2010a in Constanza, 2011). These authors argue that when it comes to an ecosystem's contribution to human well-being, the conceptual model must also include the human contributions (through restoration or polluting initiatives for example). Thus, humans' actions feedback into the ecosystem, which affects the quality of the service it may provide (Braat & De Groot, 2012). However, this doesn't go far enough according to Fish et.al because these conceptualisations still see culture services according to their economic valuation. But "*what makes a service cultural is precisely its non-economic character*" (Fish, 2016, p.210). What this means is that conceptualizing CES through positivist means of knowledge production is problematic because it is based on the assumption that CES are directly observable in the environment and measured

independently. Fish et.al argues that CES are “*lived experiences (...) which can’t be neatly linked with changes in natural environmental processes*” (Fish, 2016, p.210). This could be a sense of belonging for example that is linked more to the sense of a place for someone rather than a specific characteristic. This makes CES difficult to value compared to regulating or provisioning services because CES are mostly intangible, which puts them outside the realm of market processes. Trying to monetarize CES then becomes an ontological issue that transforms culture as an economic asset (Fish, 2016). On the contrary, Fish argues that assessing ecosystems should be done according to a wider set of criteria than just economical ones. And rather than considering them all in isolation, such assessments should consider the interactions provisioning, regulatory and cultural ecosystem services. For example, a fishing port might be valuable due to the interaction of economic and cultural factors. Not only does it provide fish which can be sold, but that particular breed of fish is linked with specific cultural heritage practices and identities that are hard to measure in monetary terms (Acott & Urquhart, 2014).

The MEA’s definition of CES seeks to move beyond the utilitarian conceptualization by paying attention to all the non-material benefits people get from nature. Rather than framing the CES through a cost-benefit analysis framework, the MEA relates it more to policy-making through a socio-ecological system approach. According to the MEA, understanding the cultural non-material benefits linked with particular seascapes for local people is an important step in getting them involved in active conservation and sustainable management of these landscapes (MA, 2005). It is true that many CES come in an intangible form, however they are not limited to that. As Fish et.al points out, archeologists and anthropologists have long understood that culture can manifest itself through material objects, called “*material culture*” or “*cultural materialism*” (Fish, 2016). In a similar vein, many cultural geographers refer to the fact that landscape is both physically constructed and shaped by various cultural practices (McLaughlin, 2011; Schaich, Bieling, & Plieninger, 2010).

From the limitations described above based on conceptualising CES as tangible and unidimensional services provided by ecosystems, it is argued by Fish et.al that the relationship between nature and culture is multidimensional and can take on both tangible and intangible forms. He proposes the following definition of CES:

*“cultural ecosystem services are the contributions 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. This approach leads to the idea that they many cultural goods and benefits associated with ecosystems arise from a series of **cultural practices** and the related cognitive, non-cognitive and embodied **interactions** occurring between people and a broad range of (culturally constructed environmental spaces”* (Fish et.al, 2016, p.212).

2.3 A relational view on cultural ecosystem services.

Fish et.al (2016) takes a relational, or comprehensive, view on cultural ecosystem services (Daniel et.al, 2012). With an emphasis on process and fluidity his framework intersects with the other relational conceptual fields of sense of place and well-being. Fish et.al’s framework entails that CES derive from human interaction with nature, through which they are co-produced and reciprocal (see Figure 4). According to a relational view, culture is not a separate entity, it is everywhere around us. Culture helps us to make sense of our lives and therefore is central to them (Chan, 2012). This makes CES slightly different epistemologically from other conceptualizations described above. Through a relational lens, “*cultural landscapes are at the interface between nature and culture, tangible and*

intangible heritage, biological and cultural diversity” (Rossler in Plieninger et.al, 2010, p.271). In fact, far from being different from the rest of ecosystem services, “*cultural values are the layers of meaning through which all ecosystem services and well-being are interpreted and valued*” (Tengberg et.al, 2012, p.17). This is called the “*culturality of ecosystem services*”, also formulated by Pröpper and Haupts (2014). It means that the benefits we get from CES are co-produced through our interaction with nature. This implies that individuals partake in the interactions that together make up and influence how we (and others) make sense of realities. Fish et.al explains:

“Cultural ecosystem services are understood here not a part of the subject-object ontology, as a priori products of nature that people utilise for a particular benefit to well being – but rather as a relational process and entities that people actively create and express through interactions with ecosystems” (Fish et.al 2016, p.211).

Fish et.al’s conceptual model links the concept of environmental spaces with cultural practices and cultural benefits. At the intersection of these are cultural goods. Environmental spaces are understood as the places where people can be with each other and the surrounding landscape or seascape. Cultural practices are how people interact with that landscape or seascape. That is, what activities they do in a given space. These interactions between people and nature are linked to aspects of human well-being, called cultural benefits. Fish summarizes this conceptual model as the following: “*environmental spaces and cultural practices should be considered mutually reinforcing cultural ecosystem services through which cultural benefits to well-being arise*” (Fish, 2016, p.211).

To summarize, a place is endowed with meaning by the cultural practices that occur there, while also giving meaning to these practices. Simultaneously, the cultural ecosystem benefits, that is the identities, experiences and capabilities, also shape these cultural practices by constantly deconstructing and redefining them (Fish, 2016). Some of the services (cultural goods) that arise from the intersection of place, practice and benefit may have monetary market value (for tourism, sports trails, festivals, romantic hideaways, etc...). This allows for an understanding of cultural ecosystem services which is less instrumental and more nuanced. The natural environment is not a product we use for our well-being. Rather well-being arises as a process of interaction with ecosystems. As such, well-being is contextualized in a web of social and ecological relational entanglements (Acott & Urquhart, 2014).

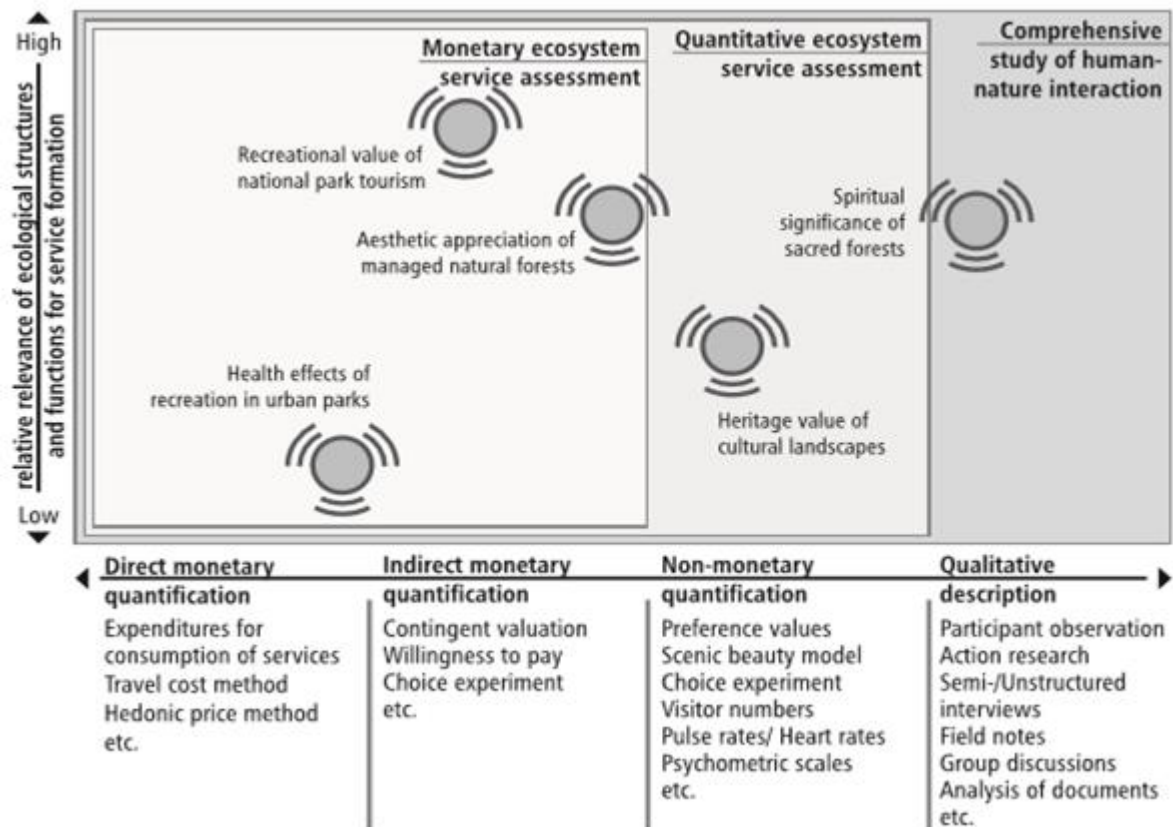


Figure 3. Daniel et.al 2012, a comprehensive/relational view in comparison with other representations of cultural services within an ES framework.

3. Well-being and CES.

In this final section, I will discuss how the concept of well-being has been defined and how it can be viewed through a relational approach.

Many studies have underlined the relevance of studying the link between CES and human well-being (Busch et.al, 2011, Russell et.al, 2013, Bryce et.al, 2016, Wangai & Burkhard, 2017). Indeed, interacting with natural environments has been shown to increase our physical and mental health (Hartig et.al, 2014) which positively influences our attitudes on nature conservation (Ewert et.al, 2005). When focusing on marine environments specifically, studies have linked living close to the coast with being in better health (Wheeler et.al, 2012). One aspect is how leisure time around marine environments is linked with mental and physical health (Bell et.al, 2015). Furthermore, CES contribute to well-being by encouraging people to self identify to a certain place, to connect with the environment and feel like they belong there (Hausmann et.al, 2015). Understanding the relationship between CES and well-being in this way can also explain why many cultural heritage practices take place in nature and why certain species are important for national and self identity (such as whales in Alaska or kiwis in New Zealand). The different dimensions of well-being are so complex and multifaceted, that to understand the full reach of CES's contribution to human well-being we cannot limit the research to purely quantifiable and monetary valuations (Bryce et.al, 2016). Although the cultural benefits of ecosystems on well-being have been studied in isolation (mental health, physical health, aesthetic beauty and recreation), there still lacks a more relational view of the culturally mediated interactions between people and the environment (Russell et al,

2013). Russell argues “*nonmaterial connections to ecosystems are realized through different channels and contribute to different constituents of well-being*” (Russell et.al, 2013, p.475). Since the majority of work is done in the instrumental readings of CES, I now aim to complement the picture by focusing on relational aspects of wellbeing through CES. This research is needed to get a better idea of the diverse and complex ways people interact with ecosystems. The following paragraphs expand on how well-being has been conceptualized typically and we may reconceptualise it from a relational point of view.

3.1 Different conceptualizations of well-being: a component-based approach.

In trying to assess what this abstract concept means many researchers and policy makers have tried break well-being into separate parts. In other words, it is a component-based approach to well-being because it separates and tries to assess the elements of well-being independently (Atkinson, 2013, 138). Such conceptualizations have often divided well-being through objective and subjective elements (McGillivray & Clarke 2006; Stiglitz et al. 2009). This is problematic for two reasons. Firstly, when well-being is measured with objective indicators it is usually associated with economic terms such as standard of living, GPD and purchasing power (Atkinson, 2013). The reasoning is that humans derive satisfaction from consuming goods and that measuring economic growth is a good indicator of societal well-being (Helne & Hirvilammi, 171, 2015). However, Jackson (2009) points out that even though increase in wealth can be associated to increase well-being to some extent, beyond a certain threshold those effects are likely to be reversed. This phenomenon has also been called the “*paradox of affluence*” whereby a link is identified when measuring well-being in relation to income in the short term, but this link disappears in more longitudinal studies (10 or more years) (Conradson, 2012; Smith & Reid, 2017). As Helne & Hirvilammi (2015) also argue that objective indicators based on material wealth “*tend to neglect the new wellbeing problems, such as stress and a hurried way of life, depression, loneliness, substance abuse and environmentally destructive behavior*” (Helne & Hirvilammi, 2014, p.2164).

Secondly, when well-being is assessed through subjective indicators, it has mostly been understood through hedonic or eudemonic perspectives (Ryan & Deci, 2001). A hedonic approach defines well-being as the attainment of pleasure and the avoidance of pain. Hedonism dates back to Greek philosophy in 4 BC, namely Aristippus who argued that “*the goal of life is to experience the maximum amount of pleasure, and that happiness is the totality of one’s hedonic moments*” (Ryan & Deci, 2001, p.143). Throughout history hedonism as been expressed through many forms. De Sade believed that well-being could be achieved by satisfying bodily sensations and pleasure. Utilitarian philosophers such as Bentham argued that a well functioning society was build on the sum of individual well-being based on self interest. Modern psychology has interpreted hedonism as subjective well-being (SWB), “*what makes experiences and life pleasant and unpleasant*” (Ryan & Deci, 2001, p.144). This evaluates human perceptual experience rather than satisfaction of material or bodily pleasure. Ryan et.al (2013) remarks that the reason why hedonic perspectives have been used in most economic and psychological studies is because it is an outcome-based conceptualization of well-being which is more easily quantifiable. Moreover, the hedonic view has been criticized because it is too reductionist and can be boiled down to behavioural theories of reward and punishment which are perhaps fitting for animals but don’t come close to encompassing the complexity of human well-being (Ryan & Deci, 2001; Helne & Hirvilammi, 2015).

Subjective well-being has also been conceptualized through eudemonic philosophy, a pioneer of which was Aristotle. In the *Nicomachean Ethics*, one of Aristotle's best known works, he identifies what he thinks is the highest good for human beings. This is not the acquisition of material wealth, honor or bodily pleasure, because these are always desired for the pursuit of something greater. Aristotle argues that the attainment of well-being can only be achieved through the maximization of our faculties as human beings (Aristotle & Rackham, 1934). Thus, one must distinguish between satisfying sensations of pleasure which are fleeting and satisfying needs that are linked to human growth and development. Reaching a state where the latter is satisfied is what Aristotle calls "*eudemonia*". Eudemonic approaches separate human happiness from well-being, as Carlisle et al. (2009) defines it "*happiness plus meaningfulness*". More recently, the eudemonic perspective on well-being has been associated with Maslow's hierarchy of needs (1943), self-actualization being the highest virtue identified by Aristotle. Self-determination theory (SDT) by Ryan and Deci (2001) attempts to define what self-actualization implies and how it can be accomplished. They theorize that there are three basic needs: autonomy, competence and relatedness and that fulfilling them is essential for psychological growth and therefore, well-being. Relatedness is feeling cared for and connected to others, it is the feeling that you matter to the people around you. Competence is having mastery of your environment, to feel effective in the things that matter to you. Thus, environments can have a big impact on the experience of competence for well-being. Finally, autonomy refers to behaviour that is self-endorsed, that you agree with and find congruent with your beliefs (Ryan and Deci, 2001). A fully autonomous person is wholeheartedly behind the things they are doing. A very popular theory in educational psychology, SDT argues that in environments where these three needs are met, people are more likely to be intrinsically motivated. Well-being then is understood as the ability to self-regulate effectively, which implies setting goals we care about and achieving them. Deci & Ryan in SDT claim that all human beings are intrinsically motivated and that this is our optimal state. To understand what well-being is, one needs to assess to what extent people's autonomy, competence and relatedness needs are being met (Ryan and Deci, 2001).

Although these theories are interesting in their own right, attempting to measure well-being only through subjective indicators is limited because it considers human well-being in isolation, as if an individual could be responsible of his own well-being without considering environmental factors. In doing so, these theories posit that well-being can be represented and dissected to its essential components (Hirvilammi & Helne 2014, 2015; Hausmann 2015). Hedonic and Eudemonic approaches to well-being only focus on a within person level of analysis and thus underestimate the context in which these experiences take place. SDT adds to this dimension a between person level of analysis but all theories disregard a three-dimensional individual-social-environmental analysis. Hirvilammi & Helne argue that the assumption that human well-being can be achieved separate from, or even at the expense of the environment has led to very narrow definition of well-being focused mainly on its instruments and indicators, whether objective or subjective (Hirvilammi & Helne 2014). They call for a broader definition of well-being as a process which could be understood in the context of a relational paradigm.

