2020

Using Environmental Identity To Promote Environmental Concern and Willingness To Participate In Endangered Species Conservation

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USING ENVIRONMENTAL IDENTITY TO PROMOTE ENVIRONMENTAL CONCERN AND WILLINGNESS TO PARTICIPATE IN ENDANGERED SPECIES CONSERVATION

A Dissertation

Presented to the Faculty of

Antioch University New England

Keene, New Hampshire

In partial fulfillment for the degree of

DOCTOR OF PHILOSOPHY

by

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April 2020

ANTIOCH UNIVERSITY
NEW ENGLAND

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ABSTRACT

USING ENVIRONMENTAL IDENTITY TO PROMOTE ENVIRONMENTAL CONCERN AND WILLINGNESS TO PARTICIPATE IN ENDANGERED SPECIES CONSERVATION

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Environmental identity (EID), a concept from the social sciences specifically conservation psychology, refers to how we orient ourselves to the natural world, and thereby take action based on our personality, values, and sense of self. The realization that conservation is a human endeavor has prompted the inclusion of the social sciences in conservation research. Research on environmental identity has been conducted in such places as zoos, higher education institutions, and with farmers, and has demonstrated that EID is a good predictor of environmental concern and proenvironmental behaviors. There is a gap in the literature regarding whether environmental identity can be used as a predictor of local environmental concern and willingness to participate in endangered species conservation. With the urgency to conserve biodiversity as we are in the midst of a sixth mass extinction, creating an effective environmental identity model to support conservation projects could offer a valuable tool for effective conservation interventions. A study using an embedded mixed methods-style design was completed in 2017 in Kefalonia, Greece. The following tools were used to determine a participant's environmental identity or connection to nature, their past and current experiences and knowledge in nature, their level of environmental concern, and their willingness to participate in sea turtle conservation: Environmental identity (EID) scale, a nature-based experience and knowledge scale, and a three-part participant survey. Both closed-ended (with follow-up questions) and open-ended questions were included in the three-part participant survey to encourage open dialogue and discussion similar to an interview, and to allow for more detailed information. This dissertation examined how environmental identity can be used to determine the existing relationships that individuals or communities have with nature, their level of environmental concern, and their willingness to participate in endangered species conservation. The use of EID was shown to be a valuable tool for predicting level of environmental concern and willingness to participate in conservation efforts for effective endangered species conservation. Findings also showed that those with a greater environmental identity, experiences and knowledge in nature, and willingness to participant reside in the same location that which has a greater presence of sea turtles. This dissertation is available in open access at AURA, http://aura.antioch.edu/ and OhioLINK ETD Center, https://etd.ohiolink.edu/etd.

Keywords: environmental identity, conservation, endangered species, sea turtles, participation

Acknowledgements

This dissertation is a culmination of support, guidance, vision, and love!

I would like to thank my parents who have shown me endless support and will always be my biggest fans. I am so lucky to have this kind of love and would not be where I am without the two of them – *I dedicate this dissertation to Stanley and Adelaide Wesolek*.

To my sisters, Carolyn Richardson and Julianna Leach, you are my light in the fog and encourage me to be myself and follow my dreams. You both represent feminine strength in your own unique ways, and for that I am in awe of you and your accomplishments. To Elizabeth Nolan and Stacy Gannon, words can never explain how much your support, love, and sisterhood has meant to me throughout this journey. I am grateful for our friendship and much needed honesty when I derailed with nonsensical thoughts. To my Antioch family – Becky, Jess, Nikki, Yves, Tuul, Francis, Joanna, Ju Pong, Mary, and Ruth – you have shaped my journey in such positive ways and allowed me to be vulnerable, challenged me to grow, and supported me when I most needed.

Thank you to Chanel Comis and Nikos Vallianos for the use of Wildlife Sense's turtle data and useful information pertaining to the lovely residents of Kefalonia, Greece. Special thanks goes to Chanel for her helpful and steadfast feedback, guidance, and support before, during, and after my field research. Chanel's devotion to conservation has been an inspiration throughout this dissertation and I will carry it with me into the future. To those who contributed to my field research including translations, interviews, and friendship, my deepest gratitude goes to Dr. Ioanna Visviki, Panos Melas, Spyridon Kavvadias, Caterina Schena, Anna Montesantou, and Julia Free.

The complexities of mixed methods research and analysis are exciting and challenging. I am extremely lucky to know brilliant colleagues and friends who gave their time, talents, and unwavering encouragement so my research was successful. I greatly appreciate and thank Alyssa Hull, Brenna Smith, Dr. Lara Appleby, Dr. Kevin Guidry, Dr. Deborah Lichti, and Dr. Renate Wuersig.

I extend my sincerest gratitude to my committee – Dr. Beth Kaplin, Dr. Jean Kayira, and Dr. Susan Clayton. Thank you for your unique perspectives, expertise, and advice. Jean, you challenged me to be a thorough and thoughtful human being, approaching my qualitative work with kindness, depth, and objectivity. You encouraged me to embrace an approach that is both complex and exciting; always allowing me to feel like anything is possible! Susan, your support throughout the analysis process was invaluable and your suggestions always helpful. Your work on environmental identity has been an inspiration to me and I am honored to have had the chance to work with you on this dissertation.

Beth Kaplin, thank you from the bottom of my heart for being my advisor and mentor. However, the most significant role these past years has been, my friend. You inspire me to do more, strive further, excel beyond my limits, expand my thoughts, and extend into facets of knowledge and research I did not even imagine. Your support, faith in me, and encouragement has allowed me to continue on even when I felt most challenged. I look forward to continue working with you in the future!

"*In the end we will conserve only what we love;*
we will love only what we understand;
and we will understand only what we are taught."
- Baba Dioum, 1968

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Chapter 1: Introduction

Concern and awareness to protect global biodiversity and endangered species has been in discussion for over fifty years resulting in the creation of organizations, laws, and treaties such as the International Union for Conservation of Nature (IUCN) established in 1948, the Endangered Species Act (ESA) of 1973 in the United States, and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) adopted in 1963 and enforced in 1975 (Convention on International Trade in Endangered Species [CITES], n.d.; Dobson, 1992; Fields, 1984; International Union for Conservation of Nature [IUCN], 2020; U.S. Fish & Wildlife Service Endangered Species, 2020). An assessment of the major groups of organisms completed between 1996 and 2019 included 112,432 species and identified 30,178 species as "threatened" (IUCN, 2019a). This information, along with data on current rates of extinction versus background rates (standard rate of extinction based on the fraction of species that have gone extinct per unit time), has led scientists to debate that our planet is facing a sixth mass extinction (Barnosky et al., 2011; Chivian & Bernstein, 2008; Luther, Skelton, Fernandez, & Walters, 2016; Pimm et al., 2014). Two overarching drivers of species extinction are human population growth and increasing per capita consumption of natural resources (Berkes, Feeny, McCay, & Acheson, 1989; Chapman et al., 2016; Chivian & Bernstein, 2008; Hardin, 1968; Ostrom, 1990; Pimm et al., 2014).

Conservation efforts center around species that are threatened and close to extinction due to factors such as small population sizes, habitat loss, and the socioeconomic condition of humans (Chivian & Bernstein, 2008; IUCN, 2019b). Endangered species conservation is distinctive in that the stakes are high and factors are complex. Human population growth and the

consumption of natural resources exacerbate the myriad direct threats and stresses species also endure.

Direct threats are the proximate human activities that have caused, are still causing, or in the future may cause the destruction, degradation, and/or impairment of biodiversity (e.g., logging or unsustainable fishing; Conservation Measures Partnership [CMP], 2013; Salafsky et al., 2008). A stress refers to a degraded condition or symptom of the target species, community, or ecosystem that result from a direct threat (e.g., decrease in population size or fragmentation of forest habitat; CMP, 2013; Salafsky et al., 2008). In addition to direct threats and stresses that make endangered species conservation complicated are human-based contributing factors that range from limited monetary resources (e.g. timber harvest), the local socioeconomic situation, and demographics to other issues such as lack of national, state, and local governmental support, corruption, and the lack of regional and local enforcement of conservation commitments (Baynham-Herd, Redpath, Bunnefeld, Molony, & Keane, 2018; Gadgil, Berkes, & Folke, 1993; Male & Bean, 2005; Mancini et al., 2011; Salafsky et al., 2008; Smith & Wishnie, 2000).

For endangered species conservation to be effective, conservation programs worldwide have applied multidisciplinary approaches and multiple strategies such as protection or management of species and habitats, education and awareness-raising, and training and capacity building (Ariefiandy et al., 2015; Baynham-Herd et al., 2018; Horwich, Lyon, Bose, & Jones, 2012; Kapos et al., 2009; Nilsson, Baxter, Butler, & McApline, 2016; Salafsky et al., 2008). However, effective conservation programs must consider human behavior, attributes (cultural beliefs, values, attitudes, concern, norms, and rules), and communities and their role and level of involvement with endangered species conservation.

For the chapters that follow, participation is referred to as the redistribution of power that enables active or true involvement of local people or communities in conservation initiatives including planning, decision and policy making, and managing of the conservation program while taking into account local views and perspectives (Arnstein, 1969; Pretty, 1995). According to Arnstein's (1969) ladder of citizen participation, there are eight rungs or levels indicating the amount of citizen participation or power local people possess for decision making. The first five rungs keep the power and the right to decide in the hands of the powerholders (for example, conservation projects or teams), whereas the final three rungs encourage citizen power or control. In an ideal situation, there would be no need for a shift in power from the "powerholders" to the local people or communities; however, I feel the struggle to achieve fairness still exists and power often remains skewed in favor of the "powerholders" in conservation efforts. Therefore, based on levels six through eight (partnership, delegation, and citizen control, respectively) of Arnstein's ladder, I position participation in a context focusing on local people or communities being active participants in established, new, or developing conservation programs. If barriers (e.g. lack of time and money) arise that prevent local people from participating in conservation initiatives, then effort to find alternate ways to be truly involved should be determined.

While conservation efforts sometimes underestimate the complicated nature of community contexts such as social, cultural, economic, and political factors, they have also misjudged the complexity of human behaviors (Knight, Cowling, Difford, & Campbell, 2010; Rands et al., 2010; Waylen, Fischer, McGowan, Thirgood, & Milner-Gulland, 2010). The inclusion of the human dimension in conservation is not a new concept (Ariefiandy et al., 2015; Berkes, 2004; Campbell & Vainio-Mattila, 2003; Horwich et al., 2012; Kareiva & Marvier,

2012), yet understanding the complexities of human nature and which attributes contribute to positive conservation outcomes is still relatively unexplored in the conservation literature (Kareiva & Marvier, 2012). The chapters that follow focus on using an interdisciplinary lens of conservation psychology to explore the human attribute of identity (environmental identity (EID)) in relation to endangered species conservation. Conservation psychology uses psychological principles, theories, or methods to understand and solve issues related to the human aspects of conservation. This research explored the environmental identity of local community members in Kefalonia, Greece, and the role EID plays in local environmental concern and willingness to participate in sea turtle conservation.

Environmental identity has the potential to be a meaningful tool in a field that has a complex nature and is faced with high stakes. While it has been applied conceptually in some research it has not been applied in practice specifically to the field of endangered species conservation. Research has found that environmental identity is a good predictor of environmental concern and behavior (Clayton, 2003; Clayton, 2012; Clayton & Kilinç, 2013; Veijalainen & Clayton, 2013). In addition, the development or awareness of an environmental identity encourages concern for animals and the surrounding environment (Clayton, Fraser, & Burgess, 2011; Gosling & Williams, 2010; Hayes-Conroy & Vanderbeck, 2005). I propose a model that includes environmental identity as a way for conservation projects to determine the existing relationships that individuals or communities have with nature, their level of environmental concern, and their willingness to participate in endangered species conservation. The overall goal of this research was to explore how environmental identity can be used as an effective tool to gather information to strengthen endangered species conservation initiatives (Figure 1).

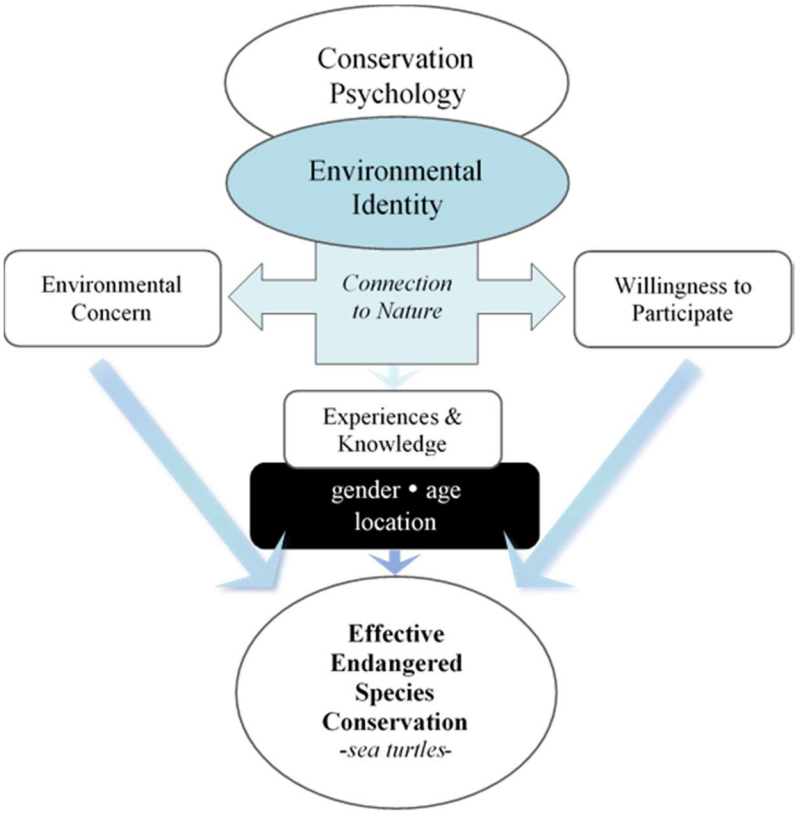

Figure 1. Conceptual Framework

The following research questions were investigated in Chapter Three and Four:

1. **Is environmental identity related to local environmental concern and willingness to participate in endangered species conservation?**
    - What is the relationship between environmental identity and (a) environmental concern, (b) willingness to participate, and (c) experiences and knowledge in nature of sea turtle conservation?
    - Are these relationships affected by gender and age?
    - Do formative experiences in nature foster a greater environmental identity?
2. **Does sea turtle presence support local experiences and knowledge in nature?**
    - Do those who have a greater environmental identity, experiences and knowledge in nature, and willingness to participant reside in the same location that which has a greater presence of sea turtles?

The first phase of this research was to complete a literature review that demonstrated the potential for environmental identity to be a meaningful tool for effective endangered species conservation. This literature review is the focus of Chapter Two. The third chapter explores the relationship between environmental identity and level of environmental concern, willingness to participate, and experiences and knowledge in nature. Chapter Three seeks to further understand

if these relationships are affected by gender and age, and whether formative experiences in nature foster a greater environmental identity. Chapter Four offers an in-depth look at past and current experiences and knowledge in nature to determine if sea turtle population trends support participant's experiences and knowledge of loggerhead sea turtles, the locally protected species in Kefalonia, Greece. In addition, the fourth chapter explores where individuals with a greater connection to nature reside, and whether they are the same people to have more experiences and knowledge of the local protected species, and are interested in participating and/or supporting endangered species conservation efforts. Each chapter has been written to stand alone as a publication; due to this there may be some repetition in each chapter, specifically for the Methods and Results in Chapters Three and Four.

This research shows evidence that environmental identity has the potential to be a strong predictor of local environmental concern and willingness to participate leading to more effective endangered species conservation. My intention is to share the foundation to creating a global model using environmental identity as an effective tool for strengthening conservation projects and building community involvement.

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Chapter 2: A Literature Review on the Use of Environmental Identity as a Valuable Tool for Effective Endangered Species Conservation

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Abstract

Endangered species conservation involves many complex factors that can limit effectiveness. Local participation is one of these factors, and has been found to be critical for effective conservation, yet a lack of local involvement in conservation projects remains. To address challenges and achieve effective participation in endangered species conservation projects, I propose an interdisciplinary approach drawing on conservation psychology, specifically exploring environmental identity (EID). Environmental identity is the way we orient ourselves to the natural world and thereby take actions based on our history, personality, emotional attachments, values, and sense of self. I explore EID as a consistent predictor of local environmental concern and willingness to participate in endangered species conservation. This review discusses the complexities of participation and community conservation, and why environmental identity is a potentially beneficial human attribute to apply to endangered species conservation. I propose five possible outcomes of using environmental identity to improve conservation interventions. Considering such outcomes offers conservation projects a better understanding of which community members would be more likely to get involved and how to encourage participation leading to more locally supported and effective endangered species conservation.

Introduction

The International Union for Conservation of Nature (IUCN) Red List of Threatened Species is the most comprehensive resource that records plant and animal species taxonomic, conservation, and distribution information (International Union for Conservation of Nature [IUCN], 2019a). IUCN's main purpose is to track and highlight those species referred to as "threatened" which face a high risk of global extinction (IUCN, 2019a; Rodrigues, Pilgrim, Lamoreux, Hoffmann, & Brooks, 2006). The IUCN uses the term "threatened" to identify species listed as vulnerable, endangered, and critically endangered. For this review the term "endangered" or "threatened" will refer to any species facing threats and high risk of extinction. An assessment of the major groups of organisms completed between 1996 and 2019 included 112,432 species and identified 30,178 species as "threatened" (IUCN, 2019b). This information, along with data on current rates of extinction versus background rates (standard rate of extinction based on the fraction of species that have gone extinct per unit time), has led scientists to believe our planet is facing a sixth mass extinction (Barnosky et al., 2011; Chivian & Bernstein, 2008; Luther, Skelton, Fernandez, & Walters, 2016; Pimm et al., 2014).

Two overarching drivers of species extinction are human population growth and increasing per capita consumption of natural resources (Berkes, Feeny, McCay, & Acheson, 1989; Chapman et al., 2016; Chivian & Bernstein, 2008; Hardin, 1968; Ostrom, 1990; Pimm et al., 2014). These trends exacerbate the myriad direct threats and stresses species endure. Direct threats are the proximate human activities that have caused, are still causing, or in the future may cause the destruction, degradation, and/or impairment of biodiversity (e.g., logging or unsustainable fishing; Conservation Measures Partnership [CMP], 2013; Salafsky et al., 2008). A stress refers to a degraded condition or symptom of the target species, community, or ecosystem

that result from a direct threat (e.g., decrease in population size or fragmentation of forest habitat; CMP, 2013; Salafsky et al., 2008). However, direct threats and stresses are not the only challenges conservation plans must address when working with endangered species conservation. Endangered species conservation is characterized by high stakes and complex contributing factors; conservation efforts center around species that are threatened and close to extinction due to factors such as small population sizes, habitat loss, illegal activities, and the socioeconomic condition of humans (Chivian & Bernstein, 2008; IUCN, 2019a).

In addition to direct threats and stresses that make endangered species conservation complicated, other human-based contributing factors add to the complexity and high stakes of endangered species conservation (Barnosky et al., 2011; Baynham-Herd, Redpath, Bunnefeld, Molony, & Keane, 2018; Chivian & Bernstein, 2008; Luther et al., 2016; Pimm et al., 2014). According to Salafsky et al. (2008), contributing factors including economic, social, cultural, institutional, and political are those that add to the persistence of direct threats and stresses. These types of human-based contributing factors range from limited monetary resources, the local socioeconomic situation, and demographics to other issues such as the lack of country, state, and local governmental support, corruption, and the lack of regional and local enforcement of conservation commitments (Baynham-Herd et al., 2018; Gadgil, Berkes, & Folke, 1993; Male & Bean, 2005; Mancini et al., 2011; Salafsky et al., 2008; Smith & Wishnie, 2000). For endangered species conservation to be effective, conservation programs worldwide have applied multidisciplinary approaches and multiple strategies such as protection or management of species and habitats, education and awareness-raising, and training and capacity building (Ariefiandy et al., 2015; Baynham-Herd et al., 2018; Horwich, Lyon, Bose, & Jones, 2012; Kapos et al., 2009; Nilsson, Baxter, Butler, & McApline, 2016; Salafsky et al., 2008). However,

effective conservation programs must consider humans, specifically communities and their role and level of involvement with endangered species conservation. It is especially important to understand communities and local participation because they add additional layers of complexity that influence conservation outcomes.

For this review, community is defined as a social group (individuals from the same area, district, or region) which shares something in common (sense of common interest or identity, the same social structure, and shared norms), and which can also be a complex, heterogeneous group of people (based on different gender, politics, class, patronage, ethnicity, age, social standing, religion, etc.) with conflicting goals, aims, and desires (Agrawal & Gibson, 1999; Campbell, Godfrey, & Drif, 2002; Horwich et al., 2012; Williams, 1982). Therefore, communities can be viewed as complex and multifaceted. Conservation programs sometimes have underestimated the complicated nature of community context such as social, cultural, economic, and political factors; they have also overlooked the complexity of human behaviors (Knight, Cowling, Difford, & Campbell, 2010; Rands et al., 2010; Waylen, Fischer, McGowan, Thirgood, & Milner-Gulland, 2010). Limiting community participation or excluding the community entirely has led to misunderstandings between the community and the conservation project, at times leading to ineffective conservation programs (Agrawal & Gibson 2001; Baral & Heinen, 2007; Barrett, Brandon, Gibson, & Gjertsen, 2001; Berkes, 2004; Campbell, 2000; Campbell, Haalboom, & Trow, 2007; Infield & Namara, 2001; Noss, 1997; Songorwa, 1999).

In this review, participation is referred to as the redistribution of power that enables active or true involvement of local people or communities in conservation initiatives including planning, decision and policy making, and managing of the conservation program while taking into account local views and perspectives (Arnstein, 1969; Pretty, 1995). Based on levels six

through eight (partnership, delegation, and citizen control, respectively) of Arnstein's ladder, I position participation in a context focusing on local people or communities being active participants in established, new, or developing conservation programs.

To mitigate the high stakes and complex nature of endangered species conservation, which often involves implementation of multiple approaches and strategies, conservation teams may draw on interdisciplinary expertise and include human aspects such as participation in conservation planning (Ariefiandy et al., 2015; Berkes, 2004; Campbell & Vainio-Mattila, 2003; Horwich et al., 2012; Kareiva & Marvier, 2012; Nilsson et al., 2016; Santangeli et al., 2016). Conservation scientists and practitioners have found that successful projects are often those where communities are involved in planning and management, autonomous members of committees and decision makers, and in control of local natural resources (Bajracharya, Furley, & Newton, 2005; Nilsson et al., 2016; Waylen et al., 2010). Participation is brought into the fold as a way to move towards effective conservation efforts. The inclusion of humans in conservation is not a new concept (Ariefiandy et al., 2015; Berkes, 2004; Campbell & Vainio-Mattila, 2003; Horwich et al., 2012; Kareiva & Marvier, 2012). Yet understanding the complexities of human nature and which attributes contribute to positive conservation outcomes is still relatively unexplored in the conservation literature (Kareiva & Marvier, 2012).

In this review I pay special attention to community involvement in endangered species conservation, and explore the reasons why I believe environmental identity (EID) is an important human attribute to consider for improving conservation outcomes. Two main questions are presented: Why does a lack in community participation, including the type of involvement, remain in endangered species conservation? How can conservation projects gain a better understanding of who is more likely to get involved and their level of environmental concern?

Here, I discuss the complexities of participation and community conservation in endangered species conservation efforts. I conclude by discussing an interdisciplinary approach, conservation psychology, and specifically explore the human attribute of environmental identity or an individual's connection to nature. Since environmental identity has been shown to be a consistent predictor of local environmental concern and willingness to participate in other fields, I will discuss its potential application in endangered species conservation.

Complexities of Participation and Community Conservation

Participation

Conservation actions often occur where humans reside or will be residing as the human population expands. Therefore, understanding human involvement in conservation should begin by understanding the "community" (Chapman et al., 2016; Chivian & Bernstein, 2008; Pimm et al., 2014). As noted previously, communities are complex, multi-faceted groups of individuals which may have things in common, but also have differing attributes and perspectives such as their connection to nature. In addition, it is important to consider community in endangered species conservation since local communities and individuals often have knowledge of natural resources, are affected by changes to the management of biodiversity, and can be either powerful advocates or creators of resistance to conservation efforts (Balint, 2006; Berkes, 1999; Berkes, Colding, & Folke, 2000; Gadgil et al., 1993; Measham, 2007).

Including local people and communities in conservation efforts can be especially beneficial for endangered species conservation. However, the degree of participation depends on who is involved and who is not involved in conservation efforts, the motivations for participation, in what local people are participating, the extent of involvement, and how participant knowledge is considered (Campbell & Vainio-Mattila, 2003; Cornwall, 2008).

Successful conservation efforts may be limited if people are not included or not attracted to be involved in a way that offers active or true participation (as defined previously; Arnstein, 1969; Pretty, 1995). According to Arnstein's (1969) ladder of citizen participation, there are eight rungs or levels indicating the amount of citizen participation or power given to local people for decision making.

The first five rungs keep the power and the right to decide in the hands of the powerholders, whereas the final three encourage citizen power or control. The first two levels are manipulation and therapy, and they are both non-participative. Manipulation is described as a way for the "powerholders" to "educate" or engineer the support of the citizens such as advisory councils that have no official power but are used to show that local people are involved in the proposed project. Therapy originated in the mental health field and refers to ways to "cure" or convince citizens to "adjust" their way of thinking or attitudes and values so they match those of a larger group or that of society. At these levels the goal is to educate participants in order to achieve public support and convince them the proposed plan is best. The third level, informing, is the first step to legitimate participation. However, the emphasis is on a one-way flow of information with no option for feedback. The fourth level, known as consultation, gets closer to legitimate participation by including such things as attitude surveys, neighborhood meetings, and public enquiries. Arnstein (1969) feels that while these are important actions, this level still represents ritual to capture citizen interest; others feel this level is pertinent because it helps determine human interest, values, and perceptions that will lead to the final three rungs of true citizen participation: partnership, delegation, and citizen control (Bautista et al., 2017; Hernes & Metzger, 2017). The fifth level, placation, includes the creation of committees by the powerholders allowing citizens to advise or plan long-term. Yet, the right to judge the legitimacy

or feasibility of the advice remains with the powerholders.

According to Arnstein (1969), the last three rungs of the ladder exist within true citizen participation. Level six, partnership, is where power has been redistributed through negotiation between citizens and powerholders. Planning and decision-making responsibilities are shared between both groups (e.g. through joint committees). The seventh level, delegation, goes beyond the previous rung: local people hold a majority of seats on committees with genuine power to make decisions. The local community now retains the power to assure accountability of the program and its goals. The final level of Arnstein's (1969) ladder, level eight, is citizen control: citizens control the planning, policy making, and managing of the program without intermediaries.

