

Making the Connection:
Finding the Love between People and Turtles

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Abstract

The Canadian Sea Turtle Network is a charitable organization based in Halifax, Nova Scotia that works with scientists and fishermen to conserve endangered sea turtles in Canadian waters and worldwide. During the summer months it opens an educational kiosk, the Canadian Sea Turtle Centre (CSTC), on the busy Halifax waterfront to educate the public about leatherback sea turtles. For my thesis, I wanted to know the motivational factors behind adult public visitors entering the CSTC, connecting with elements of the CTSC and how that visit affected their environmental awareness and conservational efforts. I also wanted to know the motivational factors for an individual to pursue a career focused on sea turtles. I used a quantitative online survey that was posted on the Canadian Sea Turtle Network social media sites and limited to previous visitors to the CSTC over the age of 19 and qualitative phenomenological interviews of 8 previous CSTC visitors identified through the survey as well as 10 sea turtle experts identified through previous connections. From the online survey, 52 respondents showed 69% of visitors were aware of sea turtles in Canadian waters prior to their visit, 50% of visitors stumbled across the Centre and 44.2% had a previous interest in turtles, 63.3% of visitors connected more with the human aspect of the Centre rather than the turtles and 72.9% of visitors made changes in their lives because of their visit. Of the visitors interviewed, 7/8 were drawn to the Centre because of a previous interest in turtles and those motivational factors were related to larger factors valued by individual: animals, nature, family and quality of life. The sea turtle expert interviews identified 7 common motivational factors: turtles, nature, ocean, travel, animals, research and marine biology. Based on its findings, the thesis concludes that the location and staff of the CSTC are vital to their success and recommends they continue to have an enthusiastic and optimistic staff that interacts with both children and adults to help connect the visitors' interests to the turtles and to consider adding advanced behavioural change suggestions for those visitors with high environmental awareness. It also concludes that a

transformative childhood experience with turtles is unnecessary to motivate an individual to pursue a career in sea turtles.

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Acknowledgements

I would like to thank my supervisors, Donovan Plumb and Kathleen Martin, for their help in achieving this goal. It has been a long six years, but it was an incredible journey. I would like to thank the CSTN (especially Kayla Hamelin) for their support. I also want to thank all the volunteers for my online survey and interviews; you made my research possible and enjoyable. A special thank you to my family (Sharon, Curt, Derek, Chelsea) for all the love.

Specifically, I would like to thank Donovan for the freedom, Kathleen & Mike for the guidance, Nick for the motivation, Richard for the distraction, Scott for the resources and James for the cuddles.

Dedication

In memory of Shala and Dunno

Chapter One: Introduction

Motivation plays an important part in many, if not all, aspects of our lives, influencing daily decisions and career paths. As an environmentalist and educator, I began this thesis interested to know if and how an individual's self-motivational values affect how and why they connect with environmental educational messages. As a "turtle girl", I was specifically interested in how personal motivation can affect an individual's interpretation of the educational information on leatherback sea turtles that is provided at a small, free choice learning setting located in Halifax, Nova Scotia, the Canadian Sea Turtle Centre. I was also interested in what motivates people to dedicate their lives to sea turtle research.

To investigate these questions, I used quantitative and qualitative methods. I began with a quantitative online survey of previous visitors to the Canadian Sea Turtle Centre. Fifty-two respondents answered demographic questions of where they live, age range, identified gender, and what year they visited the Centre from the five years it has been open. The questionnaire asked if the respondents were aware of sea turtles in Canadian waters prior to their visit. To determine their motivation for entering the Centre, it asked who they came to the Centre with and what brought them into the Centre. To assess the affect the Centre had on the visitors the questionnaire asked what they remembered most about the Centre, what they connected or related to most and if they made any changes in their lives because of their visit. It also asked what the biggest take-home message of the Centre was to help determine the messages the public are receiving from their experience at the Centre. The highlights from the survey showed more people than I expected were aware of sea turtles in Canadian waters, a lot of visitors stumbled across the Centre, almost 2/3 of the visitors connected more with the human aspect of the Centre rather than with the turtles and, impressively, over 70% of visitors made changes in their lives because of their visit. Because of these

results, I concluded the location and staff of the Canadian Sea Turtle Centre are vital to their success.

I used a phenomenological approach for my qualitative research to investigate how the motivation for a visitor to enter the Centre related to the factors they value in their daily lives. I interviewed eight visitors identified through the online survey. Seven of them were drawn to the Centre because of a previous connection to turtles or sea turtles specifically. All the visitors' motivational factors were related to larger motivational factors valued by the individual like animals and nature.

I also used a phenomenological approach to interview 10 individuals that have dedicated their lives to sea turtle research to identify their motivational factors for pursuing such a career. I learned that a significant, transformative experience with turtles as a child is unnecessary to become a sea turtle expert. Instead, the personal motivational factors of each expert that were established in childhood and valued throughout their lives are elements found in such a career.

The motivation behind my thesis question is rooted in my childhood. To understand the development of my thesis question as well as my results, you should know the background of my connection to sea turtles and my interest in knowing more about what motivates environmental concern and action.

My Background Story

I was diagnosed with asthma at the age of 2 after spending the day playing with a bunny; even at that young of an age, I loved animals. Because of my allergies, our pets when I was a little older were limited to fish, which never survived more than a week. My brother and I would cry and hold a funeral service for each one. Eventually my parents decided to get turtles, thinking they would last about 6 months instead of a week. So, when I was 6, my mom brought home two female red-eared sliders, which lived for 23 years. That same year, Teenage Mutant Ninja Turtles debuted

with its lead female character also named April. This solidified my fate as a “turtle girl”. When I was in grade 6 the kindergarten teacher, a passionate environmentalist, started an environmental club that I joined. As a result, I was part of an environmental rap group that preformed in malls, auditioned for a television commercial and I ended up attending a United Nations Youth Conference in Colorado. This sparked my passion for the environment.

Since junior high I had wanted to be a marine biologist, but in high school I decided to pursue a “practical” career in health care. I completed 3 years of a marine biology degree before being accepted into the Doctor of Dental Surgery program at Dalhousie University. A few years after graduating, I was bored of teeth, missed being a student, and felt the call of marine biology. In 2009, I started a M.Sc. at Dalhousie part-time and was introduced to Dr. Michael James, THE sea turtle guy on the East Coast. I began volunteering with the Canadian Sea Turtle Network (CSTN) in the summer of 2012. Shortly after that, Dr. James sat me down and kindly recommended I get a different degree as I do not enjoy quantitative data analysis. I had been teaching part-time at Dalhousie in the dentistry department since 2007 and had planned to get a Master’s in Education in the future, so I decided to take the opportunity to switch Master’s programs. I completed my course work focused on dentistry but wanted my thesis to be about a topic for which I was passionate. At that time, Kathleen Martin, Executive Director of the CSTN, asked me, “What do YOU actually want to research?” It was a question I had never considered and one that I needed time to answer. In the end, I decided I wanted to focus on how to get people to like turtles. It was from this jumping point I developed my thesis question.

Honesty is a quality I value immensely. This, I believe, is one of the reasons why I love education. I want to help save turtles, in this specific case, leatherback sea turtles, but I don’t want to do it by coercion. Nor do I want to save the turtles if it means other species that could be vital to our planet are lost. I want people to *want* to save the turtles and their ecosystem. Over the years, the

doom and gloom situation of our earth has depressed and terrified me to the extent that I had to turn it off at different points. When I decided the topic of my thesis, I had to mentally prepare myself for the environmental education research I had to do as background. Imagine my surprise when the results of my first search highlighted the lies and misconceptions that are being advertised about the state of our world. I searched again, under different headings with the same results. What had I been missing? Honesty, it turns out.

I will be expanding on the environmental education information in my literature review. In this chapter however, I will highlight just some of the information that made me rethink environmental education and transformed my previous understanding.

Rethinking Environmental Education

The difference in the advertised state of the world compared to the scientifically supported state of the world seems to be, in large part, because of the media. It should not have been a surprise to me, but I was still shocked to learn the extent. As I worked through the motivational literature I began to understand why and how the media (and really anyone that wants to push their own cause) can and do alter their messages to stimulate desired action. I felt used. I then began to research education and its history related to the environment. My attitude changed to one of optimism and understanding when I discovered environmental adult education (EAE). It was through this research that I underwent my greatest transformation.

As I delved into the EAE literature, I started to learn that one of the greatest harms to our environment is not the “unschooled and illiterate” but rather those “schooled and conditioned” to unquestionably consume, waste and ignore their dependent relationships on the earth (Mische 1992, p.9). Haugen (2006) introduced me to some of the injustices of the world. One in particular was how some of the richest countries with the smallest populations consume a disproportionate amount of the world’s resources while poorer countries with the largest populations are forced to

over-farm and cut down tropical forests in order to survive; and yet it is these actions such as the over-farming and deforestation that the richest countries are demanding to be stopped to save our planet (Haugen 2006, p.92). Environmental justice participants often feel that the serious environmental problems of today are a “result of wrong management decisions, a lack of education and training, and inadequate or erroneous information” (Hill 2003, p.31). I have spent most of my life avoiding politics due to my aversion for confrontation and arguing; however, the more I learned about root causes of environmental and economic issues, the more I realized the state of the world cannot be fixed by my recycling alone.

In my readings I also came across the different philosophies of teaching. These philosophies provided another interesting approach to environmental education of which I was unaware. Zoellick (2009) suggested environmental educators could benefit from clarifying their philosophies (p. 4) because we tend to teach the way we were taught, which may not be the best philosophy for promoting and encouraging environmental action (Haugen 2006, p. 95). And, by teaching in this same way, we may be promoting an ineffective cycle, creating trainers teaching the same inefficient way (Haugen 2006, p. 95). I was interested to learn what type of educational philosophy I follow.

In 1995, Elias and Merriam identified five different philosophical approaches often found in adult education: liberal, progressive, behaviorist, humanistic and radical (as referenced in Zoellick 2009, p.4). Each of these philosophical approaches is present in environmental education. Liberal education is similar to classroom teaching and the education found in zoos and aquariums; progressive examples include outdoor environmental programs or wilderness recreation; behaviorist education includes recycling campaigns; humanistic approach is more spiritual as nature nourishes the human soul; and radical is like Paulo Freire: activists promoting change (Walter, 2009). I realized I have done well in our educational system because I learn well under the liberal education system. It had never occurred to me that other ways of teaching would be more effective for different people

or that different philosophies would produce different results in a person's perception or actions.

Looking at the liberal philosophy and environmental education, Hill (2003) questioned whether the two could be untangled from each other (p.31). Sauve (2005) questioned teaching environmental education in sciences. She thought environmental issues could be/are used as a “hook” to stimulate interest in the sciences, which, using the liberal philosophy of education would be ideal; however, this avenue may not be the best approach for stimulating necessary environmental action (Sauve 2005, p. 17). Her concern was that “if we relegate environmental education to the teaching of sciences, it loses its meaning. It cannot suffice to impose a scientific method on the study of environmental biophysical realities, to impose a quest for THE right answer, as is the custom within sciences” (Sauve, 2005, p.17). This was a concern I had never considered but, growing up in this education system, it isn't surprising that I did not see the negative aspect. My almost exclusive liberal philosophy education began to explain to me why addressing political issues had never been on my radar for environmental education.

Clover, Jayme, Hall & Follen (2013) looked at the tradition of teaching with the liberal philosophy in adult education and found that often the individual is placed in a safe and comfortable learning environment with learner-centered activities tailored for the needs of the learner (p.11). The learners are encouraged to utilize their own knowledge and experiences towards self-directed learning while the “teacher” facilitates this learning process (Clover, Jayme, Hall & Follen, 2013, p.11). At first this sounded ideal to me in terms of motivating education; however, it avoids tackling the root causes of environmental injustices, of which I had recently discovered (Clover, Jayme, Hall & Follen, 2013, p.12). To address these causes requires deep probing and stepping out of one's comfort zone, to go beyond the individually focused and return to the collective and challenge what has been taken for granted (Clover, Jayme, Hall & Follen, 2013, p.13). It is a process that can be painful, but “in the critical adult education tradition it is this risk rather than comfort that brings

about the most important transformation” (Clover, Jayme, Hall & Follen, 2013, p.13). I personally had such an uncomfortable transformative experience in one of my first courses for this degree. It is because of this experience that my views of education changed, allowing for growth that I now see is necessary for change to occur.