3.2 A relational understanding of well-being.

It has been useful for researchers, philosophers and policy makers to conceptualize well-being through a component-based approach because it was the most methodologically simple (Atkinson, 2013). In other words, by making well-being the desired outcome, one could assess the different determinants that would degrade or enhance that outcome. However, understanding well-being as a

process and *not an outcome* allows for a much more holistic conceptualization of the term which takes into account the complex relationships one has with the environment as an essential factor. Well-being is considered complex and multifaceted because it is embedded within a wider system of assemblages. These include the relationships we have with other people, but also between people and material objects, people and specific places or even people and the non-tangible constituents of those places such as the histories and values attached to it (Atkinson, 2013). Brennan even argues that “*that the taken-for-grantedness of the emotionally contained subject is a residual bastion of Eurocentrism in critical thinking, the last outpost of the subject’s belief in the superiority of its own worldview over that of other cultures*” (Brennan, 2004, p.2). Therefore, defining well-being relationally also implies taking into account the different cultural contexts in which these assemblages take place.

Understanding well-being according to a relational perspective blurs the lines between objective and subjective components of well-being. Thinking of well-being as a process suggests that our thoughts and behaviours are the product of the interaction between the brain and the environment within particular cultural contexts. Thus, “*a separation of subjective wellbeing from more objective material aspects and health status seems nonsensical, perhaps even dangerously illusionary*” (Atkinson, 2013, p.139). Well-being through a relational analysis arises from the interactions that people have with natural environments. It shifts the paradigm from a human centered approach to a more interactive approach of well-being (Hirvilammi & Helne 2014). “*From this perspective, ecosystems not only offer services in support of human well-being but are its very precondition*” (Hirvilammi & Helne 2014, p.2163). A relational conceptualization of well-being offers an explanation as to how changes or disturbances in peoples’ everyday habitual practices and environments can affect their well-being by creating new relational assemblages. The importance of defining well-being in relational terms is that it has a much wider scope than the traditional human-centered approaches (Atkinson, 2015).

Many social scientists have now shifted to a definition of well-being that is situated and relational (Hirvilammi & Helne 2014, Atkinson 2013, Panelli & Tipa, 2009). It goes further than the hedonic definition of well-being as happiness through pleasure; and it goes further than the eudemonic definition of well-being through self actualization. Well-being from a relational perspective is “*a move towards the taking place of wellbeing on its own terms, as an open-ended phenomenon resisting the imposition of pre-established categories*” (Smith & Reid, 2017, p.16). Although well-being when seen through a relational lens might seem insubstantial, Atkinson argues quite the opposite. She underlines the concrete socio-political ramifications of a relational approach to well-being, ‘*the social, material and spatially situated relationships through which individual and collective wellbeing are effected.*’ (Atkinson, 2013, p.142).

Wellness is not constrained to cognitive or humanistic approaches but extends to interactions with all living and non-living things. To elaborate on this point, Hirvilammi & Helne (2014, 2015) argue that there is a strong link between the vitality of ecosystems and human well-being. They suggest that defining well-being through a relational paradigm has implications on how we define sustainability because the two concepts are interrelated. A relational paradigm implies that the full realization of people’s potentials and therefore achievement of well-being, depends on the quality and richness of their interactions with the social and biological environment. “*Human well-being relies on the ecosystems, and the pursuit of well-being affects these systems*” (Hirvilammi & Helne 2015, p.172). In a relational paradigm, human well-being and sustainability are inextricably linked. It emphasizes the fact that all living things are interdependent and therefore a definition of both terms

should take this flow of energy and materials that exists between the two. If well-being requires a healthy ecosystem, then human beings need to be mindful of the stress we put on ecosystems not only for our own well-being but also that of future generations (Hirvilammi & Helne 2015). This connected between humans and environment should not be seen as links between two separate entities, rather together they create a whole experience of well-being that is more than the sum of its parts. Such a process is well summarized by Braad as “*a property of spatial phenomena intra-actively produced, contested, and reproduced*” (2007, p.245). This describes how environmental context is part of the embodied experience of well-being, not separate from it. In addition, this statement implies that well-being can be enacted in everyday situations and is not limited to formal therapeutic spaces alone (spas, retreats).

4. Integrated conceptual framework.

In this final section, I synthesize the three conceptual discussions above as a concluding part of my theoretical framework. In this, I foremost re-apply Fish’s conceptual model as a basis for my own multidimensional conceptual model of well-being through CES. For Fish (2016), well-being is something that is felt. In other words, the way we understand ourselves and the world around us is through our embodied interaction with the environment. It is with those interactions that we will attain well-being through self-actualization, which implies here the fulfilment of one’s potential through social and biological interactions in specific places. Fish bases his argument on past research demonstrating that certain environments make people feel and think in certain ways. For instance, the natural environment, because it is so rich in sensory terms is linked with better mental health and reduced stress levels than an office environment, which is generally considered to be very bland (Fish, 2016; Russell, 2013). Thus, in Fish’s conceptual framework, the environment feeds into human well-being in three ways: “*the identities they help frame, the experiences they help enable, and the capabilities they help equip*” (Fish, 2016, p. 213). Fish calls cultural ecosystem benefits the aspects of well-being that shape both environmental places and practices while simultaneously being enabled by them. It is important to understand that these interactions, are dynamic, fluid and subject to change.

If well-being is associated with self actualization through positive cognitive interactions with the environment, then people can derive specific meanings from a place in relation to their own **identity** or place in the world. In other words, people can become attached to a place because they see it as theirs. A certain place can convey spirituality or just a general sense of belonging which helps us grow and develop as people.

In addition, **experiences** are benefits that a person feels mentally or physically while in the midst of a particular ecosystem. Self actualization and therefore well-being arise through these embodied experiences with nature which facilitate certain feelings of restoration, tranquility, escape, discovery or inspiration.

Finally, **capabilities** facilitate self-actualization, growth and well-being through the skills acquired during a person’s experience in nature. e.g., the ability to catch a fish. As Fish explains, “*the idea of capabilities is therefore about capturing how people and human cultures more generally, equip themselves, through nature to prosper*” (Fish, 2016, p.214). Capabilities can also be more

philosophical, such as life lessons or personal philosophy on life that one develops through interacting with nature.

Although identities, experiences and capabilities may be separated in this framework as different dimensions of well-being, these three facets (called cultural ecosystem benefits) work as a cohesive whole (see also figure 4). And thus *“it may be logical to explore how these benefits mutually reinforce each other in particular geographical contexts rather than attempt to separate them artificially”* (Fish, 2016, p. 214).

Cultural benefits are highly subjective and place specific (Fish, 2016). One given place might be beneficial for an individual's well-being and not another. Or a given place might be linked with identity formation for one individual and a restorative experience for another. In order to fully explore CES and their contribution to well-being, a deeper understanding of why certain places significant or important to people is required (Fish, 2016). Well-being should be seen as *“something that emerges as environment rather than something that results, or is consciously taken, from environment”* (Atkinson, 2013, p.140). Moreover, beyond this, the knowledge acquired by being in a place or by learning it give places their unique “essence”, what they are about (Andews et.al, 2014).

The MEA categories sense of place as just another type of ecosystem service. However, in the theoretical framework I use for my research, I chose to put more emphasis on sense of place, following in the efforts of other authors who mapped out how sense of place is linked to CES (Fagerholm et.al, 2012, Plieninger et.al 2013b), linked sense of place with transcendental values (Raymond, 2009), focused on sense of place and health (Atkinson et al.2012b), or by thinking of sense of place through socio-nature networks (Stedman, 2003; Acott & Urquhart, 2014). The concept of sense of place covers a broad section of academic disciplines, ranging from human geography to health, environmental and social psychology. Thus, it may help explain the different ways people experience well-being in situated environmental and cultural contexts. In that way, understanding well-being through sense of place and CES in a relational framework is useful because it goes beyond the dualistic treatment of nature and society. *“Places are more than static backdrops, they are dynamic, fluid, process-driven locations constantly evolving as environment, people, activities, legislation, policies etc. interrelate in complex and unexpected ways”* (Acott & Urquhart, 2014 p.15).

The conceptual model below is a model of the web of relationships between sense of place, according to how aspects of the physical environment relate to it, CES and the human-nonhuman constituents of it, and well-being as an embodied interaction of these assemblages. My overall argument is that the relationships we have with are environment are reciprocal and co-created. This means that the meanings people attribute to nature both shape and are shaped by the physical qualities of that place and the activities that they do in them. Linking sense of place with well-being helps reveal why people value places through identities, capabilities and experiences (as kinds of benefits) that enable and are enabled through people's interactions with nature. In addition, a perspective on well-being that is place based, emphasizes of the importance of the ecological aspects, through CES, as a mediator of that relationship. According to Fish (2011) *“advocates of the ecosystem services framework need to develop a more elaborate understanding of how a rich and variegated term such as ‘well-being’ maps back onto the services that nature provides”* (p. 673). I argue that this means linking together sense of place, CES and well-being to form a more holistic understanding of the dynamic ways people interact with nature. This a relational perspective that looks at the different types of assemblages created between human-nature-culture contexts.

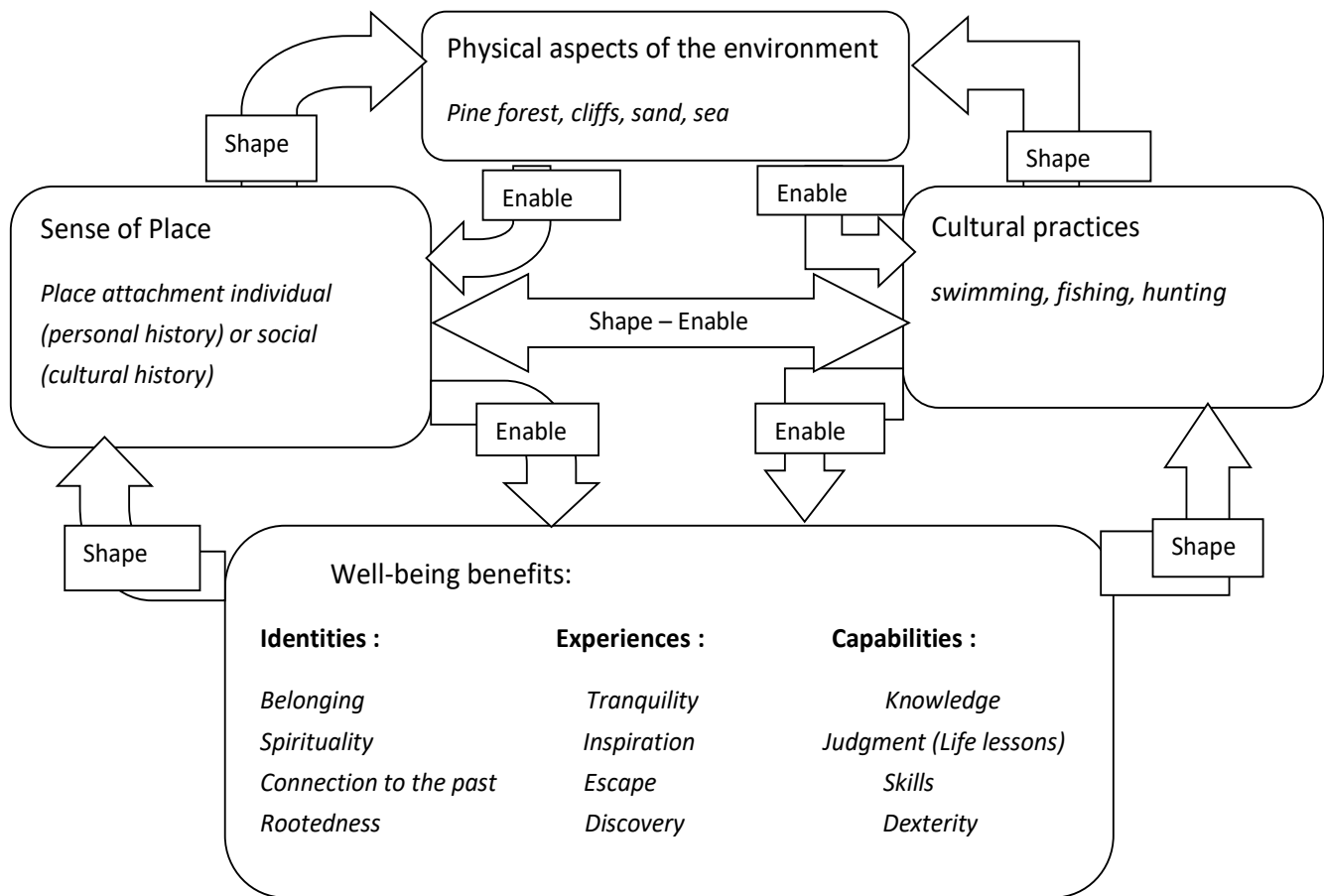


Figure 4: Relational framework, incorporating Fish et.al (2016) conceptualization of cultural ecosystem services.

III. METHODOLOGY

The methodology used to assess the cultural values that people attribute to landscape and its link to well-being was a combination of semi-structured interviews and consequent integration of data into GIS. The methods assess perceptions of people who reside on Kalamos, emphasizing local engagement in nature conservation which is one of the goals of the KKSDP. Participants therefore are residents of Kalamos, not people passing through the island or tourists.

1. The Technical Aspects

This section focuses on the methods I used to gather data and what kind of information was produced. I used semi-structured interviews to explore the ways residents of Kalamos perceived nature and how this could be linked to well-being. Local residents were divided into three categories: native residents, permanent residents and semi-permanent residents. This is because it was assumed that people would relate to nature differently according to how long they had spent on the island. Throughout the interview, participants were encouraged to identify areas on the map they perceived as being culturally significant (walking, fishing, gardening) and then linking them to different aspects of well-being (relaxation, social connections, spirituality); but also, the perceived threats to the ecosystem or cultural dis-benefits to well-being, the CES which would potentially be lost and their link to well-being.

Building on previous uses of participatory mapping techniques to assess cultural ecosystem services in environmental science, the interview started with a mapping exercise of the study area (Fagerholm, & Käyhkö, 2009, 2012; Raymond et al. 2009; Plieninger et al., 2013). I then proceeded to retrieving the GPS coordinates of the area and taking a picture of the place in question. This was done accompanied by the participant (whenever possible) to make sure their perception was captured. Some older participants were unable to accompany me due to inaccessible areas or mobility constraints.

At the beginning of the interview existing public information was presented about the area on a satellite map of the Kalamos Island and surrounding satellite islands and water bodies. Participants were first familiarised with the satellite map (delivered by CartOng from OpenStreetMap dimensions 1:100 000, on A4) by answering introductory questions “*Can you show me where you live? Can you show me where you work?*” Then participants were then told to identify with green stickers areas that they felt were special, or valuable for them and which were linked with pleasant feelings. In addition, participants had to use red stickers to identify areas they felt were unpleasant, degraded or challenged in such a way that they were associated with negative feelings. Participants were limited to three green and three red areas because each area was focused on in more detail in the following interviews. The definitions of a green “positive space” and a red “negative” space were left vague on purpose for the participants to elaborate on their reasoning of why they had categorized that place as such. Their explanations revealed links they perceived between environmental places, cultural activities and cultural ecosystem benefits or threats. Participants are also allowed to put a red and a green sticker on the same area as one place can be a source of conflicting perceptions. “*why have you selected that area?*” “*How do you feel there?*” “*What does it allow you to do?*” were some example questions. The goal was to explore how the different areas delineated by participants were linked to benefits or threats to their well-being. (see annex 2 for a full interview guide).

Twenty-five people have been interviewed for this study. The following table provides an overview of the different kinds of interviewees that were selected by means of selective/snowballing.

Figure 5: Table of my participants.