Arnstein's ladder has been critiqued, even by Arstein, for limitations such as citizen power not distributed as neatly across the rungs as suggested, the assumption that participation is hierarchical with citizen control representing the goal of participation, and due to the broadness of the ladder it does not address the uniqueness of each situation or problem which may require different levels of participation (Babu, 2015; Collins & Ison, 2006). For this review, I position participation in a context focusing on local people or communities being active participants in established, new, or developing conservation programs. If barriers (for example, lack of time and money) arise that prevent local people from participating in conservation initiatives, then effort to find different levels of participation that suit the individual or community needs should be determined.

While conservation projects may have good intentions to work collaboratively with communities by focusing their efforts on protecting biodiversity, promoting awareness of environmental issues, and offering economic incentives to communities, outcomes may not

always be positive; community members may return to illegal activities such as hunting, conservation projects may lack community support, and in some situations resentment toward the conservation initiatives may develop (Balint, 2006; Lewis & Phiri, 1998; Waylen, McGowan, & Milner-Gulland, 2009). For example, Waylen et al. (2009) found that while local awareness and attitudes in Trinidad were positive toward ecotourism and conservation of two critically endangered species, the Leatherback sea turtle (*Dermochelys coriacea*) and Trinidad piping guan (*Pipile pipile*), this positive attitude and awareness of species endangerment did not manifest in a decrease in hunting. Households that were directly benefiting from the ecotourism industry had better knowledge of local, natural resources and greater general awareness of conservation issues than those households not participating. Regardless, awareness and positive attitudes did not translate into conservation behaviors because the conservation project neglected to consider social and cultural factors such as hunting and wild meat consumption, which are widespread and popular pastimes.

This conservation project in Trinidad may have been more effective if important members of the community (hunters) had been included in the design of the project; involvement of hunters may identify ways to help decrease hunting or unfolded possible ways to work with the traditions of the community. Negative outcomes are often a result of the exclusion of the community in conservation efforts or at best limited citizen participation (or, levels 1 through 5 on Arnstein's ladder). If true citizen participation (represented in levels 6-8) is not encouraged local people may be excluded from engaging in environmentally-based actions and decision making, preventing conservation projects from learning from and understanding a community's values, identity, traditions, needs, and knowledge that can contribute to valuable support for conservation initiatives.

Encouraging true citizen participation provides conservation teams the opportunity to gain knowledge and understanding of the context, needs, values, and identity of a community, which are all helpful in building strong and sustainable programs. When the sixth level of participation known as partnership was incorporated in conservation projects in India and Congo, effective collaborations between local people, regional non-governmental organizations (NGOs), and government agencies proved successful in creating joint networks, establishing partnerships, and protecting biodiversity (Horwich, Das, & Bose, 2013; Horwich et al., 2012; Taty, Chatelain, & Borrini-Feyerabend., 2003).

Some conservation programs in Nepal have emphasized the devolution of power to the local communities to achieve participation, resulting in successful management of biodiversity, resources, and protected areas by the local people (Baral & Heinen, 2007; Mehta & Heinen, 2001). For example, when local residents in Namibia were given more control over communal land rights through community-level resource management institutions or conservancies, their participation contributed to successful wildlife management (Scanlon & Kull, 2009). Citizen control, the last rung in Arnstein's model, can be found in conservation projects that began with a grassroots structure within and by the local communities. Examples come from sea turtle conservation in Costa Rica and Brazil and cotton-top tamarins (*Saguinus oedipus*) conservation in Colombia (Campbell, 1997; Campbell et al., 2007; Marcovaldi & Marcovaldi, 1999; Marcovaldi, Patiri, & Thomé, 2005; Vieitas, Lopez, & Marcovaldi, 1999; Savage, Guillen, Lamilla, & Soto, 2010; Roldán et al., 2012; Stahelin, Fiedler, e Lima, Sales, & Wanderlinde, 2012). These programs have been successful for over 20 years in conserving endangered species while providing sustainable, economic benefits for the local community.

Community involvement thus occurs on a continuum, whether it be top-down control

(actions and policies initiated and controlled at the governmental or highest level; levels 1 through 5) or bottom-up management (solutions that begin at the lowest organizational level and within a community; levels 6 through 8) (Arnstein, 1969; Berkes, 2004 & 2007). Community involvement can include informal and formal committees, partnerships, and networks among governments, NGOs, and local people; local people and communities can be powerful advocates for conservation approaches when they are included in the planning and management process (Arnstein, 1969; Berkes, 2004 & 2007; Blom, 1998; Chapman et al., 2016; Horwich et al., 2012; Rodriguez-Izquierdo, Gavin, & Macedo-Bravo, 2010). Community participation has been an active topic of discussion, and can be found across a variety of arenas such as tourism development, environmental management, social-ecological systems, and community-based conservation (Arnstein, 1969; Pretty, 2011; Pretty et al., 2009; Reed, 2008; Tosun, 2006). In the next section, I take a closer look at community conservation.

Community Conservation

Community conservation projects or community-based conservation (CBC) has been a driving force for the inclusion of humans in conservation initiatives, specifically regarding the last three rungs of Arnstein's ladder (partnership, delegation, and citizen control). In this review, community conservation is defined as natural resources or biodiversity protection by, for, and with local communities and indigenous peoples, while taking into consideration drivers, institutional linkages at the local level, and multi-level organizations affecting the local level (Berkes, 2004, 2007; Horwich et al., 2012). Natural resources or biodiversity protection most often encompass the protection of endangered species or ecosystems in a biodiversity-rich and sensitive area. Community conservation includes ecological, development, and other human needs, and focuses on people as the solution not the problem, working at a community scale

(bottom-up approach) and supporting the decentralization of power enabling local control (Ariefiandy et al., 2015; Baral & Heinen, 2007; Berkes, 2004, 2007; Chhetri, Mugisha, & White, 2003; Horwich et al., 2012; Inskip, Carter, Riley, Roberts, & MacMillan, 2016; Kareiva & Marvier, 2012; Pretty & Smith, 2004; Wilshusen, Brechin, Fortwangler, & West, 2002).

Community conservation projects often have small budgets and long-term agendas that are most successful when they are flexible and adaptable to a variety of internal and external changes (Blom, 1998; Chapman et al., 2016). Community conservation can be socially sustainable, without support from local governments, NGOs, and other regulating systems (Hardin, 1968; Horwich et al., 2012; Nilsson et al., 2016). Community conservation projects also take into consideration the complexity of threats and stresses facing endangered species, contributing factors, the many conservation approaches that can be applied, the importance of community, and the involvement of local people (Campbell, 1997; Campbell et al., 2007; Marcovaldi & Marcovaldi, 1999; Marcovaldi et al., 2005; Martin & James, 2005; Vieitas et al., 1999). However, along with the complexity of endangered species conservation, a lack of community involvement and misunderstandings between conservation projects and communities persists (Balint, 2006; Lewis and Phiri, 1998; Waylen et al., 2009).

Common problems with community conservation include but are not limited to: (1) failure to consider local socioeconomic factors and, on a wider scale, the impact of socio-political factors; (2) ineffective link between incentives and the support of conservation, for example the benefits community members receive do not necessarily lessen the poaching in that area; (3) lack of decentralized power and distribution of responsibilities to local people and communities; (4) oversimplifying community as being homogenous with the same shared norms, values, and place identity; and (5) disregard of community involvement during stages of project

development and implementation (Agrawal & Gibson 2001; Baral & Heinen, 2007; Barrett et al., 2001; Berkes, 2004; Campbell, 2000; Campbell et al., 2007; Infield & Namara, 2001; Noss, 1997; Songorwa, 1999). These problems encompass the two main issues previously mentioned, misunderstandings between conservation projects and communities and lack of true participation. In the next section I will explore ways to remedy these issues through an interdisciplinary lens specifically focused on the human attribute of environmental identity for endangered species conservation.

Using an Interdisciplinary Lens for Endangered Species Conservation

Conservation Psychology

Endangered species conservation is a human initiative created and implemented by humans to prevent or alter the threats or impact caused by human behavior (Mascia et al., 2003; Saunders, Brook, & Myers, 2006). The realization that conservation is a human endeavor eventually prompted inclusion of the social sciences in conservation research (Hamann et al., 2010; Mascia et al., 2003; Saunders et al., 2006; Soulé, 1985). Mascia and colleagues (2003) believe the success of local, national, and international conservation efforts can be attributed to incorporating the social sciences because disciplines like political science, anthropology, sociology, and psychology focus on social factors (including economic, social, cultural, institutional, and political), human attributes (such as cultural beliefs, values, attitudes, concern, norms, and rules), and human behavior.

Conservation biology includes humans by focusing on the application of biological science to address the problems species, communities, and ecosystems face as a result of human impact (Soulé, 1985). However, it was not until the development of conservation science that the well-being of humans was considered in addition to nonhuman nature (Kareiva & Marvier,

2012; Soulé, 1985). Conservation science considers the improvement of human well-being through the management of the environment with strategies that jointly maximize benefits to both people and biodiversity (Kareiva & Marvier, 2012). Conservation science bridges a gap by including the application of both the natural and social sciences (Figure 1a & b). While conservation science is an improvement to conservation biology by including the social sciences, it is situated in a broad multidisciplinary context (e.g. anthropology, psychology, sociology).

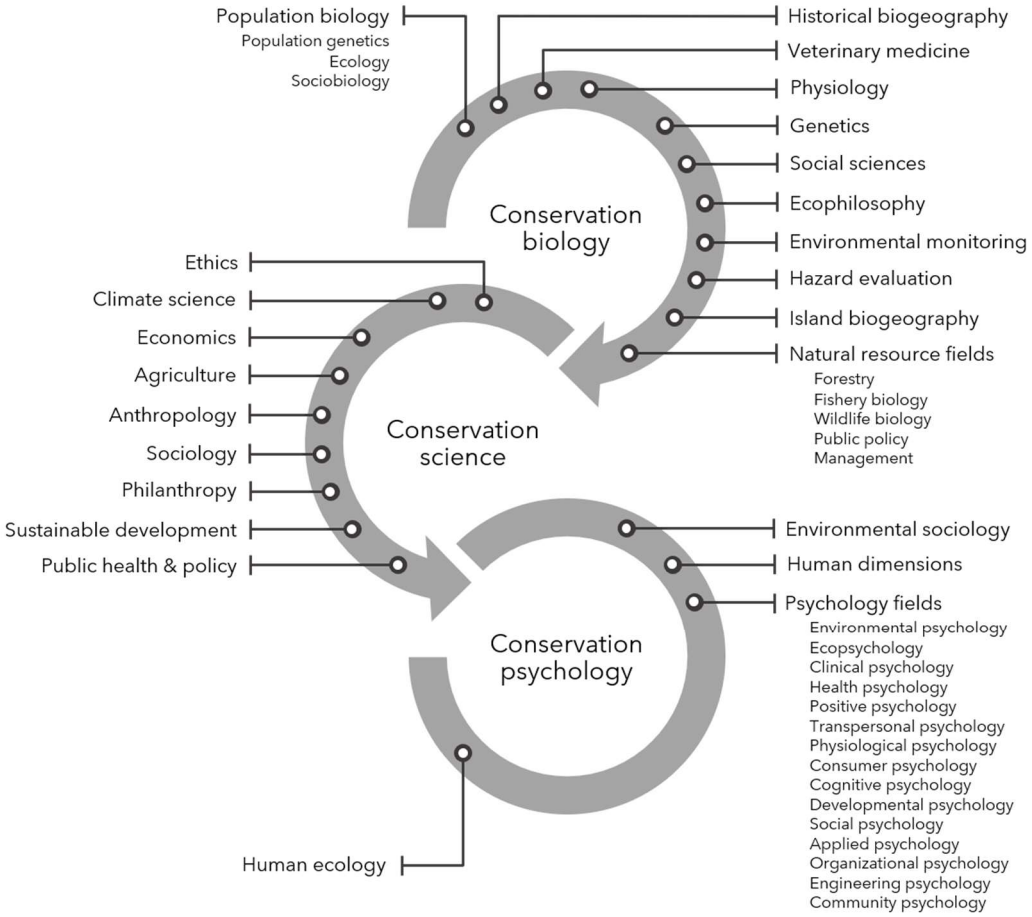

Figure 1. Fields of integrated science, a.) Conservation biology (top), b.) Conservation science (middle), and c.) Conservation psychology (bottom). All are fields that organize contributions from other fields and sub-disciplines toward conservation-related efforts (adapted from Kareiva & Marvier, 2012; Saunders, 2003; and Soulé, 1985)

The field of conservation psychology can provide a framework for understanding how human behavior can contribute to or hinder effective conservation (Clayton & Myers, 2015;

Saunders, 2003). It found its origins in the social sciences, specifically psychology, and for this review is defined as the consistent and persistent examining of the human place in nature, and in turn, nature's place in the human being, with a particular focus on how to encourage conservation of the natural world (Clayton & Myers, 2015; Saunders, 2003). Often overlooked by endangered species conservation programs, conservation psychology uses psychological principles, theories, or methods to understand and solve issues related to the human aspects of conservation. It is intended to strengthen connections between the natural and social sciences, researchers and practitioners, and among other social sciences (Figure 1c).

Two of Mascia's (2003) recommendations for the field of conservation biology were to create a cross-disciplinary communication network and a linkage between humans and nature. Conservation psychology has strived to accomplish both of Mascia's (2003) recommendations since its inception, as it is a network of interdisciplinary researchers and practitioners who are focused on understanding and promoting a sustainable and harmonious relationship between people and the natural environment (Saunders, 2003). Finally, the field of conservation psychology focuses on two key principles: (1) motivating people to act in more environmentally-friendly ways, and (2) encouraging people to care about the natural world and their role in it (Saunders, 2003). Therefore, conservation psychology has the potential to be used in endangered species conservation by focusing on a person's willingness to participate and level of concern for the environment and endangered species. Within the conservation psychology framework exists environmental identity, which at a basic level is a person's sense of connection to the nonhuman, natural environment (Clayton, 2003).

Environmental Identity

Several names and similar meanings have been used to describe environmental identity

(e.g. environmental identity, ecological identity, environmental self, and ecological self). In this review, I define environmental identity (EID) as the way we orient ourselves to the natural world (animals, plants, and other things existing in nature and not made or caused by humans) and thereby take actions based on our history, personality, emotional attachments, values, and sense of self (Clayton & Myers, 2015; Clayton & Opotow, 2003; Thomashow, 1996). Research has found that environmental identity is a good predictor of environmental concern and behavior (Clayton, 2003; Clayton, 2012; Clayton & Kilinç, 2013; Veijalainen & Clayton, 2013). In addition, the development or awareness of an environmental identity encourages concern for animals and the surrounding environment (Clayton, Fraser, & Burgess, 2011; Gosling & Williams, 2010; Hayes-Conroy & Vanderbeck, 2005). Therefore, environmental identity has the potential to be a meaningful tool in a complex, high stakes field of endangered species conservation. However, while environmental identity has been applied conceptually in some research it has not been applied in practice specifically to the field of endangered species conservation (Clayton et al., 2011; Fraser, Clayton, Sickler, & Taylor, 2009; Clayton & Brook, 2005).

Humans have multiple identities that can coexist and may vary depending on the situation (Clayton, 2003, 2012). Thus, an individual can be a fisherman, a son, a brother, and a father, and these identities can coincide with an environmental identity. Identities form over time as children experience different things during individual and social development. Environmental identity seems to emerge from direct experiences in nature that reshape an individual's experiences of themselves in regard to a connection to the natural world separate from culture or society (Zavestoski, 2003). Research shows that forming an environmental identity often begins during early encounters with nature, often times with loved ones or during meaningful social

experiences, and with a considerable amount of time spent in nature (Arnold, Cohen, & Warner, 2009; Chawla, 1999; Palmer, 1993).

Environmental identity is part of a social identity or one's sense of self derived from membership of a social group(s); in other words understanding oneself in a natural environment cannot be fully separated from the social meanings given to nature and to environmental issues (Clayton, 2003; James 1890; Mead, 1934; Zavestoski, 2003). The complex nature of an identity, therefore, encourages one to view environmental identity with multiple, integrative meanings: (1) our sense of connection to the nonhuman, natural world based on both a personal level (or self-concept) and as part of a larger whole; (2) the degree of similarity we perceive between ourselves and other components of the natural world; (3) whether we consider nature and nonhuman natural entities to be valued components of our social and moral community; (4) the natural world given an identity through the way in which people view and experience their relationship with it and how it also influences individual identities; (5) places we relate to – known as *place attachment* – such as locations with extreme winters or ocean front property; and (6) the way we interact and identify with nature – such as being an environmentalist, hiker, or landowner (Clayton & Opotow, 2003; Opotow, 1993, 1996).

Concern for the environment, attitudes, beliefs, and values have been investigated especially in regard to encouraging pro-environmental behaviors or actions (Akerlof & Kennedy, 2013; Schultz, 2001; Stem, Lassoie, Lee, Deshler, & Schelhas, 2003; Stern, Kalof, Dietz, & Guagnano, 1995). Pro-environmental behaviors or actions are defined here as behaviors completed for the motivation to conserve the environment and lessen environmental burdens (such as waste reduction, recycling, energy and water saving and purchasing environment-friendly foods; Kurisu, 2015)). Pro-environmental behaviors have been attributed to attitudes,

beliefs, and values (Ajzen, 1991; Schultz, 2001; Stern et al., 1995). Research shows that pro-environmental action is a function of both values and beliefs (Stern et al., 1995).

The Values-Beliefs-Norms (VBN) model, specifically created to understand pro-environmental behaviors, represents a framework linking values and beliefs to pro-environmental behaviors (Ajzen, 1991; Stern, 2000; Stern, Dietz, Abel, Guagnano, & Kalof, 1999). The deep-rooted values a person holds for him or herself, others, and the environment influences beliefs and affects perceptions thus encouraging pro-environmental action. The more well-known Theory of Planned Behavior (TPB) explains how behaviors are a function of attitudes (which are a function of beliefs) and other factors such as unintentional reasons or situational cues. The three main behavioral intentions in the TPB model are attitudes, social norms, and perceived behavioral control. Together these three factors can promote the "intention" to take environmentally-based action (Akerlof & Kennedy, 2013). While these models are progressive in regards to pro-environmental behaviors or actions, they exclude the concept of identity, specifically environmental identity. EID has seldom been included in previous models, despite being shown to have a significant relationship to behavior even when other predictors (attitudes, values, ideology) remain constant (Clayton, 2003). Therefore, environmental identity could be viewed as a neglected yet powerful human attribute to be considered in current and future research.

To better understand environmental identity, Clayton (2003) created a 24-item scale known as the Environmental Identity (EID) scale (later shortened to 11 items by Clayton (2012)). The scale was originally applied to North American understanding of nature, and since has been explored in Europe (specifically Finland, France, and Turkey) (Clayton & Kilinç, 2013; Prévot, Clayton, & Mathevet, 2016; Veijalainen & Clayton, 2013). Environmental identity has

predicted environmentally protective behaviors and environmentally-friendly gardening practices, and research has shown that individuals with a higher EID score are more supportive of managing natural resources for environmental protection of plants and air quality (Clayton, 2003; Kiesling & Manning, 2010; Winter & Chavez, 2008).

Determining an individual's environmental identity may help facilitate an understanding of how an individual or community defines the environment, to what degree the individual or community feels they are similar to the natural world, and whether the natural world and nonhuman entities are valued parts of their social and moral community (Clayton & Myers, 2015; Clayton & Opotow, 2003; Thomashow, 1996). EID has been investigated in zoo settings, in higher education, and with farmers, showing how the development or awareness of an environmental identity encourages concern for animals and the surrounding environment (Clayton et al., 2011; Gosling & Williams, 2010; Hayes-Conroy & Vanderbeck, 2005). Learning how people identify with nature and giving them the opportunity to create and nurture an environmental identity may be fruitful in strengthening a person's connection to nature thereby encouraging local participation and support of conservation efforts.

Two important aspects of human identity to consider are values and life goals. These two aspects reflect what a person will consider important and desirable to strive for throughout their lifetime (Crompton & Kasser, 2009; Schwartz, 1992). Values and life goals are higher-level cognitions that shape an individual's attitudes and behaviors toward ideas, objects, and other people (Crompton & Kasser, 2009; Feather, 1992; Schwartz, 1992). For instance, someone who cares about nature and has a strong connection to nature will be more attracted to protecting the environment and be more supportive of conservation actions throughout their lifetime. Since environmental identity can coincide with the multiple identities humans have (e.g. an individual

can be a fisherman, a son, a brother, and a father) it can be considered a consistent human attribute and hence be beneficial for tackling the complexities of endangered species conservation.

Applying Environmental Identity in Conservation

There is a variety of conservation planning and decision-making frameworks in existence that offer tools and guidelines for conservation practitioners to develop effective conservation programs (Bower et al., 2018; Schwartz et al., 2018). Engaging stakeholders is part of most conservation models. However, one area that still needs development in conservation frameworks is a tool to identify stakeholders and harness civic engagement (Kapos et al., 2009; Schwartz et al., 2018). Perhaps environmental identity is the tool needed to determine 'who' in a community is 'willing to participate' and 'how' they can be engaged to support local conservation efforts. As a tool, environmental identity can also be tethered to determining which level of participation an individual would be interested in, specifically levels of planning, decision making, and managing (true or active citizen participation). True or active citizen participation is critical for effective outcomes and environmental identity as a consistent human attribute may prove important for endangered species conservation which is wrought with many challenges and requires urgent, effective solutions in a rapidly changing world.

True citizen participation may not always be feasible to attain in some situations, however, steps to improve local participation and encourage community support in conservation efforts is imperative. Thus, I propose using environmental identity to improve conservation interventions by: (1) learning which community members possess a strong connection to nature and environmental concern; (2) learning which community members possess strong willingness to participate in endangered species conservation while considering potential constraints (e.g.,

not enough time, not enough money, and both of which prevent ability to get involved); (3) fostering positive relationships between these individuals and the conservation program/team; (4) offering opportunities and encouraging active citizen participation with consideration to potential constraints (e.g., local participants can share knowledge with tourists and local residents about the target endangered species via a simple conversation in which they share knowledge or an informational pamphlet created by the conservation program without taking too much time from their jobs or family life); and (5) supporting community members to inspire other local people and communities, also known as conservation contagion – conservation initiatives that have the potential to spread to other people and communities, often throughout regions by a process of diffusion, specifically initiated by the interest and support of the local people (Horwich et al., 2013; Horwich et al., 2012).

While environmental identity is not a solution to the complexities of endangered species conservation, using EID as a consistent predictor of local environmental concern and willingness to participate will help conservation teams gain a better understanding of who is more likely to get involved and how to bridge gap in community involvement. This new knowledge would have the potential to lead to more locally supported and effective endangered species conservation efforts.

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Chapter 3: Environmental Identity as a Valuable Tool for Effective Endangered Species Conservation: An Example in Sea Turtle Conservation in Kefalonia, Greece

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Abstract

Achieving effective conservation interventions is important as we are in the midst of a sixth mass extinction and the earth's biodiversity is threatened at a global level. Environmental identity (EID), or connection to nature, has been applied to farming, zoos, and education demonstrating that EID is a good predictor of environmental concern and proenvironmental behaviors. In this study I explored EID, a social science concept from the field of conservation psychology, as an approach to predict a person's level of concern and willingness to participate in conservation efforts for more effective endangered species conservation. I created a three-part study using an embedded mixed methods-style design which included: an Environmental identity (EID) scale, a nature-based experience and knowledge scale, and a three-part participant survey. Both closed and open-ended questions were included in the three-part participant survey to encourage open dialogue and discussion similar to an interview. Data on environmental identity, level of concern, willingness to participate, and past and current experience and knowledge in nature were collected from 113 participants during 2017 in Kefalonia, Greece, where loggerhead sea turtle (*Caretta caretta*) populations are a focus of conservation efforts The data showed a relationship between environmental identity and level of concern and willingness to participate in conservation efforts, and with past and current experience and knowledge in nature. Youth (less than 24 years of age) felt less connected to nature, and women had a greater willingness to participate specifically in planning, decision-making, and managing of conservation initiatives. These results support the use of EID as a valuable tool for predicting level of concern and willingness to participate for effective endangered species conservation. Through conversations to determine an individual's environmental identity participants also shed light on barriers facing participation in conservation efforts in Greece which included lack of time and money.

Understanding environmental identity among stakeholders and barriers to participation can be valuable information to improve community participation in conservation projects and improve endangered species outcomes.

Introduction

An assessment of the major groups of organisms completed between 1996 and 2019 included 112,432 species and identified 30,178 species as "threatened" (International Union for Conservation of Nature [IUCN], 2019). This information, along with data on current rates of extinction versus background rates (standard rate of extinction based on the fraction of species that have gone extinct per unit time), has led scientists to believe our planet is facing a sixth mass extinction (Barnosky et al., 2011; Chivian & Bernstein, 2008; Luther, Skelton, Fernandez, & Walters, 2016; Pimm et al., 2014). Attempts to mitigate the decline of global biodiversity and create effective conservation approaches has existed for over four decades (Akçakaya et al., 2018; Hill et al., 2015; Hoffman et al., 2010; Mace et al., 2010; Redford et al., 2011; Soulé, Estes, Berger, & Del Rio, 2003). Stopping species extinction and recovering endangered species is critically important. Plus, the interconnection between endangered species and humans has become an essential aspect of conservation efforts (Crandall et al., 2018; Mascia et al., 2003; Paloniemi et al., 2018). In this chapter, I will explore a different way to marry local participation with endangered species conservation for effective outcomes.

The role of participation in improving the effectiveness of conservation programs has been previously explored. Participation among local community members has proven to be beneficial to endangered species conservation when the involvement is genuine and inclusive (Blom, 1998; Chapman et al., 2016). Effective community involvement may include informal and formal committees, partnerships, and networks among governments, NGOs, and local people; local people and communities can be powerful advocates for conservation approaches when they are included in the planning and management process (Arnstein, 1969; Berkes, 2004; Blom, 1998; Chapman et al., 2016; Horwich, Lyon, Bose, & Jones, 2012; Rodriguez-Izquierdo et

al., 2010). Limiting community participation, not understanding community member's beliefs and motivations, or excluding the community entirely has led to misunderstandings between the community and the conservation project, at times leading to ineffective conservation programs (Agrawal & Gibson 2001; Baral & Heinen, 2007; Barrett, Brandon, Gibson, & Gjertsen, 2001; Berkes, 2004; Campbell, 2000; Campbell, Haalboom, & Trow, 2007; Infield & Namara, 2001; Noss, 1997; Songorwa, 1999). Sometimes lack of time or interest in the environment may also prevent people from participating in conservation efforts, others willing to participate may have come across additional barriers. Some barriers discussed in the literature are limited resources, unclear definition of participation, little consultation with the community, and lack of power sharing as impediments for participation (Rodriguez-Izquierdo, Gavin, & Macedo-Bravo, 2010; Stem, Lassoie, Lee, Deshler, & Schelhas, 2003; Ward, Holmes, & Stringer, 2018).