Finally, during my readings, I came across an interesting note in Clover (1995):

During an environmental education conference in Dorset, Ontario in 1995, the keynote speaker, a Mohawk elder, noted that although this was an environmental education conference, we were inside and the rest of nature was outside. That, he suggested, was the first problem with environmental education. (p.44)

Finger (1989) similarly asked, how we are supposed to have transformative experiences with nature when more people are growing up in an urban environment (p.29)? My childhood summers were spent in the woods at our family camp and even today I go to the woods for quiet and clarity. I believe my passion for the environment is rooted in my history with nature. This then added another element to my thesis; to find that connection, the motivation, between the environment and the individual.

Leatherback Sea Turtles & the Canadian Sea Turtle Network



Figure 1: Leatherback sea turtle photographed off Nova Scotia, Canada

Currently, there are 192 aquatic species listed or being considered for Canada's Species At Risk Act (SARA) (Government of Canada, January 19, 2016). The leatherback sea turtle (*Dermochelys coriacea*) has been listed as endangered on SARA since 2003 (Government of Canada, March 15, 2013). Leatherbacks are the largest living turtle, growing up to two metres in length, weighing on average between 400-500 kg, and they are the sole member of the family *Dermochelyidae* (Martin & James, 2005-2, p. 106; Davenport, Virginie, Georges, Doyle, James, 2011, p. 3474). Unlike cheloniid or "hard-shelled" sea turtles, they have no scales on their head and are "leathery-shelled", so named because of the fibrous, flexible thick skin covering all their skeletal elements (Government of Canada, March 15, 2013). Leatherback sea turtles are the most widely distributed of all the sea turtles, and they undertake long distance migrations between tropical and temperate waters (James, Ottensmeyer, Eckert & Myers, 2006, p. 755). In the Atlantic Ocean, this migration takes them from nesting beaches in Florida, South and Central America, the West Indies and the West Coast of Africa to the vital, nutrient-rich waters of Atlantic Canada where they pursue a diet of jellyfish (Martin & James, 2005-a, p. 106; James Ottensmeyer, Eckert & Myers, 2006, p.755). These turtles spend their entire lives at sea, with only the females returning to land to nest (Martin & James, 2005-a, p. 106). The public's knowledge of these creatures in Canadian waters is limited, probably because it is assumed sea turtles only live in warm waters. The education of Canadians, especially Nova Scotians, about the leatherback sea turtle is one of the goals of the Halifax-based Canadian Sea Turtle Network.

"The Canadian Sea Turtle Network [CSTN] is a charitable organization involving scientists, commercial fishermen, and coastal community members that works to conserve endangered sea turtles in Canadian waters and worldwide" (Canadian Sea Turtle Network, n.d.-a). It is a "unique, grassroots, science-based group" that works "with fishermen to help prevent leatherbacks from entanglement in commercial fishing gear" [one of the greatest threats to the survival of leatherbacks

worldwide (Canadian Sea Turtle Network, n.d.-b.)) (Canadian Sea Turtle Network, n.d.-a). This partnership has allowed for “groundbreaking scientific research on leatherbacks that has unraveled” critical missing elements of their mysterious lives using satellite telemetry and time/depth/video recording tags (Canadian Sea Turtle Network, n.d. b & c.). The CSTN “were the first group in the world to satellite tag a leatherback turtle caught at sea” (Canadian Sea Turtle Network, n.d.-c.). Since 1999, they have equipped over 100 turtles off Nova Scotia with satellite transmitters, including one male that was tracked for 918 days (Canadian Sea Turtle Network, n.d.-c.).

The CSTN attributes the success of their organization and research to their relationship with the fishers: they have engaged hundreds of fishers throughout Nova Scotia to learn about sea turtles and their conservation by focusing on the fishers’ long-term motivational factors. When initially enlisting the help of the fishers, the CSTN adopted several strategies. First, they attempted to meet as many fishers in person in order to build personal connections with them. Second, in order to build relations of trust, the CSTN strove to be honest and transparent with the fishers about their research intentions and their affiliations, especially their lack of affiliation with government agencies (Martin & James, 2005-b, p. 900). Third, and perhaps most importantly, the CSTN focused on building upon the fishers’ existing motivations to learn more about sea turtles and their conservation. Early on, the CSTN realized that “paying fishers for information rarely fosters in them a genuine interest in the relevance of the information they are gathering” (Martin & James, 2005-b, p. 900). A more lasting interest could be secured if fishers were intrinsically motivated to learn more about them. Some of the reasons fishers agreed to participate stemmed from their background and existing interests and goals. As the CSTN relates in one instance:

‘Turtling’, the term used by [CSTN] fishers to refer to surveying the seascape for leatherbacks, gives the many dedicated swordfishers in places like Cape Breton a good excuse to go to sea to look for animals -- turtles in this case -- while keeping a sharp eye out

for unlikely swordfish sightings. Turtling also satisfies the love of hunting that many fishers share. They are able to spend hours at sea in search of a rare animal, and although they don't harvest it, they do receive positive reinforcement from our group when they report their sightings. (Martin & James, 2005-a, p. 113)

Martin & James (2005-b) acknowledge that the willingness of fishers to engage with and support the work of the CSTN was also partly due to the lack of cultural value sea turtles have in Canada: "they are not eaten or used for medicinal purposes as they are in some countries where leatherbacks nest" (p. 904). The challenge for the CSTN has been to continue to hold the interest of the fishers over time as research into the leatherback sea turtles has become more science specific and less connected to their interests (Martin & James, 2005-a, pp. 112-113). This is a great challenge as fishers are in the best position to help (Martin & James, 2005-a, p.114). The hope and goal of the CSTN is that the fishers (as well as the general public) will "be motivated by the intrinsic worth of sea turtles" to put the species best interest first, ahead of personal gain (Martin & James, 2005-a, p. 113).

In addition to working to engage fishers in learning about sea turtles and their conservation, the CSTN also works to connect the general public to sea turtles and their conservation. As part of this effort, the CSTN has operated an educational kiosk, known as the Canadian Sea Turtle Centre (CSTC), during the summer tourist season. While it was previously located in Peggy's Cove (2013 and 2014), in 2015 the CSTC was relocated to the Halifax waterfront. It is a small building filled with story boards and pictures to inform the public about the existence and lives of leatherback sea turtles, with specific focus on the sea turtle research occurring in the waters off Nova Scotia. The CSTC also offers hands-on activities for children to learn about sea turtles. The CSTC is operated (usually) by two individuals who interact with the visitors, answering questions and providing information. Because of the nature of the CSTC (it is small and often busy) sometimes people walk

in, look around and leave, staying maybe five minutes. Other people become more engaged in participating in the activities and stay anywhere from ten to thirty minutes (K. Hamelin, personal conversation).



Figure 2: The Canadian Sea Turtle Centre on the Halifax waterfront, Nova Scotia, Canada

Just as with the fishers, the success of the CSTC to advance the public's understanding of and commitment to sea turtles rests on the ability of the organization to motivate people to learn more about the species. As much as the CSTN would like to motivate an emotional connection with everyone who comes into the Centre with leatherback sea turtles, it isn't realistic (K. Martin, personal communication). An important question is if it is possible to engage the public without the presence of sea turtles. Tisdell & Wilson (2005), for example, showed that active experiences were more powerful in creating conservative attitudes in relations to elephants at the Atlanta Zoo compared to passively watching the elephants whilst reading about them (p.300). Another key question for the CSTN is how, given finite time and resources, it can best motivate members of the

public to engage with, learn about, and commit to supporting leatherback sea turtles and the people working to conserve them. This is the question that lies at the heart of my Master's thesis.

Thesis Question

After spending years educating people on the presence of leatherback sea turtles, the past few years articulating my own values, passions, and motivations as well as learning about educational philosophies and free choice learning centres, I was finally able to formulate my research question.

For my thesis, I wanted to learn what the motivational factors are behind adult public visitors entering and connecting with elements of the CSTC, and how that visit affects their environmental awareness and conservational efforts. I also wanted to learn what are the motivational factors for an individual to pursue a career focused on sea turtles.

Overall, I'm hopeful this research on motivational factors will be a step in a different direction for public education of environmental issues, with further research focusing on motivation for turtle conservation in different areas as well as for other species and additional environmental issues. I want researchers to be aware of the different approaches to education and that these approaches are dependent on the researchers' desired outcomes. Learning your audience's motivation, I believe, is the first step in facilitating change.

Chapter Two: Literature Review

“Humans are famously less rational than once believed” (Gifford 2011, p.291).

As discussed in the Introduction, my research of the literature began with the discovery that not all the information on the state of our environment was/is disastrous. The cause of this common misconception, it seems, is mostly because of the media.

Media

The media is the most common form of informal learning today (Clover 2003, p. 8). It plays a central role in our understanding of and connection with the world as our realities have become vaster and more complex, especially with the Internet, where an individual can post opinions or cite poorly referenced research that can be accepted as truth (Lomborg 2001, p. 39). A problem arises when people rely solely on the media (including Internet sites) for the whole truth of a situation, as the media do not always (or rarely) include all perspectives of a topic. This problem is because media outlets are typically tied to individuals, political groups, and others who hold their own opinions and have their own agendas to accomplish. Media outlets are often focused on boosting sales of a product or encouraging consumption within a specific market for personal gain (Clover 2003, p. 8). Consequently, honest education is not the primary focus (Shaw 2003, p 61). To accomplish their self-interested goals, the media often focuses on the dramatic and emotional nature of stories or events to gain the attention of an audience and to motivate them to do or buy what the media proposes, creating citizens who are less informed (Emmelin 1976, p.46; Lomborg 2001, p. 336; Haugen 2010, p. 2).

The media’s focus on emotions rather than facts is common with all things environmental (Haugen 2010, p. 2). As a result, this focus has hurt the environmental cause by providing poor

education: focusing on excessive pessimism and overemphasizing the need for action on certain issues causing less or no action to be taken where it could be needed the most (Shaw 2003, p.66). The media has, in cases, traded educational goals for entertainment, resulting in inattention to environmental skills training and the delivery of persuasive environmental content into the hands of advertisers (Emmelin 1976, p. 46). It is in everyone's best interests to stop coercing the public to support our own emotion-arousing causes and use the most accurate evidence available to triage where to put most of our efforts (Lomborg 2001, p.5). We need to start properly educating the public about environmental issues, but to do this we need to understand the history behind environmental education.

Environmental Education

Historically, it appears that the environmental movement has not well understood how people learn, or the full importance of education (Clover 2003, p.13). Most environmentalists do not have formal training in education and thus tend to rely on the conventional pedagogical approaches to convey their information (Disinger 1991). Some environmentalists consider 'education' the broadcasting of their own perspectives without acknowledging the potential bias of their message (Disinger 1991). The loss of scientific objectivity and thus scientific credibility is a potential pitfall when researchers become educators of their own projects (Lynam, de Jong, Sheil, Kusumanto & Evans 2007). These conventional pedagogical approaches classically stress the message rather than the medium, which isn't as effective when educating adults (Disinger 1991). "Conservation goals focus on biological problems, but solutions lie with people" (Bizerril, Soares & Santos, 2011, p. 815). It is important to realize that more avenues than just a scientific approach are necessary to bring about change in our relationship with nature and that the layperson's environmental assessment is also important (Clover, Jayme, Hall & Follen 2013, p.4; Bizerril, Soares & Santos, 2011, pp. 815-816; Gifford 2007, p.201).

Looking at environmental education from a narrower and more specific view, my research found that education and participation are common components of effective conservation programs (Pegas, Coghlan & Rocha, 2015, p. 49). Most adult environmental programs focus on outdoor skills, natural history, recreation and scenic beauty (Zoellick 2009, p. 3). Typically, these programs emphasize the conservation and protection of wilderness areas and the responsibility of an individual to alter their behaviour for the betterment of the environment (Clover 1995, p. 44). As a result, one-time day events (like a beach clean-up) that involve direct environmental action are common. The limited focus of many environmental educators may be because, as studies have shown, the adult public's first thoughts about the environment focus on personally pleasing values (Disinger 1991). Local environmental problems are of secondary concern, and environmental issues at the national and global level are considered even less (Disinger 1991). Environmental education programs that focus on one-time events or on the conservation and protection of an area, however, have limited educational value and impact over time (Haugen 2010, p. 2). Profound changes in knowledge, attitude and behaviour require time and a different approach than can be found in these classic environmental events (Storksdieck, Ellenbogen & Heimlich 2005, p. 353-354). This lack of time and approach might be why environmental education has historically not provided a holistic view of society, politics, culture or nature, nor has it focused on collective action (Clover 1995, p. 44). Practical reasons for the limited scope of environmental education may be because of the competition for adult's time and money, lack of funding and lack of educational training of staff or organizers (Zoellick 2009, p. 21). The concern is that the public may assume environmental education can be taught in these one-time activities instead of acknowledging that environmental education is a life-long process that changes over time as our understanding of the topics change (Clover 1995, p. 44, Zoellick 2009, p.3).