Participant description	Participant code
Livestock farmer.	N1 Native resident 1
Fisherman year round.	N2 Native resident 2
Fisherman, 30 years old, construction worker at times, taxi driver in the summer.	N3 Native resident 3
Livestock owner, breeds horses.	N4 Native resident 4
Retired restaurant owner in the port of Kalamos.	N5 Native resident 5
87-year-old grandmother or “nona” in Greek.	N6 Native resident 6
Fisherman year round.	N7 Native resident 7
Retired fisherman, now only fishes recreationally.	N8 Native resident 8
90-year-old grandmother who lived in Kalamos during WWII.	N9 Native resident 9
Fisherman for 10 years, he now works with the merchant marines.	N10 Native resident 10
Restaurant owner, originally from Athens, 6 six years living on Kalamos.	P1 Permanent resident 1
Stay at home mom, originally from Mytikas, 5 years living on Kalamos.	P2 Permanent resident 2
Graduated university student from Athenes. Moved to Kalamos 3 years ago to work in a grocery store.	P3 Permanent resident 3

Housewife, moved to Kalamos after WWII, has been living on Kalamos for 74 years.	P4 Permanent resident 4
Housewife, husband is from Kalamos. Has lived on the island for 20 years.	P5 Permanent resident 5
Sailor, worked in the merchant marines, lived in the United States, has retired on Kalamos.	P6 Permanent resident 6
Fisherman originally from Ithaca, decided to build his house on Kalamos and has been living there for 10 years.	P7 Permanent resident 7
Substitute teacher, has been living on Kalamos for 2 years.	P8 Permanent resident 8
Retired, lives in Athenes, has a summer home on Kalamos.	SP1 Semi-permanent resident 1
Housewife from Pyreos, owns a summer home on Kalamos.	SP2 Semi-permanent resident 2
Young mother originally from Kalamos has moved to Athenes to raise her children. Returns periodically to the family home she inherited on Kalamos.	SP3 Semi-permanent resident 3
Nurse in the city of Lefkada, parents have a house in Kalamos so she comes back to the island once or twice a year.	SP4 Semi-permanent resident 4
Archeologist specialized in Byzantine civilization, returns periodically to her parent's home on Kalamos.	SP5 Semi-permanent resident 5
Housewife, mother of two, lives in Athens and has just purchased a summer home on Kalamos last year.	SP6 Semi-permanent resident 6
74-year-old grandmother, grew up on Kalamos but moved to Pyreos to be closer to her children. Has kept the family home on Kalamos for summer holidays.	SP7 Semi-permanent resident 7

Each interview transcript was then coded according to emergent themes participants evoked. These themes were further sorted in relation to Fish et al.'s (2016) overall CES wellbeing themes of 'identities', 'experiences' and 'capabilities'. It is important to note that the interview data was not aggregated to fit the final framework of identities, capabilities and experiences entirely. Rather, the research occurred in parallel, with the goal of understand how these three concepts are linked to well-being and sense of place more generally. Another methodological difference from past research using participatory GIS mapping is that all participants in this project responded independently and not through focus groups (Fagerholm & Käyhkö et.al, 2012). I made this difference in my research because I was interested in investigating the personal ways residents of Kalamos engaged with their environment and the links this has to their well-being. This may include sensitive topics that residents may not feel comfortable sharing in front of a group.

The qualitative data gathered was incorporated with the red and green stickers on individual satellite maps, and finally into one meta-map which resulted into a layered GIS map. In this map, the areas delineated as important were done so by participants only. It can therefore be considered as a map co-constructed by them. The aggregate patterns of participant responses were able to be spatially mapped out to reveal value agreement and conflict between the different sub-groups (native, permanent and semi-permanent residents). Such nodes also revealed links between specific places, cultural practices and patterns of cultural ecosystem benefits or threats. Intensity of agreement between participant subgroups is represented by more saturated red or green colors. In this, I was assisted by professional cartographers of the French NGO "CartONG".

2. The Societal Aspects

This section focuses on how participants contributed to the study and how to facilitate this process. I wanted to make a map which was co-created with the local community to empower them by giving them a voice and contributing to a wider research effort to conserve the biodiversity in the Kalamos and Kastos islands. Participatory mapping methods are effective in this regard to incorporate local knowledge in natural resource management (Tengberg et.al, 2012). When combining semi-structured interviews with participatory mapping techniques, the specific environmental spaces that are selected and elaborated upon reveal much richer, deeper, clearer conclusions that could not be inferred by general survey instruments (Fish & Church, 2016). Specifically, it points out what is particularly valuable to different subgroups and what challenges and threats are associated with those spaces (Tengberg et.al, 2012). Conceptualizing the link between CES and well-being with this methodology is useful because it allows participants to define their own criteria and definitions about what constitutes this link. The concept of *sense of place* for example can be expressed in many different ways according to different cultures and contexts (Hausmann, et.al. 2016).

Therefore, assessing *sense of place* through community mapping is especially important because local knowledge and perceptions of an area differ from academic knowledge. (Fagerholm et.al, 2012, Plieninger et.al 2013b). Fagerholm et.al explains this "it is also necessary in order to capture the nonutilitarian value of landscapes and sensitivity to cultural landscape services, which many expert evaluations of landscape or ecosystem services fail to do justice" (2012, p.1). Thus, data derived from community mapping can be described as more "active research" (Raymond, 2009, Daniel, 2012). That is, research that is bottom- up, based on the local community's assessments and valuation of ecosystem services which are place specific. This also implies that humans don't just passively

receive and process information from the environment, rather humans are “*active participants in the landscape, thinking, feeling and acting*” (Raymond, 2009, p. 1302). From a relational point of view, the way humans interact with their environment is complex and dynamic. Therefore, the use of PGIS as a mapping method using local knowledge as a primary data source is useful in order to explore *sense of place*, as the perceptions of cultural ecosystem services and what they provide for well-being (Figure 8).

Because this participative mapping technique is a bottom-up approach, it was important for participants and me to agree on how to handle sensitive data. All participants were asked whether they agreed to be recorded and whether they wished to remain anonymous. In addition, at the end of each interview, I summarized what I had understood allowing participants to verify/change the data. In addition, a pre-emptive interview was conducted with Ted Karfakis (head of Terra Sylvestris who was born on the island). The goal of this pre-emptive interview was to understand the cultural context of the community, its history and different value sets. My understanding of sensitive issues was furthered by media reports, newspaper articles, in-person discussions with English speaking residents and observations. Ted Karfakis, as a respected and trusted member of the community encouraged individuals to participate in the interviews. He was able to facilitate the interviews by acting as translator and making sure the meanings of statements were translated from one culture to another.

3. The Material Aspects

This section focuses on analysis of the semi structured interviews and the production of the Kalamos maps. It details how I came to this cartographic representation, but also how the reader should interpret the results of the map and the interviews.

When coding the interviews, I tried not to let my own biases and filters influence how I analyzed the data. I extracted key words from participant’s responses and merged them into overarching themes according to Boeje’s (2010) methodology on semi-structured interviews in order to keep my interpretation of the experience to a bare minimum. The codes that emerged from the data were the following:

Identities	Relating to how participants understand themselves and the world around them (connection to the past, spirituality, rootedness)
Capabilities	Relating to the skills and knowledge participants acquire by being in certain places These could be relating to the environment (migratory routes of fish) or personal knowledge (life lessons) that help them grow as individuals.
Experiences	Relating to benefits felt mentally or physically when being in certain places.

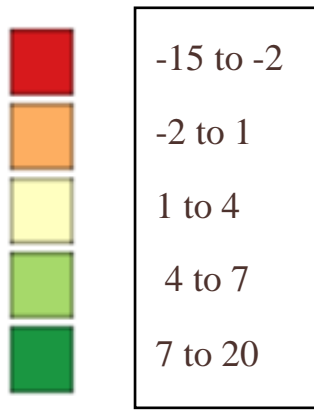
	(Tranquility, restoration, curiosity, etc..)
Cultural activities	Activities that have been described by participants as relating to the culture of Kalamos (swimming, fishing, religious celebrations, etc.)
Sense of place	Place attachment or belonging that could be either individual (personal history) or social (cultural history).
Pollution	Any kind of contamination of water, atmosphere, soil or other animals.
Local government	Regarding regulation, management of the island. Including land use policies and services (trash disposal, firemen, etc.).

Figure 6: Codes and Definitions.

Satellite color maps (A4) were useful for many people who are uncomfortable with technology to visualise the space and delineate areas on the map easily and effectively. With the help of the French NGO “*CartONG*” we superimposed a grid over the landscape and seascape of Kalamos and Kastos in order to easily organize and structure the map according to the data I collected in the semi-structured interviews. The grid is a simple way to partition space in cubes. Like a pixel on a digital photo or a satellite image, these cubes of space are the smallest identifiable element of spatial division and must be considered as an actual geographical area. This division is regular, systematic and independent of the content and structure of the landscape. Juxtaposing squares in this way allows us to make a grid which covers the studied area in its entirety. To create a grid, it is first necessary to define the size of each cube. In this case study, a 50m x 50m cube is relevant to isolate small elements (houses, churches, etc.) while obtaining a global and visible analysis of the studied area. Each colored area on the map was designated by participants in the mapping exercise and is comprised of several cubes according to the size of the area. The objective was to categorize the areas which were associated with positive emotions and those that were associated with negative emotions. Within one area, that is, a certain number of cubes of space on a grid, there can be both positive and negative perceptions for several reasons. Firstly, because people do not have the same representations of space. Secondly, because on the same area, there positive and negative elements can co-exist (beautiful scenery next to a trash yard for example). Therefore, it was necessary to obtain the ratio on the same area or space between the negative positive representations. When an area was positively perceived residents were asked to put a green sticker on it. When an area was negatively perceived, residents put a red sticker on it. Thus, for the ratio of positive-negative representations I obtain the following equation:

$$X = \text{number of green stickers on an area} - \text{number of red stickers on an area.}$$

In order to interpret the results thematically, I organized the ratio values in five categories representing the amount of value agreement or conflict in each area.



The areas which were most often linked to positive emotions by participants appear on the map in dark green, whereas the area most often linked to negative emotions appear in dark red. Areas which score between -2 and 7 were less often agreed upon by participants as to their link with well-being and areas scoring between 1 and 4 were only brought up by one or two people. Areas which have a mix of red and green are sites of value conflict. Given the fact that the study had a limited number of respondents, the aim was to use to map as a visualisation tool and a starting point to an analysis about *why* these areas were highly agreed upon or conflictual. In other words, the qualitative ways respondents felt they received benefits from these ecosystems. Furthermore, it is not the *outcome* but the *process* of integrating local participants in the co-construction of a map which was interesting to me methodologically speaking. Asking residents of the island to delineate landscape themselves, according to their own perceptions and criteria, puts power back in to their own hands by furthering local knowledge as opposed to expert or scientific knowledge. The political, social and environmental implications are of such mapping efforts and how they may lead to certain policy decisions are further explored in the discussion section.

4. Limitations

In conducting this research, several conceptual limitations and practical limitations were found. The following challenges with the methodology are explained below.

Concerning my own positionality in this research I remain aware of the different effects that a map can have and the balances of power that such a map reflects. When focusing on CES of landscape I express an opinion on which areas are suitable for conservation, which practices are allowed in those areas and how those areas should be delineated. Thus, the different resources or landscapes represented in the map are reflexive of the interests of myself as the map maker and only allow the reader to see a landscape through a certain funnel. If I examine my own role in producing knowledge on CES and wellbeing, I could say that my results could have been impacted by the “external power” of Terra Sylvestris whom provided most of the participants for this research, therefore influencing the map to be socially and politically advantageous for them in light of the current environmental conflict with the fish farms. On the other hand, I can also recognise the “internal power” of my own beliefs and research interests as the map maker which are subtly woven into the map. In both cases, the map becomes more than a-theoretical visualisation. Rather, it’s a text that promotes a certain type of discourse (Crampton, 2001).

Furthermore, a common critique of my chosen conceptual framework (relational theory) is that words cannot adequately capture the essence of an experience in its entirety (Andrews et.al, 2014).

Conversely, words can also cause people to over-interpret an experience or a feeling. In response to these challenges interview questions probed body sensations participants felt (heat, light, movement, sound) and asks them to describe in detail what happened by sharing a short story or an anecdote for example. I also went to each place the participant described and took a picture (assisted by the participant themselves or with my field notes). This added another visual component to the data which helped better understand their experience.

The practical limitations of this research are threefold. Firstly, many local residents were unwilling to be recorded or even to participate in the research. They explained that this was because there are tensions on Kalamos between ecologists and industrial fishing farms which they felt caught between. In addition, even when the participants agreed to be interviewed there is no way to guarantee the truthfulness of their responses. Because Ted Karfakis and his mother Georgia are well-know environmentalists in the community, and acted as my translator, there is a good chance that participants gave socially desirable answers, or left out certain answers due to their presence. Related to this point, even though Ted Karfakis contacted many different people from different backgrounds, he is still in the process of lawsuits with two of the island residents for poaching and other illegal fishing activities. Unfortunately, this fact made these particular individuals and their families uncooperative for this research. It could be argued then that the research is likely to have become one sided. To remedy this, I asked each participant if he/she knew someone that might give me a different opinion, some local people who might like the fish farms and be in favor of economic development of the area if it favors them. In addition, I used open-ended questions and prompts in the interviews to allow participants to explain why an ecosystem was valuable according to their own criteria. The emergence of themes that were not included in the interview guide such as issues with the local government indicates that the questions were not too one sided or constraining.

Secondly, because the field work was conducted in winter most semi-permanent residents were not on the island. Interviews were then conducted by skype and the mapping exercise was done preemptively. Sometimes people had a hard time conceptualizing distances on the map when doing the exercise alone. In many Skype interviews we realized with participants that they had located things far off from where they actually were. This was easily remedied in the semi-structured interviews were participants had to elaborate extensively about why they had chosen those places. Because I made a point to walk extensively around the island, I was able to identify the places people were talking about on the map. In the rare cases where I didn't know the place in question, Ted Karfakis assisted me.

It must furthermore be emphasized that Ted Karfakis was absent during almost 3 weeks of the study that was planned to last for 5 weeks. In half the interviews he acted as translator via Skype, for the other half, his mother (Georgia) took on this role. However, not having any formal training in interviewing or translation, Georgia often forgot to translate some of participants shorter answers or primed possible answers before they were given. By suggesting possible answers to the participants, she unwittingly was biasing their responses. Ted being unable to supervise the data collection process (due to several conferences in Switzerland), I had to discuss with Georgia about the importance of translating word for word, and of being the intermediary not a participant in the interview. I recognise that because of these unfortunate circumstances, I was limited in performing my research. Nevertheless, the use of photography and mapping coordinates, reinforce the discussions brought about in the semi-structured interviews. The triangulation of methods allows me to make a fair analysis and answer my research questions.

Finally, related to the previous limitation, I can agree that the lack of time was a final important factor that limited my research. Although the present methodology was useful to engage participants individually in analyzing and understanding their interactions with their environment, it would have been nice to share those results in a focus group session. The goal of such focus groups would be to invite native, permanent and semi-permanent residents to react to the participative map and discuss the results of the research amongst each other. Their comments could have been recorded and added to the research as an additional effort to triangulate findings.

IV. RESULTS

In this chapter the results from the field study and co-constructed map will be examined to understand how certain environmental spaces and cultural practices relate to positive or negative associations participants make with their environment, and how these are linked to well-being. In seeking to clarify this complex web of interactions, I reiterate here Fish's definition of *cultural benefits* as “*dimensions of human well-being that can be associated with the interactions between people and the natural environment*” (Fish, 2016, p.212). In the first sub question I identify which qualities of the environment are perceived by participants as *cultural benefits*. The second sub-question makes clear how these *cultural benefits* are linked to well-being. Finally, the third sub-question describes how those positive or negative associations (*cultural benefits or dis-benefits*) are dispersed within particular environmental spaces. Together, these sub-questions tie in with the conceptual framework's relational aspect which emphasizes that ecosystems do not simply supply an endless stream of services and benefits. Benefits to well-being depend on the kinds of interactions people have with their environment. I structure my results section by addressing the specific sub-questions that facilitate answering the general research question: *How do local residents of Kalamos associate with nature around them, and how do such associations relate to the wellbeing of these residents?*

4.1 Perceptions and Cultural Ecosystem Services

This first section of the results chapter will answer the first sub-question: *In what ways do residents of Kalamos perceive nature? How do these perceptions relate to cultural ecosystem services (CES)?*

4.1.1. Cultural uniqueness of landscapes as cultural benefits.

Most of the participants interviewed referred to cultural uniqueness of the landscape as a reason why it was beneficial to them. Cultural uniqueness refers to areas, practices physical features of the environment that are considered to be distinct, that is, which could not be found in any other place. It was the mix of mountain, forest and sea which was perceived as singular to Kalamos. This atmosphere was described by participants as different from other places because they felt safe and restored. A fisherman said “*we have very special nature here. In the forest, the pine and the sea brim mix to create this wonderful smell that always reminds me of here*” (N2). “*The blue of the water, the green of the trees, everything comes together and that makes it wonderful and unique*” agrees a retired restaurant owner who is nearing his eighty first birthday (N5). The pine forest stretching along the coast of the island, Mirtia beach and the top of the mount Volni specifically were perceived as being part of Kalamos' extraordinary scenery (see annex 1, pictures 2,7, 17). Native and permanent residents mentioned they felt proud and grateful to live on Kalamos because they considered it a unique place to be. Mirtia beach (number 7) and the road the mountain (number 12) appear in dark green on the map because of the high ratio of agreement between participants that they are valuable places.