To create and maintain sustainable endangered species conservation it is imperative to include local people and learn what motivates them to be able to motivate participation. For this chapter, I define participation as the redistribution of power that enables active or true involvement of local people or communities in conservation initiatives including planning, decision and policy making, and managing of the conservation program while taking into account local views and perspectives (Arnstein, 1969; Pretty, 1995). I have chosen to draw from the field of conservation psychology as a framework for my research, focusing on environmental identity (EID).

Conservation psychology is a discipline focused on understanding and promoting a sustainable and harmonious relationship between people and the natural environment (Saunders, 2003). The field of conservation psychology focuses on two key principles: (1) motivating people to act in more environmentally-friendly ways, and (2) encouraging people to care about

the natural world and their role in it (Saunders, 2003). Therefore, conservation psychology has the potential to support endangered species conservation outcomes by focusing on a person's willingness to participate and level of concern for the environment and endangered species. Within the conservation psychology framework exists environmental identity, which describes the way we orient ourselves to the natural world (animals, plants, and other things existing in nature and not made or caused by people) and thereby take actions based on our history, personality, emotional attachments, values, and sense of self (Clayton & Myers, 2015; Clayton & Opotow, 2003; Thomashow, 1996).

Since identity is a human aspect that involves both the self (e.g. behavior, affect, cognition) and the social (e.g. cultural, political, economic), it can represent a dynamic way to approach communities and conservation efforts (Devine-Wright & Clayton, 2010; Hinds & Sparks, 2009). In recent years, environmental identity and place identity have gained traction in the conservation literature (Devine-Wright & Clayton, 2010). While environmental identity can be viewed as a person's connection to nature, place identity is a person's connection with a specific geographic location. Both identities are related to environmental concern and proenvironmental behaviors with the latter related to a specific place of attachment (Clayton & Opotow, 2003; Devine-Wright & Clayton, 2010; Vaske & Kobrin, 2001). A person's connection to nature has been shown to correlate with happiness, care, concern, and proenvironmental behaviors (Kurisu, 2015; Schultz, 2000 & 2001; Vining, 2003; Zelenski & Nisbet, 2014).

Research has also found that environmental identity is a good predictor of environmental concern and behavior (Clayton, 2003; Clayton, 2012; Clayton & Kilinç, 2013; Veijalainen & Clayton, 2013). The development or awareness of an environmental identity encourages concern for animals and the surrounding environment (Clayton, Fraser, & Burgess, 2011; Gosling &

Williams, 2010; Hayes-Conroy & Vanderbeck, 2005). While environmental identity has been applied conceptually in some research (as noted above) it has not been applied in practice to endangered species conservation.

This chapter explores the role of environmental identity as a predictor of past and current experiences and knowledge in nature, level of concern, and willingness to participate in endangered species conservation. I studied environmental identity among local community members in Kefalonia, Greece where loggerhead sea turtles (*Caretta caretta*), listed as vulnerable by the IUCN, are a focus of conservation efforts (IUCN, 2019b). Gender and age were included as additional variables to determine if there was a relationship between environmental identity, experiences and knowledge, level of concern about endangered species specifically sea turtles, and willingness to participate in the conservation of this threatened species. The IUCN uses "threatened" to refer to any species facing threats and possible higher rates of extinction, including those listed as vulnerable, endangered, and critically endangered by the IUCN (Luther et al., 2016; Rodrigues, Pilgrim, Lamoreux, Hoffmann, & Brooks, 2006; Salafsky et al., 2008).

This is a critical time for endangered species on a global scale and endangered species conservation is not always effective due to lack of community involvement. My objective is to propose and test a model for endangered species conservation that includes environmental identity as a tool for conservation teams to determine the existing relationships individuals or communities have with nature, their level of environmental concern, and those willing to participate in endangered species conservation. This will offer conservations groups a way to identify community members that have interest in participation, include and motivate individuals in conservation efforts in a manner that is conducive to their work-life situation, and determine

misconceptions that may be preventing interest in participation and/or support of conservation efforts.

Methods

Study Site

Field work was conducted between July and August 2017 in Kefalonia (Cephalonia), Greece, a Greek island in the Ionian Sea west of mainland Greece (Kefalonia-Greece.com, n.d.a.; Wildlife Sense, n.d.a.). Based on tagging, nesting, and stranding estimates, approximately 300-500 loggerhead sea turtles live in the waters and nest on the beaches of Kefalonia. The small population of 5-11 loggerhead sea turtles living in the Argostoli harbor and Koutavos lagoon year round creates interactions with the local community. For example, sea turtles eat fish refuse discarded by fisherman and restaurants. The local discard of fish refuse is a common activity within the community; it encourages close contact between sea turtles and humans including their boats, and is a possible cause for the winter stay. Interactions on beaches between nesting female turtles, nests, hatchlings and beach-based businesses (e.g. inserting beach umbrellas can damage nests and the incubating eggs) also made Kefalonia an ideal location for investigating environmental identity as a predictor of level of concern and willingness to participate in endangered sea turtle conservation.

Kefalonia is the largest of the Ionian Islands at 781km² and has been inhabited since 10,000 B.C.E., reaching a peak of civilization during the Mycenaean period (1500-1100 B.C.E.). In 1953, there was a massive earthquake that destroyed most of the island, except the village of Fiskardo, leaving many inhabitants no place to live and causing a collapse in the economy and environment (Kefalonia-Greece.com, n.d.a.) With people eventually returning to the island the population began to increase and thrive again, reaching 35,590 in recent years (Wildlife Sense, n.d.a.). The population of Kefalonia is 86% Greek, 3.5%, European, 9.4% European non-EU,

and 1.1% non-European, with 50.19% women and 49.81% men (Hellenic Statistical Authority [ELSTAT] & National Centre for Social Research [EKKE], n.d.). The following are age groups for Kefalonia residents relevant for this study: 15-24 (10.05%), 25-34 (13.08 %), 35-44 (14.76%), 45-54 (13.58%), 55-64 (11.39%), and 65-74 (9.49%). Those employed (37.64%) fall in three main branches of the economy, agriculture, forestry, and fishing (9.78%), manufacturing and construction (19.14%), and services (71.08%) (ELSTAT & EKKE, n.d.).

Four villages and the surrounding beaches were the main locations for this study, Argostoli, Fiskardo, Lixouri, and Skala (Figure 1). Argostoli is one of two fishing villages and the capital of Kefalonia (Kefalonia-Greece.com, n.d.b.). It has a large harbor that is home to a small population of adult loggerhead sea turtles (*Caretta caretta*) who remain year long and do not migrate (C. Comis, personal communication, May 5, 2017). The other fishing village, Fiskardo, is located at the northern most tip of the island. While Fiskardo has a harbor, there have been no reports of a sea turtle population living in the harbor year round, so interactions with this threatened species are mostly in open waters (C. Comis, personal communication, May 5, 2017). In addition to Argostoli's nearby beaches, those in and near Lixouri and Skala were included in the study since these beaches host nesting turtles and hatchlings. Lixouri is the second largest village after Argostoli and is located on the Paliki peninsula to the southwest of the island. Skala is a resort town with long sandy beaches to the southeast of the island.

Kefalonia is rich in traditions, local products, geological formations, and biodiversity including a number of endemic and rare species such as monk seals (*Monachus monachus*) and loggerhead sea turtles (*Caretta caretta*) (Kefalonia-Greece.com, n.d.c.; Wildlife Sense, n.d.b.). Wildlife Sense, a local conservation group in Kefalonia, focuses on research, education, and conservation to protect threatened sea turtles, and aims to create connections with the local

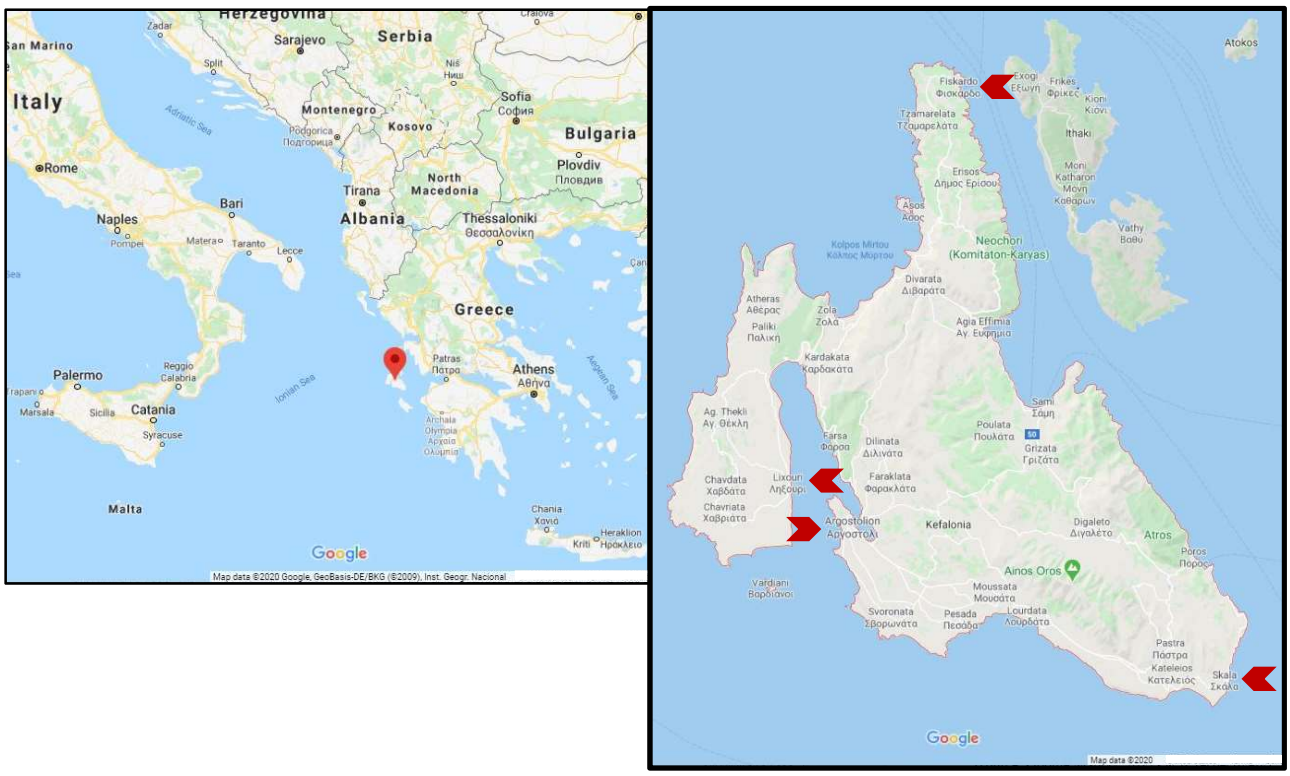

Figure 1. Maps of Kefalonia, Greece. a. Island of Kefalonia within European view (left); Island of Kefalonia in the Ionian Sea (right) – red arrow indicates the main locations in the study (source: Google Maps©, 2020a & b, respectively)

community to promote public awareness about conservation issues (Wildlife Sense, n.d.b.).

Sampling and Participants

The residents of Kefalonia were selected using two methods, purposeful sampling and snowball sampling. For purposeful sampling, participants or sites are intentionally chosen to offer in-depth insight into the problem or research question (Creswell, 2014; Patton, 2002). In this study, selection criteria were based on location and livelihood that promotes proximity to sea turtles. Staff from the organization Wildlife Sense were asked to provide an initial list of potential participants for the study based on these criteria. The villages of Argostoli and Fiskardo were chosen because they are on the coast where owners and employees of restaurants, shops, boat tours, scuba diving companies, port police, teachers, students, and fisherman have

experience interacting with adult sea turtles in the harbor and in some cases, open waters. The nearby beaches of Argostoli, Lixouri, and Skala were chosen because owners and employees of beach bars, sun beds, water sports, and beach side hotels and restaurants interact with sea turtle nests and hatchlings.

The second technique used in this study, snowball sampling, is a way to recruit people who are difficult to identify or have to meet certain criteria to participate (Cohen & Arieli, 2011; Vogt, 2005). Snowball sampling involved asking participants to recommend additional individuals who I could invite to participate in this study if they met the selection criteria. In total, there were 113 participants samped, 53 females and 60 males.

Study Design

Embedded Mixed Methods-style design. This study used a Convergent Parallel design for the two main data sets. In a Convergent Parallel design both quantitative and qualitative data have equal value (Figure 2) (Creswell, 2014; Creswell & Plano Clark, 2011). Quantitative data (QUAN) were obtained from two different instruments, the Environmental Identity (EID) scale (Clayton, 2003) and a Secondary scale developed for this study. The qualitative data (QUAL) were obtained from a three-part participant survey – demographics, environmental-based questions, sea turtle knowledge and experience – developed for this study which included both closed and open-ended questions used together to encourage a more conversational experience and allow for richer data collection. Most closed-ended questions contained a follow-up question that allowed participants to elaborate on their answers with more detail such as feelings, opinions, and knowledge. Quantitative and qualitative data were collected within the same timeframe, and then compared resulting in a merged interpretation.

What makes this study an embedded mixed methods-style design is the additional quantitative (quan) data set that is nested within the Convergent Parallel design (Figure 2) (Creswell, 2014). The nested quantitative data sets were attained from six seasons (2013 to 2018) of population data of adult sea turtles in the waters around Kefalonia and the number of nests on local beaches collected by Wildlife Sense. These data were compared with the survey data from participants about sea turtle knowledge and experience. The nested data (quan) were collated and analyzed approximately a year after the QUAN & QUAL data. The nested data (quan) will not be discussed in this Chapter.

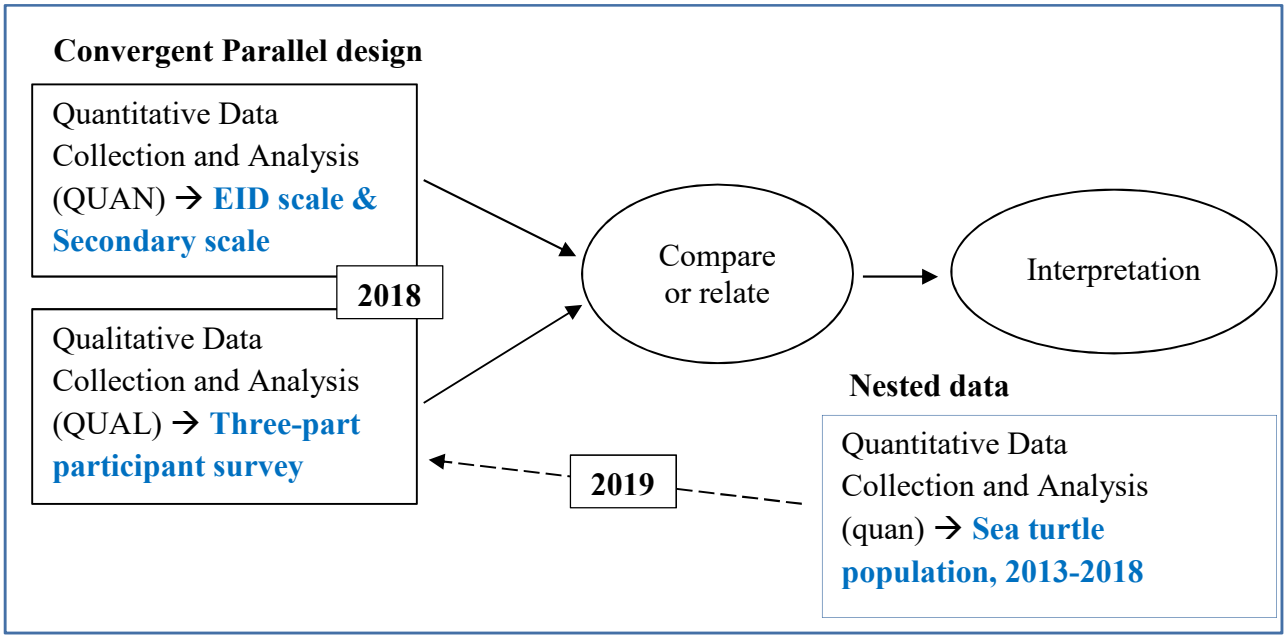

Figure 2. Embedded Mixed Methods-style design. Quantitative data nested within the larger Convergent Parallel Mixed Methods design, showing how the quantitative and qualitative data will be connected before interpretation (adapted from Creswell, 2014)

Data Collection

Two field assistants were selected based on their fluency in speaking, writing, and translating Greek into English and familiarity with the island of Kefalonia. All documents were translated into Greek by an individual fluent in the language, and then reviewed by the two field assistants for adjustments based on local colloquialisms. During data collection, each participant

was asked to choose English or Greek conversation and documents to aid their comfort level; this also mitigated any unforeseen verbal and written mistakes. The lead field assistant made verbal clarifications as needed. Following each participant interaction (defined below), the lead field assistant and I debriefed and completed all translations.

Participant interaction. Before beginning data collection with participants a preliminary conversation with each participant was completed to explain the purpose of the study and determine an individual's choice to participate (Table 1). After this initial conversation, data collection with the participant could begin on the same day or on a subsequent day depending on participant availability. Data collection with each participant, called 'participant interaction' in this study, (Steps 1- 5 in Table 1) included: (1) an opening conversation to address questions and clarifications; (2) a discussion of the project that consisted of the purpose, procedure, and approximate timing, and verbal permission to proceed; and (3) administration and completion of the IRB approved participant packet containing the consent form (detachable), EID scale and Secondary scale (Quantitative Component), and the three-part participant survey (Qualitative Component) (see Appendix A1-4 & B1-4 for English and Greek versions, respectively). The participant interaction was facilitated by me and the field assistants (research team) and lasted approximately 60 minutes but could last longer if a participant had additional questions at the beginning and/or was willing to share more with the research team specifically during the open dialogue and discussion (see Step 5 in Table 1). The location of the interview was based on convenience for the participant, often at their place of employment before work began or during a break in the afternoon or evening.

Participants completed the scales and survey by hand, with 90 individuals preferring the Greek version and 23 choosing the English version of the survey. When assistance was needed

Table 1. Overview of data collection: Preliminary conversation and Participant interaction (Steps 1-5)

PRELIMINARY CONVERSATION	Explain purpose of study and determine the choice to participate, the day, time, location, and the option to complete the consent form (occurred on a previous day or directly preceding the participant interaction, Steps 1-5 below). *Approximately 15 minutes.*
STEP 1: OPENING CONVERSATION	Any questions or clarifications were discussed (in English and/or Greek). *Variable timing depending on number and type of questions.*
STEP 2: PROJECT DISCUSSION	An overview of the project was discussed with the participant (in English and/or Greek). Once verbal consent was given, the distribution of the consent form was completed (Step 3). *Approximately 5-10 minutes.*
STEP 3: CONSENT FORM	Consent form was given to the participant for review and signature, unless the form was completed during the preliminary conversation (choice of English or Greek version). *Approximately 5-10 minutes.*
STEP 4: QUANTITATIVE COMPONENT	Environmental identity (EID) scale and Secondary scale were completed by the participant or with assistance from the research team (choice of English or Greek version). Often participants engaged in conversation during this step. *Approximately 15-20 minutes.*
STEP5: QUALITATIVE COMPONENT	Participant survey was completed by the participant or with assistance from the research team (choice of English or Greek version). This step included open dialogue and discussion. *Approximately 30 minutes depending on the individual and how much they wanted to share.*

with translation and writing the research team offered support. During each participant interaction, additional hand-written notes were taken pertaining to comments participants offered in regards to the survey questions in the Qualitative Component (sometimes information or stories participants themselves had not physically written down). An audio recorder was used with permission from the participant.

There were a few participants that preferred to complete the packet on their own and we honored these requests; the day of retrieval was based on a participant's preference (typically 2-3 days later). On the day we returned we offered additional opportunities to share or make any clarifications especially if we noticed there was brevity to their responses, blank responses, and/or they had inquiries (this follow-up was done before we departed). This enabled us to make a further connection with these participants. For participants who completed the packet in our

presence, having an initial conversation and then spending time with the participant allowed us to build a connection with the intention to reduce potential power imbalances or any perception that we were trying to influence participant responses. In addition, with snowball sampling we were introduced to some participants who were friends of previous participants creating a stronger, positive connection.

Quantitative data. The quantitative measurement tool was a 24-question Environmental Identity (EID) scale developed by Clayton (2003) consisting of a 7-point Likert-scale ranking which determined the environmental identity or level of connection to nature for each participant (see Appendix A2 & B2). The EID scale is in part based on a collective social identity structure and factors including (Clayton, 2003): (1) salience of identity – extent and importance of individual's interactions with nature ("*I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean).*"); (2) self-identification – way in which nature contributes to the collectives with which one identifies ("*I think of myself as a part of nature, not separate from it*"); (3) ideology associated with the group – measured by support for environmental education and a sustainable lifestyle ("*Behaving responsibly toward the Earth – sustainable growth – is part of my moral code.*"); (4) positive emotions – measured by asking about the enjoyment obtained in nature, through satisfaction and aesthetic appreciation ("*I would rather live in a small room or house with a nice view than a bigger room or house with a view of other buildings.*"); and, (5) autobiographical information – based on experiences and memories of interacting with nature ("*I feel that I have roots to a particular geographic location that had a significant impact on my development.*").

Following the EID scale was a 9-question Secondary scale designed using a 7-point Likert-scale ranking to assess past and current experiences and knowledge of nature (e.g. how

much time spent in nature as a child and adult; knowledge of sea turtles and protection efforts), the level of concern (e.g. for protecting nature and sea turtles), and willingness to participate (e.g. in protecting nature and sea turtles) (see Appendix A3 & B3). The style of questions for the Secondary scale were inspired by previous work (Clayton & Kilinç, 2013).

Qualitative data. For the Qualitative Component, a three-part participant survey was designed that included both closed and opened-ended questions (see Appendix A4 & B4). The first part of this participant survey consisted of questions focused on demographics to gain background data about the participants. Participant gender and age were recorded to determine if either would affect their EID, level of concern, and willingness to participate in endangered species conservation. The second part was comprised of environmental-based questions, such as "*Do you consider yourself to be connected to nature*;*"* "*I am someone who is concerned about nature, especially conserving endangered sea turtles*;" and, "*I am someone who is willing to participate in protecting nature, especially conserving endangered sea turtles*.*"* The results from the qualitative-based questions in this section are intended to provide additional insight to those of the EID scale and the Secondary scale. The final part of the survey consisted of questions related to sea turtle knowledge and experience, such as "*Which turtle species are present in this area*;" "*How often do you see sea turtles and/or sea turtle nests*;" and, "*Do you think that there are fewer or more sea turtles with respect to 5 years ago*."

Participants completed the participant survey by hand and the field assistants and I used the closed-ended (with follow-up questions) and the open-ended questions to encourage open dialogue and discussion similar to an interview. This discussion-style process allowed for more detailed information.

Results

Participant connection to nature (Quantitative data)

Scale results. The highest score an individual could receive on the EID scale is 168 (total of 24 questions). The Secondary scale had three parts; for past and current experiences and knowledge in nature (labeled 'Experience') the highest score an individual could receive is 35 (total of 5 questions), for level of environmental concern (labeled 'Concern) it is 14 (total of 2 questions), and for willingness to participate (labeled "Participate') it is 14 (total of 2 questions).

EID mean scores and internal reliability (alpha) of the 24-question scale items was high (Table 2). A high alpha suggests that scale items, in this case EID, are closely related as a group. Mean scores for past and current experiences and knowledge in nature were high, and the 5-question scale resulted in a moderate reliability of .69. Item five was the only question in this scale relating to experiences in adulthood, while the other four items focused on experiences and knowledge from youth. When question five was removed from the scale it resulted in a reliability of .70 (a reliability coefficient of .70 or higher is considered "acceptable").

Participants' level of concern mean scores were also high, and the internal reliability of the 2-question scale items was fairly high ($\alpha = .82$). Willingness to participate mean scores were moderately high, and the 2-question scale resulted in a high reliability (Table 2).

Table 2. Descriptive statistics for participants' scores for environmental identity (EID), experience and knowledge in nature, level of environmental concern, and willingness to participate in conservation efforts and Cronbach's alpha (α) levels

	Minimum	Maximum	Mean	Standard Deviation	α
EID	57	166	134.55	21.46	.91
Experience	6	35	25.63	6.51	.69
Concern	3	14	12.24	2.17	.82
Participate	2	14	9.92	3.61	.94

Relationships between variables. EID was significantly correlated with environmental concern and willingness to participate (Table 3). EID was also correlated with past and current experiences and knowledge in nature, showing a relationship between experiences and knowledge learned as a youth and in adulthood with an individual's connection to nature. Environmental concern and willingness to participate also had a significant positive correlation. Experience was significantly correlated with both environmental concern and willingness to participate, although the relationship with concern was stronger.

Table 3. Correlations between environmental identity and past and current experiences & knowledge, level of environmental concern, and willingness to participate

	Experience	Concern	Participate
EID	.49**	.63**	.59**
Experience	1.00	.48**	.34**
Concern		1.00	.52**
Participate			1.00

** $p < 0.01$

To further understand the role of EID in predicting an individual's level of concern and willingness to participate in endangered species conservation efforts, I performed a regression analysis. Setting concern as the dependent variable and EID, participate, and experience as independent variables the results of the regression indicated the three predictors explained 46.5% of the variance ($R^2 = .47$, $F[3,112] = 31.56$, $p < .001$). With a 95% confidence interval, it was found that EID significantly predicted environmental concern ($\beta = .41$, $p < .001$), as did willingness to participate ($\beta = .20$, $p = .021$) and past and current experiences and knowledge in nature ($\beta = .21$, $p = .012$).

With participate as the dependent variable and EID, concern, and experience as

independent variables the results of the regression indicated the three predictors explained 38% of the variance (R^2 = .38, F[3,112] = 22.52, p < .001). With a 95% confidence interval, it was found that EID significantly predicted willingness to participate (β = .44, p < .001) and the level of concern predicted willingness to participate (β = .24, p = .021). Past and current experiences and knowledge in nature was not a good predictor of willingness to participate.

Gender differences. Women (M = 10.74, SD = 3.10) showed a greater willingness to participate than men (M = 9.20, SD = 3.89), (t[111] = -2.33, p = .022). Yet women and men did not differ significantly on EID, level of concern, and past and current experiences and knowledge in nature.

Age differences. Age groups (<24, 25-34, 35-44, 45-54, 55-64, 65-74) showed a difference in EID when an analysis of variance (ANOVA) was performed (F[5, 111] =3.10, p = .012). Those <24 years old (M = 123.25, SD = 25.87) reported less connection with nature, while individuals 55-64 years of age (M = 149.73, SD = 12.56) had the highest EID.

To determine if there was a significant difference in EID between the lowest and highest age group an independent samples t-test was performed and showed that there was indeed a significant difference between individuals <24 and 55-64 (t[37] = -3.23, p = .003). Age groups did not differ significantly in level of concern, willingness to participate, and past and current experiences and knowledge in nature.