Despite the flawed approach of many adult environmental education programs, they have had some success in the past. A possible reason these approaches can and have been successful may be because school age children have, historically, often been the targets of environmental education programs (Zoellick 2009, p.1; Clover 1995, p.44). Adult learning can take place (inadvertently) as these children transfer the environmental knowledge to their immediate family members (Damerell, Howe & Milner-Gulland 2013, p. 5). In turn, parents and siblings can then cultivate environmental concerns and behaviours to people outside of the immediate family (Villacorta, Koestner & Lokes 2003, p.501). Moreover, when children who have received environmental education grow up (environmental education has been offered for more than 40 years), they become environmentally educated adults (like me) who can participate in environmental decisions and should be remembered when developing environmental educational programs (Zoellick 2009, p. 1). Despite the importance of children's learning about the environment, given that it is adults who are presently making decisions with environmental consequences and, given that environmental change needs to occur NOW, a strategy that hinges on waiting for the next generation to mature before environmental action is taken cannot be sustained (Zoellick 2009, p.3, Clover 1995, p. 44). This is the main reason why my research is focused on adults.

Overcoming the current limitations of environmental education cannot be achieved simply with a transfer of technology and finances (Guevara 2000, p.74). Environmental education should enhance the long-term problem solving of adults by stimulating action not just for one day but also over a lifetime (Savue 2005, p.16). The importance of lifelong environmental education was acknowledged in 1975 with the writing of The Belgrade Charter at a United Nations Educational, Scientific and Cultural Organization (UNESCO) International Environmental Workshop to address the environmental issues worldwide. It states:

Environmental education, properly understood, should constitute a comprehensive lifelong education, one responsive to changes in a rapidly changing world. It should prepare the individual for life through an understanding of the major problems of the contemporary world, and the provision of skills and attributes needed to play a productive role towards improving life and protecting the environment with due regard given to ethical values.

The goal of environmental education is to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones.

<http://www.gdrc.org/uem/ee/belgrade.html>

This charter did and does provide a foundation for environmental education. This foundation provided the scaffolding for the development of environmental adult education, the exact branch of education for which I was searching.

Environmental Adult Education

Environmental adult education (EAE) is a relatively new hybrid stemming from the environmental movement and adult education (Summer 2003, p. 41). EAE often takes the form of a dialogical process involving all community learners regardless of different social, racial and educational backgrounds because all stakeholders are critical (Haugen 2010, p. 8 & 10). As Summer (2003) relates, when done well, an EAE process moves learners to commitment and action (p.41). Once in this position of commitment and action, adult learners can fight the often-hidden root causes of environmental problems such as racism, sexism and other social inequities (Haugen 2010, p.10). Adult education within this paradigm tries to redefine the term “environment” to move it away from the reduced meaning of “nature” to also include the environment of families and communities as well as the political whole, including economic structures (Hill 2003, p.34).

Environmental education cannot be preached from a pulpit or podium nor should educators indoctrinate or simply impart knowledge (Clover 1995, p.44, Gilkin & Feldman 2011, p.1).

Environmental education must be made personal as educators act as guides rather than teachers to motivate adult learners to find their own ethical and moral beliefs about their connection with the natural world (Clover 1995, p.44, Gilkin & Feldman 2011, p.11, Haugen 2010, p. 4, Haugen 2006, p.94). To do this, you must begin where the person or people are, present information to them in a respectful, truthful and non-judgmental manner, and allow them to draw from their own potential to bring about change (Clover 1995, p. 44; Gilkin & Feldman 2011, p.49). The learners must feel what they are learning is applicable to their lives in order to be motivated to use what they are taught (Haugen 2006, p.98).

Think about how people learn best. We learn best when we care about what we are doing, when we have choices. We learn best when the work has meaning to us, when it matters. We learn best when we are using our hands and minds. We learn best when the work we are doing is real and relevant. (Littky, 2004, as in Gilkin & Feldman 2011, p.28).

Education is the learning that occurs in the social interaction between the teacher and the learner or within social and cultural practices (Ollis & Hamel-Green 2015, p. 214; Martin 2009, p.43).

Knowledge comes through emotion and shared stories; it is produced through rational debate and discussion as well as the arts and imagination (Clover, Jayme, Hall & Follen 2013, p.32).

Respect is a key element of the adult learning process. Learners should feel respected, heard, important, un-judged and equal to other participants, not inferior to the educator (Haugen 2006, p.97; Gilkin 2011, p.10 & 49). Environmental educators need to take multicultural perspectives into consideration when conducting training because oppressed groups are often who suffer the most from social injustice and environmental degradation, and because environmental problems are often international in nature (Haugen 2006, p. 97; Sauve 2005, p. 26; Haugen 2010, p.5). Guevara (2000)

agrees with this, claiming the global concept of environment is mostly a British or Northern industrial countries' perception, and should include a broader cultural vantage (p.74). EAE uses philosophies from other major education movements like feminist and indigenous, and non-formal education as a guide for addressing the socio-political issues within environmental dilemmas (Haugen 2010, p.5). Indigenous education theory, for example, stresses a connection to the earth not only as a framework for teaching but also as a teacher and spiritual guide (Haugen 2006, p.100). This educational approach must be done in a safe environment, but it is important to realize that safe and challenging are not contradictory, as being challenged is a key element in the teaching and learning continuum (Clover, Jayme, Hall & Follen 2013, p.34). The importance of being challenged was also discussed in the Introduction.

EAE has the heavy burden of trying to educate people about potentially disturbing topics without having them shut down, like I had done in the past (Gilkin & Feldman 2011, p. 3). Most participants subscribe to the notion that the serious environmental problems of today are a result of inadequate or erroneous information, a lack of education and training, wrong management decisions and maladaptive behaviours (Hill 2003, p.31; Green-Demers, Pelletier & Menard 1997, p. 157; Clover, Jayme, Hall & Follen, 2013, p. 56). The goal of EAE is not to turn everyone into a full-fledged activist, but to encourage a political consciousness and provide strategies to critically, creatively and unapologetically challenge authority from different viewpoints to bring about change (Clover, Jayme, Hall & Follen 2013, p. 3; Zoellick 2009, p.20). In other words, EAE strives to promote an adult transformation, “a total phenomenon including cognitive, emotional, as well as action dimensions” which, according to Finger (1989), is necessary for the information to have a significant impact on the beliefs and values of the adult learner (p.27). I certainly went through such a transformation during my research.

At this point it is important to mention the fundamental difference between environmental adult learning and environmental adult transformation is that the former is mainly cognitive learning about a specific environmental issue(s) to help make the individual feel more safe and secure, whereas the latter leads to environmental awareness, concern and potentially socio-political commitment to protect the environment (Finger 1989, p. 30). Given the seriousness of the environmental issue today, environmental adult learning probably isn't enough to facilitate the changes needed (Finger 1989, p.30). Transformation is accomplished using the principles of EAE already mentioned: interweaving the environment into the human way of living, instead of just adding it to an academic curriculum (Haugen 2010, p. 4). Clover (1995) found that building reflection into the educational process was also a strong contributing factor in transformation (p.44). Finger (1989) found adults identified three main types of life experiences that were crucial to their environmental transformation: so-called nature experiences, mostly during childhood; experiences of deep fear and anxiety related to modern military or civil technology threats (for example, nuclear power stations); and experiences of social and/or political commitments, mostly in local environmental groups (p. 29). Other life experiences mentioned included living in the country, personal contact with other cultures or value systems, as well as physical and/or spiritual experiences with nature (Finger 1989, p.29). These experiences can and should be tapped into during EAE to help bridge the connection from learning to transformation.

Adult Education Settings

Adult education has historically occurred in non-formal settings, like community-based organizations, or as informal education; like self-directed learning (Martin 2009, p. 37). Adult education is widespread and diverse but is not well reflected in adult education literature and research (Lange & Chubb 2009, p. 64). As the average person only spends 3% of their time in school, it is important to acknowledge the benefit and necessity of adult education outside of

universities (Ballantyne & Packer, 2005, p. 281). In our ever-changing world, it is critical that individuals be able to evaluate and critique information from the media, Internet and educational centres to update their knowledge and understanding with accurate information outside of the classroom (Ballantyne & Packer, 2005, p.281).

Environmental justice movements and protests are examples of non-formal sites of adult education and are typically fueled by emotions. Emotions, like anger, can be large motivating factors when it comes to environmental involvement (Ollis & Hamel-Green, 2015, p.208; Crowther, Hemmi & Scandrett 2012, p.116). It is important to recognize, however, that you can have both cognitive understanding of a subject and an emotional purpose without them being contradictory, a point that isn't always highlighted in the media (Crowther, Hemmi & Scandrett 2012, p.116). Environmental justice movements are typically local community campaigns fighting the inequalities of environmental resources and the resulting conflicting environmental valuations by those social groups most likely to suffer environmental damage: ethnic minorities, indigenous and low socio-economic individuals, as previously mentioned (Crowther, Hemmi & Scandrett 2012, p.115; Scandrett *et al.* 2010, p. 136). The people involved in these movements have urgent and pressing needs to understand the contradiction between economic (capitalist) development and social movements, with the goal to obtain some environmental and social concessions (if not completely resolve them) from those responsible (Scandrett *et al.* 2010, p. 136). Protests are sites of environmental education where adults may engage in purposeful, holistic and embodied learning (Ollis & Hamel-Green, 2015, p.208). These individuals usually consider themselves activists and tend to have a deep spiritual commitment and connection for what they are supporting (Ollis & Hamel-Green, 2015, p.208).

Another, more recent form of environmental learning in the non-formal setting is ecotourism. Ecotourism can emphasize the emotional, intellectual and spiritual connection people

have with their surroundings, while enhancing the long-term conservation of wildlife and their habitats (Tisdell & Wilson 2005, p.292; Ballantyne & Packer, 2005, p.285). With this captive audience, it is important to provide interpretation and meaning to help people form such relationships and foster pro-conservational values (Tisdell & Wilson 2005, p.292). It is also important to remember that people with pro-conservative attitudes are more likely to seek environmental knowledge so ecotourism is not only an opportunity to introduce environmental learning but also to reinforce pre-existing values (Tisdell & Wilson 2005, p. 292).

Free Choice Learning Settings

“Free choice learning settings” (FCLS), like museums, aquariums and the Canadian Sea Turtle Centre, are examples of public informal educational places. Most research clearly shows that FCLS are a rich learning environment that nurtures and engages visitors in the active process of learning and understanding (Barriault & Pearson, 2010, p. 91-2). As FCLS are open to the general public, visitors are more heterogeneous, differing greatly in their pre-visit experiences, interests, motivations, attitudes and knowledge (Ballantyne & Packer, 2005, p.287). Free-choice learning is typically nonlinear and highly personal because learning is dependent on the choices of the learner: what to learn, where and when to participate (Barriault & Pearson, 2010, p. 90; Falk & Storksdieck 2005, p.746). Unlike formal education, FCLS do not have a set of mandatory learning objectives but may have desired learning outcomes to focus on the multiple ways visitors comprehend the information they encounter (Ballantyne & Packer, 2005, p.283). Because of this, research involving FCLS should focus on “who learned what”, not what each person learned about an intended content as that may not have been the person’s focus (Storksdieck, Ellenbogen & Heimlich 2005, p. 365 & 355). These different learning objectives should never be underestimated and may include evoking feelings; changing attitudes, intentions or behaviours; encouraging curiosity and exploration; making decisions about moral and ethical issues; developing a sense of personal, cultural and

community identity; and/or inspiring participation in programs or organizations (Dillon 2003, p.223; Ballantyne & Packer, 2005, p.282-3). Learning in these settings can be affected by motivation, prior knowledge, interest and beliefs, expectations, social interactions, and exhibit design (Falk & Storksdieck, 2005, p. 770 & 746). The learning experience needs to consider the impacts (including emotional) that can result from the personal nature of each experience (Barriault & Pearson, 2010, p. 91). Visitors should be able to connect what they see, do and feel with their prior knowledge and experiences in order to result in a positive experience (Dillon 2003, p.223).