However, not all definition participants had of “*unique*” nature necessarily meant “*rare*”. As many participants pointed out, what made an area special for them was precisely its ordinary aspect. The elderly native residents explained that fifty years ago, “*in the olden days*” people used to stay in their communities (Kefali, Acrapidia, Episkopi villages). These villages were connected by simple dirt

roads which didn't make transport around the island easy. Consequently, the places they like most are in their neighbourhood. They have their habits there and so they feel fulfilled by those places. Furthermore, because they couldn't move as much anymore, elderly residents explained they found new places which were beneficial for their well-being. Instead of hiking up mount Volni (769m), they described their gardens as the space they had made for themselves which was special to them. Therefore, uniqueness as a cultural benefit can be experienced differently by different people, or according to different times in their life. Although participants agreed on some locations, no two participants had the same combination of answers. Each had their own three places associated with well-being, which they related to for different reasons.

To sum up, cultural uniqueness of particular sites was not related to one element in particular, rather, it was the coming together of many intersecting factors which people argued made Kalamos a valuable place. These results imply that cultural benefits from nature can emerge in relatively ordinary, local spaces not just places officially recognized as therapeutic. The physical aspects of a place are related to the activities that participants do in them, which feedback to the interactions they had in nature which they described as beneficial for their well-being.



N4's grandmother's home was described as a place associated with positive emotions (picture 21)

4.1.2. Purity as a cultural ecosystem service.

A CES which was frequently referred to by native and non-native residents alike was the feeling of purity of Kalamos which, they argued, gave them a better quality of life. When asked to elaborate on this, participants generally described simplicity, peacefulness and tranquility that they felt were qualities embedded in their experience of the island. To that extent native residents, permanent residents and semi- permanent residents all agree: "*If this nature wasn't there, I wouldn't be here*" explains a farmer native to Kalamos (N1). Permanent residents in particular were adamant about this fact. They all said that they moved to Kalamos for a better quality of life, which they associated with

the lack of environmental and noise pollution, as well as the large proportion of nature on the island. *“The first time I visited Kalamos, I knew I would stay here. The mountain, sea and quietness; that is what attracted me to this place”* recounts a permanent resident, having moved 6 years ago to open a restaurant (P1). What participants underline here is that it is this that the perceived purity of the air, the clarity of the water and the lack of noise pollution is important for their mental and physical health.

Purity and cleanliness as cultural benefits of nature were often linked to certain cultural practices which took place in these environmental spaces. Activities such as walking, gardening, collecting olives, lemons, firewood or camping were often mentioned. Participants explained that they felt connected to the landscape through the quietness, but also to themselves. The same restaurant owner (P1) elaborates on this *“I feel connected to these places because they are so pure and clean. Being in these places help me reconnect with myself. It’s like meditation”*.

Therefore, when defining what the CES from nature are, the outwards environmental context as well as the inner significance for participants must be considered. The perceived purity of the landscape was considered by many residents as important for their well-being both because of the benefits to their physical health and because of the opportunity it provided for them to reflect and introspect.

4.1.3. Aesthetic beauty as a cultural ecosystem service.

Non-native residents in particular (permanent residents and semi-permanent residents who had not grown up on the island), derived their cultural benefits mainly from the island’s aesthetic beauty. Many described the view from certain places as special, irreplaceable and beneficial for their well-being. As Kalamos is a mountainous island, the entire village is built on a slope. One restaurant owner having moved from Athens (P1) mentioned she liked St Georges’ church, not because she was particularly religious but because *“I like the view from the church, you see the port and the village. The sunset from there is breathtaking”* (see annex 1, picture 6). A school teacher (P8) who has been living on Kalamos for only 2 years says: *“I’m a city girl originally. I remember my first impression of the island was: Wow, how green! The pine trees grow all the way to the sea”* (see annex 1 picture 19). In that sense, the cultural experiences that the participants described as beneficial to them were especially contemplative. By gazing at the beautiful scenery which was unique to them, they experienced feelings of appeasement. A fisherman originally from Ithaca (P7), describes his experience on top of mount Volni, in these terms; *“I sit on the ridge overlooking Episkopi with a cup of coffee. In that moment, I feel like nothing else matters but the here and now. The mind empties of all negative thoughts. I wouldn’t want to be anywhere else. When I come down the mountain after 1 or 2 hours, I always feel better”* (see annex 1 picture 17). The places non-native participants selected as being culturally beneficial to them consistently referred to its natural beauty as facilitating their restorative experiences.

More specifically, sensory responses to the environment were central to non-native participant’s restorative experiences. For example, almost all participants explained they enjoyed the forest for its combination of the pine trees, the sea air and the dirt. *“I feel the strength of the nature here, if all of it were to leave tomorrow, I think I would be depressed clinically”* says one retired sailor, having discovered Kalamos while working in the merchant marines (P6). Some enjoyed Mirtia beach for its radiant sunset colors and soft white pebbles. They found gazing at the colors of the water, especially at sunset a rejuvenating experience. The top of mount Volni was appreciated for its sense of

wildness, silence and lack of visible development. Up there, the sensation of the wind circling around the body and the endless open space where stimuli that were associated with freedom and relaxation for some non-native participants.

To sum up, by describing their experiences many participants reveal how sensory experiences are interlinked with their experiences of well-being. Bodily senses give rise to positive emotions which make a place culturally beneficial. The narratives of non-native participants in particular highlighted that they valued places predominantly because they found naturally beautiful and sought refuge in them in times of need.



Green cliffs of Kalamos from the ferry boat coming from the mainland (picture 19)

4.1.4. Cultural ecosystem services related to place-based interactions over time.

In contrast to non-native residents, native residents of Kalamos tended to derive CES from a place they had accumulated personal and communal histories in overtime. In that sense well-being was linked to a sense of belonging to a place. Indeed, a pattern recognized within native participant's responses linked cultural benefits to places they had grown up in and therefore felt attached to. In other words, the cultural benefits of a certain place were due to the interaction the individual-place over time. For native residents, past connections to the area were an important part of the landscape's significance. Here CES are more place specific and rich if they are connected to native residents. In fact, the link between CES and place-based interactions overtime was mentioned by all ten native residents interviewed, compared to only two permanent residents and no semi-permanent residents.

As one native housewife (P8) explains *"I could go to other places to swim but I chose this beach because I have gone there since childhood, it was there that I learned to swim and fish for sea urchins."* Native residents described a sense of affiliation with their surrounding environment as a primary

reason why they were still living on Kalamos. This discourse was especially present amongst the fishermen interviewed. Although they have seen many other beautiful places in their lives, Kalamos is unique for them because it's where they were born. *"It's always inside me, wherever I go"* says one fisherman (N10). The cultural benefits of the landscape are tied to the accumulation of past experiences which shape participant's attachment to place. Such connections can also be manifested through family ties, as was for participant 1, who owned livestock and had spent her whole life on Kalamos. The interview took place in the shade of an olive tree on her farm. As she looked around at her goats and chickens grazing she said *"I was born here, this is my inheritance. It's a bit outside the village, it's calmer and I like the nature here. It has a great view of the sea. All in all, I feel at home here"* (N1).

The interplay between practices and places is important but not static. Rather, the symbolic meanings attributed to a place are also subject to change, if certain cultural practices are neglected or have ceased. Some native participants no longer derived cultural benefits from a place which had previously been significant to their well-being. For example, the experience of sadness was evoked when those native participants talked about the ruined buildings around Kalamos, relics of when the island was occupied by the British in the 1800s. According to one younger mother of three, it is because these places were linked to the past that they gain particular meaning.

"I wish Kalamos was better maintained, because I feel that the cultural history that place contains is falling in ruins. When I bring my grandchildren here and tell them about their grandparent's lives, I want them to see what I am talking about. No point in taking them there if there is nothing to see" (SP3).

For others on the contrary, even when the cultural practices have died out, the thought of them still brings happiness when visiting the place in question. For example, the abandoned village of Kefali at the southern tip of the island was still mainly perceived as culturally beneficial. Once a bustling social hub, and first settlement on Kalamos, the village was abandoned after an earthquake in 1953 following wave of disease. For many elderly residents, Kefali is a source of positive emotions. They speak of their life in Kefali and recall the cultural practices of everyday life that happened there. Such as the fish market, holiday celebrations and what relics of that time are still there today. Even permanent residents, coming from the mainland talked about a certain *"energy"* they felt in Kefali.

"I love the old village particularly. Even though it is abandoned now, I still feel it's very alive. I close my eyes and I imagine what life was like before it that place. You can feel the energy there, that place has a soul. I feel good there, it makes me feel connected to the island and to those who used to live here in the past" says one stay at home mom (P2).

All in all, this demonstrates that individual-place based interactions are dynamic. They are considered as CES only if the cultural practices that shape them still remain alive in the hearts and minds of residents.

4.1.5. Relating sense of place and cultural practices to CES.

By answering the first sub-question, cultural uniqueness, landscape purity and aesthetics stood out most from given narratives as cultural benefits from nature on Kalamos. While the sense of living in a place that was unique and pure was perceived by all as a cultural benefit, aesthetics was more present amongst non-native residents, while native residents felt attached to Kalamos because it was

their home. Overall, most participants described that the CES they got from nature were fundamentally intertwined with their attachment to a particular place and the cultural practices that occurred in that place. Therefore, they argue that it is the entire experience, the history, the practices, the aesthetics, the physical features of the place, the sensory perceptions which together created a sense of well-being. In other words, participants derive CES from a place which they have actively given meaning to. Participants did not passively experience cultural benefits from nature. On the contrary, both the significance of a place and the types of CES experienced there can change, as they are constantly being created and re-created through participants interactions with nature overtime.

4.2 CES and Well-Being

Having focused in the previous section on the different ways in which residents of Kalamos related to the nature on the island, I now turn to how they might derive well-being from these associations. This section of the results chapter will answer the second sub-question:

In what ways are these cultural ecosystem services related to people's wellbeing from nature?

The interview data reveals that there are three ways that CES described above contribute to well-being, namely through the experiences, identities and capabilities. This division will be used in this section to discuss findings on Kalamos. This classification is in line with Fish's (2016) conceptual framework and underlines the fact that the cultural aspects of human well-being are actively constructed and reconstructed through participant's cognitive processing of environmental spaces.

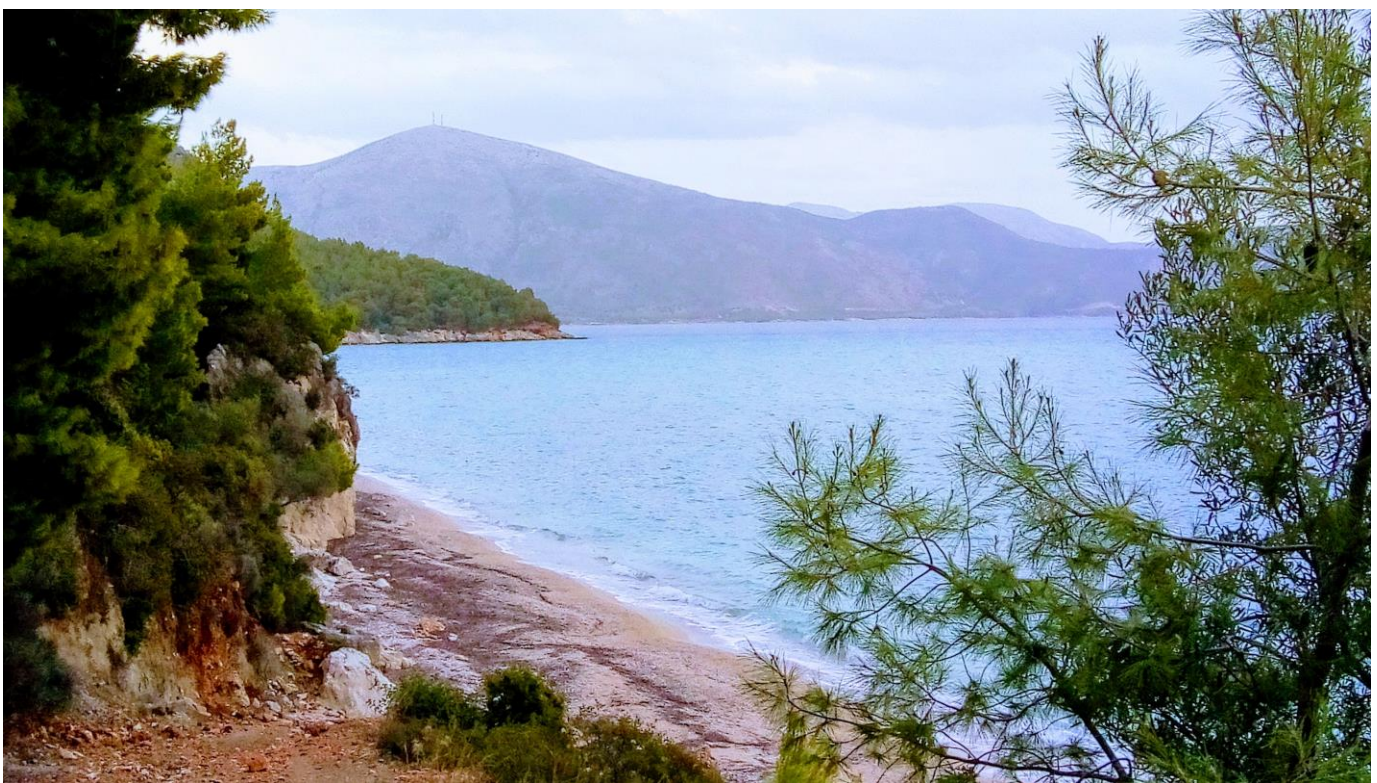
4.2.1 Well-being through restorative *experiences*.

The sense of purity and uniqueness participants described as a CES from the nature of Kalamos enabled experiences of well-being through a feeling of relaxation and tranquility. More specifically, the link between CES and well-being manifested itself often through stress reduction. Moreover, native residents, permanent and semi-permanent residents in each interview recounted how experiences of tranquility in landscape lead to feelings of appeasement. More precisely, nine participants mentioned the pine forest as an important place to escape and recharge (Figure 7 and 8 number 2). As a native farmer (N₁) explains "*I like the pines, their smell, it revitalises me and makes me feel good. [...] You take a deep breath and then move on, it's like purging yourself.*" An elderly participant said that despite his 80 years of age "*every 4-5 days, I walk through the pine forest. It's rejuvenating and good for my health*" (N₅).

Interestingly, not all participants agreed that they had to physically be in the pine forest to benefit from restorative experiences. When selecting culturally beneficial places on the map, many elderly residents chose the pine forest, even though they never went there anymore due to mobility constraints. Nevertheless, by simply remembering past experiences in nature they claimed feeling happy and appeased. It seems that a physical contact with nature is important but not mandatory to experience restoration. This finding also underlines the fact that certain places can still be beneficial for well-being in distant ways.

Another commonly referred location for restoration was Mirtia beach (see figure 7 and 8 number 7). It was selected as culturally beneficial place by eight participants and described by five of them as

“the most beautiful beach on Kalamos” (P1, P3, P4, N2, SP3). One stay at home mom, whose house is near Mirtia beach explains *“I don’t just go to sit there, I go because they trigger emotions inside me that are not my everyday ones [...] Peace of mind comes from admirations of what exists, how the colors blend in with each other and how beautiful they are”* (P2). The experience of quietness and peacefulness is the main reason why participants preferred tourism development in Acrapidia beach rather than Mirtia. Those kinds of statements were most often by participants living full time on the island (permanent and native residents). They preferred to keep Mirtia beach hidden for themselves to conserve its wild and peaceful character. Participants explain that they care less about Acrapidia beach because is close to the port and it’s the man tourism hotspot on the island. They argue that whatever development happens in Acrapdia, it will not affect the other beaches. Well-being through restorative experiences is very much place-based and is not a social experience. The eight participants who selected Mirita beach on the map as a place where they had restorative experiences said they preferred to do so alone. For this reason, participants make clear ta potential tourism development would not be welcome in this area.



Mirtia beach (picture 7).