Participant connection to nature (Qualitative data)

A deductive approach was used to explore the participant responses and identify the previously established main themes: connection to nature, past and current experiences and knowledge, level of environmental concern, and willingness to participate in sea turtle conservation. Based on patterns I found in participant's responses I created categories that were

grouped into sub-themes for each of the four main themes. Connection to nature had eight sub-themes (Table 4), while past and current experiences and knowledge in nature, level of environmental concern, and willingness to participate had two sub-themes comprised of "yes" or "no" responses. I also reviewed the secondary variables of age and gender to determine the relationship these two items had with the four main themes.

Table 4. Eight sub-themes for connection to nature

Q1. Do you consider yourself to be connected to nature? And, what does that mean to you? (Part II, Participant survey)							
Connected	**Not Connected**	**Mutual Connection**	**Limited Connection**	**Feelings**	**Characteristics**	**Actions/ Activities**	**Places**
Number of participant responses per sub-theme							
64	8	24	6	47	5	41	12
Examples of participant responses per sub-theme							
"Yes" "Connected"	"No" "Not Connected"	"Part of one another" "Equal member"	"I do not spend enough time in nature" "I live in a city"	"Balanced" "Calm" "Love" "Relaxed"	"Beautiful" "Paradise" "Personality"	"Clean beaches" "Protect nature/sea turtles" "Recycle"	"Beaches" "Mountains" "Sea" "Village"

Connection to nature. A person who felt connected to nature simply responded "yes" or "no" and these responses were placed in the sub-themes titled Connected or Not Connected, respectively (Table 4). Those with a deeper connection to nature and having responses such as, "part of one another" and "equal member" were placed in the sub-theme titled Mutual

Connection. Individuals who felt their connection was limited ("I do not spend enough time in nature" or "I live in a city") had responses that were assigned to Limited Connection. Participants sometimes offered more than one response to question one noted in Table 1. Therefore, the remaining four sub-themes, Feelings, Characteristics, Actions/Activities, and Places, included responses that often accompanied responses belonging to the Connected, Mutual Connection, and Limited Connection sub-themes. Examples of responses in the Feelings theme were "calm" and "love;" Characteristics were "beautiful" and "personality;" responses for Actions/Activities were "protect" and "clean beaches;" and examples for the Places responses were "village" and "sea" (Table 4). An individual's responses may have consisted of information that could be placed in more than one sub-theme for example, "I feel *calmer* when I am at the *sea*."

For connection to nature, 109 participants out of 113 (96%) had complete data (incomplete refers to questions that were left unanswered and therefore could not be used) from which 48% were female and 52% were male responses. Similar to environmental identity mean scores that were high in the quantitative data analysis the majority of the responses here were feelings of being connected to nature. Finally, to further connect the quantitative and qualitative data for environmental identity/connection to nature, EID scores and connection to nature responses were coded to show the relationship between the data sets. Individuals with EID scores of 135 and higher were those who responded yes to feeling connected to nature, those with scores of 106-134 expressed some form of a connection, and individuals with no connection had EID scores below 104.

Age differences. To determine how age related to an individual's connection to nature responses, a simple "yes" or "no" theme was created. If a participant responded with "yes" to

question 1 (Table 4), I would then confirm their age group; the same went for "no" responses. Akin to the quantitative data, those <24 years old seemed to have less of a connection to nature. In addition, there were only eight participants above that responded that they do not have a connection to nature, half of those individuals were from the <24 age group.

Past and current experiences & knowledge in nature. A "yes" or "no" sub-theme was established for past and current experiences and knowledge in nature by reviewing the responses to questions 2 and 3 (Table 5) in Part II of the participant survey. When I needed clarification for responses I would also review question 4 in Part II and questions 8 and 9 in Part III (Table 5). One hundred and eight participants out of 113 (95.5%) had complete data from which 47% were female and 53% were male responses. Those who responded yes (40% female, 46% males) to having experiences in nature during adolescences had more positive extended responses (Q3, 4, 8, 9), and those with "yes" responses were usually the same individuals who scored near or above the mean (M = 25.63, SD = 6.51) for past and current experiences and knowledge in the quantitative data set. Examples of statements from these individuals include:

"*I now work in the sea.*"

"*I take walks in nature every day now and when I was a youth.*"

"*From my knowledge and experience, I created an environmental group for students every school year.*"

"*I learned from the volunteers, social media, and television, so to protect sea turtles.*"

Table 5. Participant survey questions: past and current experiences & knowledge in nature

Q2. If applicable, do you think that your experiences in nature at young age strengthened your connection to nature? (Part II, Participant survey)
Q3. If applicable, do you think that your experiences in nature as an adult strengthened your connection to nature? (Part II, Participant survey)
Q4. If applicable, where did your experiences occur in nature? Of those places, which is your favorite and why? (Part II, Participant survey)
Q8. If applicable, when did you learn about sea turtles and/or sea turtle protection? (Part III, Participant survey)
Q9. If applicable, where did the information about sea turtles and/or sea turtle protection come from? (Part III, Participant survey)

For those who responded no (7% female, 7% male) to having experiences in nature during adolescences had less positive interactions with nature, and the majority of individuals scored below the mean reported previously. Examples of statements from these individuals include:

"*No, I used to live in Athens.*"

"*No, grew up in a city.*"

"*No, my love of nature was after the age of 30.*"

Level of environmental concern. A "yes" or "no" sub-theme was created for level of concern by reviewing the responses to question 5 in Part II of the participant survey ("*I am someone who is concerned about nature especially conserving endangered sea turtles."*). One hundred and nine participants out of 113 (96%) had complete data from which 48% were female and 52% were male responses. Those who responded yes (39% female, 42% male) to having concern about nature had more positive responses, and those with "yes" responses were usually the same individuals who scored near or above the mean (M = 12.24, SD = 2.17) for level of

concern in the quantitative data set. Examples of statements from these individuals include:

"*Yes, if they didn't protect nature then fish wouldn't exist for me. I live by the nature.*"

"*Yes, because we live in an island and along with the people of the island the turtles have the right to live here too.*"

"*Yes, they must exist because they are part of the "ecosystem," a "web of life.*""

For those who responded no (2% female, 4% male) they expressed no concern and even frustration or distrust based on issues of "corruption" and not feeling connected to nature. The majority of these individuals scored well below the mean (scores of 3-7). Examples of statements from these individuals include:

"*I dislike the professional protectors of the environment, those receiving money.*"

"*No, it (sea turtles) is the only thing I am not interested in.*"

In addition, there were participants who responded with some concern (7% female, 6% male) to the "yes" responses plus "lack of time," "lack of knowledge," and "lack of information." The responses seem to suggest that if they had more time in their schedule, more information about ways to participate, and reasons for why it is important, their level of concern may be different. The same individuals also scored below the mean (scores of 9-11) for level of concern in the quantitative data set.

Willingness to participate and gender differences. A "yes" or "no" sub-theme was established for willingness to participate in protecting nature by reviewing the responses collectively for questions 6, 7, and 8 (Table 6) in Part II of the participant survey. One hundred and nine participants out of 113 (96%) had complete data from which 48% were female and 52% were male responses. Those who responded yes (37% female, 35% male) indicated a greater

Table 6. Participant survey questions: willingness to participate

Q6. I am someone who is willing to participate in protecting nature, especially conserving endangered sea turtles. || If I had time, I would be interested in: Being part of a committee... planning | decision-making | managing (Part II, Participant survey)
Q7. If I had time, the following are other ways I could participate in protecting nature and conserving endangered sea turtles in my community. (Part II, Participant survey)
Q8. Do you feel enabled to participate in protection efforts in your community? (Part II, Participant survey)

willingness to participate in endangered species conservation based on positive interactions with nature and were usually the same individuals who scored near or above the mean (M = 9.92, SD = 3.61) for willingness to participate in the quantitative data set. Examples of statements from these individuals include:

"*Education! Be part of a team that speaks to children.*"

"*Talking to tourists about the turtles, e.g. lagoon protection.*"

"*Prepare and distribute leaflets with environmental information.*"

Those who responded "no" (11% female, 17% male) had less positive interactions with nature and the majority of these individuals scored below the mean with a score of 2-8. Examples of statements from these individuals include:

"*Because I want to do nothing. The turtles are okay alone. With not intervening. The more you don't help it the better it is.*"

"*I don't have enough time. I work a lot of hours.*"

Individuals with mean scores of 8 that reported "no" as a response usually had issues with "lack of time" and "lack of money." Similar to the quantitative data, the qualitative data shows that women responded "yes" to willingness to participate more than men, and a larger number of men responded "no."

Level of participation. Participants had the opportunity to choose the type of participation they would prefer: planning, decision-making, and managing (Table 6). Among the 109 participants, 17 chose planning (16%), 12 decision-making (11%), 17 managing (16%), 31 chose all of the above (28%), and 32 chose none of the above (29%). Some participants chose more than one option, while some did not specify at all. The majority of individuals (71%) appear to be interested in active or true involvement such as planning, decision-making, and managing.

Discussion

The quantitative data showed that environmental identity can be a strong predictor of level of concern and willingness to participate in endangered species conservation, specifically for sea turtles. Environmental identity also had a relationship with past and current experiences and knowledge in nature. In addition, the reliability of the Secondary scale questions pertaining to 'Experience' increased when item five was removed. This question was the only one relating to experiences in adulthood, while the other four items focused on experiences and knowledge from youth. It may be that further questions based on adulthood were needed to strengthen the scale or perhaps, it is more likely that focusing on questions pertaining to experiences in nature during youth are more beneficial.

It has been found that individuals with greater environmental interest and action are those who spent more time in nature, especially as a child (Chawla, 1999; Hinds & Sparks, 2008). While the qualitative data relates back to the quantitative data for connection to nature, level of concern, and willingness to participate, it is the past and current experiences and knowledge in nature that are most intriguing. The qualitative data show that time spent in nature and learning about the environment as a youth encourages proenvironmental behaviors and environmental

concern later in life. Those who reported no experiences in nature during adolescence or limited due to living in a city, noted that they had less positive interactions with nature overall similar to previous studies (Chawla & Derr, 2012; Hinds & Sparks, 2008; Kals & Ittner, 2003; Myers, Saunders, Kahn, & Kellert, 2012).

The quantitative and qualitative data also showed that youth (< 24 years old) were less connected to nature. This may be due to the fact that they have not had as much life experience and opportunities to gain further knowledge like those individuals 55-64 years of age who reported feeling the most connected to nature. In addition, four of the <24 year old participants who reported not to be connected to nature were the same four participants in this age group that responded to not having past and current experiences and knowledge in nature during adolescence. Efforts to share environmental-based knowledge and engage youth in conservation initiatives at an earlier age may be a valuable way to strengthen a youth's connection to nature. A few participants shared that they learned about sea turtles and conservation in school from visiting speakers. The participants also expressed interest in visiting schools to share information on sea turtles, threatened species, and the importance of conservation.

Both data sets showed that women had a greater willingness to participate than men. This also includes more willingness to be a member of a planning committee as well as interest in being on a committee for all three participation categories (planning, decision-making, managing). Finally, women were less likely to choose "none of the above." While there is a difference in willingness to participate between woman and men the overall minimal differences are consistent with those previously found in caring for the land and the surrounding environment in Zakynthos, Greece (Theodossopoulos, 2003). However, the main reasons for not participating in endangered species conservation in Kefalonia, Greece were the lack of time and

money.

Greece is a developed country but with the aftermath of the 2007-2009 financial crises many Greek people have resorted to working long hours seven days a week (Amadeo, 2019; Kouretas, 2010). There has been limited time and funds available for conservation projects, a lack of faith in political institutions, and the choice of family labor versus outside employees (Giovos et al., 2016; Papoulis et al., 2015; Ragkos et al., 2016). So how can environmental identity contribute to more effective participation, in countries or communities that have financial concerns, thereby guide conservation efforts?

During the study, those interested in conservation noted their willingness to support conservation efforts if there were simple ways that did not take away from their work. One suggestion was the option to display informational flyers provided by the conservation group in their establishments Participation can be practical and manageable such as events that require a small amount of time and responsibility, membership that includes an advisory role, meet-ups at convenient locations for feedback sessions (sharing helpful information to stay equally informed), and placing informational handouts in shop windows (Campbell et al., 2007; Marcovaldi, Patiri, & Thomé, 2005; Senko, Schneller, Solis, Ollervides, & Nichols, 2011).

In addition to zoos, education institutions, and farming practices, environmental identity has now been applied to endangered species conservation (Clayton et al., 2011; Gosling & Williams, 2010; Hayes-Conroy & Vanderbeck, 2005). The data is this study show that environmental identity is a valuable tool in predicting an individual's level of concern and willingness to participate in endangered species conservation. I propose using environmental identity to improve conservation interventions by focusing on different ways to approach participation and/or support of conservation efforts (Figure 3). Four options to apply

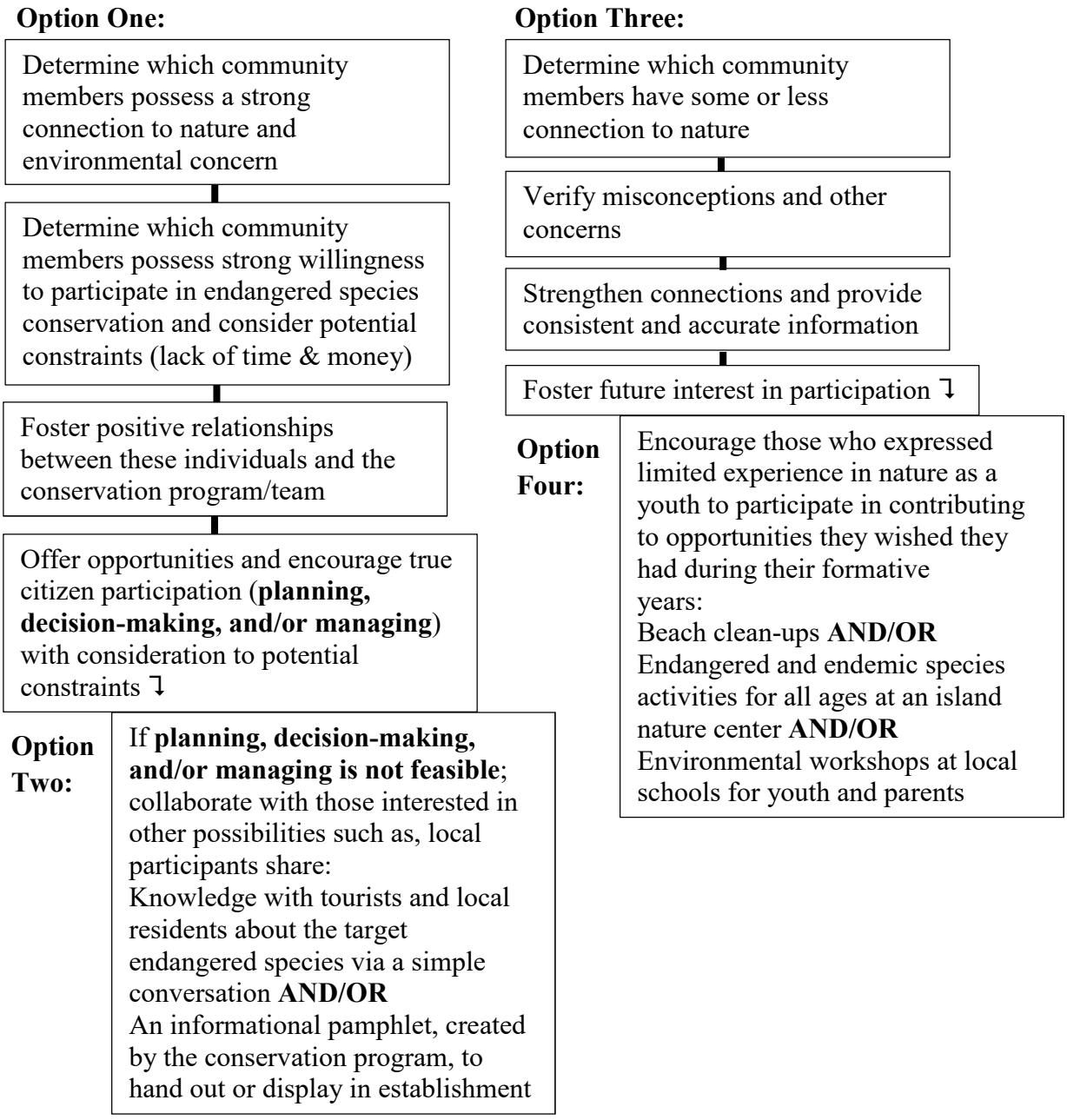

Figure 3. Using environmental identity to apply participation options in endangered species conservation

environmental identity in conservation interventions arose from this study. Option 1 for those who wish to be involved in true participation (planning, decision-making, managing); Option 2 for those who noted that lack of time and money are barriers and may be interested in participation if incorporated easily into their work-life situation; Option 3 for those who have

less connection to nature and are disenchanted with conservation efforts due to misinformation (all protectors of wildlife take money; sea turtles do not need protection; sea turtle threatened status is incorrect); and, Option 4 for those who had less experience and knowledge in nature as a youth and were interested or less than interested in participation and/or support of conservation efforts (the latter had mixed responses, either a connection to nature or less connection to nature).

Limitations

A power imbalance and the presence of the research team during the participation interaction could be limitations in this study. It is important to recognize as an outsider that I may have been seen as someone with influence and power, and therefore participants may have told me information they thought I wanted to hear (Creswell, 2014). Therefore, spending time with participants was extremely important in order to build trusting relationships. In addition to the preliminary conversation, opening conversation (Step 1), and open dialogue and discussion (Step 5) of the participant interactions, often participants offered the opportunity to join them in a meal and conversation before discussing the project. These meals and conversation also afforded the opportunity to build relationships that would not have existed.

Having friends introduce the research team to other participants (snowball sampling) also created an additional layer of trust between the research team and the new participant. Finally, there is no way to be entirely sure our presence during the participation interactions did not influence individual's answers. However, in addition to being forthright with information and building relationships, having several data sources that were converged hopefully reduced false information. Specifically, there were more than one opportunity to answer similar questions

throughout the participant packet. If discrepancies across similar questions were found, it was noted during coding and analysis and the use of the data was questioned as useable or not.

Using a mixed methods design could also be seen as a limitation due to its time-consuming nature and the need for practitioners that are knowledgeable with the combination of quantitative and qualitative data. However, practice over time with such data sets affords more fluidity and competence for tackling other integrated projects. Plus, considering an integrated research team may be an effective way to work with a mixed-methods design and learn from one another. Regardless of the time and effort it may take, the outcome is rich data sets and information that may not be gained with only a single approach.

The mixed-method nature of this study, specifically the participant survey with open and closed-ended questions, offered a way to learn about the local community and the knowledge they possess. Mancini et al. (2009) used a survey-interview portion in their study and found that the consumption of sea turtle meat increased in the particular region of Baja California Sur (BCS), Mexico during Lent since it is served as a substitute for red meat. This information offered insight into local tradition and knowledge that was not previously known. During the current study, two reasons participants gave for not be willing to participate in conservation efforts were lack of time and money. This information offers helpful insight into the barriers facing participation and/or support of conservation efforts in Greece.

Conclusion

The primary goal of this research was to explore how environmental identity can be a valuable tool in predicting an individual's level of concern and willingness to participate in endangered species conservation. Understanding the levels of environmental identity in local communities as a way to promote participation and/or support of local conservation efforts. This

research comes at a time when our planet is facing a sixth mass extinction (Barnosky et al., 2011; Chivian & Bernstein, 2008; Luther, Skelton, Fernandez, & Walters, 2016; Pimm et al., 2014). While local participation is not the main solution to the complex nature of endangered species conservation, it is important to consider the quality and degree to which participants are involved in planning, managing, and decision-making.

While there are limitations to consider in this approach such as power imbalances and the complexities of a mixed method design, I think environmental identity offers the chance to build relationships and support opportunities for local participation to help strengthen endangered species conservation initiatives. Since it has been found that individuals with greater environmental interest and action are those who spent more time in nature as a child (Chawla, 1999; Hinds & Sparks, 2008), it may be useful to further investigate environmental identity and the relationship of individuals with limited experience in nature as a youth in regards to endangered species conservation.

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Chapter 4: Environmental Identity as an Effective Tool for Endangered Species Conservation: The Influence of Loggerhead Sea Turtle (*Caretta caretta*) Presence on Local Experiences and Knowledge in Kefalonia, Greece

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Abstract

Environmental identity (EID), a concept from the social sciences, has been applied to zoos, education institutions, and farming practices demonstrating that EID is a good predictor of environmental concern and proenvironmental behaviors. In this study, I explored EID as an effective tool for strengthening endangered species conservation efforts by focusing on how the presence of a target species can support local experiences and knowledge. I examined sea turtle population data (number of adult and juvenile loggerhead sea turtles and nests per season) from Kefalonia, Greece spanning six seasons. These data were compared to measures of experience and knowledge of sea turtles reported by 113 participants from four villages in a three-part participant survey conducted in 2017. The turtle data trends supported island residents' knowledge of turtle species, the frequency of seeing sea turtles, and the change in turtle numbers over time. The majority of participants who live and/or work in the same area, Argostoli, Kefalonia, reported having more experiences and knowledge of sea turtles than participants in the other locations sampled. These individuals also reported feeling more connected to nature and willing to participate and/or support conservation efforts. This may be attributed to the greater presence of loggerhead sea turtles and monitoring efforts of this species in Argostoli harbor, Koutavos lagoon, and the surrounding beaches. The findings also shed light on the locations in which individuals are less connected to nature, possess misinformation, and feel disenchanted, which may provide valuable information in designing effective endangered species conservation projects.

Introduction

The data on current rates of extinction versus background rates (standard rate of extinction based on the fraction of species that have gone extinct per unit time) shows that our planet is in the midst of a sixth mass extinction (Barnosky et al., 2011; Chivian & Bernstein, 2008; Luther, Skelton, Fernandez, & Walters, 2016; Pimm et al., 2014). In addition, IUCN's assessment from 1996 to 2019 showed that 30,178 species worldwide have been identified as "threatened," which includes the categories titled critically endangered, endangered, and vulnerable (IUCN, 2019a). The global decline in biodiversity requires urgent conservation efforts that must consider multiple factors for effective endangered species conservation.

Salafsky and colleagues (2008) grouped the complexities of conservation into four main categories: contributing factors, direct threats and stresses, conservation actions, and project teams. Contributing factors are found throughout the conservation literature and can be identified as anything from limited monetary resources, the local socioeconomic situation, demographics, and culture, to issues with governance such as the lack of country, state, and local governmental support, corruption, and the lack of regional and local enforcement (Conservation Measures Partnership [CMP], 2013; Gadgil, Berkes, & Folke, 1993; Male & Bean, 2005; Mancini et al., 2011; Salafsky et al., 2008; Smith & Wishnie, 2000). According to Salafsky et al. (2008), contributing factors (economic, social, cultural, institutional, and political) are those that add to the persistence of direct threats. Threats are the proximate human activities that have caused, are still causing, or in the future may cause the destruction, degradation, and/or impairment of biodiversity (e.g. logging or unsustainable fishing). Stresses involve a degraded condition or symptom of the target species, community, or ecosystem that results from a direct threat (e.g. decrease in population size or fragmentation of forest habitat).

The third category, conservation actions, can be defined as approaches initiated by project staff or partners designed to reach the objectives of a project and ultimately the larger conservation goals (for example, establishing a protected area or an ecotourism business) (Salafsky et al., 2008). The term "action" or "approach" can also be referred to as strategies, interventions, activities, responses, and measures (in the sense of taking action, rather than just monitoring). Conservation actions may be ineffective if they are devoid of support of the target species from the local community, lacking the 'best' conservation approach, or not implementing an effective combination of approaches. Salafsky et al.'s (2008) final category, project teams, refer to the groups involved in designing, implementing, managing, and monitoring projects; they can be partnerships between a local nongovernmental organization (NGO) and a community or between scientists, the staff of a national park, and the local community. These four categories highlight the many different factors that contribute to the complexity of endangered species conservation and why it can be challenging. Engagement with the social sciences has been shown to be an important way to improve conservation biology research in support of effective endangered species management, specifically those working with sea turtles (Bennett et al., 2016; Campbell, 2003 & 2010; Hamann et al., 2010; Mascia et al., 2003; Rees et al., 2016, Saunders, Brook, & Myers, 2006).

In 2010, thirty-five researchers (from thirteen nations) working in the field of turtle biology and/or conservation created a list of priority research questions and addressed the varying gaps in the sea turtle literature (Hamann et al., 2010). In the category of "Conservation Strategies" the recommendations were to improve dialogue across disciplines and effectively integrate social science research with ecological or biological research. This conversation was revisited in 2016 highlighting that research in global priorities for the management and

conservation of sea turtles has indeed expanded (Rees et al., 2016). However, the recommendation to further engage the social sciences remained relatively untapped. Barriers for including social sciences in conservation can include differences in disciplinary training, philosophies, skills, viewpoints, and approaches as well as requiring long-term commitment and maintaining clear communication (Bennett et al., 2016; Campbell, 2003 & 2010). However, with the inclusion of social sciences, conservation outcomes have potential to result in more effective and socially just conservation efforts (Bennett et al., 2016). This chapter was inspired by the recommendation to integrate social sciences with biological research to create more effective sea turtle conservation (Hamann et al., 2010; Rees et al., 2016).

Out of the 30,178 species threatened worldwide, 19% threatened with extinction are reptiles of which 12% are classified as critically endangered, 41% endangered, and 47% vulnerable (Böhm et al., 2013, IUCN, 2019a). Along with environmental changes (climate change, sea level rise, loss and degradation of nesting beaches), sea turtles are also affected by human activities (fisheries bycatch, pollution, direct turtle and egg harvest) (Fuentes, Dawson, Smithers, Hamann, & Limpus, 2010; Hamann, Fuentes, Ban, & Mocellin, 2013; Lewison et al., 2013; Lynch, 2013; Mancini & Koch, 2009; Nada & Casale, 2011; Poloczanska, Limpus, & Hays, 2009; Wallace et al., 2010; Wilcox, Mallos, Leonard, Rodriguez, & Hardesty, 2016). Sea turtle species inhabit and migrate through all the earth's oceans, except the Arctic. There are seven living species, with most listed as endangered. The loggerhead (*Caretta caretta*), leatherback (*Dermochelys coriacea*), and olive ridley (*Lepidochelys olivacea*) sea turtles are listed as vulnerable (IUCN, 2019b; Sea Turtle Conservancy, n.d.). Green sea turtles (*Chelonia mydas*) are listed as endangered, whereas Kemp's ridley (*Lepidochelys kempii*) and Hawksbill (*Eretmochelys imbricata*) sea turtles are critically endangered. The flatback turtle (*Natator*

depressus) is listed as data deficient. Sea turtles, which have significant roles in human society including as a symbol of conservation, cultural emblem, food source, and a marketing tool (Frazier, 2005), face multiple global threats, and are representative of the complex challenges faced in endangered species conservation management.