Falk, Moussouri & Coulson (1998) showed that an individual's motivation for entering a free choice learning setting significantly impacts how, what and the amount they learn (p.114). Faulk *et al.* (2007), for example, investigated behavioural changes as a result of education received at zoos and aquariums and found that, unlike demographic variables, prior experience, knowledge, interest and motivation can predict changes in a visitor's knowledge and conservation attitude (p.6). As a result, they recommended education be tailored to the motivational factors of visitors (Faulk *et al.* 2007, p. 6). These motivational factors fell into one of five categories: Explorers (individuals who stumbled upon the FCLS or did not come in with an itinerary in mind), Facilitators (individuals that were helping others accomplish their experience), Professional/Hobbyists (individuals who have a passion for a specific topic that is present in the FCLS), Experience Seekers (individuals looking more for an adventure than knowledge), and Spiritual Pilgrims (individuals looking for or who have a spiritual connection with all or an element of the FCLS) (Faulk *et al.* 2007, p.7). Each of these groups of people will respond and learn differently and this variation in audience should be considered when developing and implementing programs in these settings (Storksdieck, Ellenbogen & Heimlich 2005, p. 365). Individuals that entered the FCLS with a focused strategy on visiting a specific exhibit showed significantly greater mastery of learning compared with other visitors that just wandered through the exhibits (Falk, Moussouri, & Coulson 1998, p.116). Falk, Moussouri, &

Coulson (1998) also showed that education and entertainment as the motivational factors for entering a FCLS had the greatest impact on the individual's learning (p.114). Storksdieck, Ellenbogen & Heimlich (2005) continued with this conclusion and showed again that prior knowledge and interest were the most important factors when it came to learning in a free-choice setting; with motivation, expectations, advance organizers, exhibition design and social interactions as other factors that impact visitors' learning. The importance of these factors demonstrates that the visitors' experience is affected by events prior to their arrival at the FCLS (Falk, Moussouri, & Coulson 1998, p.117). Because of the importance of these factors, marketing campaigns can dramatically affect how visitors utilize FCLS and what they learn by enticing individuals for specific reasons or exhibits, or encouraging a pre-visit plan with the promise of both education and entertainment (Falk, Moussouri, & Coulson 1998, p.117; Falk, Moussouri, & Coulson 1998, p.115). Interestingly, the museum community has historically debated whether the purpose of a visit should be for education or entertainment because they historically saw these two purposes as separate elements instead of dimensions of a continuum (Falk, Moussouri, & Coulson 1998, p.115).

FCLS should always be socio-culturally oriented because humans are social creatures and a product of our social relationships and culture (Falk & Storksdieck 2005, p.746). Studies have shown that visitors' learning is strongly influenced by the interactions and collaborations they have with their own social group as well as with museum staff and other visitors (Falk & Storksdieck 2005, p.746). Barriault & Pearson (2010) suggested increasing social interactions, either via "on-the-floor explainers" or through cooperative/ collaborative components to the exhibits to encourage any and all desired long-term behavioural changes (p.101). They also suggested providing context and everyday life examples to help the visitors reflect on past experiences or prior knowledge to allow for a deeper engagement with the exhibits and thus hopefully making a deeper impact on them (Barriault & Pearson 2010, p. 101). Despite all this, however, any one experience in a FCLS is small

in comparison to a person's continuous and ongoing lifelong learning (Storksdieck, Ellenbogen & Heimlich 2005, p.366).

Education in FCLS has been shown to have varying lasting effects. Falk & Gillespie (2009) showed no significant decline in understanding of learning post-museum-visit compared with four to six months afterwards (p. 127). Adelman, Falk & James (2000) also showed the retention of knowledge learned during an aquarium visit six to eight weeks later; however, there was a decrease in enthusiasm and emotional commitment and no evidence of change in conservation action despite individual's plans to do so immediately following their visit. Ballantyne & Packer (2005) reported studies focusing on wildlife encounters in natural environments had strong emotional impacts on participants resulting in significant improvements in the adoption of environmentally favourable changes even up to six months after the experience (p.284). Falk & Gillespie (2009) showed that an increase in emotions, specifically fear, during an exhibit experience resulted in both better short-term learning and memory as well as possible longer retention of understanding (p.126-127). Because of these varying lasting effects, it would seem FCLS might not be focusing on effective motivational strategies for behavioural change. Instead of frustrating program developers, this suggestion should encourage them to partner with others that may be able to provide reinforcing experiences and ample opportunities for lifelong learning, which may be the future of environmental education (Storksdieck, Ellenbogen & Heimlich 2005, p. 366; Ballantyne & Packer 2005, p.291).

Motivation

The topic of motivation has been repeatedly referenced throughout this chapter. Motivation is an extensive field of research and education, but in its basic form, "motivation refers to the personal investment that an individual has in reaching a desired state or outcome" (Maehr & Meyer, 1997, as referenced in Ambrose, Bridges, Lovett, DiPietro & Norman, 2010, p. 68). Over the years, research in this area has looked at how to consistently and reliably motivate an individual. The

conclusion (I'll save you the suspense) is that motivation is multifactorial and dependent on the individual. Motivation is influenced by arousal and direction of behaviour (Mitchell 1982, p.81). In order to understand an individual's motivation, you need to know the subject value of a desired goal and that individual's expectation for successfully achieving that goal (Ambrose, Bridges, Lovett, DiPietro & Norman, 2010, p. 69). Goals are the cognitive representation of a motivational drive and performance is the action or process of carrying out that goal or task (Osbaldiston & Sheldon 2003, p. 350). Often these terms get confused when people want to assess motivation as they are often trying to define goals or measure performance (Mitchell 1982).

Self-efficacy has been identified in contemporary motivational research as a key component in motivation, as well as having a direct link to procrastination when low or absent (Lai 2011, p. 7; Steel 2007, p.69). Self-efficacy is defined as “an individual's confidence in his or her ability to organize and execute a given course of action to solve a problem or accomplish a task” (Eccles and Wigfield (2002) as quoted in Lai 2011, p. 7). Often when trying to motivate an individual to change a behaviour, for example, the importance of self-efficacy is ignored. A person must feel they are able to accomplish what is being proposed for them to be motivated to begin. Self-efficacy is high in individuals that have experience with personal mastery, observed others successfully completing the behaviour, and receive encouragement and reinforcement (standard preservative techniques) (Norman, Boer & Seydel 2005, p. 116-7). One should also consider the physiological state of the individual as this may affect how the person reacts to experiences (Norman, Boer & Seydel 2005, p. 116-7). Self-efficacy will be discussed further within the different theories of motivation mentioned later.

Motivation can be complicated but gets even more difficult when the message isn't clear or concise. This is common with environmental educational messages as the solution isn't always black or white. A lot of environmental messages, especially from scientists, have a level of uncertainty.

Increasing uncertainty increases the difficulty of comprehension for the person: the more certain a statement, the easier it is to decipher and respond (Morton, Rabinovich, Marshall & Bretschneider 2011, p. 104). This uncertainty can allow people to maintain a relatively optimistic stance about negative futures and justify self-interest actions or trigger feelings of threat resulting in maladaptive coping mechanisms like denial or disengagement (Morton, Rabinovich, Marshall & Bretschneider 2011, p.104). To avoid denial and defensiveness when faced with environmental uncertainty, it is important to help people feel empowered to act effectively (self-efficacy) and to avoid negative outcomes (response-efficacy) (Morton, Rabinovich, Marshall & Bretschneider 2011, p.104).

Another solution to uncertainty is framing the message as either a loss or gain (Morton, Rabinovich, Marshall & Bretschneider 2011, p.104). As with a study on breast-examination pamphlets, climate change can be presented as benefits to performing a specific behaviour (a positive or gain frame) or the costs of not performing the same behaviour (a negative or loss frame) (Morton, Rabinovich, Marshall & Bretschneider 2011, p.104). The information presented in both cases would be the same, but the individual's response varies. Individuals are more responsive to frames that 'fit' a desired goal and not just exclusively to avoid loss (Morton, Rabinovich, Marshall & Bretschneider 2011, p.104). When communicating the uncertainties of climate change, a positive frame was more effective than a negative frame at stimulating action (Morton, Rabinovich, Marshall & Bretschneider 2011, p 107). It seems that, at least in this domain, uncertain optimism is more motivating than uncertain pessimism about the future (Morton, Rabinovich, Marshall & Bretschneider 2011, p 108).

Re-framing of a message may seem like the sensationalizing of information often used in media (discussed earlier), but it is different. It is true that the sensationalizing of information can lead to a higher perception of risk compared to a neutral style of the informational content, which can then lead to stronger negative emotions and the acquisition of more knowledge (Otieno *et al.*

2014, p.615, 632, 634). Because sensationalizing information can increase knowledge, it can be found even in reputable journals like *Science* and *Nature* (Otieno *et al.* 2014, p. 613). In extreme cases, scientific results have been manipulated to give the public one-sided or even inaccurate impressions about various environmental risks (Otieno *et al.* 2014, p. 613). However, sensationalizing information can also lead to the hindering of desirable behavioural change as well as unbalanced or narrowed views of information and “(mal-) prioritization” of concepts, which is exactly what EAE is trying to avoid (Otieno *et al.* 2014, p. 615, 632, 634). Instead, environmental messages should help people understand the nature of the problem (Pelletier, Tuson, Green-Demers, & Noels 1998, p.461). Research on management and conservation behaviours has shown helping people to understand the problem can be a more effective way of helping people to carry-out environmental behaviours, instead of using coercive techniques (e.g., social pressures, punishment or taxes) (Pelletier, Tuson, Green-Demers, & Noels 1998, p.461).

Motivational Theories

The theory of fear appeal is commonly used amongst advertisers, politicians, scientists, policymakers and intervention developers (as mentioned earlier with media) because it is seen as an effective motivational strategy, like sensationalizing information. Many campaigns use negative emotional arousing imagery to both attract attention to the message and influence emotion-based processing of risk information (Brown & Smith 2007, p.256). When asked, many non-behavioural scientists would prefer non-coercive methods on ethical grounds for conveying environmental information but cite evidence to support coercive methods work better (Gifford 2007, p.202). Fear appeals have repeatedly been found to affect attitude formation and intentions for actions by acting as a driving force to motivate trial and error behaviour (Otieno *et al.* 2014, p. 615; Norman, Boer & Seydel 2005, p. 81). This effect is because if a communication evokes fear, then the individual is motivated to reduce this unpleasant emotional state (Norman, Boer & Seydel 2005, p. 81). If the

message also contains behavioural advice, the individual may follow the advice and if it results in a reduction of fear, then the behavioural response is reinforced and the likelihood of it being performed again is enhanced (Norman, Boer & Seydel 2005, p. 81). However, if the message does not contain behaviour advice or if the message does not lead to the reduction of fear, alternative coping responses may be used to reduce the fear arousal, like avoidance or denial (Norman, Boer & Seydel 2005, p. 81-2). This is consistent with the Brown & Smith (2007) conclusion that “fear-arousing messages might be counter-productive” (p. 265). Even government agencies now admit the failure of some conscious-raising campaigns and other educational activities provided through the media (Finger 1989, p.27). One study, for example, demonstrated that smokers exposed to graphic and disturbing medical images felt they were less likely to develop such complications (lower personal risk perceptions) than those smokers that were shown less-disturbing images (Brown & Smith, 2007, p. 263). The study concluded that people might avoid emotional distress when, in this case, health messages are presented in an emotive way (Brown & Smith, 2007, p. 263). Kok *et al* (2014) agrees, they found that people react defensively, including with avoidance or less attention, when fears appeals are used on people whose determinate of the risky behaviour is more related to self-efficacy, skills or environmental factors (p. 104). Looking at it from a different angle, Brown & Smith (2007) suggested that people might reduce risk perceptions when the outcomes of risky behaviour are more desirable (p.256). To me, this is obvious in the stock market and investment world. Norman, Boer, & Seydel (2005) discuss maladaptive coping mechanisms in response to fear appeals with drinking, which included avoiding thinking about the adverse consequence, wishful thinking that medical breakthroughs will nullify any potential adverse effects, believing the adverse consequences are a result of fate and not the drinking, and faith that God will provide protection (p.95). These maladaptive coping mechanisms are like environmental responses to climate change: some people take little or no action as they believe Mother Nature or a religious/secular deity will

either not forsake them or will do what it wishes, regardless of the actions of humans (Gifford 2011, p.293). These maladaptive coping strategies may result in the person engaging in activities to reduce the fear instead of dealing with the threat itself, referred to as “protection motivation” (Norman, Boer & Seydel 2005, p. 94). How people mitigate potential emotional distress is usually through one of two well-documented processes (Brown & Smith 2007, p. 257). The first is diverting attention away from the threatening message, either through distraction, selective attention, selective memory or termination of the stimulus (Brown & Smith 2007, p. 257). The second process involves the evaluation of negative messages with deliberate bias to invalidate their content (Brown & Smith 2007, p. 257). People scrutinize unfavourable information more critically and give greater weight to favourable information (Brown & Smith 2007, p. 257). In summary, fear appeals can be effective at motivating individuals, but program planners should identify the determinants of behaviour they are hoping to change before considering this approach, as it may not produce the desired effect (Kok *et al.* 2014, p. 104).