4.2.2 Well-being through *identity* framing.

Certain places and landscapes were linked to well-being by participants because of its symbolic roles in their life. Such symbolism is often linked to the development of one’s self identity in a certain place. This relationship between identity development and well-being was more observed in interviews with native residents of the area compared to permanent or semi-permanent residents. Native residents explain that they feel connected to the island, it’s nature and the people here because they grew up there. As one grandmother originally from Kalamos remarks *“I think the place where you grew up has an impact on who you are as a person”* (SP7). This sheds light on the fact that environmental spaces become significant places overtime. These spaces are interwoven with experiences past and future which binds people to them. As such, they factor in to the construction

of one's self identity. A native farmer describes her house and land in such terms *"My home is everything for me, the land has been passed down from my father, I put my heart and soul into this land to raise livestock and feed my family good clean food. On a very personal level, it is everything for me"* (N₁). Therefore, certain person-place interactions, in which the participant identifies with a certain place, can be symbolic. Well-being is then developed with a sense of belonging.

Interviews revealed participants felt more self actualized, that is developing their self identity, through their interactions with nature. This self -actualization was sometimes described through specific experiences that helped them come to certain personal philosophies or life lessons. One restaurant owner reflected upon this *"by being in nature I have developed my own personal philosophy on life. You start thinking about life from a different perspective when you are in nature. It's about connection with everything around you and being in the moment"* (P₁). For others it's about more concrete moral values *"by working the land I have learned through difficulties. The key is not too give up easily and the result is good, clean food"* says a farmer (N₁). Finally, participants associated self-actualization with spiritual experiences in which they described feeling connected to everything, the people, nature and God. The church in Kefali village devoted to the Madonna was often mentioned as creating miracles such as curing sickness. Although the village is deserted now, native residents still sometimes brave the bumpy dirt road to the church in the hope of having their prayers answered. Seemingly, environmental experiences, even tiring or uncomfortable can be beneficial for well-being if they correspond to how they see themselves and the world.

Places imbued with meaning were linked to participants well-being by developing their self identity but also a collective communal identity. This tendency was especially present in narratives of native residents of the island. The beach of Acrapidia was mentioned by seven native residents as a traditional meeting place (see figure 7 and 8, number 4). They describe this beach close to the port as a place where they like to go at night, have a drink, socialize. *"It's a nice place to relax from the rest of the day. I get more social benefits from it. If you meet anyone in Acrapidia, you will talk to them. It's a better place to connect with people than the port where people just ignore each other"* says one fisherman (N₁₀). In that sense, Acrapidia is linked to the culture of Kalamos because of its social value. Ted Karfakis, head of Terra Sylvestris, explains that Acrapidia is more than a meeting point. Because of it's location near the port of Kalamos and the fact that there are cafes and restaurants on the beach, Acrapidia is a melting pot of residents, tourists, and merchant marines. Those interactions are particularly valuable for the younger generation of native residents who get to practice their English, Spanish or even German during the summer holidays. They explained that by meeting visitors to the island, they got a chance to affirm their own cultural identity. Some even said that they enjoyed these interactions on Acrapidia beach because it gave them a sense of communal pride to be from Kalamos. When describing his summers in Acrapidia beach, one native resident remarks *"In Acrapidia, the people I meet in the summer are from all over the world. I learned a lot just from these interactions and taught people somethings too"* (N₃).

When asked how they would react to more infrastructure development (such as more taverns and restaurants) on Acrapidia, six out of seven participants were favorable to the idea. However, they were weary of the possible negative impact of such developments. As the same native resident (N₃) explains *"it would make me sad to see Acrapidia be so developed that it would lose its identity"*. The old mill especially was described as a cultural landmark on Acrapidia beach that should be conserved but not modified. These remarks reinforce the assumption that landscape development should be in accordance with what is valued by the community. Local landmarks, such as the old

mill, are important because they are engrained with cultural meanings which link the community of Kalamos together with its past. The old mill represents a traditional way of life. Although it is no longer in use it serves as a reminder of certain traditions, such as the way the community used to work together to make bread. What participants wanted was development around the mill, like a terrace of some sort which would be in accordance with the mill's traditional architecture. In this way Acrapidia can still retain its communal cultural identity, which residents can be proud of.

Moreover, twenty participants described the village of Kefali, which was the first settlement of Kalamos, as place that was linked to their self identity but also their communal identity (figure 7 and 8, number 8). They explained that this was due to the events and the history that happened there. Kefali is the site of religious celebrations on June 30th and the 15th of August. All residents of Kalamos gather in the church there, which is devoted to the Madonna (virgin Mary) for early morning services. The rest of the day is devoted to feasting, drinking and dancing with Greek folk music. For example, one man who was involved in organizing the celebrations recalls:

“We would come with friends on horseback a couple days beforehand to go camping, tell stories around the fire, in addition to organizing everything. When I go there now, and walk through the hills, the village, when I look at the church...all those happy memories awaken, and it makes me feel warm inside” (N4).

Ten other participants also told similar stories in which their well-being was enabled by certain cultural practices which reinforced both their cultural identity and self-identity. These in turn are shaped through a mix of environmental factors and social interactions. In other words, the descriptions of the religious ceremonies in Kefali, and all the cultural practices around it, point to an interaction between nature and society which strengthens and shapes communal and self identities of native residents.

4.2.3 Well-being through *capability* development.

Finally, CES are related to people's well-being by the skills or capabilities developed through certain human-ecosystem interactions. Capability development as a source of well-being was the most often cited by native fishermen but also permanent residents in comparison with semi-permanent residents who didn't spend as much time on Kalamos. Professional fishermen describe the wave of happiness that they feel when he catches a fish. They explain that this happiness comes from achieving something. One fisherman explains: *“Fishing for me is very important because it gives me a purpose in life. I never went to school, the only thing I'm good at is fishing (N8).* Well-being as fishermen described it came from the feeling of purpose and accomplishment.

For permanent residents, capabilities were linked to well-being through the knowledge gained by observing nature. In the pine forest, ten participants said they discovered new species of plants and birds. One semi-permanent resident said she always brings her children to the pine forest when they visit the island in the summer. *“Nature is where life started so I think our children should be exposed to it as often as possible. You learn more in nature than you do in books”* she claims (SP₃). Another permanent resident said nature inspired her to be creative *“Let me put it this way: we don't have shops on the island, so when I want to give a gift to someone I go to Mirtia beach to collect some pine cones and dry branches from the sea to make a gift myself. Before I lived on Kalamos so close to nature, I would have never thought of that”* (P₂). By being in nature more generally, fifteen participants told stories of how they gained certain insights or wisdom. Feelings of gratitude, respect

for nature and the importance of patience for instance are life lessons gained by being in nature that are linked to well-being as they help people flourish as individuals.

“Growing up on Kalamos I learned all about nature. The different species of flowers, their smell, how to use them in cooking or for medicine. I also learned about the different animals that live here, mostly in the ocean and how they feed themselves. From buying fresh fish everyday, you learn about which are resident, which are migratory. You understand food much better this way, when it is put in wider context” (N6 native “nona” or grandmother).

In general, it seems that on Kalamos people’s activities are linked to the seasons. In summer people swim and collect sea shells, fall and spring are good for fishing and in winter people collect the olives, the lemons and the oranges to make preserves. Well-being comes from developing those skills linked to a specific way of life.

4.2.4 Relating experiences, identities and capabilities to well-being.

In answer to this second sub question, all participants interviewed related the cultural benefits of nature and their well-being to restorative experiences. The aesthetic beauty of nature, its calmness and cleanliness helped participants unwind. The feelings of stress reduction were described on a mental and physical level. The restorative benefits of nature were felt through embodied experiences which could happen in close proximity to nature (a walk in the forest) or at a distance by simply remembering the experience.

Native residents of Kalamos mainly related the cultural benefits of nature and their well-being to the development of their self and communal identity. They claimed being proud of being from Kalamos and that they felt they belonged there. Well-being for native residents seemed to be most linked to feelings of affiliation to the environment.

Permanent residents and fishermen related the cultural benefits of nature and their well-being to the opportunity they had learn and accomplish things. Many permanent residents who had moved to Kalamos from Athens, Pireos or other large cities felt happy and grateful for the close contact they now had with nature. They felt the capabilities they had developed in nature had helped them grow as individuals. For fishermen, the fishing skills they had learned on the sea have helped them prosper by gaining employment (self employed or in the merchant marines). For both permanent residents and fishermen, well-being is associated with a sense of achievement, whether it be through new knowledge acquisition (about biodiversity; personal philosophies) or physical tangible accomplishments (fishing).



Fishermen from Kalamos unloading fish for the market in Mitikas, the closest town on the mainland.

Iles de Kalamos et Kastos (Grèce)



Partenaires

Cette carte a été réalisée par Léo Chevrier, bénévole de l'association CARTONG pour Léa Denieul dans le cadre de sa thèse en lien avec le projet Rewilding Europe.



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Figure 7 Map of all areas described by participants (1-40).

Iles de Kalamos et Kastos (Grèce)



Figure 8 Map of all areas color coded following the ratio of participant agreement.

4.3 Perceptions, Wellbeing and the Spatial

Where the previous sections focused on the different ways residents of Kalamos perceived nature and how well-being is imbedded within those relationships. Here I proceed by zooming in and out of people's personal associations in order to explore unique zones on Kalamos as raised in the interviews. In this sub-question I hence describe, on one hand, which areas of the map were strongly agreed on by participants as culturally beneficial to their well-being. On the other hand, I also expose the places selected by participants as impeding the cultural benefits of certain environmental spaces (cultural dis-benefits). Participants equally pointed to specific places (21 specific places out of a total of 39 areas in total) or delineated broader areas or roads (19 broader areas or roads out of a total of 39 areas in total). Moreover, cultural benefits and dis-benefits were not dispersed randomly across the island, rather they seemed to aggregate in certain places (see figure 7).

This section of the results chapter answers the third sub-question: *How are these perceptions of nature and related forms of well-being dispersed spatially?*

4.3.1 Culturally beneficial places with strong participant agreement.

For some specific places there was unequivocal value agreement. Mirita beach was overwhelmingly agreed on as a positive space (see figure 7 and 8, number 7). Well-being was linked to its beauty and quietness but also because it was a safe space to retreat to when the tourists arrive in summer. A semi-permanent resident, who only comes in the summer describes "*Mirtia is very wild, there are no restaurants like in Acrapidia. I like to collect sea shells, dry wood for the fire, little things, just enjoy the moment*" (SP₁).

Secondly, the islet of the coast of Kastos was identified by all six fishermen interviewed and three native residents as a traditional spawning site for mackerel fish (see figure 7 and 8, number 29). Because the island is very small, only 700 meters long, this islet was a popular spot for fishing trips with family and friends. Native participants tell stories of picnicking on the islet, drinking wine and ouzo after a meal and taking a nap under the olive trees in the afternoon while their nets filled with fish. Other fishing spots were mentioned as culturally beneficial but not with the same intensity of agreement between participants (see figure 8, numbers 27, 28, 29, 30, 31, 32). It seems that the islet of Kastos is important to the well-being of many native residents because of the convergence of many cultural practices that happen there (not only fishing but also picnicking, and snorkeling). The village of Kefali was rated as important for similar reasons. Not only is Kefali village situated in bay which is a strategic location for fishing, it's also the ideal location for a port because it's protected from the wind. Before the 1953 earthquake that destroyed the village, Kefali used to host the main fish market on the island as well as the religious celebrations devoted to the Madonna (virgin Mary). The advantageous geographical location mixed with the diversity of cultural practices enabled certain identities, capabilities and experiences to flourish there over the years. This is perhaps why native residents but also some permanent residents agree that Kefali is a significant site associated to their well-being.

Moreover, many participants underlined the fact that for them, the CES of a valued place also include the journey to the place itself. In other words, it's not all about the destination, it's also about the journey there. One housewife takes the time in the interview to emphasize this point "*I walk up to Agai Paraskevi instead of taking the car because the route is very nice along the mountain side. Same reason I walk to the pine forest, the journey is part of the experience*" (P₃). Indeed, the walk

up the mountain to the church Agai Paraskevi (figure 7,8, number 12) was identified by permanent and semi-permanent residents as route they often take to exercise, walk the dog or bird watch. Thus, permanent and semi-permanent residents agree that the road to Agai Paraskevi is important for their well-being because of its link to leisure activities, highlighting that the road itself has a leisure purpose. Similarly, the road and the walk through the pine forest was identified as important for well-being because of its restorative qualities. Native, permanent and semi-permanent residents seem to agree on this point (see SRQ2, 1).

The road to Kefali on the other hand was mainly culturally beneficial for native residents (figure 7,8, number 9). They explained that the walk to Kefali from Kalamos village is spiritually significant for them because if they want to ask Madonna for something, tradition says they must walk the 7km dirt road to the church in order to *“earn the right to speak”* (N1). Therefore, results indicate that cultural beneficial places and roads cluster according to how they are perceived by different demographical subgroups of participants (native, permanent and semi-permanent residents).

It is important to note that not all CES were not tied to one place but rather some were described as a certain energy emanating from the island. *“Some things you cannot explain, being somewhere just makes you feel good and fulfilled and that’s why the place is important to me”* shares a semi-permanent resident who returns to her summer home on Kalamos every year (SP1). This energy was described by fifteen participants uncorrelated with how long they long they had spent on Kalamos. A native resident of Kalamos also shares this feeling *“the sea and the forest create this energy of peace and quiet. I feel good here and that is why I never left”* (P19). These comments reveal that the emotional connections participants created with places is translated into its “energy” which makes a certain landscape beneficial to them.

4.3.2 Culturally dis-beneficial places with strong participant agreement.

The trash site was brought up as a problematic place across all demographical participant subgroups (see figure 7, 8, number 34). Half of the participants interviewed (13 out of 25) selected it as place associated with negative emotions. According to participants, this trash cite was supposed to be for temporary storage until the waste was shipped away to the permanent disposal site, but that plan was never materialized. The trash just accumulates until someone sets it on fire deliberately or it catches fire because of constant sun exposure. This is interfering with participant’s well-being because the trash site is located on the dirt road to the old village of Kefali which is highly significant historically, emotionally and spiritually for many residents of Kalamos due to the church of Madonna and the religious celebrations that happen there. One native resident, whose home and land are adjacent to the trash site comments *“The trash yard is dirty, it smells bad, it’s not well maintained, and I feel that it’s bad for my health. Even when I just think about it now I feel negative”* (N1). Seven participants have even decided to take an alternative route than the traditional 7 km walk to Kefali because the trash site ruins the experience for them. *“The smell of the burnt plastic fills my lungs, it’s very unhealthy. That’s another reason I go my boat to Kefali, to avoid that place”* (SP3). Evidently, the trash yard is highly intrusive to the well-being of many participants. Its negative effects are felt both tangibly, on a physical level and intangibly as it infringes on the enjoyment of spiritual practices.

The other overwhelmingly negative place, very often cited was the fish farms (figure 7, 8, number 33). Located on the South-West side of the island, the fish farms were indicated on the map by three-quarters of all participants interviewed (17 out of 25). *“There are permanent nets there and*

dead fish floating around, it smells terrible for kilometers around. At night you can see the lights from the fish farms, it ruins the view” describes a retired restaurant owner who used to fish recreationally in this area (N5). When I raised this issue in the interviews with other fishermen they revealed that the fish farms are on what used to be a good fishing spot. Now fishermen are barred from going there. Traditionally, it was described as a great place for herring, white bay and red snapper. According to the fishermen, without access to that area, those fish are much harder to come by now. In the words of another fisherman: *“all these things really upset me. They are polluting the island that I love”* (N2). Manifestly, well-being on Kalamos is tied to the idea of purity of waters, forests, food and the absence of atmospheric or sound pollution. Purity is a cultural benefit considered by almost all participants as contributing to a better of quality of life. The fish farms are perceived as a direct threat to that purity. The participant’s discourse makes it clear that they believe the fish farms are a source of industrial pollution as well as a source of socio-environmental injustice. Seventeen participants said they viewed it as an aggression on many levels including the local government. One man who had been fishing for almost fifty years said *“The local government doesn’t care, they get subsidies from the European union and slip the money in their pockets. Meanwhile they let foreign workers take over our seas and drive the wild fish away”* (N8). The Kalamos and Kastos islands have historically been known for fishing. The fact that the Greek government has leased part of that seascape to corporations has been perceived as culturally alienating and destructive. The six native fishermen interviewed agreed that the fish farms act like fish aggregating devices. They describe the areas that used to be spots for migratory or resident fish are now almost empty. (see figure 7, numbers 27, 28 29, 30, 31, 32). According to the six native fishermen, the fish farms unwittingly disrupt the entire ecosystem by attracting the fish away from traditional routes or polluting them with steroids and pesticides as wild fish graze around the fishing nets. As a native fisherman explains:

“I grew up in a place where the fishing boats would go out in the morning, catch fresh fish, and sell it to us in the evening for us to cook it. That is why I cannot accept the fish farms here, because they interfere with the way we do things. I feel that it changed the culture of the island and that makes me angry” (N2).