Conservation actions to protect endangered species populations often occur where humans reside or will be residing as the human population expands. Limited participation of people that interact with or cause threats to endangered species populations has led to misunderstandings between communities and conservation projects, at times leading to ineffective conservation programs (Agrawal & Gibson 2001; Baral & Heinen, 2007; Barrett, Brandon, Gibson, & Gjertsen, 2001; Berkes, 2004; Campbell, 2000; Campbell, Haalboom, & Trow, 2007; Infield & Namara, 2001; Noss, 1997; Songorwa, 1999). Effective conservation programs must consider humans, specifically communities and their role and level of participation with endangered species conservation. The field of conservation psychology offers a valuable approach to engage social sciences with endangered species conservation.

The field of conservation psychology can provide a framework for understanding how human behavior can contribute to or hinder effective conservation (Clayton & Myers, 2015; Saunders, 2003). The field found its origins in the social sciences, specifically psychology, and is the consistent and persistent examining of the human place in nature, and in turn, nature's place in the human being, with a particular focus on how to encourage conservation of the natural world (Clayton & Myers, 2015; Saunders, 2003). The field of conservation psychology focuses on two key principles: (1) motivating people to act in more environmentally-friendly ways, and (2) encouraging people to care about the natural world and their role in it (Saunders, 2003). Therefore, conservation psychology has the potential to be useful in endangered species

conservation by focusing on a person's willingness to participate and level of concern for the environment and endangered species. Within the conservation psychology framework exists a person's sense of connection to the nonhuman natural environment, known as environmental identity (Clayton, 2003).

I define environmental identity (EID) as the way we orient ourselves to the natural world (animals, plants, and other things existing in nature and not made or caused by people) and thereby take actions based on our history, personality, emotional attachments, values, and sense of self. Research has found that EID is a good predictor of environmental concern and behavior (Clayton, 2003; Clayton, 2012; Clayton & Kilinç, 2013; Veijalainen & Clayton, 2013). In addition, the development or awareness of an environmental identity encourages concern for animals and the surrounding environment (Clayton, Fraser, & Burgess, 2011; Gosling & Williams, 2010; Hayes-Conroy & Vanderbeck, 2005). Environmental identity thus has the potential to be a meaningful tool in the complex, high stakes field of endangered species conservation. However, while environmental identity has been applied conceptually in some research it has not been applied in practice specifically to the field of endangered species conservation (Clayton et al., 2011; Fraser, Clayton, Sickler, & Taylor, 2009; Clayton & Brook, 2005).

This chapter explores environmental identity as an effective tool for strengthening endangered species conservation efforts, specifically focusing on how the presence of a target species can support local experiences and knowledge. Loggerhead sea turtle (*Caretta caretta*) population data were reviewed to determine if the data support the local experiences and knowledge reported by local community members in Kefalonia, Greece. In addition, the data were explored to determine if individuals with more experiences and knowledge had a higher

environmental identity, lived in a specific location, and were more willing to participate and/or support the local conservation efforts. This is a critical time for endangered species on a global scale and endangered species conservation is not always effective due to lack of community involvement. Using environmental identity will offer conservation projects a way to identify local people who possess more experiences and knowledge of a target species, have the potential to participate in conservation efforts, and even discover deficits in conservation efforts from community members that possess valuable input due to their connection to the local information and environment.

Methods

Study Site

Field work was conducted between July and August 2017 in Kefalonia (Cephalonia), Greece, a Greek island in the Ionian Sea west of mainland Greece (Kefalonia-Greece.com, n.d.a.; Wildlife Sense, n.d.a.). Based on tagging, nesting, and stranding estimates, approximately 300-500 loggerhead sea turtles live in the waters and nest on the beaches of Kefalonia. The small population of 5-11 loggerhead sea turtles living in the Argostoli harbor and Koutavos lagoon year round creates interactions with the local community. For example, sea turtles eat fish refuse discarded by fisherman and restaurants. The local discard of fish refuse is a common activity within the community; it encourages close contact between sea turtles and humans including their boats, and is a possible cause for the winter stay. Interactions on beaches between nesting female turtles, nests, hatchlings and beach-based businesses (e.g. inserting beach umbrellas can damage nests and the incubating eggs) also made Kefalonia an ideal location for investigating environmental identity as a predictor of level of concern and willingness to participate in endangered sea turtle conservation.

Kefalonia is the largest of the Ionian Islands at 781km² and has been inhabited since 10,000 B.C.E., reaching a peak of civilization during the Mycenaean period (1500-1100 B.C.E.). In 1953, there was a massive earthquake that destroyed most of the island, except the village of Fiskardo, leaving many inhabitants no place to live and causing a collapse in the economy and environment (Kefalonia-Greece.com, n.d.a.) With people eventually returning to the island the population began to increase and thrive again, reaching 35,590 in recent years (Wildlife Sense, n.d.a.). The population of Kefalonia is 86% Greek, 3.5%, European, 9.4% European non-EU, and 1.1% non-European, with 50.19% women and 49.81% men (Hellenic Statistical Authority [ELSTAT] & National Centre for Social Research [EKKE], n.d.). Those employed (37.64%) fall in three main branches of the economy, agriculture, forestry, and fishing (9.78%), manufacturing and construction (19.14%), and services (71.08%) (ELSTAT & EKKE, n.d.).

Four villages and the surrounding beaches were the main locations for this study, Argostoli, Fiskardo, Lixouri, and Skala (Figure 1). Argostoli is one of two fishing villages and the capital of Kefalonia (Kefalonia-Greece.com, n.d.b.). It has a large harbor that is home to a small population of adult loggerhead sea turtles (*Caretta caretta*) who remain year long and do not migrate (C. Comis, personal communication, May 5, 2017). The other fishing village, Fiskardo, is located at the northern most tip of the island. While Fiskardo has a harbor, there have been no reports of a sea turtle population living in the harbor year round, so interactions with this threatened species are mostly in open waters (C. Comis, personal communication, May 5, 2017). In addition to Argostoli's nearby beaches, those in and near Lixouri and Skala were included in the study since these beaches host nesting turtles and hatchlings. Lixouri is the second largest village after Argostoli and is located on the Paliki peninsula to the southwest of the island. Skala is a resort town with long sandy beaches to the southeast of the island.

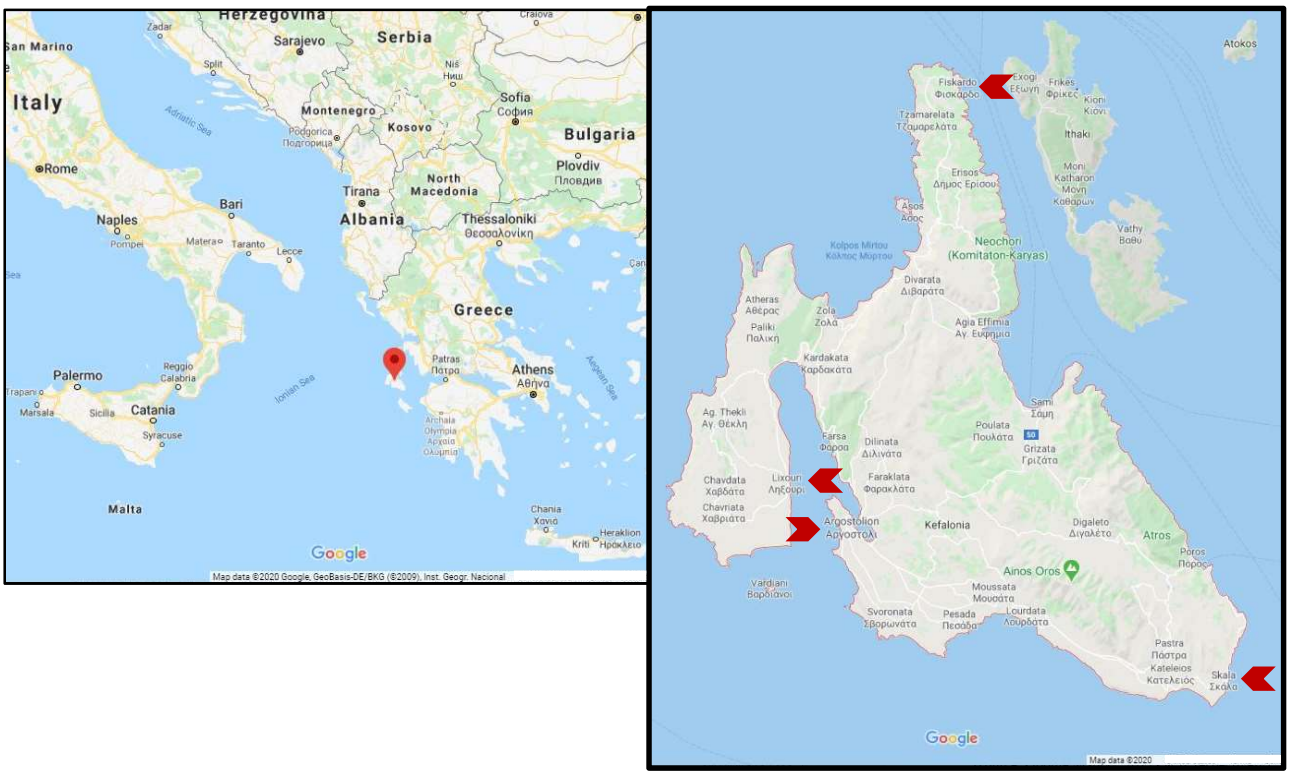

Figure 1. Maps of Kefalonia, Greece. a. Island of Kefalonia within European view (left); Island of Kefalonia in the Ionian Sea (right) – red arrow indicates the main locations in the study (source: Google Maps©, 2020a & b, respectively)

Kefalonia is rich in traditions, local products, geological formations, and biodiversity including a number of endemic and rare species such as monk seals (Monachus monachus) and loggerhead sea turtles (*Caretta caretta*) (Kefalonia-Greece.com, n.d.c.; Wildlife Sense, n.d.b.). Wildlife Sense, a local conservation group in Kefalonia, focuses on research, education, and conservation to protect threatened sea turtles, and aims to create connections with the local community to promote public awareness about conservation issues (Wildlife Sense, n.d.b.).

Sampling and Participants

The residents of Kefalonia were selected using two methods, purposeful sampling and snowball sampling. For purposeful sampling, participants or sites are intentionally chosen to offer in-depth insight into the problem or research question (Creswell, 2014; Patton, 2002). In

this study, selection criteria were based on location and livelihood that promotes proximity to sea turtles. Staff from the organization Wildlife Sense were asked to provide an initial list of potential participants for the study based on these criteria. The villages of Argostoli and Fiskardo were chosen because they are on the coast where owners and employees of restaurants, shops, boat tours, scuba diving companies, port police, teachers, students, and fisherman have experience interacting with adult sea turtles in the harbor and in some cases, open waters. The nearby beaches of Argostoli, Lixouri, and Skala were chosen because owners and employees of beach bars, sun beds, water sports, and beach side hotels and restaurants interact with sea turtle nests and hatchlings.

The second technique used in this study, snowball sampling, is a way to recruit people who are difficult to identify or have to meet certain criteria to participate (Cohen & Arieli, 2011; Vogt, 2005). Snowball sampling involved asking participants to recommend additional individuals who I could invite to participate in this study if they met the selection criteria. In total, there were 113 participants samped, 53 females and 60 males.

Study Design

Embedded Mixed Methods-style design. This study used a Convergent Parallel design for the two main data sets. In a Convergent Parallel design both quantitative and qualitative data have equal value (Figure 2) (Creswell, 2014; Creswell & Plano Clark, 2011). Quantitative data (QUAN) were obtained from two different instruments, the Environmental Identity (EID) scale (Clayton, 2003) and a Secondary scale developed for this study. The qualitative data (QUAL) were obtained from a three-part participant survey – demographics, environmental-based questions, sea turtle knowledge and experience – developed for this study which included both closed and open-ended questions used together to encourage a more conversational experience

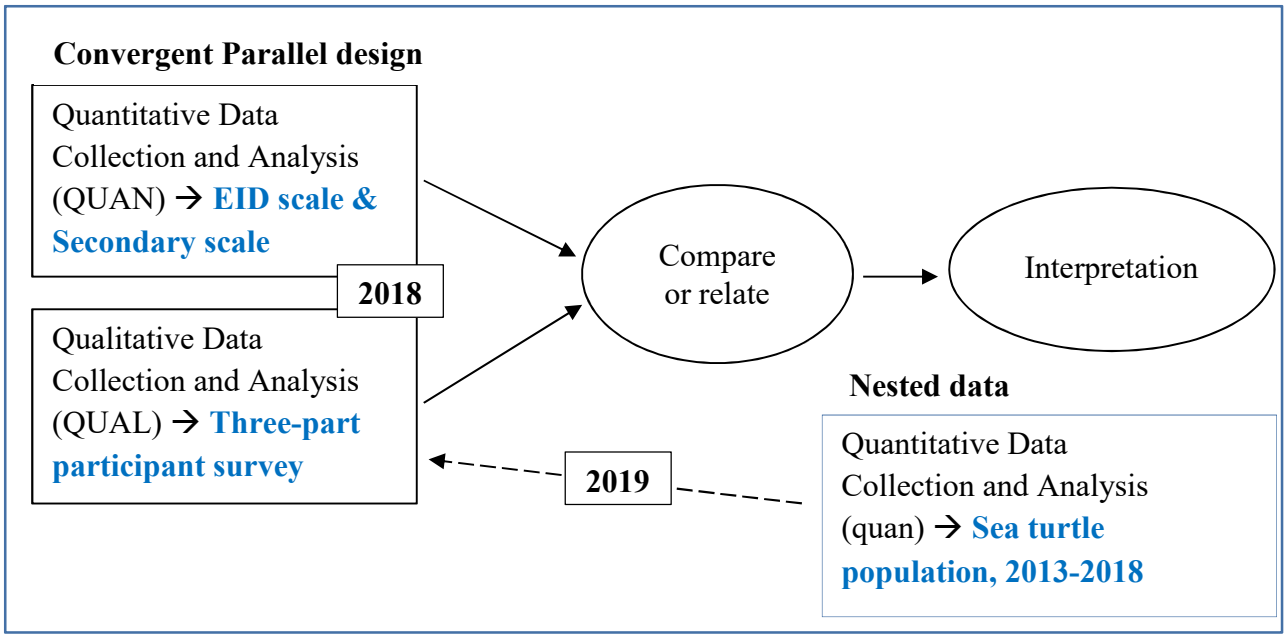

Figure 2. Embedded Mixed Methods-style design. Quantitative data nested within the larger Convergent Parallel Mixed Methods design, showing how the quantitative and qualitative data will be connected before interpretation (adapted from Creswell, 2014)

and allow for richer data collection. Most closed-ended questions contained a follow-up question that allowed participants to elaborate on their answers with more detail such as feelings, opinions, and knowledge. Quantitative and qualitative data were collected within the same timeframe, and then compared resulting in a merged interpretation.

What makes this study an embedded mixed methods-style design is the additional quantitative (quan) data set that is nested within the Convergent Parallel design (Figure 2) (Creswell, 2014). The nested quantitative data sets were attained from six seasons (2013 to 2018) of population data of adult sea turtles in the waters around Kefalonia and the number of nests on local beaches collected by Wildlife Sense. For this chapter these data were compared with the survey data from participants that focused on sea turtle knowledge and experience. The nested data (quan) were collated and analyzed approximately a year after the QUAN & QUAL data, and this chapter focuses on the nested data and questions 1, 2, and 4 from the participant survey, Part

II (see below for more detailed information).

Data Collection

Two field assistants were selected based on their fluency in speaking, writing, and translating Greek into English and familiarity with the island of Kefalonia. All documents were translated into Greek by an individual fluent in the language, and then reviewed by the two field assistants for adjustments based on local colloquialisms. During data collection, each participant was asked to choose English or Greek conversation and documents to aid their comfort level; this also mitigated any unforeseen verbal and written mistakes. The lead field assistant made verbal clarifications as needed. Following each participant interaction (defined below), the lead field assistant and I debriefed and completed all translations.

Participant interaction. Before beginning data collection with participants a preliminary conversation with each participant was completed to explain the purpose of the study and determine an individual's choice to participate (Table 1). After this initial conversation, data collection with the participant could begin on the same day or on a subsequent day depending on participant availability. Data collection with each participant, called 'participant interaction' in this study, (Steps 1- 5 in Table 1) included: (1) an opening conversation to address questions and clarifications; (2) a discussion of the project that consisted of the purpose, procedure, and approximate timing, and verbal permission to proceed; (2) opportunity for additional questions and clarification; and (3) administration and completion of the IRB approved participant packet containing the consent form (detachable), EID scale and Secondary scale (Quantitative Component), and the three-part participant survey (Qualitative Component) (see Appendix A1-4 & B1-4 for English and Greek versions, respectively). The participant interaction was facilitated by me and the field assistants (research team) and lasted approximately 60 minutes but could last

Table 1. Overview of data collection: Preliminary conversation, Participant interaction (Steps 1-5), and Nested data

PRELIMINARY CONVERSATION	Explain purpose of study and determine the choice to participate, the day, time, location, and the option to complete the consent form (occurred on a previous day or directly preceding the participant interaction, Steps 1-5 below). *Approximately 15 minutes.*
STEP 1: OPENING CONVERSATION	Any questions or clarifications were discussed (in English and/or Greek). *Variable timing depending on number and type of questions.*
STEP 2: PROJECT DISCUSSION	An overview of the project was discussed with the participant (in English and/or Greek). Once verbal consent was given, the distribution of the consent form was completed (Step 3). *Approximately 5-10 minutes.*
STEP 3: CONSENT FORM	Consent form was given to the participant for review and signature, unless the form was completed during the preliminary conversation (choice of English or Greek version). *Approximately 5-10 minutes.*
STEP 4: QUANTITATIVE COMPONENT	Environmental identity (EID) scale and Secondary scale were completed by the participant or with assistance from the research team (choice of English or Greek version). Often participants engaged in conversation during this step. *Approximately 15-20 minutes.*
STEP5: QUALITATIVE COMPONENT	Participant survey was completed by the participant or with assistance from the research team (choice of English or Greek version). This step included open dialogue and discussion. *Approximately 30 minutes depending on the individual and how much they wanted to share.*
NON-PARTICIPANT INTERACTIONS	
quantitative COMPONENT (**Nested data**)	Sea turtle population data attained from six seasons (2013-2018). The 2013-2017 data came from Wildlife Sense at the end of the 2017 season. Data from 2018 was included the following year at the end of the season to confirm similar trends in population data.

longer if a participant had additional questions at the beginning and/or was willing to share more with the research team specifically during the open dialogue and discussion (see Step 5 in Table 1). The location of the interview was based on convenience for the participant, often at their place of employment before work began or during a break in the afternoon or evening.

Participants completed the scales and survey by hand, with 90 individuals preferring the Greek version and 23 choosing the English version of the survey. When assistance was needed with translation and writing the research team offered support. During each participant interaction, additional hand-written notes were taken pertaining to comments participants offered

in regards to the survey questions in the Qualitative Component (sometimes information or stories participants themselves had not physically written down). An audio recorder was used with permission from the participant.

Some participants preferred to complete the packet on their own and we honored these requests; the day of retrieval was based on a participant's preference (typically 2-3 days later). On the day we returned we offered additional opportunities to share or make any clarifications especially if we noticed there was brevity to their responses, blank responses, and/or they had inquiries (this follow-up was done before we departed). This enabled us to make a further connection with these participants. For participants who completed the packet in our presence, having an initial conversation and then spending time with the participant allowed us to build a connection with the intention to reduce potential power imbalances or any perception that we were trying to influence participant responses. In addition, with snowball sampling we were introduced to some participants who were friends of previous participants creating a stronger, positive connection.

Quantitative data. The quantitative measurement tool was a 24-question Environmental Identity (EID) scale developed by Clayton (2003) consisting of a 7-point Likert-scale ranking which determined the environmental identity or level of connection to nature for each participant (see Appendix A2 & B2). The EID scale is in part based on a collective social identity structure and factors including (Clayton, 2003): (1) salience of identity – extent and importance of individual's interactions with nature ("*I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean.*"); (2) self-identification – way in which nature contributes to the collectives with which one identifies ("*I think of myself as a part of nature, not separate from it.*"); (3) ideology associated with the group – measured by support for environmental education

and a sustainable lifestyle ("*Behaving responsibly toward the Earth – sustainable growth – is part of my moral code.*"); (4) positive emotions – measured by asking about the enjoyment obtained in nature, through satisfaction and aesthetic appreciation ("*I would rather live in a small room or house with a nice view than a bigger room or house with a view of other buildings.*"); and, (5) autobiographical information – based on experiences and memories of interacting with nature ("*I feel that I have roots to a particular geographic location that had a significant impact on my development.*").

Following the EID scale was a 9-question Secondary scale designed using a 7-point Likert-scale ranking to assess past and current experiences and knowledge of nature (e.g. how much time spent in nature as a child and adult; knowledge of sea turtles and protection efforts), the level of concern (e.g. for protecting nature and sea turtles), and willingness to participate (e.g. in protecting nature and sea turtles) (see Appendix A3 & B3). The style of questions for the Secondary scale were inspired by previous work (Clayton & Kilinç, 2013).

Qualitative data. For the Qualitative Component, a three-part participant survey was designed that included both closed (with follow-up questions) and the open-ended questions to encourage open dialogue and discussion similar to an interview (see Appendix A4 & B4). This discussion-style process allowed for more detailed information. The first part of this participant survey consisted of questions focused on demographics to gain background data about the participants. Participant gender and age were recorded to determine if either would affect their EID, level of concern, and willingness to participate in endangered species conservation. The second part was comprised of environmental-based questions, such as "*Do you consider yourself to be connected to nature*;*"* "*I am someone who is concerned about nature, especially conserving endangered sea turtles*;" and, "*I am someone who is willing to participate in*

protecting nature, especially conserving endangered sea turtles." The results from the qualitative-based questions in this section are intended to provide additional insight to those of the EID scale and the Secondary scale. The final part of the survey consisted of questions related to sea turtle knowledge and experience, such as "*Which turtle species are present in this area*;" "*How often do you see sea turtles and/or sea turtle nests*;" and, "*Do you think that there are fewer or more sea turtles with respect to 5 years ago*" (questions 1, 2, 4, respectively) (see Appendix A1-4 & B1-4). These three survey questions will be specifically addressed in this chapter.

For questions 1, 2, and 4, (Participant survey, Part III), participants had multiple options to choose from and an option to add additional feedback for question four. The responses from these questions were assigned a quantitative value and transformed into percent of total participant responses per location so the final data could easily connect back to the turtle population data (quantitative nested data). For the purposes of this study, experience and knowledge is viewed as what an individual has learned over time and their own personal interactions with sea turtles. In general, monitoring by a conservation group is also considered important since the presence and information disseminated by such a group allows the local community further knowledge (as shared by some participants as to where they learned about sea turtle information).

Quantitative data (Nested data). I obtained previously collected sea turtle population data (number of adult and juvenile loggerhead sea turtles and nests per season) spanning six seasons. The number of adult and juvenile loggerhead sea turtles were collected during the day by Wildlife Sense volunteers (100 volunteers in 2013; over 250 volunteers in 2018) from May to October annually while beaches were monitored during the day and evening for new nests. In

this study, the data were used to establish an estimated number of adult and juvenile sea turtles in the waters around the island, specifically the Argostoli harbor and Koutavos lagoon, and the number of nests at the beaches of Argostoli, Lixouri, and Skala over six seasons.

I separated the adult and juvenile turtle data by location of sighting (harbor & lagoon) and status (overwintered, stranded live or dead, tagged). Adult and juvenile turtle counts came from Argostoli harbor and Koutavos lagoon, those remaining during the winter, any stranded turtles due to injury or death, and those taken out of the water to be tagged and released. Stranded and tagged and released turtles came from Argostoli harbor, Koutavos lagoon, and from beach sites. I calculated the counts for wintering, stranded, and tagged turtles to assess or evaluate population changes over time and to note that these turtles may have already been counted in the harbor and lagoon numbers.

Argostoli had turtle presence data for the harbor, lagoon and nesting beaches, whereas Lixouri had data for only nesting beaches since no adult turtles have been observed in the Lixouri harbor. Wildlife Sense only has turtle counts at Skala beaches for the 2015 and 2016 seasons. Fiskardo is not a monitored site for turtles and nests in the harbor and beaches. However, it was a location to investigate to determine if the lack of monitoring affects participant experience and knowledge of sea turtles.

The turtle population data were used to compare sea turtle population trends and responses from participants, specifically questions 1, 2, and 4 (*Which turtle species are present in this area?; How often do you see sea turtles and/or sea turtle nests?; Do you think that there are fewer or more sea turtles with respect to 5 years ago?*, respectively) of the participant survey, Part III. The expectation was that participants would have knowledge of the local situation, a broad view of the problem, and/or recall the past accurately (Bradburn et al., 1987;

Mancini & Koch, 2009; Moore et al., 2010). Therefore, the results of the nested data should support the knowledge and experience data.

Results

Turtle Population Data

The presence of loggerhead sea turtles, both adult and juvenile, in Argostoli harbor and Koutavos lagoon changed over the six seasons (Figure 3a). In 2013, 27 turtles were counted in Argostoli harbor and Koutavos lagoon, with 5 overwintering turtles in this location and 4 stranded turtles (Figure 3a). In 2018, turtle counts in Argostoli harbor and Koutavos lagoon were 105, with 11 turtles overwintering in this location and 23 stranded turtles (Figure 3a).