Knowledge-deficit theory is another motivation theory that is significant to environmental education. This theory assumes people can change but lack the information about how and/or why they should change their behaviours in order to help themselves, the environment, etc., (Nolan 2010, p.645). The solution to inaction then, according to the knowledge-deficit theory, is information. This approach of providing information is used often with environmental education. In most cases, however, people do have the knowledge to act in an environmentally friendly way, but lack the motivation to implement the necessary changes, resulting in information campaigns that improve environmental literacy but do not produce desired long-lasting behavioural changes (Nolan 2010, p. 645). Like the previously mentioned smoking research, highlighting or emphasizing the dire nature of a situation can decrease the likelihood a person will act if their self-efficacy is also decreased (Nolan 2010, p.645). The potential for less or no action of an individual because of the

message tone should serve as a reminder to educators that knowledge alone will not produce action, but it is a prerequisite for action (Pelletier, Dion, Tuson & Green-Demers 1999, p.2483; Green-Demers, Pelletier & Menard 1997, p.157; Nolan 2010, p. 655).

The theory of planned behavior “sets out to account for how a person’s attitudes, subjective norms and behavioral control beliefs influence a person’s intention to perform a behaviour” (Prinbeck, Lach & Chan 2011, p. 342). It focuses on guiding human action by three kinds of ‘beliefs’: behavior beliefs (the likely favourable or unfavourable consequences of behaviours), normative beliefs (the normal expectations of behaviours due to social pressure or subjective norms), and control beliefs (the factors that may hinder or promote performance of behaviours) (Hrubes, Ajzen & Daigle 2001, p. 166). Of these beliefs, social motivation or normative beliefs has been found to be the most effective way of influencing a person’s behavioural intention (Prinbeck, Lach & Chan, 2011, p.343; Finger 1989, p. 27). One way to influence behaviour is to include personal stories or testimonials in support of the behavioural change, as recommended in free-choice learning settings (Prinbeck, Lach & Chan, 2011, p.343). Behavioural theory, however, also predicts that a reinforced behaviour will not outlast the withdrawal of the behavioural incentive, including social pressures, making many current environmental behavioural programs not cost effective (Pelletier, Tuson, Green-Demers, & Noels 1998, p. 440; Green-Demers, Pelletier & Menard 1997, p.164). Prinbeck, Lach & Chan (2011) suggest learning and understanding people’s knowledge and values about a specific topic is a critical component to successful policy planning and implementation (p.343).

Self-determination theory is possibly the most significant theory to environmental education that I will discuss and support in my research. This theory is used and empirically supported in areas like interpersonal relationships, education, leisure, and sports (Pelletier, Tuson, Green-Demers, & Noels 1998, p. 441). Self-determination theory proposes that people are more likely to engage in

behaviours if the motivation for that behaviour comes from within them rather than from an external controlling force (Osbaldiston & Sheldon 2003, p. 349). “In other words, bribes and guilt do not help to create the type of high-quality motivation that will lead people to take increasing responsibility for their behavior and for the environmental health of the planet as a whole” (Osbaldiston & Sheldon 2003, p. 350). Self-determination theory has a scale of motivation, with intrinsic motivation as the highest or most motivational form and amotivated as the lowest or lack of motivational form. Intrinsic motivation is the engagement in an activity for the sole pleasure and satisfaction of performing that activity (Pelletier, Tuson, Green-Demers, & Noels 1998, p. 441; Osbaldiston & Sheldon 2003, p. 349). Extrinsic motivation, on the other hand, is when the goal of a behaviour is either to elicit positive consequences or avoid negative ones (Pelletier, Tuson, Green-Demers, & Noels 1998, p. 441). There are four subtypes of extrinsic motivation existing between the poles of intrinsic and amotivation, ordered from most to least autonomous: integration, identification, introjection, and external regulation (Pelletier, Tuson, Green-Demers, & Noels 1998, p. 442). The first two are considered internalized motivation and the latter two are considered non-internalized motivation (Osbaldiston & Sheldon 2003, p. 349). Internalization is the process by which outer regulations from the social world of attitudes, beliefs and behaviours gain value for the individual and are transformed into personal purposes, forming inner regulations as the person evolves towards effective functioning and greater autonomy (Pelletier, Tuson, Green-Demers, & Noels 1998, p.462). Integration is complete unification of an individual’s core sense of self with external regulations, becoming part of their self-definition (Villacorta, Koestner & Lekes 2003, p.488). Identified motivation is when the individual endorses the values underlying the behaviour and chooses to engage in the behaviour (Osbaldiston & Sheldon 2003, p. 349; Green-Demers, Pelletier & Menard 1997, p.158). Introjected motivation is when the individual wants to avoid feeling guilty (Osbaldiston & Sheldon 2003, p. 349). External regulation is when an individual acts

because they expect to receive a reward (Osbaldeston & Sheldon 2003, p. 349). Amotivation is compared to learned helplessness: the lack of control and alienation felt by an individual; an amotivated individual is incapable of foreseeing the consequences of their behavior (Pelletier, Tuson, Green-Demers, & Noels 1998, p. 442). Interestingly but not surprisingly, learned helplessness and pessimism have been strongly connected to depression (Steel 2007, p.69).

Self-determination theory assumes that any aversion to behaviour decreases as the behaviour becomes more integrated into the individual's self-system (Green-Demers, Pelletier & Menard, 1997, p.164). When behaviour requests come from authorities in a controlling manner, individuals may not comply, as they are unlikely to internalize the request (Osbaldeston & Sheldon 2003, p. 350; Emmelin 1976, p.47). If, however, the request is made in a supportive manner, then the individual can autonomously decide what behaviour is needed (Osbaldeston & Sheldon 2003, p. 350). Supporting an individual's autonomy can be achieved by allowing choice, providing rationale and acknowledging the other's perspectives (Osbaldeston & Sheldon 2003, p.351). An individual's level of self-determination can be undermined or enhanced by three characteristics of their social environment: the degree to which the people in their surroundings allow the individual to make their own choices instead of trying to control their behaviour (autonomy support), the degree to which these people provide constructive feedback that promotes competence, and the degree to which the members of the individual's social environment show genuine interest in relating to them (involvement) (Pelletier, Tuson, Green-Demers, & Noels 1998, p. 164, 461). The person may then internalize the motivation; take ownership of the goal they set and try harder and longer to complete the goal (Osbaldeston & Sheldon 2003, p. 350). As the individual completes each goal, the individual should develop stronger intentions to continue to perform them and possibly set more difficult, but still achievable, goals to reduce boredom and increase self-satisfaction (Osbaldeston & Sheldon 2003,

p. 350; Steel 2007, p.82). This ‘foot-in-the-door’ effect can set into motion the psychological changes needed to turn small behavioural changes into larger ones (Swim *et al.*2011, p.248).

Intrinsic and self-determined motives are liable to be significant incentives and long-term predictors of environmental behaviours, like recycling, as they act out of personal choice and interest (Pelletier, Dion, Tuson & Green-Demers 1999, p.2483-2484). Given the perceived degrading state of the world today, humans should significantly alter their habits to be consistently and persistently performing environmentally responsible behaviours versus doing the right thing every now and again (Osbaldiston & Sheldon 2003, p. 349). Fostering environmentally responsible behaviours, according to Osbaldiston & Sheldon (2003), consists of three steps for the individual: initiate the behaviour, maintain the behaviour by performing it regularly, and ensure the behaviour is generalized so that it covers a large range of behaviours within a domain (p. 355). However, there are barriers that are embedded in our culture that inhibit responsible environmental behaviours (Pelletier, Dion, Tuson & Green-Demers 1999, p.2483). These barriers include how environmentally responsible behaviours are framed as self-sacrificial, resulting in individuals seemingly being faced with the choice of being happy or choosing a healthy environment (Brown & Kasser 2005, p. 349). Pre-existing skepticism about climate change is another potential barrier to any communication about the environment (Morton, Rabinovich, Marshall & Bretschneider 2011, p 109). Finally, environmental numbness is also a factor in the current climate-change situation (Gifford 2008, p.277). Most people are simply (and understandably) not thinking about climate change most of the time as they are instead thinking about friends, family, work, weekend plans, etc. (Gifford 2008, p.277). The critical challenge is to get as many people thinking about environmental concerns as possible and to have them thinking in a group or community perspective in order to deter self-interest behaviour (Gifford 2008, p. 277).

As mentioned, self-determination theory is potentially the most significant of the theories I have presented regarding environmental education. Because of this significance, the Motivation Towards the Environment Scale (MTES) was developed based on self-determination theory to directly measure and address environmental concerns. MTES found individuals behave in environmentally conscious ways for different reasons: from the simple pleasure and satisfaction of completing the tasks to obtaining rewards like recognition from others (Pelletier, Tuson, Green-Demers, & Noels 1998, p.460). Contrary to motivation in domains such as sports and education, Pelletier, Tuson, Green-Demers, & Noels (1998) showed the relationship between satisfaction and self-determined forms were negative, which they attributed to satisfaction preceding motivation in the environmental domain (p.460). Self-determined individuals reported the environment as an important problem and that they felt competent to participate in activities to solve the problem; compared with non-self-determined individuals who reported being satisfied with the environmental situation, lacked confidence to do something about it and were less engaged in environmental behaviours (Pelletier, Tuson, Green-Demers, & Noels 1998, p.460). In other words, as environmental behaviors become more complex and demanding, individuals need to be more self-determined to achieve them (Pelletier, Tuson, Green-Demers, & Noels 1998, p.461). In the context of the environment, amotivated individuals daunted by the severity and enormity of the environment may “suffer” from global helplessness beliefs (Pelletier, Dion, Tuson & Green-Demers 1999, p.2485). These individuals may be amotivated for three specific reasons: strategy beliefs (the developed or proposed environmental programs are not effective), capacity beliefs (they do not have what it takes to implement the strategies in their lives), and effort beliefs (they cannot maintain the effort required to integrate the strategies into their lives) (Pelletier, Dion, Tuson & Green-Demers 1999, p.2485, 2487). Individuals that viewed themselves as competent expressed the desire to set goals for themselves and believed they had the capacity to accomplish these goals through particular

behaviours (Pelletier, Dion, Tuson & Green-Demers 1999, p.2498). Individuals without this confidence seemed to become amotivated and helpless because of capacity beliefs (Pelletier, Dion, Tuson & Green-Demers 1999, p.2498). Green-Demers, Pelletier & Menard (1997) showed easier environmental behaviors were more likely to be performed more often and difficult environmental behaviours were less likely to be performed as often, regardless of the individual's self-determination level; however, self-determined individuals performed environmental behaviour of all levels of difficulty more often than non-self-determined individuals (p.159, 162). Interestingly, people tend to favour more pleasant tasks in the short term, even if these tasks are detrimental to them in the long term (Steel 2007, p.74).

Despite these amotivational beliefs, people still perceived the environmental situation to be important, indicating again that knowledge of the environmental situation may not be enough to motivate people to adopt environmental behaviours (Pelletier, Dion, Tuson & Green-Demers 1999, p.2498). It is important to challenge learners' beliefs about their abilities or inabilities to make an impact on environmental issues (Ballantyne & Packer 2005, p. 289). Providing positive experience examples can demonstrate to learners that they can make a change in their own local environment, which helps to overcome "action paralysis" (Ballantyne & Packer 2005, p. 289). To help provide these positive experiences, organizations and people in a social environment should support individual's autonomy, provide proper knowledge and skills about how to carry out specific environmental behaviours, and provide constructive feedback as the individual acquires and hones these skills in order to successfully motivate the individual to adopt the desired environmental behaviours (Pelletier, Dion, Tuson & Green-Demers 1999, p.2498-2500). Pelletier, Tuson, Green-Demers, & Noels (1998) recommended that the research addressing the determinants of motivational orientations act as a guide for not only encouraging the public to act in environmentally conscious way but to do so for self-determined reasons (p. 461). An autonomous orientation

towards environmental behaviours seems to coincide with a general orientation towards intrinsic life aspirations like community involvement and self-development (Villacorta, Koestner & Lokes 2003, p. 501). Research has shown that intrinsically orientated people are happier than extrinsically orientated people and act in more ecologically responsible ways, indicating that living a more environmentally responsible life may not be the sacrificial life assumed to be needed (Brown & Kasser 2005).