The depletion of the sea, and the arrival of the fish farms has lead to intense competition of fisherman for the best fishing spots. On native resident discloses *“Some fishermen even fish illegally in breeding season so the fish populations don’t have time to regenerate themselves. I know because my father is one of those fishermen. Sometimes, he brings home fish with loads of eggs inside them. He doesn’t care, he likes them because they are bigger”* (N7). Although the native fishermen interviewed denied this, they did talk about a disconnect with old fishing traditions, where people did not fish all year round and fished much more in harmony with the patterns of nature. Furthermore, the native fishermen also accused the new permanent residents of the island of illegal fishing activities such as night fishing, when the fish are easier to catch. The rising tension reached its peak a few weeks before my arrival, when the teacher’s dog was poisoned. In the village, word is that this act was to put a stop to her reckless fishing practices such as fishing in breeding season, night fishing and poaching. *“That’s how they settle things here”* says one fisherman (N10).

Understanding what people value in certain places opens up the conversation about the potential conflicts in a given place, and their far-reaching consequences. The Fish farms thus affect the well-being of the community members by reducing their freedom and constraining their access to places around the islands of Kalamos and Kastos. This has significant implication for their way of life

ranging from recreational activities such as swimming, to threatening their self identity (in the case of fishermen). Many even mentioned it threatened their livelihoods, either by polluting their food supply (sea bass) or by taking away their jobs and giving them more incentive to fish illegally.

4.3.3 Places perceived as both culturally beneficial and dis-beneficial.

Finally, some places were perceived with mixed feelings. In the cemetery perceptions of cultural benefits or dis-benefits to well-being changed according to how each participant viewed death (see figure 7,8, number 20). For four participants, the cemetery made them feel very negative because it made them think of their loved ones who have died and reminded them of their own mortality. *“Going to the cemetery always makes me feel sad. I would rather not go, but I have to go because I have many people there. That is the price to pay when you get old. Going to the cemetery reminds me of that”* (one native resident says, crying, N8). On the contrary, for two other participants going to the cemetery was a way to let go of the pain inside them. It was perceived as a place of sanctuary, where they could just let go and feel emotions they thought they could show to others. In the words of one native resident who has lost her son in infancy *“I visit the cemetery because I feel more connected to him there than in other places. It’s tough but you always feel better afterwards, as if the place absorbs some of my sadness or relieves some of the pressure, something like that”* (N4). Thus, the cemetery can be linked to well-being by providing a safe space to connect with the dead.

In some cases, the generational gap played a role in conflicting place perceptions. For example, amongst elderly native residents, the thought of the abandoned olive grooves brought back happy memories which were tainted by sadness because they were no longer being maintained (figure 7,8, numbers 37,38,39). It seems that the younger generation has left the island to find work in Athens and the remaining residents are not enough to care for their own land and that of their neighbours. The term *“wild”* in this context does not have a positive connotation for elderly native residents. As one of them says *“nature can be wild but when something belongs to someone it should be taken care of”* (N6). Remarkably, in certain areas residents want to keep the area *“wild”* such as Mirtia beach because it associated with peace, quietness and purity. Conversely, when it comes to agricultural land, *“wild”* in this sense seems to rime with neglect, as nobody takes care of the land anymore.

There seems to be a shift in values from the older to the younger generation. Elderly residents think that modern Greeks don’t know anything about their history and traditions and especially in Kalamos they don’t try to preserve them. For example, one 86-year-old native resident says this about Kastromonastiro, a navigation control post during the Greek war of independence from the Ottoman empire in 1821: *“they don’t understand the value of an old castle. They say that it’s theirs, so they can do whatever they like to it. They don’t save it to turn it into a monument”* (N6). Because Kalamos is a small island people are often left to their own devices. According to the older generation, sites such as agricultural land or old buildings are not being maintained because the younger generation does not see value in them. When asked, the younger residents argue that it’s not that they disregard old monuments completely, but they would rather invest the money in making Kalamos a more comfortable place to live. One 27-year old man recently moved to Kalamos from Athens commented *“isolation can be a good or a bad thing. In this case, it makes me feel sad because I feel that these people don’t have all their needs met”* (P3). Another fisherman concurs:

“You know, it’s not easy to live on Kalamos in the sense that it is not very practical. We don’t have more than a school here, so kids have to wake up very early to catch the ferry for the mainland that

leaves at 6h30. We have no hospital, no firemen, no police. If someone needs help, they cannot find it on Kalamos” (N3).

Sites of conflicting perceptions can be within the place itself. Notably, the cemetery where participants felt both cultural benefits and dis-benefits according to how they related to death. Conflicting perceptions can also occur between generations. On Kalamos, the older generation feel saddened at the thought of traditional practices dying out. Particularly agricultural practices, such as olive collecting, being neglected, the land becoming wilder. While the younger generation argued that rather than tending the land which is time consuming, they would benefit more from new infrastructure developments, making the island an easier place to live.



Abandoned olive grove (picture 40).

4.3.4 Overarching Issues

Mapping as a tool allowed people to explain deeply engrained problems within a special context. In the mapping exercise, participants raised some themes that were not explicitly addressed in the interview guide. Although these themes were not directly linked to CES, they affected the benefits to well-being people got from ecosystems in various ways. Specifically, by mapping out the trash site, and the fish farms participants were able to expand on their lack of trust and disappointment in their community council and local government. One permanent resident for the past five years remarks:

“In the village, there are so many ideas for a better life, can we do something for the port? Can we do something for the trash? It’s been five years that I’m here and nothing has changed. What are they waiting for? There are too many words and no action on the part of the local municipality as well as the government that is higher up. That affects my well-being, the well-being of the island and the well-being of my children” (P2).

What emerged throughout participant's narratives was a feeling of inertia and not being heard by their representatives. This seems to arise from the 2011 government reform which ties Kalamos to the municipality of Lefkada instead of considering it as an independent municipal unit. Lefkada island has a population of 22,652 people whereas Kalamos counts only 500 people (Wikipedia, 2018). Because Kalamos is such a small island the native and permanent residents feel neglected. In the words of one permanent resident for twenty years *"we are such a small island that nobody takes care of us"* (P5). Participants explained that the consequences of this government reform were that they did not trust their voices would be heard, so they didn't dare to speak up. *"Whatever people say, the government doesn't give a damn. They just continue what they do and if people react they even bring security forces. That is not very just, is it?"* says one man who claims he has moved away from his native island because the tensions with the local government made him feel disrespected (SP1). This injustice is tied to a feeling of powerlessness *"fighting for something takes energy and I don't think that anyone is willing to do that"* says a nurse whose parents still live on Kalamos (SP4). Eight participants brought up instances of suspected governmental corruption. In the case of the cement road between the towns of Kalamos and Episkopi, one says *"there is so much corruption, they built cheap roads and kept the rest of the money in their pocket"* (P1). The lack of trust in the municipal government which participants described seemed to be linked to the fact that they were governed by another island with many more residents and a different culture to that of Kalamos. In fact, many residents expressed their incomprehension as to how a foreign government could even understand their concerns. They tell stories of failed construction projects, such as the installations of anti-mud barriers, which were promptly ripped apart by the wind. They not made stronger, participants claim, because the municipal government of Lefkada was unaware that the weather conditions on Kalamos differed significantly from their island.

When delving into how this sense of powerlessness was threatening participants' sense of well-being, they explained that the absence of a good local government had led to a loss of community feeling over the years. Historically, the local government had been involved in organizing the religious ceremonies and maintaining the historical monuments. An archeologist specializing in Byzantine civilization who grew up on Kalamos shares her point of view: *"For me tradition is something that has to be kept alive. Kalamos was very isolated which gives it a sort of closed culture that makes it special. But nobody has taken on the charge of preserving popular knowledge of nature and popular antiquities"* (SP5). She continues to explain that in addition to the change of government, most of the people who were driving cultural activities of Kalamos have died and the new people that have moved there don't have the same connection to the place. According to her, Kalamos is a small island that is inside and outside the state law, people are free to do what they please. They don't protect things because they don't appreciate the value of them. This view is supported by many elderly residents who lament the "good old days". One "nona" or grandmother shares her experience: *"growing up in a small island, you learn to respect other members of the community and the nature around us. Because so much of our lives depended on working the land, we had a greater respect for nature"* (N6). Several elderly residents describe how neighbours used to help each other collect their olive trees or press grapes for wine. There seems to be a shift in how people interact with each other and the environment on an everyday basis which is described by many as detrimental to their well-being.

"If people don't change the way they act, the energy of the place will change. I feel I can't trust anyone here, there is a loss of community feeling which is linked to how people treat the environment I believe."

And this in turn affects all of us feel on the island. But people don't realize that. They can't see past the end of their nose" (N4).

The narratives of native residents' underline that perhaps lack of trust is not only due to loss of social cohesion of the native community and loss of many of their unifying practices and traditions, but also the arrival of newcomers, both temporarily and permanently. This finding is in accordance with the Fish's (2016) conceptualization of CES. It shows that environmental spaces are shaped by the cultural practices that occur in them but are also shaped by the attachments people have to them, the extent to which they give meaning, confer a *sense of place*. Thus, the making of place is not something that is determined or set in stone. On the contrary, it is a dynamic process. What native residents express is that meaningful places must be actively maintained if they are to continue to contribute to resident's well-being and better quality of life.

V. DISCUSSION

So far in this study, I mainly found that CES were associated to the physical characteristics of nature (mountain, forest, beaches in comparison to infrastructure) which participants found unique to Kalamos as they remained relatively pure and untouched. These biophysical aspects of nature contributed to their better quality of life because the clean air, water and earth present there. Beyond that, the experiences residents had in these environments were extremely relevant to their well-being and varied according to participant subgroups. Specifically, demographics (time spent on the island) seemed to have an effect on the how different human-ecosystem interactions were related to well-being. Native residents' perception of cultural benefits mainly arose from their interaction with specific environmental spaces within their lifetime on the island. Whereas newcomers (permanent and semi-permanent residents) most often referred to the aesthetic qualities as the cultural benefit of an environmental space. (SQ₁). The CES of nature were linked to well-being by enabling rejuvenating experiences, developing identities and acquiring capabilities through interactions with nature that can be proximate or distal. While all participants subgroups agreed they felt restored by *experiences* in certain areas on Kalamos, native residents predominantly expressed feeling connected to a place because of the role it had played in forging their *identity*. Fishermen and permanent residents derived well-being mostly from the *capabilities* they had gained by living in close proximity to nature. They explained their sense of well-being through a sense of achievement which comes from developing or perfecting skills (SQ₂).

By aggregating the data from the semi-structured interviews and the co-constructed map, an element arose that I wasn't expecting to uncover but yet that I find very relevant to the study. That is, results suggest that there is a conflict linked to eroded social cohesion and community feelings. This is due to the lack of trust in far away governments and being threatened by the arrival of newcomers. Interestingly, the issues on Kalamos are similar to issues studied in other rural areas of the world. Many people feel forgotten by those who govern, as they live in isolated areas that the government appears to be less concerned about. Thus, the management of local landscapes is a concern to the almost all the participants. Development in certain areas, whether it be the fish farms or the creation of protected areas by Terra Sylvestris and Rewilding Europe, can greatly harm the well-being of the community if it is done without their knowledge or approval.

On bases of these outcomes, I would like to discuss a range of implications for the management of the landscape and seascape around Kalamos, namely *the power of maps* and the implications of representing *the relationship between CES and well-being* of resident communities in counter-maps. In the first section on the power of maps I debate on the consequence of having fixed definition of landscapes; labelling landscapes as conservation areas compared to others; and how maps themselves can act as reinforcing and reproducing the power asymmetries in landscape management. Once certain areas are delineated, maps play important roles in freezing certain geographical boundaries (Harris & Hazen, 2006).

In the second section I discuss the consequences of having a fixed definition of landscapes, as it ignores the dynamic social and psychological perceptions that landscapes have over time. To answer this concern, I argue that participatory mapping of CES can help us re-think conservation mapping by upsetting the dominant power hierarchies and thus giving different cartographic representations focusing on the well-being of resident communities. Finally, I critically examine the shortcomings of

the participatory CES map in this study to capture the complex ways well-being is related to intangible landscape values of the residents of Kalamos.

5.1 Moving beyond “fixed” boundaries

In this section I discuss how the management of the landscape and seascape around Kalamos has predominantly been decided by the entities in power namely the Greek government and the European Commission which provides subsidies for large scale aquaculture (European Union, 2012). Then, I look at ways that power influences conservation planning and question whether fixed boundaries maps or marine protected areas are useful tools for nature conservation. In light of the relational framework used in this study, I explain why fixed boundaries do not properly capture the relationships people have with nature.

5.1.1 Perpetuation of Knowledge-Power

In this first section I examine how organisms in power can draw up landscape boundaries which serve their interests. These include deciding which areas are suitable for infrastructure development or nature conservation, which practices are allowed in those areas and how those areas should be delineated. What is problematic in this is that outside institutions, often of different social classes may have completely different ideas of what nature is. In addition, they are operating in areas without knowing how the people living there interact with the land. To designate conservation areas by ignoring local understandings of nature is to consider ecosystems themselves as static and separate from history (MacDonald, 2003). In the case of Kalamos, the area bay behind the mountain was considered suitable for the implementation of the fish farms because seems like a deserted spread of sea. Not only the local community was not consulted about this development, but also many residents explained that they did not seek legal sanctions because they were unaware they had historical rights to the sea. The 2011 ministerial decree for aquaculture advancement which was ratified in 2014, divided up Greek coastal and marine areas without taking into consideration of how this affected the activities and livelihoods of the local communities in those areas. When interviewing the residents of Kalamos many described the various impacts of the 2011 legislation which favored the needs of fish farming enterprises above the visible biodiversity loss, pollution and food insecurity which was deeply impacting their well-being. The three main activities that residents can do year-round on Kalamos are fishing, construction and livestock farming. If one of those activities is jeopardized than it affects the entire community. The fish farms in this regard compete with resident fishermen by attracting fish away from the usual fishing spots but also make it more difficult for other residents of Kalamos from consuming fish that hasn't been contaminated with pesticides (the worst reported case being sea bass).

In addition, a map of the 2011 legislation makes possible the development of industrial aquaculture on certain areas of land including the pine forest which has been found in this research to be an important restorative area for the residents of Kalamos. If this in fact comes to be, it could have disastrous consequences on the well-being of local residents because it does not consider the historical and social meaning this forest.

5.1.2 Boundaries and Conservation Goals

When looking into the power inequalities of conservation mappings, we must consider the historical and geographical factors which have influenced the creation of such maps and their subsequent conservation strategies. Chapin's (2004) article "*A Challenge to Conservationists*" is interesting in this regard because it points to the conflicts of interest between international conservation organizations, and the communities whose land they claim to protect. By designing fixed areas for conservation which must be "*pristine nature*" international NGOs take away the legitimacy of local communities for participating in mapping areas for conservation and reduced their involvement to learning skills for sustainable development. The imbalance of power in contemporary conservation politics comes from the lack of in depth investigations of historical uses and distributions of land. Thus, for resident groups, "*tradition becomes an instrumental resource in a battle for sovereignty or control over resources that they have lost through the process of colonialization or nationalization*" says MacDonald (2003, p.5). The goal of biodiversity conservation has very entrenched historical and political roots and is being used by local groups to regain control over their land. I argue that the goal of Terra Sylvestris to reinforce fixed lines delineating protected areas may not be the best way to protect nature and the well-being of residents of Kalamos.