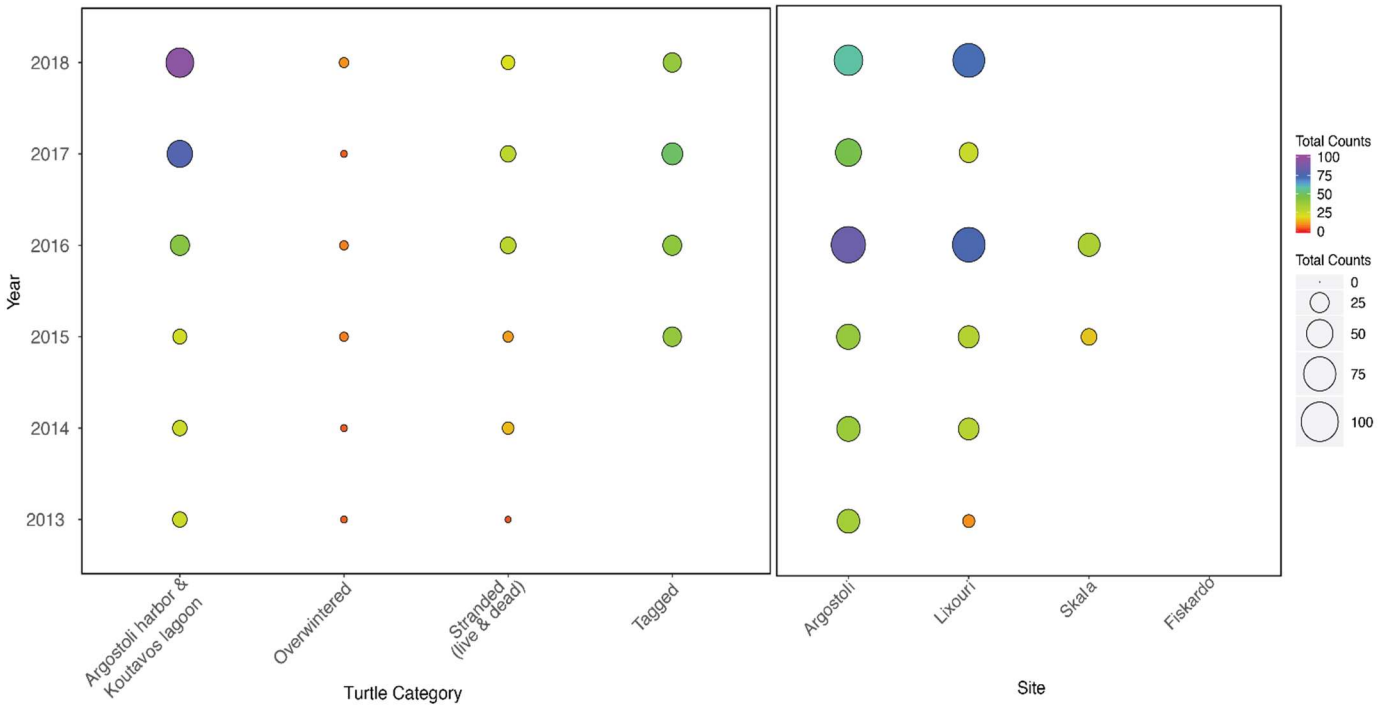

Figure 3. Loggerhead sea turtle population for 2013-2018 seasons, a. adult and juvenile turtle categories, and b. turtles nests per beach

The number of nests counted at Argostoli and Lixouri beaches changed over six seasons (Figure 3b). In 2013, 36 nests were counted on Argostoli beaches and 10 on Lixouri beaches,

while in 2018, there 59 nest counts at Argostoli beaches and 73 at Lixouri beaches (Figure 3b).

Experience & Knowledge of Sea Turtle Species

While there have been reports of green sea turtles nesting on some of the beaches of Kefalonia, loggerhead sea turtles frequent the island (C. Comis, personal communication, May 5, 2017). The majority of participants in all locations had knowledge of which species of turtles are most common in and around Kefalonia, with loggerhead as the largest percent of responses (Figure 4.). When asked what species of turtle are present, majority of participants in Argostoli, Lixouri, Skala, and Fiskardo responded with "loggerhead."

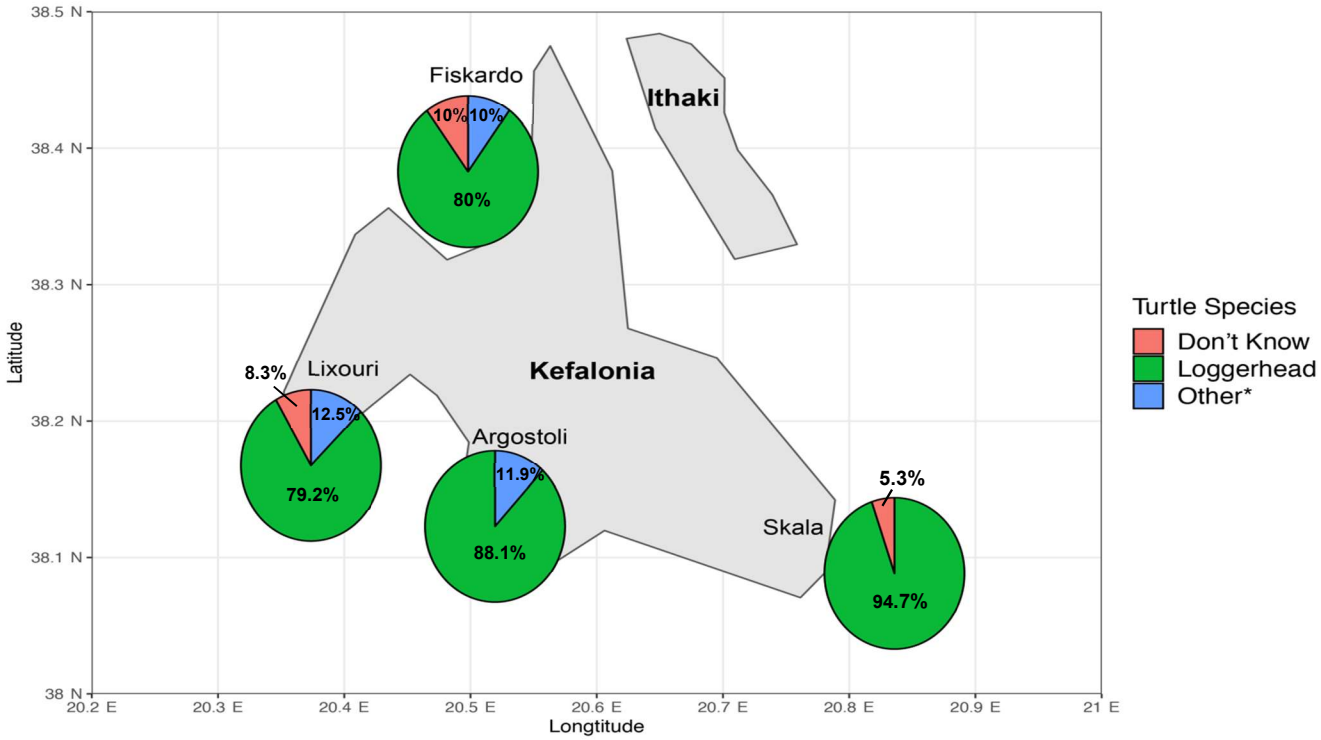

Figure 4. Experience & knowledge of sea turtles – *Which turtle species are present in this area?* (Participant survey, Part III, question 1). *Other: green, leatherback, land tortoise, hard shell turtles.

Argostoli has consistent monitoring and presences of adult and juvenile turtles in the main harbor and nests along the beaches, which may explain why responses did not include "don't know." Lixouri has consistent monitoring which is limited to the beaches and there have

been no reported interactions between humans and turtles in the harbor which may explain why responses were found across all three categories, “loggerhead,” “other,” and “don’t know.” Even though there is no consistent monitoring in Skala, the larger presence of reported nests along these beaches by participants may be enough for local people to be quite knowledgeable, especially with 94.7% responding “loggerhead.” Finally, Fiskardo is an area that lacks monitoring, and very few sightings of sea turtles were noted from participants during the study. However, a majority of participants possessed knowledge about the turtle species on and around Kefalonia. The participants here also had variability of responses across all three categories, and had the highest percentage of responses across all sites for “other” (10%) and “don’t know” (10%).

Experience & Knowledge of Sea Turtle Encounter

Participants from the Argostoli area reported seeing sea turtles more frequently than other participants from other communities sampled (Figure 5.). The highest percent of responses in Argostoli was “multiple times per day” and it was the only location not to have responses in the “never” category. Responses in Lixouri were limited to three categories, “never”, “few times per year”, and “other” (once in my life). Regardless of consistent monitoring on the Lixouri beaches, the limited experience with sea turtles may be another reason why the type of sea turtle knowledge (79.2%) was not as high as Argostoli (88.1%) (Figure 4). Skala showed responses across six categories, such as “never” to “multiple times per week,” and “few times a year” as the highest response for participants at this site. Fiskardo showed responses across four categories, such as “never” to “multiple times per week,” and “few times a year” as the highest response for participants at this site.

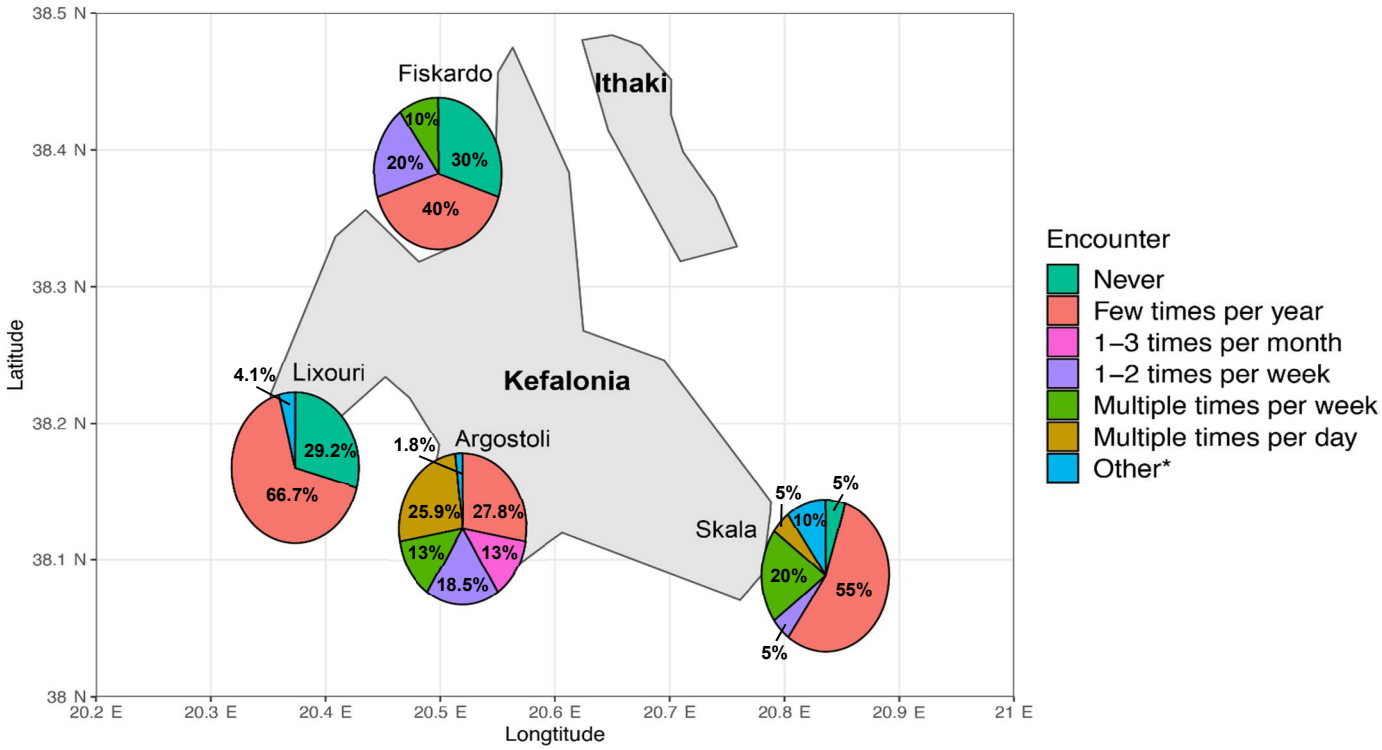

Figure 5. Experience & knowledge of sea turtles – *How often do you see sea turtles and/or sea turtle nests?* (Participant survey, Part III, question 2). *Other: once in my life.

Experience & Knowledge of Change in Sea Turtle Presence

Participants from the Argostoli area had knowledge that sea turtle presence had changed over the six year period (Figure 6.). In Argostoli, 55.6% of participants indicated there were more sea turtles now than in the past, the highest percent across all sites. This can also be supported by the change in turtle and nest counts from 2013 to 2018 (63 to 164, respectively, see Figure 3). Participants from Lixouri most frequently responded "fewer" followed by "don't know." Monitoring is limited to the beaches, there are no interactions between humans and turtles in the Lixouri harbor (as in Argostoli harbor and Koutavos lagoon), and there is limited experience with sea turtles (Figure 5). The majority of Skala residents reported that they believe there are fewer turtles today similar to Lixouri, followed by "don't know." Again, there is no consistent monitoring in this location, or known interactions between humans and turtles as they

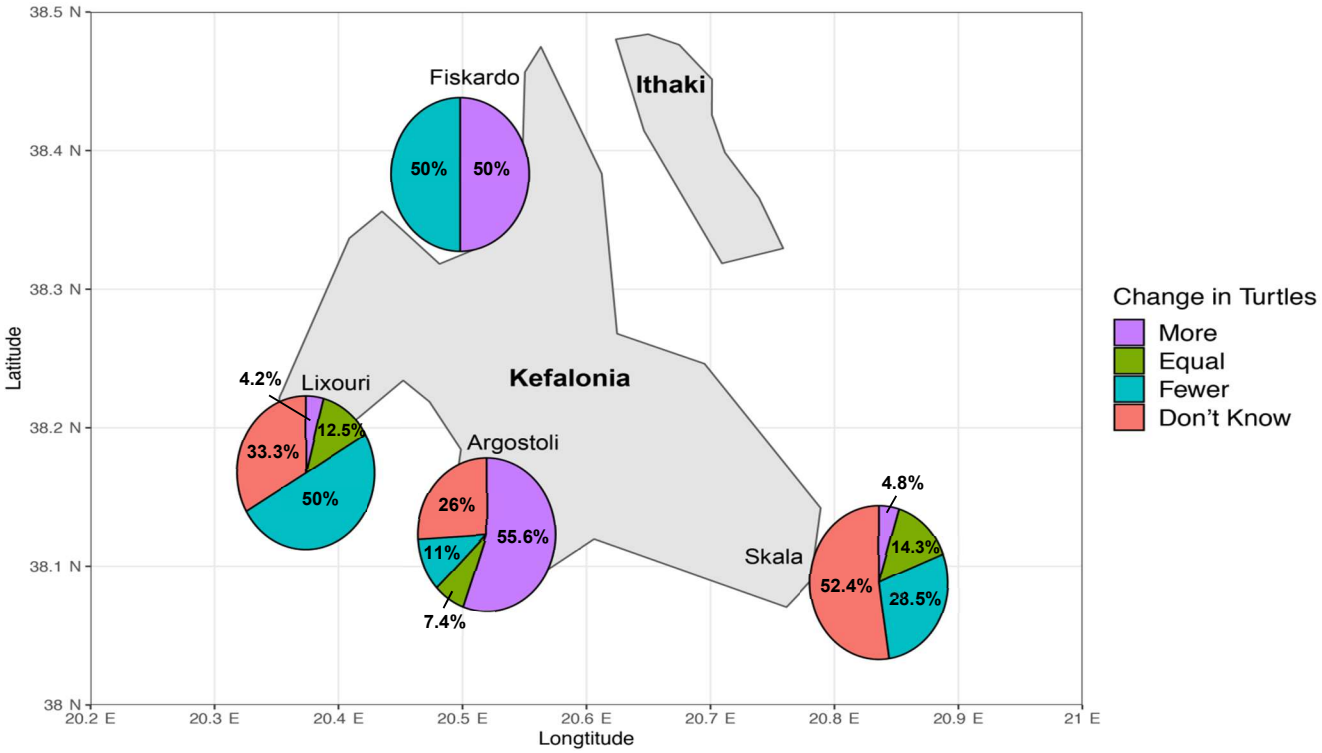

Figure 6. Experience & knowledge of sea turtles – *Do you think that there are fewer or more sea turtles with respect to 5 years ago?* (Participant survey, Part III, question 4)

lack a harbor. Finally, Fiskardo's responses were split between "more" and "fewer" sea turtles. With no monitoring ever being done in this area and very few sightings of sea turtles reported by participants the responses for this question may be due to guessing.

Some responses seemed to indicate that misinformation about loggerhead sea turtles exists and that a person's individual experience alone is not always enough to provide accurate information, for example:

"*More; maybe it just happened I saw more.*"

"*Fewer; because I don't see them usually.*"

There were responses that showed a conflict with what is known about sea turtles and the environment, for example:

"*More; I see more. I don't think the ecologists have helped but the climate changed so it*

helped them."

"*More; now turtles are too many. The last 5 years turtles have increased too much and maybe nature is in danger!*"

Another misconception had to do with the awareness that sea turtles had increased and the belief that the species does not need the same amount of protection as other threatened species anymore, for example:

"*More; the population has increased the last 30 years. I would invest in other species, more endangered species (monk seal).*"

Environmental Identity, Experiences & Knowledge, and Participation per Location

Environmental identity (EID) and past and current experiences and knowledge in nature (from the EID and nature-based, Secondary scales) were found to be positively correlated, $r(111) = .49$, $p < .001$, showing a relationship between experiences and knowledge learned as a youth and in adulthood with an individual's connection to nature (EID and participation were positively correlated, $r(111) = .59$, $p < .001$; EID and concern were positively correlated, $r(111) = .63$, $p < .001$). Therefore, I wanted to determine if those with more past and current experiences and knowledge in nature live in a particular location and whether those locations included a greater percent of people with high EID scores (135-168) and high Participate scores (9-14).

Individuals who responded yes for past and current experiences and knowledge had scores of 25 to 35 ($M = 25.63$, $SD = 6.51$), while those who responded no for past and current experiences and knowledge had scores below 25. Figure 7 shows that participant responses with the largest percent of past and current experiences and knowledge in nature live in Argostoli followed by Fiskardo, Skala, and Lixouri. Individuals with EID scores of 135 and higher were

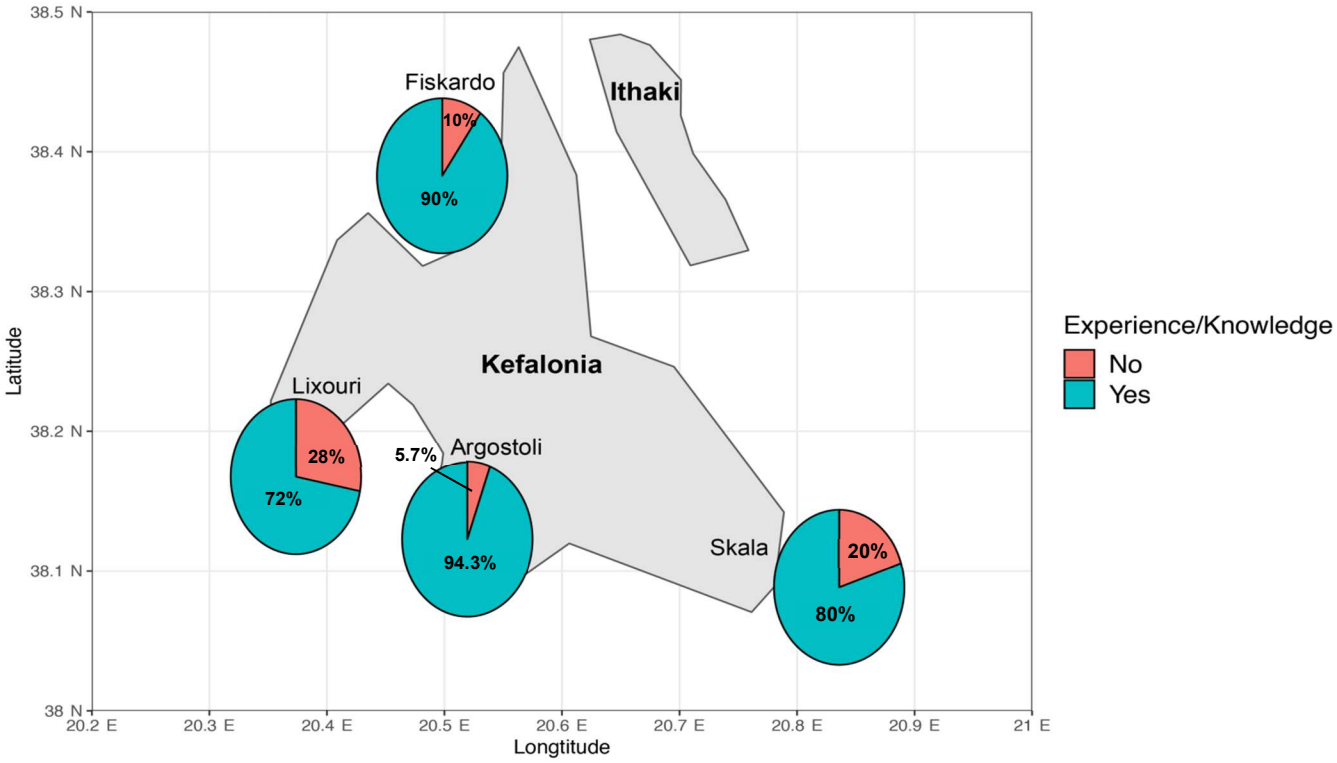

Figure 7. Percent of participant responses per location regarding past and current experiences & knowledge in nature

those who responded yes to feeling connected to nature, those with scores of 106-134 expressed some form of a connection, and individuals with no connection had EID scores below 104 (M = 134.55, SD = 21.46). Of the participants with high EID scores, or greater connection to nature, the largest percent live in Argostoli followed by Skala, Fiskardo, and Lixouri (Figure 8).

Individuals with Participate scores of 9 and higher were those who responded yes to willingness to participate in endangered species conservation, while those with low scores (between 2-8) expressed no willingness to participate. Individuals with mean scores of 8 that reported "no" as a response usually had issues with lack of time and money, for example "*I don't have enough time. I work a lot of hours*" and "*If I had time and money*." Figure 9 shows that participant responses with the largest percent of willingness to participate live in Argostoli followed by Skala, Fiskardo, and Lixouri. Lixouri had the largest percentage of individuals not

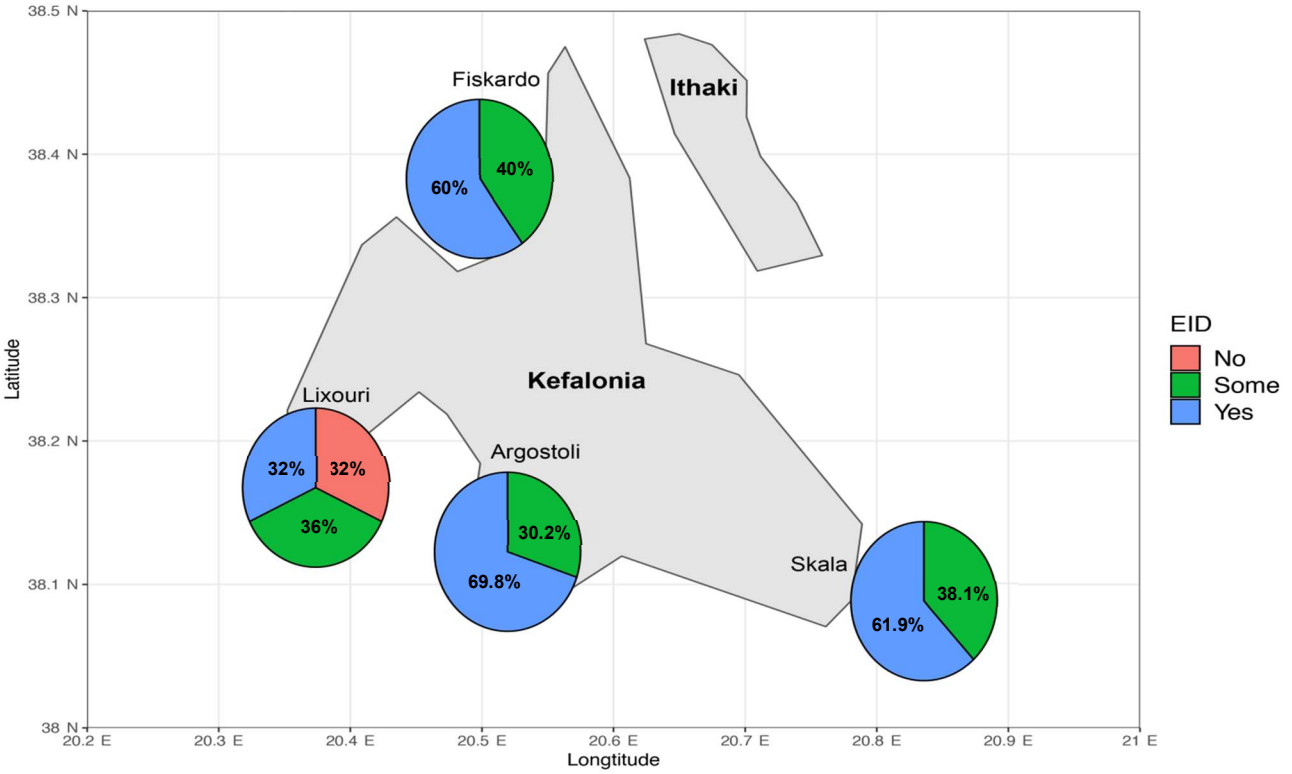

Figure 8. Percent of participant responses per location regarding environmental identity (EID) – No = Not connected to nature; Some = Limited connection; and Yes = Connected to nature

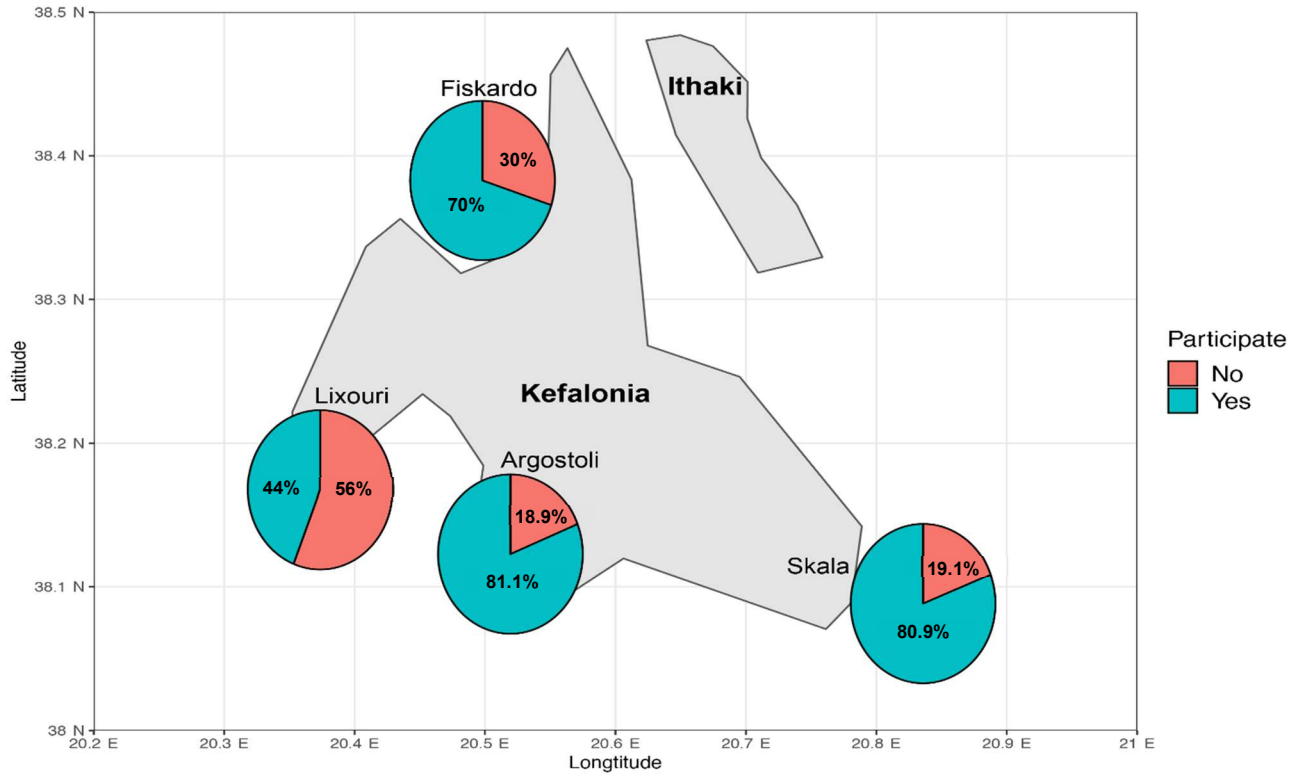

Figure 9. Percent of participant responses per location regarding willingness to participate

willing to participate in sea turtle conservation.