Chapter Three: Methodology

How I chose my method

When considering which method would be best to address my question of individual motivation, I initially considered a quantitative approach, as all my previous exposure to research had been with this method. This is appropriate for gathering basic information about the visitors to the CSTC and so was used in the form of an online survey in order to get an overview of the public's experience at the Centre. What a quantitative approach could not do, however, is give a detailed description of how and why the CSTC visit affected an individual personally. It would not learn the personal history behind the visit. For the detailed information about an individual's experience, I needed a qualitative research method.

I considered five potential qualitative research methods. Ethnography was easily ruled out, as I was not interested in learning the "field" or "subculture" of the individuals entering the Centre. I also did not think this approach was applicable because the Centre is not large nor well established enough to be a subculture on its own. Though, it could be argued, I am interested in the subculture of turtle researchers, my goal was not to observe an individual's actions, nor describe the culture of "sea turtle people", but to learn the "essence" of these individuals (Richard and Morse, 2013-a, p. 54-55).

Grounded theory is socially constructed reality learned from the participants (Richard and Morse, 2013-a, p. 62). This could have worked as my approach to analyze the participants' change and process of change (if any) after visiting the Centre. I, however, was interested in individual experiences and not in a local and limited theory about how the Centre provided change to visitors because I felt each visitor's experience would be different and possibly not comparable (Richard and Morse, 2013-a, p. 64). With the experts, I was more interested in learning how and why everyone became a sea turtle expert rather than learning about the life or reality of the experts now.

I was not looking at the effects of the communication, verbal or non-verbal, involved in sea turtle discovery and study, nor how this social reality was produced, so discourse analysis was easily ruled out (Richard and Morse, 2013-a, p. 72-73).

A case study approach would have been too limiting and inappropriate, I feel, to use for both visitors to the Centre as well as the sea turtle experts. I believed the individuals' experiences would be too vast and varied and this approach would not provide an accurate description of their experience but instead would provide a skewed answer.

Grounded theory and phenomenology were the two most likely approaches I could have used so I did a side-by-side chart of what my thesis would look under each method using Richard and Morse (2013-a & b).

Table 1: Comparing Grounded Theory to Phenomenology for best method choice.

Grounded Theory	Phenomenology
Asks: What are the dimensions of their experience at the CSTN? (p.30)	Asks: What is the meaning behind their experience at the CSTN (p.30)
Methods: Interviews, Observational (p.31) <i>Note to self: Observations at the CSTC-could observe those visitors interested and those not interested in the Centre</i>	Methods: In-depth Interviews, small sample size (p.31)
Would develop concepts and generate theories (p.33)	Would find and explore themes (p.33)
Uses both descriptive methods to identify the process and interpretive methods to identify core variables and social processes to connect and make sense of the data (p.42)	Uses interpretive methods for more subjective or "softer" data = experiences, values, dreams, perceptions, beliefs (p.42)
Interpretive methods used to see "what is going on" and "what it means" or how it can be explained. Uses previous studies to guide perspective (p. 51)	Interpretive methods focusing on the "interpretations of the discovered world, what is experienced by those studied and how their perceptions might be understood... studies are full of feeling, reflectively describing meaning, emotions, and experience, pulling and using similar
Begins with the question "what's going on here"- appropriate for the "researcher wishing to learn from the participants how to	

<p>understand a situation ... usually situated in experiences in which change is expected” (p.62)</p> <p><i>Note to self: want to inspire environmental change but it is not expected</i></p> <p>The explicit goal is to develop theory so reports will feature theory that is limited and local = single story line. It “attempts to account for the centrality of the core concept by telling the story of its emergence” (p.64)</p>	<p>emotional responses from the reader” (p.52)</p> <p>“Offers a descriptive, reflective, interpretive and engaging mode of inquiry from which the essence of an experience may be elicited. Experience is considered to be an individual’s perceptions of his or her presence in the world at the moment when things, truths or values are constituted” (p.67)</p> <p><i>Note to self: this is what I am looking for</i></p>
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For my thesis I used a phenomenological approach because it

offers a descriptive, reflective, interpretive and engaging mode of inquiry from which the essence of an experience may be elicited. Experience is considered to be an individual’s perceptions of his or her presence in the world at the moment when things, truths or values are constituted. (Richards and Morse, 2013-a, p.67).

I was interested in learning more about the “essence” of an individual’s experience at the CSTC and how that might motivate them to engage with, learn about, and commit to supporting leatherback sea turtles. I wanted to learn what attracted the person to the Centre and what they connected with (if anything) during their visit. I wanted to know the meaning this new reality had on the individual’s life and how their actions had followed their self-interpretation of their experience (Richard and Morse, 2013-a, p. 72; Richards & Morse, 2013-c, p. 199). By using phenomenology, I felt I was better able to explore and understand how an individual experienced the Centre as it related to their lives and values as well as their past lived experiences, which may not be directly related to sea turtles.

I found it difficult to find information about and research on the phenomenological method, probably because “researchers who use phenomenology are reluctant to prescribe techniques” (Groenewald 2004, p.44). Most of what I did find talked about the different philosophies and

philosophers, which didn't help provide a clear path for my research approach. What it did provide was confirmation that I was using the right method as everything came back to phenomenology as an understanding of the experience (social and psychological) of the phenomenon from the perspective of the participants or, basically, the lived experience of the individual (Dowling 2007, p. 138; Groenewald 2004, p. 44). I did find a research guide in Giorgi's (1997) method that recommended a minimum of five steps: (1) "collection of verbal data"; (2) "reading of the data"; (3) breaking of the data into parts; (4) "organization and expression of the data from a disciplinary perspective"; and (5) "synthesis or summary of the data for communication to the academic community" (Robb, McNery & Hollins Martin, 2013, p. 403). Giorgi also recommended the researcher aim to describe the phenomenon as accurately as possible by remaining true to facts and by avoiding pre-given frameworks (Groenewald 2004, p. 44). A common theme that did exist amongst the information I found was the importance of acknowledging the researcher's own background and assumptions because the "researcher cannot be detached from his/her own presuppositions and ... should not pretend otherwise" (Groenewald 2004, p.45). For this reason, I included my history in the Introduction and have included my own feelings and opinions in different parts of this thesis.

Research Overview

My research had three components. The first component was the quantitative data collected via an online survey sent out to previous visitors of the CSTC. A description of the survey and its link was posted on the CSTN social media sites for previous visitors to fill out with a free CSTN t-shirt (provided by CSTN) as an incentive for completing the survey (See Appendix 1 for survey). The purpose of these questions was to identify for the CSTN the different types of people that are entering the Centre (Faulk *et al.* 2007), establish a baseline of public sea turtle knowledge, determine what the public are learning, and if this knowledge is motivating them to change their behaviours.

Initially no demographic variables were included in the online survey because it has been shown that “none of the standard demographic variables such as age, gender, and race/ethnicity significantly” influence learning (Falk & Storksdieck 2005, p. 759). However, some demographics were added to benefit the CSTN with their own statistical records for the Centre. My goal was to receive at least 80 responses.

The survey provided a platform to identify participants for the second component of my research, which involved one-on-one phenomenological conversational interviews with volunteers from the online survey that accepted the ethical implications of the interview (See Appendix 2 and 3 for my email to participants and the informed consent). My initial goal was to interview three to five people to begin with and then, if these interviews did not elicit a large variety of backgrounds and interests, I would consider another three to five individuals. However, I had more volunteers than expected so I interviewed everyone that was eligible and willing. These interviews were non-structured for the most part, recorded and performed either in person or via live chat over the Internet. The goal of the interviews was to gain insight into the person’s history, beliefs, experiences, values, etc.; essentially what makes the person, themselves. My hope was to connect what they were most drawn to in the Centre to an element of their essence to provide insight for that connection to the CSTN.

I did not conduct pre and post visit interviews at the CSTC. This was partly because of timing: the Centre is only open during the summer months and the timing of my ethics approval did not coordinate with this schedule. It was also because of the nature of the Centre: it is very small (12x12 foot building) and located in a very busy part of downtown Halifax. As a result, people stay for a few minutes to 30 minutes, making pre and post interviews seem unreasonable compared with those done in museums and aquariums. Also, Falk & Gillespie (2009) found “the use of a post-visit measure with a retrospective pre-measure, as opposed to a more common separate pre- and post-

test... yields greater reliability for affective measures” (p. 115). This is because prior investigations have shown individuals tend to over-report on the pre-measure to appease the researchers (Falk & Gillespie 2009, p. 115). There was also no significant difference between pre and post entry interviews compared with exit only interviews regarding affecting visitors’ perception of key messages (Adelman, Falk & James, 2000, p.44).

The third component of my research also involved one-on-one phenomenological conversational interviews, but these were with individuals or “experts” who work in sea turtle research. My goal was to interview five to seven experts in the sea turtle field to identify their motivations for dedicating their lives to the research of these animals. I also had more volunteers than expected. These were semi-structured, recorded interviews performed either in person or via live chat over the Internet. These interviews focused on the expert’s past experiences that led them to their career decisions. Initially I interviewed two experts that I have interacted with regularly over the past few years. Using a limited “snowballing” method, I asked one of these experts to recommend other experts. That expert generated a list of colleagues that agreed to help with my thesis research. I emailed each of these experts explaining my thesis and asking permission to conduct an interview (See Appendix 4 and 5 for my expert email and informed consent). My goal was the same for both interviews: to gain insight into the individual’s essence. My hope was to learn what transformative moment or experiences lead the expert to choose a career focused on sea turtles.

What Happened & When

Ethics approved my research submission and revisions in December 2017. In January 2018, I created the online survey using Google Forms. I chose April 1, 2018 as the end date for the survey and the draw date for the CSTN t-shirt. I sent it to three friends, two of whom work for the CSTN to test that the link and all components were working properly. I deleted two of these responses but

kept one as that friend completed the survey using her memory of her initial visit to the CSTC prior to working for the CSTN. The online survey went “live” on Friday, January 19, 2018 from the CSTN on Twitter, Facebook and Instagram, with the plan that it would be reposted once a week for 2 months. I checked for responses almost daily.

In the first 24 hours I was up to eight responses. From these, I had five people interested in interviews. I emailed those five people on January 21 and heard back from four. During the week of January 22-26, I arranged interview times and locations for three and confirmed a live chat meeting on January 28 with a fourth respondent. The online survey was reposted on Friday January 26 and by January 28 I had 16 responses but no additional people for interviews. The online survey was reposted on Monday, February 5 to try to get people who check their Facebook at different times (instead of always posting it on Friday). It was also shared on the Dalhousie Marine Biology Society Facebook page and the private Sea Turtle Centre staff/volunteer page. By the end of the day on February 5, I was up to 23 responses. Of those responses, an additional six people offered to do interviews. I did not want volunteers of the Centre as interview candidates as I felt they would provide a bias and possibly one-sided prior life experiences, and thus were not the demographic I was interested in interviewing. I included the following line in my initial email to these additional six respondents: “Please also let me know if you are a volunteer with the CSTN as a number of volunteers have filled out the survey but are not eligible for the interview”. Two were indeed volunteers and another lived in California. As my ethics was only approved for people living in Canada, I did not interview the individual living in California or the individual living in Trinidad who volunteered later.

By Friday, February 9, I was up to 29 responses and two new offers for interviews. However, when I went through the individual responses, there was one that hadn’t been to the Centre. I deleted this respondent answers. By February 17 I had 40 responses and six more people

offering interviews. Of these six, I heard back and booked interviews with five. The survey was reposted for the last time on Facebook and Twitter on March 12.

On April 1 I “Googled” websites that randomly pick numbers and asked the website to pick a number between two and 40 for the winner of the t-shirt (as number 1 was a member of the CSTN). It chose number 11, which happened to be one of my interview volunteers and so was easy to contact. I also closed the survey so that it was no longer accepting responses.

In total I had 18 people offer interviews, eight of which I interviewed. For everyone, I sent an initial email and then, if I did not get a response, the same email again one week later. I did not send a third. There were five people who did not respond to either email, two people (as mentioned) who lived outside of Canada, two volunteers (as mentioned), and one person who had set up an interview time but then I never heard from again despite multiple emails.

For the eight interviews I conducted, I let most of the people pick a location that suited them. I had two people who chose libraries because they wanted to see what the library looked like inside, I did one at the CSTN office as they lived down the street, two were done at restaurants that I travelled for, and three were conducted online using video chats as these individuals were located outside of the Maritime provinces. I conducted all the interviews between February and May 2018.