Firstly because, by mapping out different areas for conservation map makers automatically exclude other areas. The consequences of this is that it might justify the over exploitation of resources outside of protected borders. Linking this comment to the case of Kalamos, preserving the areas which residents agreed were beneficial to their well-being must not be done at the expense of other areas which were less often mentioned. This means that the areas on the map which are colored in green should not be interpreted as high priority areas for conservation. Their purpose was merely to act as representations to illustrate the rich and varied ways residents of Kalamos interacted with nature. Secondly, while map boundaries seem immutable, fixed and absolute in some cases, their power is put into question when such things as fire, floods or other natural disasters destroy the landscape without discrimination. Although an area for the junk yard was clearly delineated narratives point to the fact that the negative impacts are not constrained to this area. On the contrary, they spread on a large scale and impact the well-being of residents no matter how far away they are from the actual area. Likewise, the many stories about poaching and illegal night fishing on Kalamos illustrates that lines drawn on maps do not keep poachers out nor animals in. Thirdly, delineating areas for conservation pre-supposes that human over-use of resources is inevitable and the best we can do is to save certain areas from widespread damage. Aside from being very deterministic, this assumption is not necessarily guaranteed as protected areas are affected by the collateral damage from pollution or invasion from competitive species. The narratives of the fisherman point to the fact that fish farms, although cartographically constrained to isolated areas, impact the entire ecosystem by attracting breads of wild fish and sometimes dolphins.

Perhaps the best way to protect nature is to refrain from mapping it. To argue this point, two of the fisherman I interviewed refused to map the areas they valued for fishing because they felt like divulging their knowledge would give open access to their private fishing grounds. One said, "*I'm not going to tell you where the fish are because then everybody will start to come, and we have enough competition on this island as it is*" (P22). Such challenges have also been encountered by Kain et.al (2012) in Northern Vancouver Island. In both studies it was found that fishermen were very protective of their knowledge on fishing grounds and weary of mapping those areas they value for

fear of commercial and recreational development. It seems that the CES related to fishing especially are tied in with other economical and political issues that are sensitive to be mapped out.

The lessons learned from these examples put the power of fixed map boundaries for nature into question. They reveal their largely symbolic nature on one hand. While on the other hand, map boundaries seem to assign priority for conservation of certain areas over others, leading to resource overuse in the latter. These fixed lines drawn on maps do in no way make them real, in a physical sense as many human, animal and plant species flow through those borders as they please. Finally, the delineation of areas on maps are often representative of the interests of the map maker in question. Due to these politics of mapping it may be difficult for researchers to gain the trust of resident communities to share their knowledge of the land. This invites to think about what isn't being represented on map and what those omissions imply in a socio-political and environmental sense.

5.1.3 Boundaries and Perpetuated Landscape Protection

Building on these western ideals of what constitutes nature (pristine, depopulated areas), conservation maps tend to feature these areas compared to others (Hazen & Anthamatten, 2004; MacDonald, 2003; Berkes, 2004). It seems that the areas selected for conservation qualify according to certain cultural or economic pre-requisites. Alvard (2002) for example argues that conservation cartographies should take into account two basic imperatives. Firstly, that ownership of the land is contested "*where control over the access to the resources is derived from the willingness and ability to defend the resources from those who wish to acquire them*" (Alvard in MacDonald, 2003, 5). And secondly, that a resource must be scarce in order for conservation to occur. According to Alvard (2002) conservation maps must prioritize areas that are defensible with scarce resources. When applying this to the Kalamos, a number of problems arise from such cartographic valuation systems. The way elderly residents explained how the community would share common responsibility for the protection and maintenance of the mountain and beaches around the island for example counters the assertion that land must be contested for it to merit conservation status. On the contrary this research provides a case where communities co-operate to sustainably care for public land. "*When I was growing up here 50 years ago, people were not expecting other people to come and clean up after them. They felt at home here and they took care of it. Not just their own home but the road in front of their house and the nearby beaches too*" explains an elderly native resident (N9). This research like numerous cases worldwide shows that conservation can occur when communities work together to maintain public resources and not only in cases where the land is under threat. This research counters the widely held belief of the "*Tragedy of the Commons*" (2009) in which Hardin argued that privatizing land was the only way to protect ecosystems.

Concerning resource scarcity, as the results from the study in Kalamos imply, culturally valuable landscapes are not always the ones that are perceived as rare, beautiful or historically valuable. It seems that CES can also be derived from everyday landscapes. These ordinary landscapes are valuable because they have been shaped by human activity overtime. As Read argues in her exploration of the landscapes of the Otago Peninsula in New Zealand, "experts" have attempted to define the land according to criteria of resource scarcity and objective aesthetic indicators, in her opinion these "experts" perpetuate their "*privilege[d] view of the outsider over the inhabitants who are owners and users of the landscape*" (Read, 2005, p.340). Throughout her argumentation she sheds light on the limited approach landscape managers have had in defining cultural landscapes. By

basing their assessment solely on their own criteria, they ignore whether those assessments are also relevant to the inhabitants of that landscape. There is “*a tension between the rural landscape environment as the lived experience of those who dwell within it and the objectification of that environment as scenery by those who visit it*” (Read, 2005, p.341). Given the above arguments, resource scarcity should not always be considered as a defining feature of conservation areas on maps.

Another issue in concerning the asymmetry of landscape protection is the relative “mappability” of certain areas compared to others. This is a significant issue for cartography because it implies that the importance of an area is not linked to how well this area can be mapped. Therefore, when looking at a map, one must be weary of how the areas were selected. Not only, according to which cultural or economic factors but also according to the relative ease that these areas can be mapped. To link this argument with the results from Kalamos where marine ecosystems were underrepresented due to the difficulty of mapping features that are constantly moving, as well as species that only swim through it. This sheds light on the reason why marine ecosystems have been less defined as protected areas compared to terrestrial ecosystems and explains perhaps why there has been a lack of impact studies assessing parameters such as the number of farmed fish escaping from cages or how far the chemicals will spread throughout the ocean. “*While nearly seventy percent of the Earth’s surface is covered by ocean, in 1997 less than 20% of global protected areas included marine ecosystems*” (UNEP, 2005 in Harris & Hazen, 2006).

Overall, maps for conservation are a way to validate certain conservation approaches. Notably, that delineating territory is the best way to tackle conservation issues. This underemphasizes other approaches that might better respond to conservation needs. Conservation cartographies can lead the reader to believe that certain conservation goals have been achieved in protected areas. “*Once determined, conservation areas may be naturalized in ways that give the impression that conservation has already happened, and is successful*” (Harris & Hazen, 2006, p.115). Indeed, the nomenclature in the past tense “protected” area insinuates this. This is problematic because it implies that threats to ecosystems are fixed in time and place. Mapping out conservation areas in that sense, creates a sort of protective bubble assuring map readers that the threat is being or has already been dealt with. However, we know this to be untrue as there are still many issues within protected areas, the development of fish farms and poaching in the GR2220003 Inner Ionian Archipelago marine protected area being the prime example.

5.2 Accounting for the Well-Being of Communities by Counter-Mapping

Maps emphasizing the processes and transformations of landscape are a new trend in conservation biology (Zimmer, 2000; Fagerholm, & Käyhkö, 2009, 2012; Plieninger, 2013; Pröpper & Haupts, 2014). In this section, I look into alternative ways of mapping which focus on the transformative qualities of landscape in line with my conceptual framework. I then explore how these maps can help to re-think conservation strategies to extent beyond jut the physical features of the environment and include inputs and perceptions of local residents. I use the term “*counter-maps*” by Harris and Hazen (2006) to describe this category of maps: “*The idea of counter-mapping has since been taken up more generally to refer to efforts to contest or undermine power relations and asymmetries in relation to cartographic products or processes*” (Harris & Hazen, 2006, p.117). Therefore *counter-maps* are part of an initiative which aims to reveal the biases and assumptions of past conservation

cartographies and empower communities. I argue that the participative map of CES which was the output of this study is a *counter-map* because it aims to underline and contest the dominant power tracings while suggesting alternative readings. Counter-maps serve the well-being of resident communities by overcoming the eco-social hierarchies of land.

One of the aims of the participative map was to show how different areas are interconnected, rather than representing them as a dispersed patchwork. This speaks to the limitation described above of inflexible, fixed boundaries of conservation areas. In line with my conceptual framework, emphasizing interconnected spaces on maps is important because it argues for an understanding of well-being that is relational. In other words. Interconnected spaces represent the social, political and environmental relationships through which well-being is created. To give concrete examples, the dirt road to the village of Kefali, the road to the church Agai Paraskevi or the road through the pine forest are all instances focusing on the experience of the journey itself rather than valuing individual constituent parts. Designing counter-maps with permeable, “*soft boundaries*” suppose the inclusion of man in nature, something that had previously been excluded in past “*fortress conservation*” maps (Harris & Hazen, 2006). Consequently, the designation of areas on the map of Kalamos addressed the dynamic forms human-ecosystem relationships can take and how well-being is affected by those associations. This attempt highlights the importance of remapping multiple understandings of what well-being is, and what it could become. In this sense, counter-maps may help policy makers and scientists preserve cultural landscapes that are not directly economically profitable (Burgi, 2017). Furthermore, if we understand landscapes as continuously evolving entities overtime, then investigating the reasons and contingencies for these changes is a valid research concern.

In line with this research effort, results of this study expanded on resident’s changing relationships to nature according to changes in the ecosystems on the island. Similar to a study by Tengberg et.al, (2012), results from Kalamos showed that these human-ecosystem interactions can be detrimental to well-being. By taking the form of loss of land in which people undertook certain cultural practices linked with their cultural identity, loss of opportunities for tourism and recreation (experiences), declining knowledge about the environment and how to preserve it (capabilities), or loss of spaces which enabled social interaction between people, for example. This research is relevant because ignoring cultural values in ecosystem management can downgrade the experiences people have with nature, their interest in it and the skills they derive from it. By identifying and assessing the ways people connect with local environments and the benefits these environments produce in terms of well-being, it becomes clearer why the loss of these functions can be culturally devastating. In this way, combining GIS mapping with structured interviews is a way of taking into account local knowledge and perceptions of the area which can then be included in decision making about sustainable land use strategies (Plieninger et.al, 2013b).

The argument that a more relational assessment of human-ecosystem relationships focusing on ecosystem services, human well-being and quality of life based on input from local communities is nothing new (Stephenson, 2008). In fact, it is the approach used by the World Heritage Center’s work on cultural landscapes. What the conceptual framework of the Kalamos study adds to this model, is a way to better understand *intangible* values by suggesting that the focus should be on identifying the complex web of relationships between human, nature, culture contexts. Focusing on located stories, traditions, experiences of the environment and how they relate to different aspects of well-being, is a way to assess such intangible values in all their richness and complexity. My argument being that even though in theory CES are conceptualized as separate services from other

ecosystem services, it was found that people often experience them as bundles of services. This is in line with work by Burgi (2017) on cultural landscapes or Gee et.al (2017) on seascapes.

In this study, a farmer's home and land was valued for raising livestock, feeding it to her daughter as well as because it was inherited from her father. *My home is everything for me, the land has been passed down from my father, I put my heart and soul into this land to raise livestock and feed my family good clean food. On a very personal level, it is everything for me* (native farmer N1). In this statement provisioning services and cultural services cannot be separated as both influence and are influenced by heritage values. Likewise, a common theme found in the comments of the fishermen interviewed was the way intangible values were rarely expressed in isolation. They often linked to other intangible or even other tangible services. These results echo Gee et.al (2017)'s work which looked into the culturally significant areas for marine spatial planning. In both studies we remark that in the case of fishing, many different areas are important to enable the experience. Fisherman need to go to different areas that supply wood or paint for the boats for example. Thus, separating and mapping land according to provisioning, regulating, supporting or cultural ecosystem services to which type of value or benefit they refer to is not capturing the person's actual experience of them and could even be perceived as disrespectful (Gee et.al, 2017).

To sum up, this study adds to other work that has been done on CES by going further than just recognising and assessing CES compared to other ecosystem services but rather how do all of these services interact create a more relational experience of well-being. As the argument above implies, cultural ecosystem services are not limited to one place, but can be the product of many interconnected spaces (such as the 7km road to Kefali for example). These environmental spaces enable specific cultural practices to happen and their associated benefits for well-being. At the same time, these environmental spaces are being shaped by the cultural practices that people undertake in those spaces. Moreover, cultural ecosystem services interlink with provisioning and regulatory services to shape environmental spaces by the meanings people attribute to them. To sum up, an environmental space is defined as meaningful by individuals through the relational assemblages that shape it.

5.3 Difficulty in mapping intangible values associated to well-being.

Intangible values, which lend themselves poorly to economic valuation, have seen an even more limited representation on maps (Chan, Satterfiled, et.al. 2012b). There has been growing attention to intangible values of landscape in the last ten years (Taylor, 2008; Gee and Burkhard, 2010; Chan, Satterfiled, et.al. 2012b; Fish, 2016). These authors are interested in the concept of *sense of place*: the self-reported feelings and sensation that people have when they are in a certain environment, and how people process this information to give meaning to a place. These authors argue that landscapes can be valuable as cultural constructs full of memories and meanings. *"Landscape therefore is not simply what we see, but a way of seeing: we see it with our eye but interpret it with our mind and ascribe values to landscape for intangible – spiritual – reasons"* (Taylor, 2008, p.1). However, not all kinds of intangible values are easily "mappable", some intangible values are easier to delineate than others. Areas of recreation for example are easier to compile and quantify using economic impact studies compared to spiritual areas. When reviewing the literature and comparing it with my own research results, I argue in this section that there seems to be two main concerns

when mapping intangible values. Firstly, the issue of individual based valuation versus group-based valuation. Second, the issue of landscape temporality.

5.3.1 Individual vs group based intangible landscape values.

In the case of the Kalamos study it could be argued that the mapping of intangible values didn't go far enough because certain types of values don't necessarily refer to individual needs but rather group-based needs. Valuation of landscape can even be for another group all together. These other-based values are often grouped together in the literature with "*biocentric values*" (inherent worth of all living things), "*non-use values*" and "*bequest values*" (for future generations) (Chan, Satterfield, et.al. 2012b). As these authors point out, it can be difficult to draw areas linked to these values on a map, as such values can only be implied. On the other hand, finding people who associate bequest values to landscape may prove difficult as some might have moved away, ceasing all contact with the land in question (Chapman, 2013). In light of the research objective of the study on Kalamos, which was to investigate local residents' relationships to nature, sometimes it was difficult for participants to decide whether they valued an area because it was socially encouraged to do so (such as a church), or because it was their choice as individuals, or if they valued it for another group entirely (such as future generations). What was challenging to map in this context was that it could be a mix of the three. A prime example of this is when many participants linked certain cultural well-being indicators (such as spirituality and connecting to something greater) to larger transcendental values such as shared responsibility for environmental protection. One permanent resident living for 5 years on Kalamos said: "*up there [the mountain], I feel connected with everything: people, nature and god*" (P2). Such transcendental value judgements were discussed by participants as moral obligations that are societal, personal and future driven "*we mustn't forget that this nature needs tending and regulations to be protected. It's for the good of us all in the end. For us to live a better quality of life*" (P2) continues. This can be considered a shortcoming of the methodology used in this study. By focusing on areas of value agreement and conflict, it does not go as far as representing the differences between these types of values (individual, group, other based).

5.3.2 Landscape temporality.

The second consideration when endeavoring to map intangible values is the issue of temporal change in landscapes. Stephenson (2008) in his discussion of what constitutes cultural values, points to the dimension of landscape temporality. According to him, the way we represent landscape is not through an individual point in time, but through "*a continuum bearing within it the forms, relationships and practices of the past that influence those of the present and thereby shape the landscape that is perceived*" (Stephenson, 2008, p.135). In line with a relational perspective on CES, well-being and place, the notion of landscape temporality focuses on the dynamic interactions of environments, practices and relationships which continuously evolve overtime. An example from this study, one old woman (N9) explains how as a young child, she used to be excited to go with her mother to the port of Kalamos for the fish market. At that time, it was a social hub associated with positive emotions. However, that changed when the Germans came during WWII and burned most of the infrastructure. Although the place remains geographically the same, this old woman has made a different relational assemblage which influences how she perceives that landscape.

An additional issue of landscape temporality is how often valued cultural activities occur in a given area. Many recreational activities such as swimming or birdwatching are seasonal. Likewise, certain areas may only be perceived as important during the time of a religious ceremony. This suggests that

map representations need to take into account the complex spatial and functional aspects of ecosystems. Map makers should consider ways of mapping areas whose value have changed overtime. Animations in mapping, as opposed to static maps, could be a way to represent areas as dynamic and interconnected, while avoiding valuing one over the other (Chapman, 2013). In this study, the CES map of participants' perceptions was complemented by semi-structured interviews which was a cheaper way of assessing the dynamic and multiple ways landscapes change overtime. Nevertheless, the chosen method still reduces them to areas on map in a specific point in time.