Discussion

Data from the turtle counts around the island of Kefalonia show that loggerhead sea turtles are the most common species present. The data also showed a change from 2013 to 2018 in loggerhead sea turtles and nests at the different locations monitored by Wildlife Sense. The increase in adult and juvenile loggerhead sea turtles and nests could be attributed to: (1) a growth in the number of volunteers over six seasons; and (2) more turtles frequenting Kefalonia over time (C. Comis, personal communication, January 20, 2020). These turtle data trends correlate with the Argostoli area residents who indicated correct knowledge of turtle species, the frequency of seeing sea turtles, and the change in turtle numbers over time.

Those participants with the greatest past and current experiences and knowledge in nature and high environmental identity scores were from the Argostoli area. Local communities in and near Argostoli have the opportunity to see and learn about loggerheads on a fairly regular basis in the Argostoli harbor, Koutavos lagoon and the surrounding beaches. Local community members from Argostoli such as owners and employees of shops, restaurants, fishing boats, and Port Police also have the opportunity to share knowledge of the sea turtles with tourists. This exchange of knowledge may encourage local people to become more aware of turtle facts and monitoring efforts so they are able to share with guests who are less familiar and frequent their establishments. Wildlife Sense, who monitor sea turtles and nests, may also be sharing accurate information with local people and visitors.

The main harbor of Lixouri does not have the extensive opportunities to see, learn, and share information about loggerhead sea turtles. While there are monitoring efforts in the Lixouri area, the efforts are only being targeted on the beaches. Both of these factors may contribute to

the lower responses for past and current experiences and knowledge in nature and the lowest environmental identity scores compared to the other locations sampled.

Skala and Fiskardo are locations that have either had limited or no monitoring efforts. Yet, Skala and Fiskardo have the second and third greatest percent of responses for past and current experiences and knowledge in nature and high environmental identity scores. The Skala area is known for having beaches with many turtle nests (C. Comis, personal communication, May 5, 2017). This may be a factor that offers the opportunity for the local community to see hatchlings and nesting females, and learn about sea turtles. Perhaps with consistent monitoring it is possible there would be a similar trend in the Skala area, showing an increase in nests similar to the Argostoli area. Due to the lack of monitoring in Fiskardo it is difficult to propose what contributes to the percent of participant responses, specifically for the frequency of seeing sea turtles and the change in turtle numbers over time.

Since the majority of participants in Argostoli have a good understanding of sea turtles in and around the island and reported feeling connected to nature, this location could be used as an example for other sites. For instance, while there are no sea turtles reported to frequent the Lixouri harbor, this main location of the Paliki peninsula could be an ideal location for Wildlife Sense to share consistent information on sea turtles and monitoring efforts and volunteer opportunities occurring across the island. While this cannot replace an individual's direct experiences with sea turtles, it can offer an avenue towards strengthening the connection with the community and opportunity to provide accurate information.

Some participant responses suggest that there is misunderstanding or misinformation about sea turtles and nature, and some participants suggested that based on their experience and knowledge of loggerhead sea turtle presence, the turtles do not need protection. Some of these

participants also shared that they feel no impetus to acquire further information or participate and/or support conservation efforts in their area because they believe the turtles are thriving and no longer under threat.

Other reasons participants gave for not being willing to participate in conservation efforts were lack of time and money. Greece is a developed country but with the aftermath of the 2007-2009 financial crises Greek people have resorted to working long hours, seven days a week (Amadeo, 2019; Kouretas, 2010). There has been limited time and funds available for conservation projects, a lack of faith in political institutions, and the choice of family labor versus outside employees (Giovos et al., 2016; Papoulis et al., 2015; Ragkos et al., 2016).Such barriers can undermine participation and support of conservation efforts.

During the study, some of the participants interested in conservation noted they would be willing to support conservation efforts if there were simple ways that did not take away from their work. One suggestion was the option to display informational flyers provided by the conservation group in their establishments. Participation can be practical and manageable such as events that require a small amount of time and responsibility, membership that includes an advisory role, meet-ups at convenient locations for feedback sessions (sharing helpful information to stay equally informed), and placing informational handouts in shop windows (Campbell et al., 2007; Marcovaldi, Patiri, & Thomé, 2005; Senko, Schneller, Solis, Ollervides, & Nichols, 2011). Community members who are engaged in conservation have the tendency to inspire other local people and communities, also known as conservation contagion (Horwich, Das, & Bose, 2013; Horwich et al., 2012). Conservation contagion are conservation initiatives that have the potential to spread to other people and communities, often throughout regions by a

process of diffusion, specifically initiated by the interest and support of the local people (Horwich, Das, & Bose, 2013; Horwich et al., 2012).

Limitations

During this study, some participants commented that it took longer than they hoped to complete the participant packet. The scales and survey questions used in this study could be fine-tuned to allow for a more efficient way to collect data in a timely fashion and reduce unnecessary redundancies in the questions being asked. The time consuming nature of analyzing a combination of quantitative and qualitative data can be daunting. However, practice over time with such data sets affords more fluidity and competence for tackling other integrated projects. Plus, considering an integrated research team that includes social scientists may be an effective way to work with combined data sets and learn from one another. Regardless of the time and effort it may take, the outcome is rich data sets and information that may not be gained with only one style of analysis.

A power imbalance and the presence of the research team during the participation interaction could also be limitations in this study. It is important to recognize as an outsider that I may have been seen as someone with influence and power, and therefore participants may have told me information they thought I wanted to hear (Creswell, 2014). Therefore, spending time with participants was extremely important in order to build trusting relationships. In addition to the preliminary conversation, opening conversation (Step 1), and open dialogue and discussion (Step 5) of the participant interactions, often participants offered the opportunity to join them in a meal and conversation before discussing the project. These meals and conversation also afforded the opportunity to build relationships that would not have existed.

Having friends introduce the research team to other participants (snowball sampling) also created an additional layer of trust between the research team and the new participant. Finally, there is no way to be entirely sure our presence during the participation interactions did not influence individual's answers. However, in addition to being forthright with information and building relationships, having several data sources that were converged hopefully reduced false information. Specifically, there were more than one opportunity to answer similar questions throughout the participant packet. If discrepancies across similar questions were found, it was noted during coding and analysis and the use of the data was questioned as useable or not.

In conclusion, this study showed that there is a relationship between environmental identity and past and current experiences and knowledge in nature. Those individuals with more experiences and knowledge of the local protected species were the same individuals with a greater connection to nature who reside in the same location. These participants also had a greater willingness to participate in endangered species conservation. I propose using environmental identity to strengthen conservation interventions by focusing on two different ways to approach participation and/or support of conservation efforts (Figure 10). Option one

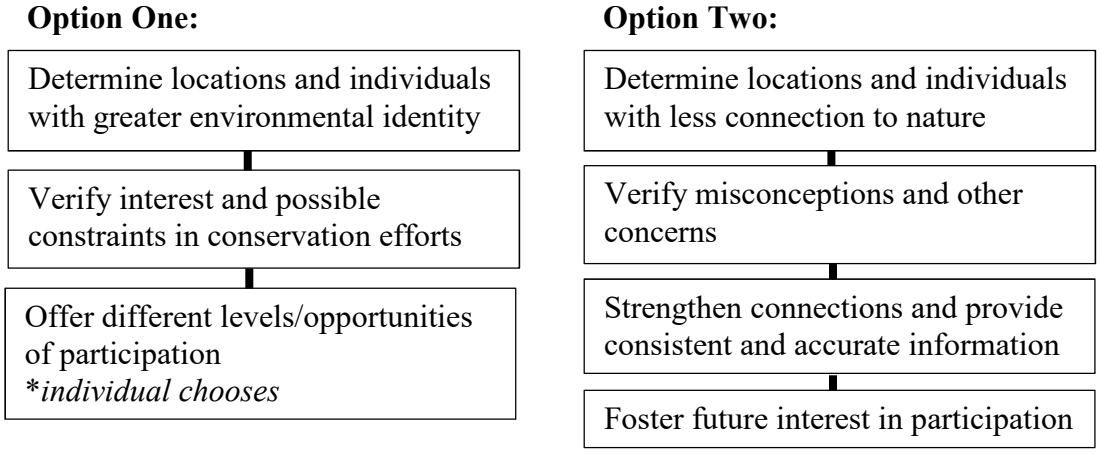

Figure 10. Using environmental identity to identify and engage local people in endangered species conservation

would be to identify and engage those community members that have a good connection to nature, experiences and knowledge of the protected species, and those who expressed interest in participating and/or supporting conservation efforts. Option two would be to identify individuals and areas that may have misinformation and possibly less knowledge and experience with the target species and cultivate relationships with these people and communities.

Although challenges exist, the benefit to integrating the social sciences affords environmental identity as a valuable tool for effective endangered species conservation. Considering how humans connect with and care about nature is a significantly powerful way to predict past and current experiences and knowledge in nature, level of environmental concern and to promote participation in endangered species conservation. It would be interesting to perform a similar study in other locations with sea turtles or other threatened species to determine reasons that lead to or prevent participation and support. Future research could also reaffirm that environmental identity can be an effective tool across different endangered species conservation initiatives.

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Chapter 5: Conclusion

Conservation actions directed toward protecting endangered species often occur where humans reside and in regions of high biodiversity. Limited participation of people that interact with or cause threats to endangered species populations has led to misunderstandings between communities and conservation projects, at times leading to ineffective conservation programs (Agrawal & Gibson 2001; Baral & Heinen, 2007; Barrett, Brandon, Gibson, & Gjertsen, 2001; Berkes, 2004; Campbell, 2000; Campbell, Haalboom, & Trow, 2007; Infield & Namara, 2001; Noss, 1997; Songorwa, 1999). The recognition of the importance of including local communities has been growing over time (Rodriguez-Izquierdo, Gavin, & Macedo-Bravo, 2010; Singh, 2019). However, authentic or true citizen participation is required to maintain sustainable and effective endangered species conservation (Arnstein, 1969; Rasoolimanesh, Jaafar, Ahmad, & Barghi, 2017).

Research has found that environmental identity is a good predictor of environmental concern and behavior (Clayton, 2003; Clayton, 2012; Clayton & Kilinç, 2013; Veijalainen & Clayton, 2013). In addition, the development or awareness of an environmental identity encourages concern for animals and the surrounding environment (Clayton, Fraser, & Burgess, 2011; Gosling & Williams, 2010; Hayes-Conroy & Vanderbeck, 2005). Therefore, environmental identity has the potential to be a meaningful tool in a complex, high stakes field of endangered species conservation.

This study demonstrates that environmental identity can be an effective tool to gather information to strengthen conservation projects and build community involvement. I suggest a three-tiered concept model that includes three components: Environmental Identity,

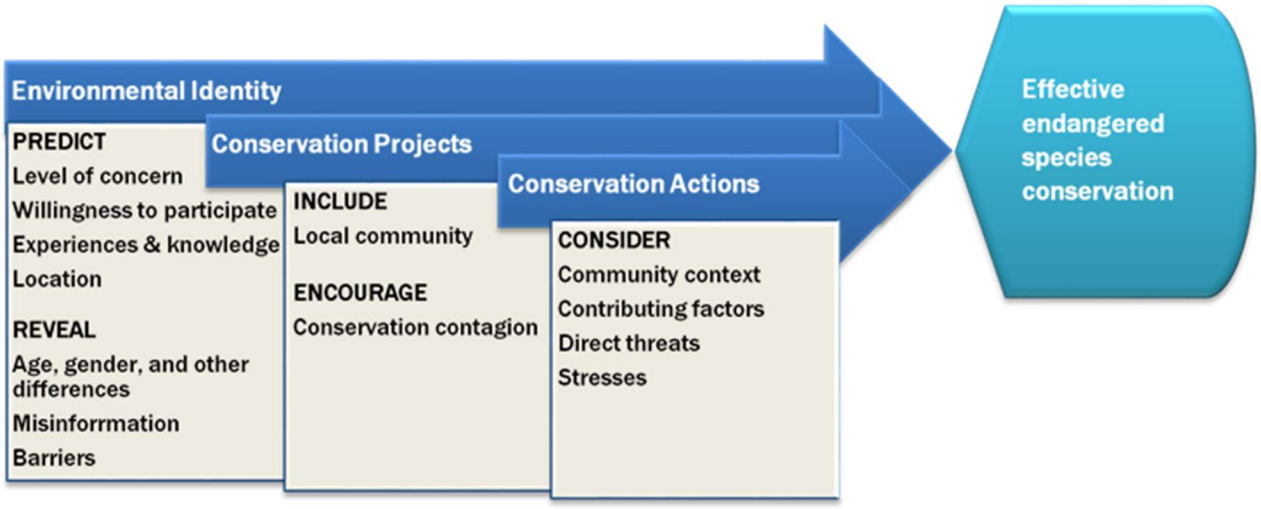

Figure 1. Three-tiered model for effective endangered species conservation driven by environmental identity

Conservation Projects, and Conservation Actions (Figure 1). The three components in Figure 1 would be considered on a concurrent continuum rather than in isolation. Environmental identity which has been a neglected human attribute in other models has been shown to be a valuable tool in this study, and therefore one of the three necessary components. In the first component, environmental identity can be used to determine which members of the community feel more connected to nature, where they reside, and those who have high levels of concern and interest in participating and/or supporting conservation efforts. Within this component other information can be identified such as age and gender differences, misinformation in regards to the endangered species and protection efforts, and barriers within the community that may prevent participating in endangered species conservation initiatives. This additional information can inform conservation groups on ways to proceed effectively in building relationships while recognizing impediments.

Second, conservation projects and the local community work together to build relationships within the community and encourage involvement in existing programs or in the

development of new programs. Encouraging community involvement by building relationships can strengthen conservation programs and also lead to stronger and extended participation and care through what is known as conservation contagion (programmatic initiative that have the potential to spread to other communities often throughout regions by a process of diffusion, specifically initiated by interest of the local people) (Horwich, Das, & Bose, 2013; Horwich, Lyon, Bose, & Jones, 2012). This component will allow for further community input and ways for community members to be involved even when barriers keep them from doing so. For example, a shop owner may not have extra time to participate in an event, however, they can display informational flyers in their store showing support for the conservation-based opportunity.

The last component of the three-tiered model is a combination of conservation actions or approaches such as protection or management of species and habitats, education and awareness-events, and training and capacity building. Conservation actions can be applied after considering the community context, contributing factors (economic, social, cultural, institutional, and political), direct threats, and stresses that pertain to the specific community. Taking each of these aspects into account is equally important to be sure that the most effective actions are applied along with community participation and support.

While there are limitations to a mixed method design, the results from this research show the benefits of using environmental identity as an effective tool in endangered species conservation by supporting local participation and uncovering relevant information pertaining to the local community. The strength of this approach is when environmental identity is combined with conservation project efforts and conservation actions (as seen in Figure 1) to tackle the

complexities of conserving threatened global biodiversity in the midst of a sixth mass extinction (Barnosky et al., 2011; Chivian & Bernstein, 2008; Mace et al., 2010).

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Appendices

Appendix A

A1. Informed Consent Form

Study Title: *Investigating local environmental concern and willingness to participate for more effective endangered species protection: The role of environmental identity*

Researcher: Christina M. Wesolek, Antioch University New England, USA.

What is the project about?
The purpose of this project is to learn about the local environmental identity and the knowledge and experience local people have with sea turtles.

What do you have to do?
If you agree to be part of the study, you will participate in completing an Environmental Identity scale, a Secondary scale, and a three-part participant survey. You will have the opportunity to answer both brief questions and elaborate in greater detail on certain points. During our visit you will have the opportunity to share your knowledge. Written notes and audio recording will be taken with permission.

What do you gain from this study?
You will have the opportunity to share your knowledge about your connection to nature and to the local sea turtles (the endangered species of focus for this study). Each individual will receive the results from the Environmental Identity scale. This information will be helpful for those working to protect the environment to better understand how a person's environmental identity can predict environmental concern and willingness to participate in protecting the natural world.

What could happen to you?
The risks for participating in this study are minimal to none. If you find any of the questions uncomfortable, you have the right to skip any question(s) you do not wish to answer or to stop being involved at any time.

What will happen to the information you share?
The information that you share will be kept private. Your name will not be used in any written reports or publications. Data will be kept until analysis is complete, and then will be destroyed.

You always have a choice.
If you first decide to participate and then change your mind, you do not have to complete or finish any part of the study. Again, you also have the right to skip any questions you do not wish to answer.

Do you have any questions?

If you have questions about this study, please contact [redacted] - [redacted] or [redacted].

If you have any questions about your rights as a research participant, you may contact [redacted], Chair of the Antioch University New England Institutional Review Board, or [redacted], Provost for Academic Affairs at Antioch University New England, [redacted].

⁃ I have read this consent form, plus any additional questions I had were answered. I understand I can change my mind at any time, and no longer participate in this study. I agree to participate in this study.

Printed Name of Participant	Signature of Participant	Date

Signature of Person Obtaining Consent	Date

A2. Environmental Identity Scale

Please indicate the extent to which each of the following statements describes you by using the appropriate number from the scale below.

1	2	3	4	5	6	7
Not at all true of me			**Neither true nor untrue**			**Completely true of me**

_____1. I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean).

_____2. Engaging in environmental behaviors is important to me.

_____3. I think of myself as a part of nature, not separate from it.

_____4. If I had enough time or money, I would certainly devote some of it to working for environmental causes.

_____5. When I am upset or stressed, I can feel better by spending some time outdoors "communing with nature"

_____6. Living near wildlife is important to me; I would not want to live in a city all the time.

_____7. I have a lot in common with those working to protect the environment (as a group).

_____8. I believe that some of today's social problems could be cured by returning to a more natural way of life in which people live in harmony with the land.

_____9. I feel that I have a lot in common with other biological organisms.

_____10. I like to garden.

_____11. Being a part of the ecosystem is an important part of who I am.

_____12. I feel that I have roots to a particular geographic location that had a significant impact on my development.

_____13. Behaving responsibly toward the Earth – sustainable growth – is part of my moral code.

_____14. Learning about the natural world should be an important part of every child's upbringing.

_____15. In general, being part of the natural world is an important part of my self-image.

_____16. I would rather live in a small room or house with a nice view than a bigger room or house with a view of other buildings.

_____17. I really enjoy camping and hiking outdoors.

_____18. Sometimes I feel like parts of nature – certain trees, or storms, or mountains – have a personality of their own.

_____19. I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time.

_____20. I take pride in the fact that I could survive outdoors on my own for a few days.

_____21. I have never seen a work of art that is as beautiful as a work of nature, like a sunset or a mountain range.

_____22. My own interests usually seem to coincide with the position advocated by those working to protect the environment.

_____23. I feel that I receive spiritual support from experiences with nature.

_____24. I keep mementos from the outdoors in my room, such as shells or rocks or feathers.

A3. Secondary Scale: Past and Current Experiences and Knowledge in Nature, Environmental Concern, and Willingness to Participate

Please indicate the extent to which each of the following statements describes you by using the appropriate number from the scale below.

1	2	3	4	5	6	7
Not at all true of me			**Neither true nor untrue**			**Completely true of me**

_____1. I spent a lot of time in natural settings (woods, mountains, desert, lakes, ocean) as an adolescent.

_____2. My parents/guardians encouraged me to spend time in nature as an adolescent.

_____3. I learned about sea turtles when I was an adolescent.

_____4. I learned about sea turtle protection when I was an adolescent.

_____5. I spend a lot of time in nature as an adult.

_____6. I am concerned about protecting nature.

_____7. I am concerned about protecting sea turtles.

_____8. Participation in activities protecting nature in general is important to me.

_____9. Participation in activities protecting sea turtles is important to me.

A4. Participant Survey

Part I. General Information

1. Village: Argostoli ☐ Fiskardo ☐ Lixouri ☐ Skala ☐
   Other ☐ (write-in location) _____
2. How long have you lived in this area? (write-in) _____
3. I am from Kefalonia? Yes ☐ No ☐ If no, how many years have you lived here? _____
4. Gender: Female ☐ Male ☐
5. Age (years): ≤ 24 ☐ 25-34 ☐ 35-44 ☐ 45-54 ☐
   55-64 ☐ 65-74 ☐ ≥ 75 ☐
6. Profession/Job: Fisherman ☐ Boat Tour ☐ Scuba Company ☐
   Beach Bar ☐ Beach Bed ☐ Hotel ☐
   Other ☐ (write-in profession/job) _____
7. Position: Owner ☐
   Manager ☐
   Employee ☐ (write-in position) _____
   Other ☐ (write-in alternative position) _____
8. How long have you been in this job and/or position? (write-in) _____
9. Education: Primary School ☐
   High School/Lyceum ☐
   Technical College/University ☐
   Other ☐ (write-in additional type of education) _____

Part II. Connection to Nature, Experience in Nature, Environmental Concern & Willingness to Participate

1. Do you consider yourself to be connected to nature? **And**, what does that mean to you?
   _____
   _____
   _____

2. If applicable, do you think that your experiences in nature as an adolescent strengthened your connection to nature? **Yes / No / Maybe**. Explain your choice below.

   _____
   _____
   _____
   _____

3. If applicable, do you think that your experiences in nature as an adult strengthened your connection to nature? **Yes / No / Maybe**. Explain your choice below.

   _____
   _____
   _____
   _____

4. If applicable, where did your experiences occur in nature? Of those places, which is your favorite, and **why**?

   _____
   _____
   _____
   _____

5. I am someone who is concerned about nature, especially conserving endangered sea turtles. Circle **Yes / No / Maybe**. Explain your choice below.

   _____
   _____
   _____
   _____

6. I am someone who is willing to participate in protecting nature, especially conserving endangered sea turtles. **If I had time**, I would be interested in:

   Being part of a planning committee for protection projects ☐

   Being part of a decision-making committee for protection projects ☐

   Being part of a committee that manages protection projects ☐

   All of the above ☐ None of the above ☐ **Why?.**

7. **If I had time**, the following are other ways I could participate in protecting nature and conserving endangered sea turtles in my community.

   _____
   _____
   _____
   _____

8. Do you feel enabled to participate in protection efforts in your community? **Yes / No / Maybe**. Explain your choice below.

_____
_____
_____
_____

Part III. Sea Turtle Knowledge and Experience

1. Which turtle species are present in this area?
   Green ☐ Loggerhead ☐ Leatherback ☐
   Or, offer a description _____

2. How often do you see sea turtles and/or sea turtle nests?
   Never ☐ Occasionally (few times a year) ☐ Once a month ☐ Twice a month ☐
   Three times a month ☐ Once a week ☐ Twice a week ☐
   Multiple times a week ☐ Multiple times a day ☐

3. What have you seen from the choices below? **Check all that apply.**
   See turtle eating ☐ See turtle in open waters ☐ See female nesting ☐ Nests ☐
   See emerging hatchlings ☐ Dead turtle ☐
   Something else (write-in) _____

4. Do you think that there are fewer or more sea turtles with respect to 5 years ago?
   More ☐ Equal ☐ Fewer ☐ I don't know ☐ Other _____
   Please explain your choice _____

5. What are some of the protection efforts in your community that are directed toward sea turtles?

_____
_____
_____
_____

6. Are the sea turtle protection efforts in your community helping protect the local sea turtles? **Yes / No / Maybe**. Explain your choice below.