As 40 responses were only half of the 80 responses I had hoped to get, I discussed with CSTN staff about emailing out the survey to previous visitors of the Centre who had left their email address in the guest book to be contacted in the future with information about the CSTN. This had been the original plan for sending out the survey instead of through social media. However, by January 2018 the CSTN were not prepared to email these individuals. On May 23 I went into Google Forms to create a second survey, same as the first, so it could be emailed without reactivating the initial online survey. I then sent the new link to the CSTN staff to be emailed when they were ready. At this time, I noticed there were 48 responses. I am unsure when or how the other

eight responses were left. I wondered if it was a refreshing error as I had had the survey open on a tab most of the time on my computer instead of logging in anew every time I checked Google Forms. Of those new eight responses, there were three more offers for interviews. I emailed these individuals on May 23 to thank them for their offer but that I no longer required volunteers for my interviews.

The Centre opened for the 2018 season on June 6. It was decided that I would use this as another opportunity to hopefully get more responses for my survey. I redid the survey and changed the wording to reflect someone responding shortly after his or her visit. As I was no longer looking for interview volunteers, that section of the survey was removed. I printed 100 copies of the updated survey along with a sign asking people to fill them out and handed them off to CSTN staff. The printed surveys were placed by the door of the Centre. I also created a third online survey with its own link and emailed it to the CSTN staff. This link was attached to the back of CSTN business cards that were handed out to visitors of the Centre and given to anyone who made a purchase at the Centre. Another opportunity to win a CSTN t-shirt accompanied this latest round of surveys to be drawn for on August 1, 2018.

The online survey to be emailed to previous visitors of the CSTC was never sent. None of the paper surveys were filled out despite the staff moving their locations, providing pencils, changing the sign and folding it in half to make it look less intimidating. There were four responses to the online survey so on August 1 I used a random number generator website again to pick a number between 1 and 4. It picked number 3. I emailed the provided email address to inform them they had won a t-shirt and arranged to send it to their grandson as requested.

For my expert interviews, I first interviewed two local experts in person, both of whom I knew well. The first was before the visitor interviews as a safe introduction to my interviews, the second was near the end of my visitor interviews. The second expert is highly connected in the sea

turtle world and was going to be attending an international sea turtle meeting in the weeks following our interview. This expert agreed to ask others of varying backgrounds if they would be willing to talk with me for my research. As most sea turtle research occurs outside of Canada, I reapplied to Ethics to allow for interviews with individuals living in United States, which was approved.

Approximately two months after our interview, I received an email from expert 2 with a list of nine experts that had responded positively to the interview request. I emailed the nine experts on June 28 and received responses from six. I sent out the same email on July 16 and received responses from the final three. As summer is the busy field season for sea turtle research, the times people were available were limited. However, everyone was keen to help and in the end, I interviewed eight of the nine experts suggested, all via online video chat.

Interviews

I tried to keep each of the interviews relaxed and casual. I recorded each interview except for two because of technical difficulty with the recorder: one was discovered the day after the interview, and one was discovered at the beginning of the interview. There was also one expert interview recording that was inaudible. For the interviews conducted in person, I had the individual sign two copies of the informed consent: one for my records and one for theirs. For the interviews conducted over the Internet, I sent the interviewees the informed consent a few days ahead of the interview and we either discussed it during the interview or they sent me a confirmation email that stated they read and agreed to the informed consent. One individual signed it, scanned it, and emailed it back.

Overall, I much preferred the in-person interviews as they flowed more easily, probably because I was able to read body language better and did not have to deal with Internet delays. For each in-person interview I brought two shortbread sea turtle cookies I had made to thank the individual for participating. They were given at either the beginning or end of the interview. For the

experts I interviewed over the Internet, I met all but one in person at the 39th International Sea Turtle Symposium in February 2019 and gave them purchased chocolate turtles as a thank you.

Prior to meeting each person, I did not provide any further prompting for my interviews beyond the introductory emails. I did not send out interview questions ahead of time because I did not want the individual's answers to be rehearsed. I felt that might result in the person telling me things they thought I would like to hear instead of what meant most to them. During most of the interviews I had a notebook open to write down reminders to ask them to further clarify points or topics they had mentioned during certain answers or stories. These notes were minimal, and usually written blind so as not to break eye contact during the conversation.

The visitor interviews began with introductions, usually some small chat and then I asked them to tell me what they remembered about their visit at the Centre. From there I asked them questions about their past usually stemming from comments made about what they liked about the Centre. I asked them about their careers, their hobbies, pets, family, etc. I also told them stories about myself related to what we were discussing at the time. This was done to help the interview seem more like a conversation and to possibly spark another topic of conversation. I talked more in some interviews than others, as some people were more talkative and open.

The expert interviews began with me explaining my research and what I had completed to date. I then asked them to tell me how they got to where they are today, "the long version". At this, everyone laughed and started in on their story, beginning in many different places. I made sure to ask most experts about childhood and present pets, what their parents did for work, and what would be their dream job.

Near or at the end of most interviews I asked the individual where was their favourite place to travel. This was usually a good final conversation but also more of a personal question than a research question as I like to travel and always enjoy asking people (friends, family, patients) where

are their favourite places. I usually ended the interview when the conversation had come to a natural end and when I could think of nothing else to ask. I always asked if the person had any questions for me before we said our “goodbyes”. All the experts interviewed online wanted to know what I was going to do with my research while a few of the visitors also asked, mostly those visitors with research backgrounds.

As per Groenewald (2004), after each interview I made notes (memoing) about what I heard, felt and saw about the interview surroundings as well as my initial feelings and interpretations of the interview itself and what stuck out the most to me (p.48).

Analysis

For the online survey, Google Forms provided a summary of the responses including charts and percentage calculations. However, as I combined the results of the two surveys (the initial survey plus the 2018 visitor survey) I had to combine the numbers from both surveys myself. I printed the results of the surveys (which became known as the “Accordion of Knowledge”). This allowed me to work without the need for Internet or electricity (i.e., in the woods at my camp) but also allowed for less time staring at the computer screen (which can result in a migraine). The multiple-choice questions allowed for easy analysis, as they just required counting (and recounting to confirm). The short answer questions required more thought and contemplation. For these three questions I read and re-read through the responses, finding common themes and developing categories. I will provide more detail about these themes and categories at the beginning of each question in the results section.

For my interviews, I transcribed each interview by listening to the recording on one computer and typing on another, pausing and replaying as needed. Initially I transcribed everything, however, after the first two interviews I did not include all my own stories as they were mostly repeating the same stories about my background and myself. In these cases, I put in brackets the

topic of the story I was telling as a reference to know which of “my stories” were told. The expert interviews did not include as many of my own stories. I included most “umms” and “ahhs” and did not correct grammar. In my transcriptions I did not use the visitors’ name but gave them an alphanumeric designation, for example: V1 = Visitor 1, E3= Expert 3. I did keep all the names of places and other people the same as only I viewed these transcripts. For the results however, names of people and places were changed and occasionally gender was also switched. The exception to this was two experts who did not want their information changed. As I was transcribing, I was also taking notes about my own interpretations of the conversation, what I felt were the highlights and questions that arose but were not answered. Once the interviews were transcribed, I again printed each interview so they could be read and re-read without a computer. I highlighted key points and interesting quotes and used these along with my notes when writing my results. These notes and quotes for each visitor are compared with each other in the discussion chapter.

Chapter Four: Results

Online Survey Results

There was a total of 52 responses: 48 from the survey over the winter and four responses from the month of July. All surveys were filled out online.

Question #1: Where do you live?

Two people did not provide answers to this question so the following results will be out of 50 instead of 52. $20/50 = 40\%$ were from the Regional Municipality of Halifax (HRM). $4/50 = 8\%$ were from Nova Scotia but outside of HRM, making a total of $24/50$ or 48% of visitors that filled out the survey from Nova Scotia. $3/50 = 6\%$ were from New Brunswick and $1/50 = 2\%$ was from Newfoundland. These combined resulted in $28/50$ or 56% of respondents living in the Atlantic Provinces. $14/50 = 28\%$ of respondents were from Ontario. One person (2%) was from Manitoba. These results combined meant $15/50 = 30\%$ were non-Atlantic Canadians and a total of $43/50 = 86\%$ of the respondents were Canadian.

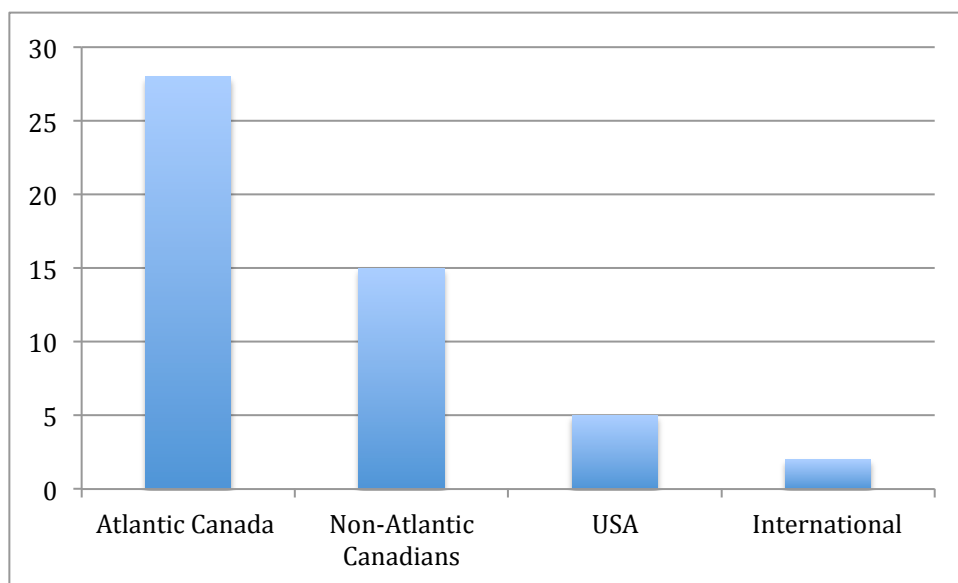


Figure 3: Distribution of where online survey respondents live

5/50 = 10% of respondents were from the United States of America: two were from coastal states (California and New Hampshire) and three were from interior states (Illinois, Wisconsin, Oklahoma). 2/50 = 4% were from countries outside of North America: one was from Trinidad and Tobago (presumably one of the volunteers that worked with the CSTN) and the other from England.

Question #2: What age range do you fall under?

17/52 = 32.7% were between 19-29 years old

10/52 = 19.2% were between 30-39 years old

6/52 = 11.5% were between 40-49 years old

12/52 = 23.1% were between 50-59 years old

7/52 = 13.5% were 60+ years old

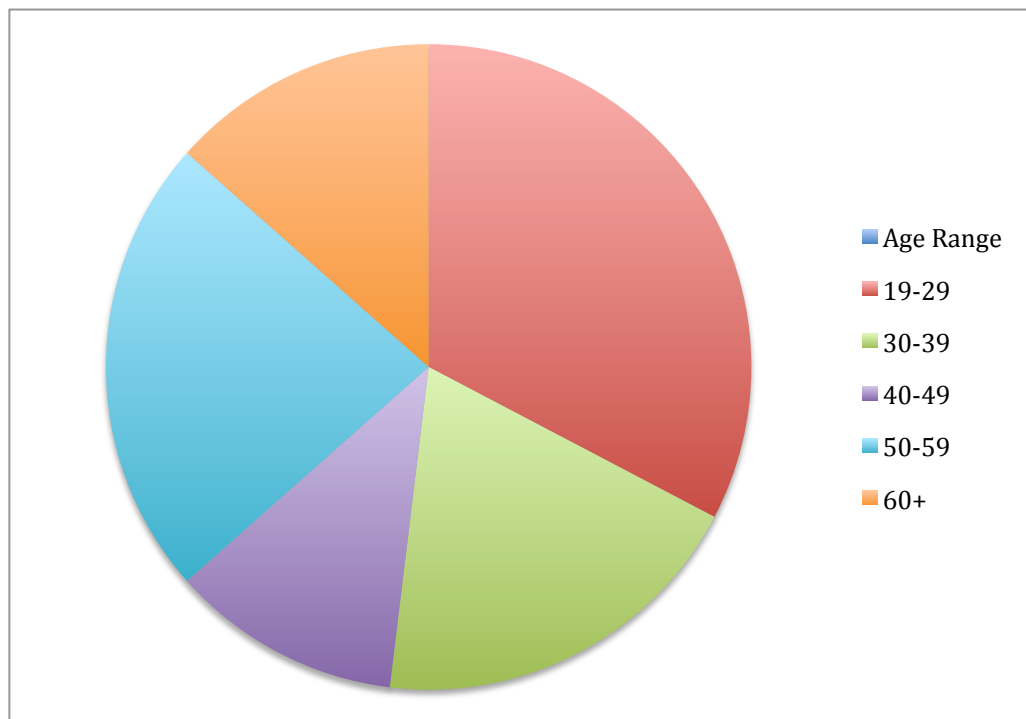


Figure 4: Age range of online survey respondents

Question #3: What gender do you identify with?