Although it was the objective of this study to investigate the relationships residents of Kalamos had with nature, I will conclude this discussion by saying that the map reflects only a specific picture of the different relational assemblages created by residents through the practices they had in particular environmental spaces. These assemblages are likely to be re-shaped according to the different environmental and societal pressures on and around Kalamos. Correspondingly, this research is a snapshot of how these complex relational elements intermingle but only at this specific time.

VI. CONCLUSION

In this study, I explored the various ways that CES could be seen as ‘catalysts’ in relationships between place and wellbeing. Particularly, I aimed to investigate the different ways people relate to ecosystems; and to map out those interactions for future conservation efforts of the NGO Terra Sylvestris. This involved exploring the forms that CES take when perceived as well-being benefits and how they might be place based, that is, rooted to the environment. Linking CES, well-being and sense of place in a relational framework helps us understand the physical and emotional relations through which well-being is connected to place and potential risks and challenges that connection implies. The narratives participants shared in the semi-structured interviews revealed the vast array of ways that they experienced CES in nature. The relational framework interconnects cultural practices to physical aspects of the environment, to benefits on well-being and sense of place, something that has been overlooked for long by science, but by combining those aspects we get closer to a more holistic view. In that sense it captures the narratives of the residents of Kalamos well.

However, some work still needs to be done, particularly when it comes to mapping the emergent interactions between humans and nature. Conceptually speaking, although mapping CES is useful in many ways, it was found that not all values can be spatially mapped out easily. Indeed, delimitating areas according to which specific value, benefit or service they related to, was sometimes ineffective and besides the point. Specifically, when fisherman pointed out that marine ecosystems are interconnected and therefore some significant areas are linked together as part of a circuit. Other participants also mentioned that it was not just the destination that was beneficial to their well-being but the journey to get there, usually through walking or by boat. Some participants were uncomfortable with selecting only three areas, mentioning that the exercise was flawed as it implied that those areas were more important than others. As a restaurant owner said “*All of the island needs protection and tending. It’s not just these places*” (P2). This underlines the fact that in people’s narratives about CES and well-being the whole is greater than the sum of its parts. Ultimately, it seems to be a very naïve assumption that communities will offer a unanimous coherent picture of the issues at hand. As my results in the field indicate, there was not one united participant group and community needs shifted consequently. Integrating community view points if those are constantly changing suggests that counter-maps cannot apply a standardized approach, rather it must be based in a specific time and place.

In the context of an on-going discussion about the processes and driving powers shaping cultural landscapes, the argument made in this study has been that GIS mapping could profit from re-thinking some of its fundamental assumptions, mainly that maps perpetuate hierarchies of power which affect conservation strategies and beliefs about the human-nature relationship. This has been the driving controversy in the debate around conservation mapping in the last fifteen years (with authors such as MacDonald, 2003; Berkes, 2004 or Harris and Hazen, 2006). I have chosen to add to this research effort by taking a relational approach to understand the ways in which human-ecosystem interactions are linked with well-being. This means avoiding the dominant and often to simplistic view that landscapes can be pre-defined as protected areas or therapeutic spaces. The dominant approach has been problematic in many ways. Not only does it allow a dominant group to decide which areas will be protected and not others. But also, it implies that well-being is entirely controllable, and thus therapeutic spaces can be separated from “regular” landscapes to become

pristine conservation zones. On the contrary, the research objectives and methodology of this study are geared towards making sense of a place through participant's own associations with well-being. Although these interactions are difficult to contextualise, I argue that the map that was created in the Kalamos study is a *counter-map* because the areas were delineated by the local resident, without conscious outside agendas. The residents of Kalamos have been overlooked since the island ceased to be considered as an independent municipal unit in 2011. To make a map based on their perceptions effectively puts power back in their hands.

Based on my results in chapter four and the discussion above, I suggest that future conservation strategies of Terra Sylvestris on Kalamos be mindful of not isolating entire areas as *protected no-go zones*. On the contrary, Terra Sylvestris should seek to understand the diverse ways people derive well-being from ecosystems and design conservation strategies that respond to these diverse needs. A local council could be reformed, to the best of its ability be transparent in its decision making when it comes to conservation strategies around the island. More maps should be added to the one I have produced. Not with the goal to improve (because one perspective is not above another) but rather to offer multiple representations of landscape. Multiple maps can counter balance the possible biases and assumptions other maps could hide as well as exploring the point of view of other actors whom experience a kind of well-being from nature that is probably different from that of residents. What should be emphasized is the map's transient aspect: it serves as an exploration of landscape that is time and place based. Far from being archived permanently, maps should be re-created and modified according to changing ecological, social and political contingencies. Hopefully, the improvements in GIS technology will give cartographers more and more tools to visually represent the different ways humans and landscapes interconnect. Yet these technological advances must be accompanied by a change in mentality. One that does not focus too much on landscape as isolated parts but instead as a dynamic whole. One that does not determine fixed boundaries of landscape but rather fluid ones. And one that overall values the interactions between societies and ecosystems.

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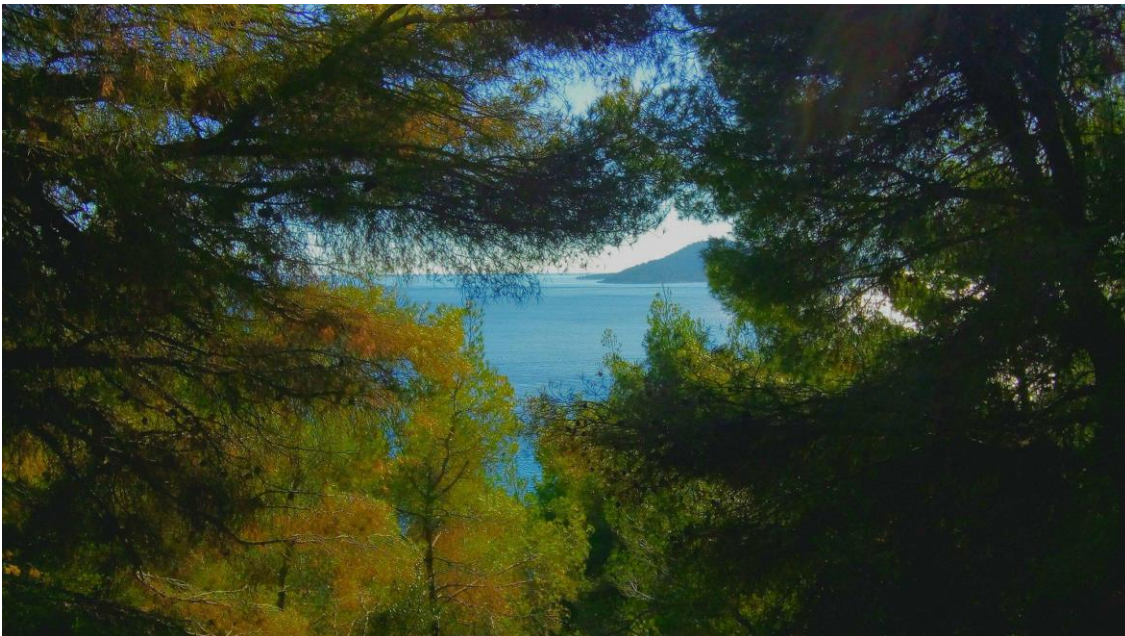
Annex 1: Pictures linking numbers to locations on figure 7.

Places associated with positive emotions.

1. Farmer's land.



2. Road through the pine forest, to Episkopi village.



3. Village of Episkopi.



4. Acrapidia Beach.



5. Big rock used as a meeting point on Acrapidia beach.



6. St Georges Church.



7. Miritia beach.



8. Abandoned village of Kefali.



9. Road to Kefali.



10. Road to Kefali by boat along the coast.



11. Agai Paraskevi church.



12. Road up the mountain to Agai Paraskevi church.



13. Small isolated beach.



14. Small isolated beach 2.



15. Old Mill.



16. Kalamos Port.



17. On top of mount Volni.



18. Forest under the mountain.



19. Green cliffs of Kalamos.



20. Cemetery.



21. Grandmother's house.



22. St Constantin church.



23. St Nicolas Church.



24. House where a birth happened.



25. Petri, olive fields still cultivated.



26. Fishing bay of the abandoned village of Kefali.



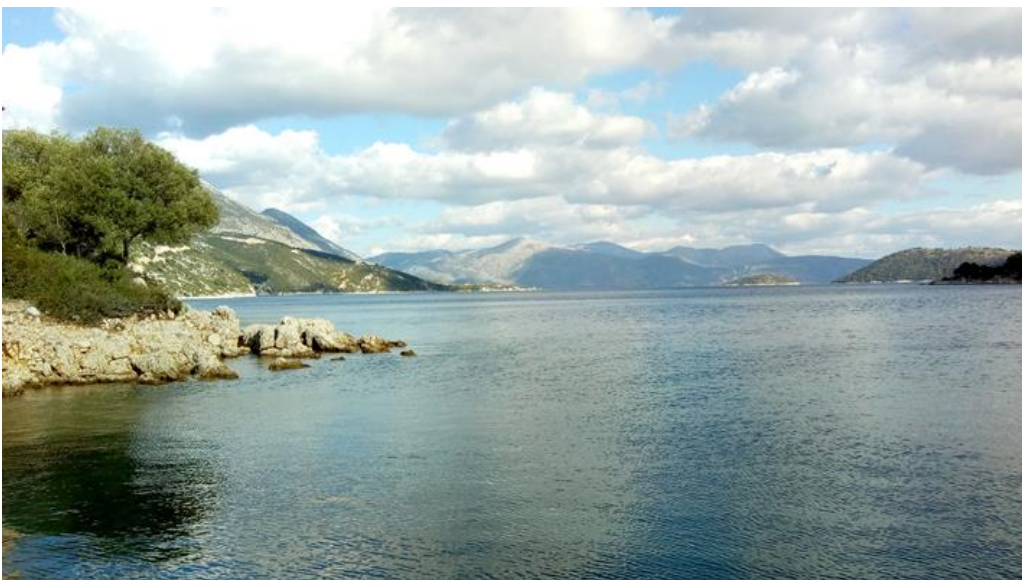
27. Fishing spot around Kalamos island.



28. Fishing spot around Kalamos.



29. Fishing spot on the Islet of Kastos.



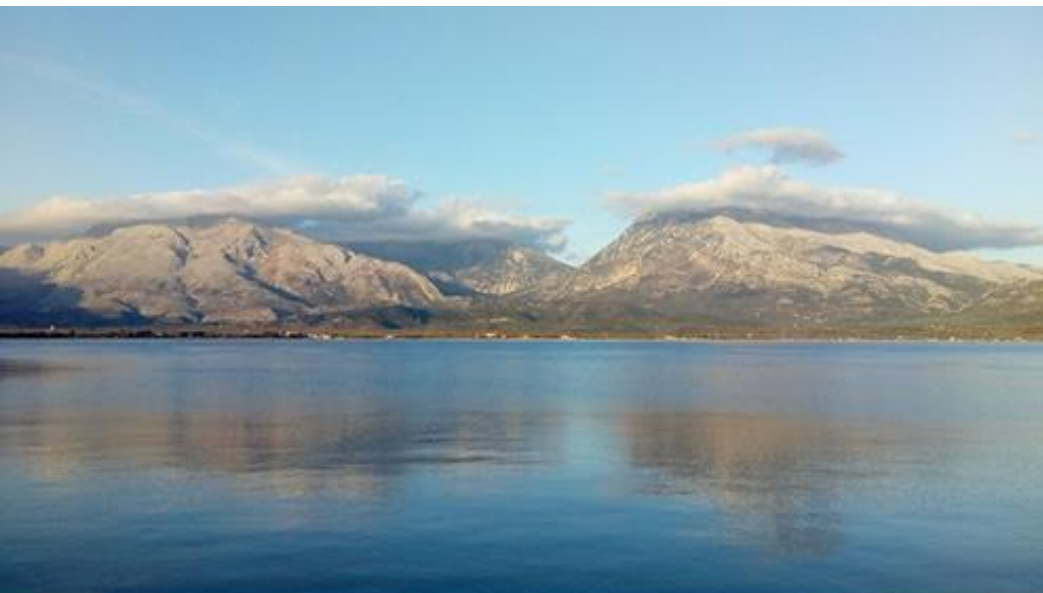
30. Fishing spot near Kastos island.



31. Fishing spot near Kastos island.



32. Fishing spot (no longer in use) close to the fish farms.



Places associated with negative emotions.

33. Fish Farms



34. Junk yard on fire.



35. Trash on beach.



36. Kastromonastiro in ruins.



37. Agai Triada church.



38. Abandoned olive grove.



39. Abandonned olive grove.



40. Abandonned olive grove.



Annex 2: Interview guide

I. Introduction:

- *Who am I?*

My name is Lea Denieul. I am a master student from Wageningen University, studying leisure, tourism and the environment.

- *What my is the aim of my research project?*

The aim of my research is to understand what kinds of relationships people have with nature, and how they gain well-being from being in specific places. This knowledge can better inform decision makers about management of natural resources.

- *Why is their participation important?*

I am interested in your own account of which places you think are important for your well-being (positively or negatively) and why. As a (resident of the island, fisherman, semi-permanent home owner), explaining to me your experiences in certain places will help me understand which kinds of cultural benefits you get from these interactions.

- *How long will the interview take?*

This interview will take about 1h- 1h15h. I thank you very much for your participation and I remind you that you can withdraw at any time.

- *Your contribution is voluntary and completely anonymous, could I record this interview?*
- *Do you mind if I take some notes?*

II. Interviewee background information & familiarization of the satellite map.

- *How long have you lived on Kalamos? What motivated you to live here?*
- *What is your job?*
- *Could you show me on this map where you live?*
- *Can you show me where you work/ used to work?*

III. Mapping exercise.

- *Could you identify three places that are important for you personally? Please use the green stickers for positive places (places that make you feel good, that are valuable for you) and the red stickers for negative places (places that are lost or degraded, that are associated with negative emotions for you)*
- *Are there places that could be both for you?*

3.1 For areas identified with green stickers: Areas that are special, significant or valuable.

3.1.1. Link with Well-being.

- *Explain to me why you chose to mark this area in green.*
- *What history do you know of that place?*
- *What physical/ natural aspects of that place make it significant for you?*
- *Explain to me your experience in that place: How do you feel there? What activities does it allow you to do?*
- *Are there any benefits for you when you are in this place?*

probes
Sense of place/ place identity Are any of these areas connected to who you are as a person? Why?
Past memorable experiences Do any of these areas make you reminisce about the past?
Spirituality When you are in any of these areas, do you feel connected to something greater?
Knowledge and Skills Do you learn about nature in any of these areas? Why those?
Tranquility, Relaxation Do you visit any of the sites to clear your head? Why those?
Social Bonds Would you visit any of these places with others? Why?
Aesthetics Do you think any of these sites are beautiful? Why those?
Other Are there any other reasons why these areas are important for you?

3.1.2 Link with sense of place.

- *How often do you visit this place? How do you get to this place?*
- *Are there many similar places on/around the island where you can do these activities? Or is this place irreplaceable and distinct? If yes, what features of the environment make it unique for you?*
- *Do you think many different people use area? How many functions does it fulfill?*
- *Is this place linked with the culture of Kalamos? If yes, in which ways?*
- *Has this place changed over time? If yes, how do you feel about that change?*
- *Is this a place you would want to protect? From whom? Why?*

3.2 For areas identified with red stickers: Areas that are associated with negative emotions.

3.2.1 Link with well-being

- *Explain to me why you chose to mark this area in red. What risks, threats or challenges are associated with it?*
- *Is this place important for you? Why? Why not?*
- *What physical/natural aspects of that place are perceived as negative for you?*
- *Explain to me your experience in that place. How do you feel there? What activities does it forbid you to do?*
- *What is the impact of losing those activities? What are the consequences for you?*
- *Does it affect your everyday life?*

3.2.2 Link with sense of place

- *How many times do you visit this place? Why?*
- *Do you think many different people use area? How many functions does it fulfill?*
- *Do you know the history of that place? Is this place linked with the culture of Kalamos? If yes, in which ways?*
- *Has this place changed over time? If yes, how do you feel about that change?*
- *Is this a place you would want to protect? From whom? Why?*

IV. End

It has been a pleasure talking with you. In order to make sure I fully understood you, I will summarize briefly what you have said. Please feel free to tell me at any time if I misunderstood.

If you have any further questions regarding my research here is my contact information.

Is there anyone else you think it might be interesting for me to talk to? Someone who has a different opinion than you perhaps?