_____
_____
_____
_____

7. Do you know of any laws or rules protecting sea turtles? **Yes / No / Maybe**. Explain your choice below.

   _____
   _____
   _____
   _____

8. If applicable, when did you learn about sea turtles and/or sea turtle protection?

   _____
   _____
   _____
   _____

9. If applicable, where did the information about sea turtles and/or sea turtle protection come from?

   _____
   _____
   _____
   _____

~~~~~~

THIS IS THE END OF THE SURVEY. THIS RESEARCH WOULD NOT BE POSSIBLE WITHOUT PEOPLE LIKE YOU. THANK YOU SO MUCH FOR TAKING THE TIME TO PARTICIPATE!

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Appendix B

B1 ΕΝΗΜΕΡΩΣΗ ΚΑΙ ΣΥΓΚΑΤΑΘΕΣΗ

Τίτλος μελέτης: Διερεύνηση της τοπικής περιβαλλοντικής ευαισθησίας και επιθυμίας συμμετοχής του κοινού για την αποτελεσματική προστασία ειδών υπό απειλή: Ο ρόλος της περιβαλλοντικής ταυτότητας.

Ερευνήτρια: Χριστίνα Γουεσολεκ, Πανεπιστήμιο Αντιοχ, Νέα Αγγλία, ΗΠΑ

Ποιος είναι ο σκοπός της παρούσας μελέτης;
Ο σκοπός της παρούσας μελέτης είναι να γνωρίσουμε την τοπική περιβαλλοντική ταυτότητα και τη γνώση και εμπειρία των ντόπιων για τις θαλάσσιες χελώνες.

Τι πρέπει να κάνετε;
Εάν συμφωνήσετε να λάβετε μέρος στην παρούσα μελέτη, θα συμπληρώσετε μία κλίμακα Περιβαλλοντικής Ταυτότητας, μια Δευτερογενή κλίμακα και ένα ερωτηματολόγιο, το οποίο χωρίζεται σε τρία μέρη. Θα έχετε τη δυνατότητα να δώσετε σύντομες απαντήσεις και σε ορισμένα ερωτήματα θα έχετε την ευκαιρία να δώσετε πιο εκτενείς απαντήσεις. Κατά τη διάρκεια της συνομιλίας σας θα έχετε την ευκαιρία να μοιραστείτε τις γνώσεις σας. Θα κρατηθούν γραπτές σημειώσεις και οι συνομιλία θα καταγραφεί ηλεκτρονικά με την άδεια σας.

Τι θα αποκομίσετε από αυτή τη μελέτη;
Θα έχετε την ευκαιρία να μοιραστείτε τις γνώσεις σας μαζί μας για το δεσμό σας με τη φύση και ειδικότερα με τις θαλάσσιες χελώνες, που ενδημούν στην περιοχή (το απειλούμενο είδος που είναι αντικείμενο αυτής της έρευνας). Κάθε άτομο που θα συμμετάσχει θα λάβει τα αποτελέσματα της έρευνας (κλίμακας) περιβαλλοντικής ταυτότητας. Αυτές οι πληροφορίες είναι σημαντικές για αυτούς που εργάζονται για την προστασία του περιβάλλοντος και θα τους βοηθήσουν να κατανοήσουν καλύτερα το πώς η περιβαλλοντική ταυτότητα κάθε ατόμου μπορεί να αποτελέσει απόδειξη της ευαισθησίας του για το περιβάλλον και της επιθυμίας συμμετοχής του στη διάσωση και διατήρηση του φυσικού κόσμου.

Τι μπορεί να σας συμβεί;
Ο κίνδυνος από τη συμμετοχή σας στην παρούσα μελέτη είναι μηδαμινός έως ανύπαρκτος. Αν κάποιες από τις ερωτήσεις θεωρείτε ότι είναι ενοχλητικές, μπορείτε να τις παραλείψετε και να σταματήσετε τη συμμετοχή σας στην έρευνα οποιαδήποτε στιγμή.

Τι θα γίνει με τις πληροφορίες που θα μοιραστείτε μαζί μας;
Οι πληροφορίες που θα μοιραστείτε μαζί μας θα παραμείνουν μυστικές. Το όνομά σας δεν θα χρησιμοποιηθεί σε γραπτές εκθέσεις ή σε δημοσιεύσεις. Τα δεδομένα της έρευνας θα κρατηθούν ώσπου να τελειώσει η ανάλυση και έπειτα θα καταστραφούν.

Η επιλογή είναι πάντοτε δική σας.
Εάν συμφωνήσετε να συμμετάσχετε στην παρούσα έρευνα και μετά αλλάξετε γνώμη, δεν

χρειάζεται να ολοκληρώσετε το οποιοδήποτε μέρος από τη μελέτη. Επαναλαμβάνουμε ότι έχετε το δικαίωμα να παραλείψετε, όσες ερωτήσεις δεν επιθυμείτε να απαντήσετε.

Απορίες;
Αν έχετε επιπλέον ερωτήσεις ή απορίες για αυτή τη μελέτη, παρακαλώ να επικοινωνήσετε με την [redacted] στην ηλεκτρονική διεύθυνση: [redacted] ή στο τηλέφωνο [redacted].

Αν έχετε ερωτήσεις για τα δικαιώματα σας ως συμμετέχοντες στην παρούσα έρευνα μπορείτε να επικοινωνήσετε με το [redacted], Προϊστάμενο της Επιτροπής Ερευνητικής Δεοντολογίας του Πανεπιστήμιου Αντιοχ, στο [redacted] ή με τη [redacted], Ακαδημαϊκή Κοσμήτορα στο Πανεπιστήμιο Αντιοχ, Νέα Αγγλία, ΗΠΑ στο [redacted].

⏩ Έχω διαβάσει τις παραπάνω πληροφορίες και έχω λάβει απαντήσεις στις επιπλέον ερωτήσεις μου. Κατανοώ ότι μπορώ να αλλάξω γνώμη σε οποιαδήποτε στιγμή και να μη λάβω μέρος στην παρούσα μελέτη.

Όνομα Συμμετέχοντα Υπογραφή Συμμετέχοντα Ημερομηνία

Υπογραφή Μάρτυρα της Συγκατάθεσης Ημερομηνία

B2. Κλίμακα Περιβαλλοντολογικής Ταυτότητας

Παρακαλώ σημειώστε το βαθμό που οι ακόλουθες προτάσεις σας περιγράφουν χρησιμοποιώντας τον κατάλληλο αριθμό από την παρακάτω κλίμακα:

1 2 3 4 5 6 7

Μη αληθινό για μένα **Ούτε αλήθεια Ούτε ψέμα** **Απόλυτα αληθινό για μένα**

__1. Περνώ πολύ χρόνο στο φυσικό περιβάλλον (δάση, βουνά, ερήμους, λίμνες, θάλασσες).

__2. Η περιβαλλοντολογική συμπεριφορά είναι σημαντική για μένα.

__3. Θεωρώ τον εαυτό μου μέρος της φύσης και όχι ξεχωριστά από τη φύση.

__4. Αν είχα αρκετό χρόνο και χρήματα, θα αφιέρωνα ένα μέρος για να δουλέψω για περιβαλλοντολογικούς σκοπούς.

__5. Όταν είμαι ανήσυχος/η η αγχωμένος/η, αισθάνομαι καλύτερα περνώντας μερικό από το χρόνο μου «σε επαφή με τη φύση».

__6. Μου είναι σημαντικό να ζω κοντά στην αγρία φύση. Δεν θα ήθελα να ζω συνέχεια στην πόλη.

__7. Έχω πολλά κοινά με αυτούς που εργάζονται (σαν οργάνωση) για να προστατέψουν το περιβάλλον.

__8. Πιστεύω ότι μερικά από τα σημερινά κοινωνικά προβλήματα θα λύνονταν αν επιστρέφαμε σε έναν πιο φυσικό τρόπο ζωής, όπου οι άνθρωποι θα ζούσαν σε αρμονία με τη γη.

__9. Αισθάνομαι ότι έχω πολλά κοινά με τους άλλους βιολογικούς οργανισμούς.

__10. Μου αρέσει να ασχολούμαι με τον κήπο.

__11. Το να είμαι μέρος του οικοσυστήματος είναι ένα σημαντικό κομμάτι της ταυτότητας μου.

__12. Αισθάνομαι ότι η καταγωγή μου από μια συγκεκριμένη περιοχή είχε σημαντική επίδραση στην εξέλιξη μου.

__13. Η υπεύθυνη συμπεριφορά απέναντι στη γη, η βιώσιμη ανάπτυξη, είναι μέρος του ηθικού μου κώδικα.

__14. Κάθε παιδί πρέπει να μαθαίνει για το φυσικό κόσμο όταν μεγαλώνει.

__15. Γενικά, το να είμαι μέρος του φυσικού κόσμου είναι ένα σημαντικό κομμάτι της προσωπικής μου εικόνας.

__16. Θα προτιμούσα να μένω σε ένα μικρό δωμάτιο η σπίτι με ωραία θέα, παρά σε ένα μεγαλύτερο δωμάτιο ή σπίτι με θέα άλλα κτήρια.

__17. Μου αρέσει η ορειβασία και η κατασκήνωση.

__18. Μερικές φορές αισθάνομαι ότι στοιχεία της φύσης – όπως μερικά δένδρα,ή καταιγίδες, ή βουνά – έχουν τη δική τους προσωπικότητα

__19. Θα αισθανόμουν ότι ένα σημαντικό κομμάτι της ζωής μου θα μου έλειπε, αν δεν θα μπορούσα να βγαίνω που και που και να χαίρομαι τη φύση.

__20. Αισθάνομαι υπερηφάνεια για το ότι θα μπορούσα να επιβιώσω στη φύση μόνος μου.

__21. Δεν έχω δει ποτέ ένα έργο τέχνης που να είναι το ίδιο όμορφο όπως ένα έργο της φύσης, όπως ένα δειλινό ή μια οροσειρά.

__22. Τα συμφέροντα μου συνήθως συμπίπτουν με τις θέσεις όσων δουλεύουν για να προστατεύσουν το φυσικό περιβάλλον.

__23. Αισθάνομαι ότι παίρνω ψυχική δύναμη από τις εμπειρίες μου με τη φύση.

__24. Κρατώ αναμνηστικά από τη φύση στο δωμάτιο μου, όπως βότσαλα, πεταλίδες η φτερά.

B3. Δευτερογενής Κλίμακα: Προηγούμενες και Τωρινές Εμπειρίες και γνώση στην Φύση Ευαισθησία για το Περιβάλλον & Επιθυμία για Συμμέτοχη

1 2 3 4 5 6 7

Μη αληθινό για μένα — **Ούτε αλήθεια Ούτε ψέμα** — **Απόλυτα αληθινό για μένα**

__1. Σαν έφηβος περνούσα πολύ χρόνο στο φυσικό περιβάλλον (δάση, βουνά, έρημους, λίμνες, θάλασσες).

__2. Όταν ήμουν έφηβος, οι γονείς μου με προέτρεπαν να περνώ πολύ χρόνο στη φύση.

__3. Έμαθα για τις θαλάσσιες χελώνες όταν ήμουν έφηβος.

__4. Έμαθα για την προστασία των θαλασσίων χελωνών όταν ήμουν έφηβος.

__5. Σαν ενήλικας περνώ πολύ χρόνο στη φύση.

__6. Νοιάζομαι για την προστασία της φύσης.

__7. Νοιάζομαι για την προστασία των θαλασσίων χελωνών.

__8. Γενικά, μου είναι σημαντικό να παίρνω μέρος σε δραστηριότες για την προστασία της φύσης.

__9. Γενικά, μου είναι σημαντικό να παίρνω μέρος σε δραστηριότες για την προστασία των θαλασσίων χελωνών.

Β4. Ερωτηματολόγιο

Μέρος Ι. Γενικές Πληροφορίες

1. Χωριό: Αργοστόλι ☐ Φισκάρδο ☐ Ληξούρι ☐ Σκάλα ☐
   Άλλο ☐ (Συμπληρώστε το όνομα) _____
2. Πόσο καιρό έχετε ζήσει σε αυτήν την περιοχή; (Συμπληρώστε)_____
3. Είμαι από την Κεφαλονιά: Ναι / Όχι. Αν όχι , πόσα χρόνια ζεις εδώ; _____
4. Φύλλο: Θηλυκό ☐ Αρσενικό ☐
5. Ηλικία (χρόνια): ≤24 ☐ 25-34 ☐ 35-44 ☐ 45-54 ☐
   55-64 ☐ 65-74 ☐ ≥75 ☐
6. Επάγγελμα /εργασία: Ψαράς ☐ Περιήγηση με βάρκα ☐
   Υποβρύχιες καταδύσεις ☐ Παραλιακό μπαρ ☐
   Ξαπλώστρες ☐ Ξενοδοχείο ☐
   Άλλο ☐ (συμπληρώστε άλλο επάγγελμα/εργασία/) _____
7. Θέση: Ιδιοκτήτης ☐
   Διαχειριστής ☐
   Εργαζόμενος ☐ (συμπληρώστε τη θέση) _____
   Άλλη ☐ (συμπληρώστε τη θέση) _____
8. Πόσο χρόνο ασκείτε αυτό το επάγγελμα και αυτή τη θέση? (συμπληρώστε) _____
9. Εκπαίδευση: Δημοτικό ☐
   Γυμνάσιο/Λυκειο ☐
   Τεχνική σχόλη/Πανεπιστημιο ☐
   Άλλη ☐ (συμπληρώστε άλλο είδος εκπαίδευσης) _____

Μέρος ΙΙ. Δεσμός με τη φύση, Εμπειρία με τη Φύση, Ευαισθησία για τη Φύση και Επιθυμία Συμμετοχής

1. Θεωρείς ότι είσαι συνδεδεμένος/η με τη φύση; **Τι σημαίνει αυτό για σένα;**

_____
_____
_____
_____

2. Εάν ισχύει, πιστεύεις ότι η εμπειρία σου με τη φύση σε νεαρή ηλικία δυνάμωσε τη σχέση σου με τη φύση; **Ναι / Όχι / Ίσως.** Εξήγησε την επιλογή σου.

_____
_____
_____
_____

3. Εάν ισχύει, πιστεύεις ότι η εμπειρία σου με τη φύση σαν ενήλικας δυνάμωσε τη σχέση σου με τη φύση; **Ναι / Όχι / Ίσως.** Εξήγησε την επιλογή σου.

_____
_____
_____
_____

4. Εάν ισχύει, από πού έχεις αντλήσει τις εμπειρίες σου με τη φύση; Από αυτά τα μέρη, πιο είναι το πιο αγαπημένο σου **και γιατί;**

_____
_____
_____
_____

5. Ενδιαφέρομαι για την προστασία της φύσης και ιδιαίτερα για την προστασία των θαλάσσιων χελωνών που είναι σε απειλή. **Ναι / Όχι / Ίσως.** Εξήγησε την επιλογή σου.

_____
_____
_____
_____

6. Επιθυμώ να πάρω μέρος στην προστασία των θαλασσίων χελωνών που είναι σε απειλή. Αν είχα χρόνο, θα ενδιαφερόμουν στο/στα (**Σημειώστε όσα ισχύουν**):

Να είμαι μέλος επιτροπής σχεδιασμού έργων προστασίας ☐

Να είμαι μέλος επιτροπής αποφάσεων για τα έργα προστασίας ☐

Να είμαι μέλος επιτροπής επιμέλειας έργων προστασίας ☐

Όλα τα παραπάνω ☐ Κανένα από τα παραπάνω ☐ (**Γιατί;**) _____

7. Αν είχα χρόνο, οι παρακάτω είναι άλλοι τρόποι με τους οποίους θα μπορούσα να πάρω μέρος στην προστασία της φύσης.

_____
_____
_____
_____

8. Αισθάνεσαι ότι είσαι σε θέση να λάβεις μέρος σε έργα προστασίας της φύσης στην τοπική σου κοινωνία? **Ναι / Όχι / Ίσως.** Εξήγησε την επιλογή σου.

_____
_____
_____
_____

Μέρος ΙΙΙ. Γνώση και εμπειρία με τις θαλάσσιες χελώνες

1. Ποια ειδή χελωνών υπάρχουν σε αυτή την περιοχή;

Πράσινη ☐ Καρέτα καρέτα ☐ Δερματοχελώνα ☐

Ή δώστε μια περιγραφή _____

2. Πόσο συχνά βλέπετε θαλάσσιες χελώνες ή φωλιές θαλασσίων χελωνών;

Ποτέ ☐ Μερικές φορές το χρόνο ☐ Μια φορά το μήνα ☐

Δυο φορές το μήνα ☐ Τρεις φορές το μήνα ☐ Μια φορά την εβδομάδα ☐

Δυο φορές την εβδομάδα ☐ Πολλαπλές φορές την εβδομάδα ☐

Πολλαπλές φορές την ημέρα ☐

3. Τι έχετε δει από τα παρακάτω; **Σημειώστε όσα ισχύουν.**

Χελώνα να τρώει ☐ Χελώνα στην ανοιχτή θάλασσα ☐

Θηλυκό να φτιάχνει φωλιά ☐ Φωλιά ☐

Χελωνάκια να βγαίνουν από τη φωλιά ☐ Νεκρή χελώνα ☐

Κάτι άλλο (Συμπληρώστε) _____

4. Νομίζεις ότι τώρα οι χελώνες είναι περισσότερες ή λιγότερες σε σχέση με πέντε χρόνια πριν;

Πιο πολλές ☐ Το ίδιο ☐ Πιο λίγες ☐ Δεν ξέρω ☐

Κάτι άλλο ☐

Σε παρακαλώ εξήγησε την απάντηση σου _____

5. Ποιές προσπάθειες γίνονται στην κοινότητα σου για την προστασία των θαλάσσιων χελωνών?;

_____
_____
_____
_____

6. Είναι αποτελεσματικές οι προσπάθειες που γίνονται στην κοινότητα σου για την προστασία των θαλασσίων χελωνών; **Ναι / Όχι / Ίσως.** Εξήγησε την επιλογή σου.

_____
_____
_____
_____

7. Ξέρεις κανένα από τους νόμους που προστατεύουν τις θαλάσσιες χελώνες;
Ναι / Όχι / Ίσως. Εξήγησε την επιλογή σου.

_____
_____
_____
_____

8. Εάν ισχύει, πότε έμαθες για τις θαλάσσιες χελώνες και για την προστασία τους;

_____
_____
_____
_____

9. Εάν ισχύει, από που πληροφορήθηκες για τις θαλάσσιες χελώνες και για την προστασία τους;

_____
_____
_____
_____

~~~~~~

ΑΥΤΟ ΕΙΝΑΙ ΤΟ ΤΕΛΟΣ ΤΟΥ ΕΡΩΤΗΜΑΤΟΛΟΓΙΟΥ. ΑΥΤΗ Η ΕΡΕΥΝΑ ΔΕΝ ΘΑ ΜΠΟΡΟΥΣΕ ΝΑ ΠΡΑΓΜΑΤΟΠΟΙΗΘΕΙ ΧΩΡΙΣ ΑΝΘΡΩΠΟΥΣ ΣΑΝ ΚΑΙ ΕΣΕΝΑ. ΣΕ ΕΥΧΑΡΙΣΤΩ ΠΟΛΥ ΓΙΑ ΤΟ ΧΡΟΝΟ ΚΑΙ ΤΗ ΣΥΜΜΕΤΟΧΗ ΣΟΥ!

~~~~~~

Appendix C

Permission for the use of Figure 1, *Fields of integrated science* (an adaptation from the originals), in Chapter 2.

From Oxford University Press for BioScience journal articles
Figure 1a & 1b.

From: [redacted]
Date: Fri, Dec 20, 2019 at 10:20 AM
Subject: RE: Copyright permission request (AIBS)
To: Christina Wesolek

AgtDef

Dear Christina,

RE. Fig. 1. Michael E. Soulé. What is Conservation Biology? A new synthetic discipline addresses the dynamics and problems of perturbed species, communities, and ecosystems. *BioScience* (1985) 35 (11): 727-734, doi: 10.2307/1310054

Fig. 1. Peter Kareiva & Michelle Marvier. What Is Conservation Science?. *BioScience* (2012) 62 (11): 962-969, doi: 10.1525/bio.2012.62.11.5

Thank you for your response. I can confirm that your license look correct, and I am providing adaptation rights below.

Oxford University Press controls the copyright of the articles in *BioScience* on behalf of American Institute of Biological Sciences.

Further to your Rightslink Licenses #4733080800492 & #4733090265883, dated 20th December 2019, we hereby acknowledge that you wish to adapt the above material for your thesis to be submitted to Antioch University New England in April 2020. We therefore grant Christina M. Wesolek the non-exclusive right to use the above material in this way, subject to payment of the fee (if applicable) and adherence to the terms and conditions as specified in your license.

Kind regards,
[redacted]

[redacted] | Permissions Assistant | Rights Department
Academic and Journals Divisions | Global Business Development
Oxford University Press | [redacted] | [redacted] | [redacted]

Thank you for your order!

Dear Ms. Christina Wesolek,

Thank you for placing your order through Copyright Clearance Center's RightsLink® service.

Order Summary

Licensee:	Ms. Christina M. Wesolek
Order Date:	Dec 20, 2019
Order Number:	4733090265883
Publication:	BioScience
Title:	What Is Conservation Science?
Type of Use:	Thesis/Dissertation
Order Total:	0.00 USD

View or print complete details of your order and the publisher's terms and conditions.

Sincerely,

Copyright Clearance Center

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UNIVERSITY PRESS

Thank you for your order!

Dear Ms. Christina Wesolek,

Thank you for placing your order through Copyright Clearance Center's RightsLink® service.

Order Summary

Licensee:	Ms. Christina M. Wesolek
Order Date:	Dec 20, 2019
Order Number:	4733080800492
Publication:	BioScience
Title:	What is Conservation Biology? A new synthetic discipline addresses the dynamics and problems of perturbed species, communities, and ecosystems
Type of Use:	Thesis/Dissertation
Order Total:	0.00 USD

View or print complete details of your order and the publisher's terms and conditions.

Sincerely,

Copyright Clearance Center

From Amy Bodwell (on behalf of Dr. Carol Saunders) amd Australian National University Press for Human Ecology Review journal article
Figure 1c.

From: [redacted]
Date: Thu, Jan 9, 2020 at 12:03 PM
Subject: RE: Copyright permission request -- Carol's Con Psych Figure 1
To: Christina Wesolek

Hi Christina,

Carol would have been honored to have you use her work. Please use the figure with appropriate credit. Thanks for asking. Good luck with your work. Conservation Psychology needs young and engaged students.

All the best with your dissertation.

[redacted]

From: Christina Wesolek
Date: Tue, Jan 7, 2020 at 9:29 PM
Subject: Copyright permission request -- Carol's Con Psych Figure 1
To: [redacted]

Dear [redacted],

I hope this email finds you well. [redacted] shared your email address with me.

I am a Ph.D. candidate at Antioch University New England. My research focuses on conservation and environmental identity (from the field of conservation psychology). I have created an adapted version of three different conservation-based diagrams into one, so I can explain my work using a visual depiction (see attached for my adapted diagram). One of the diagrams comes from Dr. Saunders' work which has been a true inspiration for me.

My request is to gain permission to use my adapted version of Dr. Saunder's Figure 1 (originally found on page 139) specifically the portion titled, "Conservation Psychology" from: *Saunders, C. D. (2003). The emerging field of conservation psychology. Human Ecology Review, 137-149.* I have attached the article for your convenience.

The journal that Carol's con psych figure was published in (Human Ecology Review) has a Creative Commons license -- but not until after this article's publication date (post-2003). Therefore, I was directed to contact the author for permission or a family member who would be able to offer permission in her absence.

Thank you in advance for your help. Happy New Year!

Sincerely,
Christina

From: [redacted]
Date: Wed, Jan 8, 2020 at 6:55 PM
Subject: RE: Copyright permission request (HER)
To: Christina Wesolek, [redacted]
Cc: [redacted], [redacted]

Hi Christina
My understanding is that the CC license requires you to reference the original author in a standard citation and say 'adapted from' to indicate you have made a change to the original. In 2003 HER was published by the Society for Human Ecology and SHE would hold and still holds the copyright, although we would have notified the author as a courtesy. Obviously, in this case we can't do that.
ANU Press have published HER since 2013, but SHE retains copyright. I don't have any formal copyright policy from 2003 – it was before my time, but the © appears on the jacket. So, I hope this email satisfies your institution that you have permission from SHE to adapt this work. I also observe your re-working of the material is pretty extensive, so it is hardly a direct lifting.
Cheers
[redacted]

From: Christina Wesolek
Date: Wed, Jan 8, 2020 at 12:38 PM
Subject: RE: Copyright permission request (HER)
To: [redacted], [redacted]
Cc: [redacted], [redacted]

Dear [redacted] & [redacted],

I would like to thank you for giving me permission (previously) for my request to use my adapted version of Figure 1 (originally found on page 139) specifically the portion titled, "Conservation Psychology" from: *Saunders, C. D. (2003). The emerging field of conservation psychology. Human Ecology Review, 137-149.*

My university wants me to double-check a few things.

It appears that as of 2018 Human Ecology Review has a creative common license that states that even adapted work requires copyright permission specifically from the author (in this case Dr. Saunder's -- who is deceased). https://press.anu.edu.au/faqs & https://creativecommons.org/licenses/by-nc-nd/4.0/

1. Since Dr. Saunders is deceased, how do I proceed in getting copyright permission? Is the permission you provided acceptable??
2. Can you please tell me what your policy for copyright permissions were in 2003? (Did the policy state that the copyright was held by the publisher/journal OR the author?)
3. If copyright was held by the ANU Pressand/or HER journal and not the author is it possible for someone on your end to state the copyright policy for 2003 along with the approved permission for my adapted work?

Any help is greatly appreciated.

All the best
Christina

From: [redacted]
Date: Thu, Dec 19, 2019 at 5:45 PM
Subject: RE: Copyright permission request (HER)
To: Christina Wesolek

That is fine Christina
Human Ecology Review is now published as Creative Commons – not something around in 2003. See the latest issue at https://press.anu.edu.au/publications/journals/human-ecology-review. Incidentally, I am pretty sure you don't need permission for a diagram that you adapt yourself, just say 'adapted from . . .' and provide a normal reference.

Good luck with the thesis
Cheers
[redacted]

From: Christina Wesolek
Date: Fri, Dec 20, 2019 at 10:15 AM
Subject: Copyright permission request (HER)
To: [redacted], [redacted]

Dear [redacted] & [redacted],

I am writing to you to determine how I go about requesting copyright permission for a figure diagram from a particular Human Ecology Review journal article?

I am a Ph.D. candidate at Antioch University New England. My research focuses on conservation and environmental identity (from the field of conservation psychology). I have created an adapted version of three different diagrams in one, so I can explain my work using a visual depiction (see attached for my adapted diagram).

My request is to gain permission to use my adapted version of Figure 1 (originally found on page 139) specifically the portion titled, "Conservation Psychology" from: *Saunders, C. D. (2003). The emerging field of conservation psychology. Human Ecology Review, 137-149.*

I have attached the article for your convenience.

If you are not the correct person(s) to contact, my apologies. However, it would be greatly appreciated if you could forward this message onward or let me know directly who I should be contacting. Thank you in advance for your help. Happy holidays!

Sincerely,
Christina

Permission for the use of Figure 2, *Embedded Mixed Methods-style design*, in Chapters 3 and 4.

From: [redacted]
Date: Mar 9, 2020, 10:53 AM
Subject: RE: Never received copyright permission agreement
To: Christina Wesolek

Dear Christina Wesolek,

Thank you for your request. I am pleased to report we can grant your request without a fee as part of your thesis or dissertation.

Please accept this email as permission for your request as you've detailed below. Permission is granted for the life of the edition on a non-exclusive basis, in the English language, throughout the world in all formats provided full citation is made to the original SAGE publication. Permission does not include any third-party material found within the work. Please contact us for any further usage of the material.

If you have any questions, or if we may be of further assistance, please let us know.

Kind Regards,
[redacted]
Rights Coordinator
SAGE Publishing
www.sagepublishing.com

From: Christina Wesolek
Date: Monday, March 9, 2020 4:50 AM
Subject: Never received copyright permission agreement
To: [redacted]

Dear [redacted],

The reason for this email is that I went through CCC for a copyright request.

A CCC rep ([redacted], Customer Account Specialist) contacted me through email and said Sage would email me directly because my request was indeed granted and the permission was not coming from them rather Sage.

I never received permission via email from Sage (I have checked all my folders). Can someone assist me with receiving the permission via direct email?

This is my second attempt to reach someone at Sage.

Any help would be greatly appreciated.

Best,
Christina Wesolek

~~~

Below are some details from my original request...

I submitted a request for copyright approval via CCC for adapting portions of two different figures into a figure I created for my dissertation at Antioch University New England. Please note my adaptation is quite different from the originals.

I have adapted Figure 10.1 (p.220) and 10.2 (p.221) from Creswell's 4th edition of Research design: qualitative, quantitative, and mixed methods approaches. I would like to use my adaptation in my chapter 3 and 4 of my dissertation. I have attached a sample of my adapted figures.
~~~

Permission for the use of the Environmental Identity (EID) scale

From: [redacted]
Date: Nov 9, 2019, 9:57 AM
Subject: RE: Permission to use EID Scale
To: Christina Wesolek

Hi Christina,

You have my permission to use the EID scale in your doctoral research and print it in your final thesis.

Best regards,
[redacted]

--
[redacted]
Whitmore-Williams Professor and Chair of Psychology
The College of Wooster
https://discover.wooster.edu/

From: Christina Wesolek
Date: Fri, Nov 8, 2019 at 1:58 PM
Subject: Permission to use EID Scale
To: [redacted]

Dear [redacted],

I hope you are doing well!

For the final dissertation document I will need permission to use diagrams, maps, scales, and other visuals. As you are aware, as a member of my dissertation committee, I have utilized your Environmental Identity (EID) scale for my dissertation field research.

At your convenience, can you please confirm that I have been given permission/approval to use your EID scale in my research and display it in my final dissertation document (Note: the word "environmentalist" was replaced with "those working to protect the environment" and the word "sustenance" was replaced with the word "support")?

I look forward to hearing from you. Thank you!

Sincerely,
Christina