42/52 = 80.8% were female

10/52 = 19.2% were male

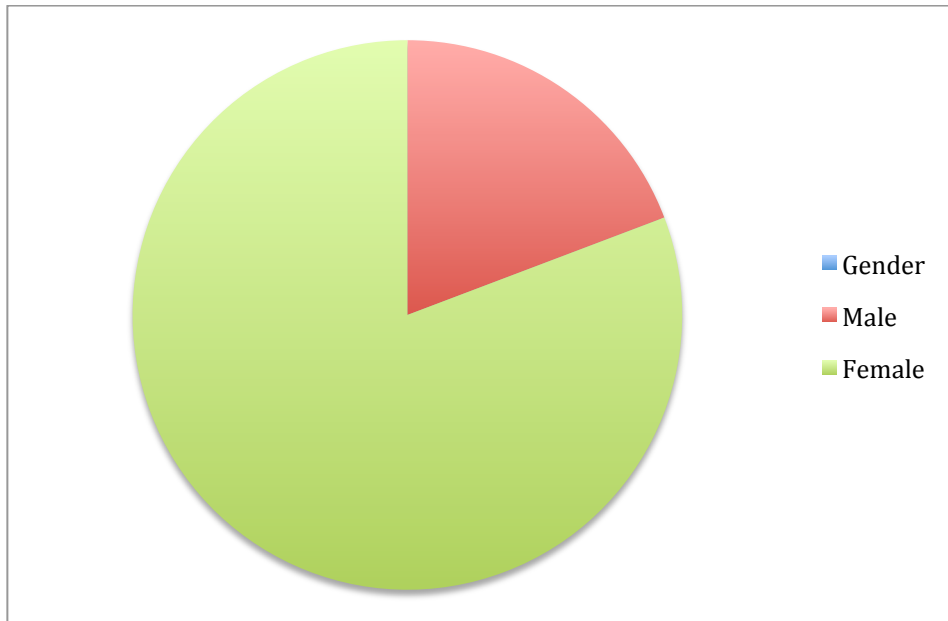


Figure 5: Gender distribution of online survey respondents

Question #4: What year did you visit the Centre?

None of the respondents visited the Centre in 2013

1 respondent (1.9%) visited the Centre in 2014

5 respondents (9.6%) visited the Centre in 2015

12 respondents (23.1%) visited the Centre in 2016

30 respondents (57.7%) visited the Centre in 2017

4 respondents (7.7%) visited the Centre in 2018

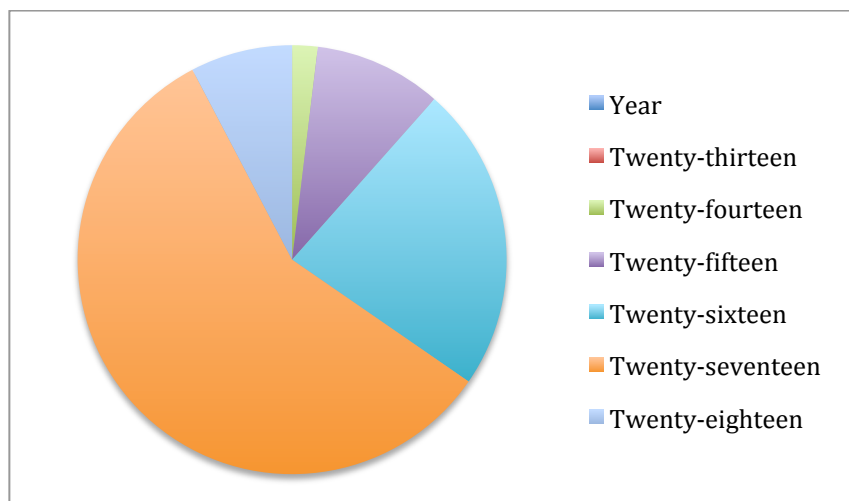


Figure 6: Distribution of year online survey respondents visited the CSTC

Question #5 Who did you come to the CSTC with?

As this question allowed multiple answers, I will initially group these results into people who had single answers and those who had multiple answers.

$9/52 = 17.3\%$ came by themselves; $19/52 = 36.5\%$ came with family, $7/52 = 13.5\%$ came with children under 12 years old, and $7/52 = 13.5\%$ came with friends. One person answered “husband” and I included this in “family”.

Two people answered both “family” and “children under 12 years old”. One person answered “children (under 12 years old)” and “teens (13-18 years old)”. One person answered “friends” and “family”. For the final tallies below, I will include these in each of the categories, as I believe that will provide a better representation of the visitors of the Centre. It will also allow the CSTN to be able to look at the presentation of children and teens separately.

One person came with teens and provided a further clarification that they had brought a group of girl guides to the Centre. I included this in the final tallies under “teens”.

Four people answered that they came by themselves but also that they came with others. Three people said they came by themselves as well friends and family. One person said they came

with themselves as well as friends, family and colleagues. I assume this to mean they visited the Centre multiple times. As I don't know how many visits these represent, I decided to create another category of "multiple" to cover these respondents.

Final tallies:

9/52 = 17.3% came by themselves

22/52 = 42.3% came with family

8/52 = 15.4% came with friends

0/52 came with colleagues (except assumed on return visit)

10/52 = 19.2% came with children under 12 years old

2/52 = 3.8% came with teens (between 13-18 years old)

4/52 = 7.7% presumably visited the Centre more than once

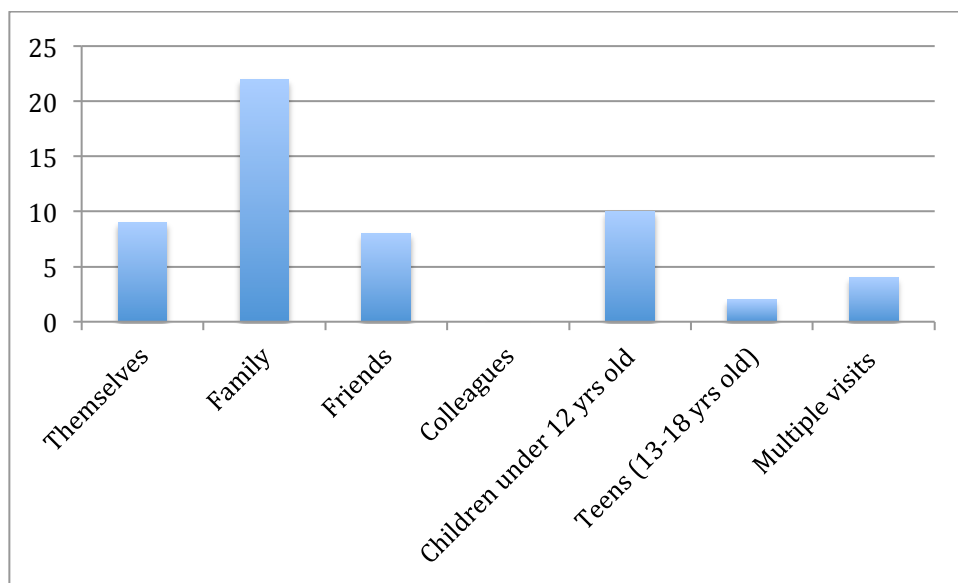


Figure 7: Who with the online survey respondents visited the CSTC

Question #6: What brought you into the CSTC?

Multiple answers were allowed for this question so the final numbers will add up to more than 52, however more than half of respondents ($30/52 = 57.7\%$) only put one answer. Four individuals left additional notes. I included both “I also volunteer and do the weekly beach walk” and “I volunteered for CSTN while studying at DAL” under “friends or family of staff member/volunteer of the CSTN”. The other two individuals checked multiple answers and left additional comments. These comments were “wanted to show it to out of town visiting family” and “I really like turtles and when I was walking around the waterfront in Halifax, I saw the turtle on the building and went to investigate”. I feel these two notes are more comments or additions rather than further clarifying the already checked off answers the two individuals provided. For that reason, I did not count those two responses in the calculations.

11/52 = 21.2% Heard about the CSTC and specifically to visit it

7/52 = 13.5% Was with a person or group that wanted to view it

23/52 = 44.2% Had a previous interest in sea turtles

26/52 = 50.0% Stumbled across it

7/52 = 13.5% Came in to make a connection with an element of nature

10/52 = 19.2% Friends or family of staff member/volunteer of the CSTN

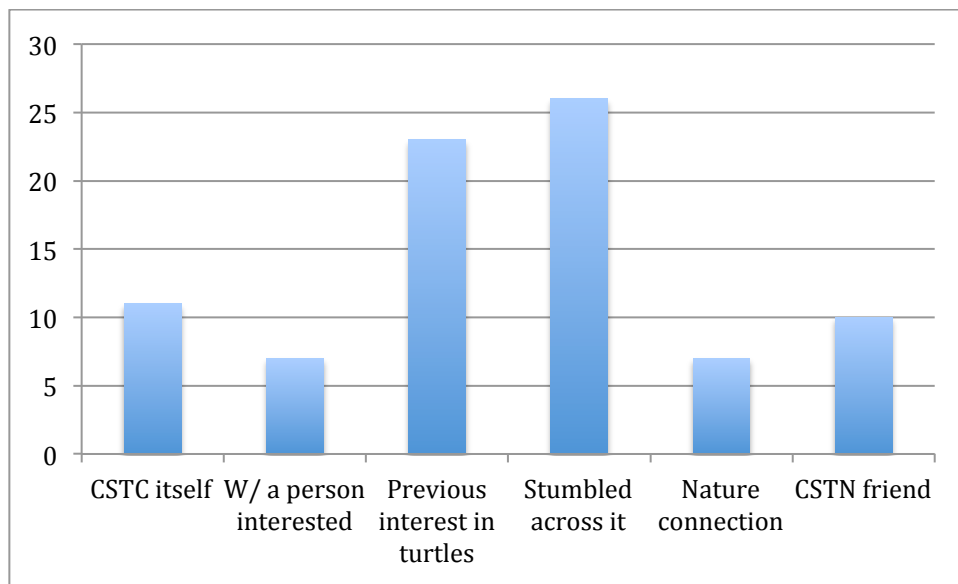


Figure 8: Why the online survey respondents entered the CSTC

Question #7: Prior to your visit, were you aware of sea turtles in Canadian waters?

36/52 = 69% of respondents answered “Yes”

16/52 = 31% of respondents answered “No”

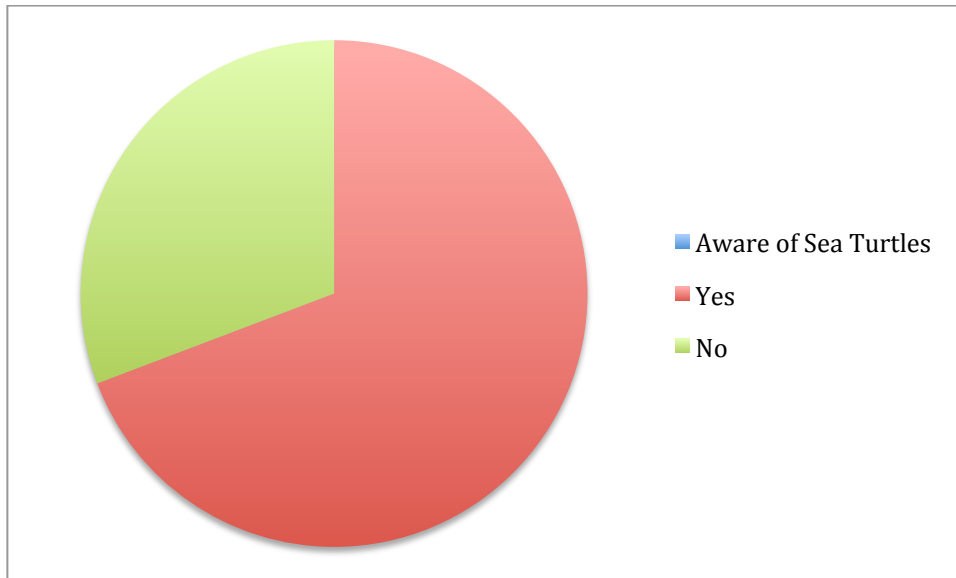


Figure 9: Distribution of awareness of sea turtles in Canadian waters of online survey respondents prior to visiting the CSTC

Question #8: What do you remember most about the CSTC?

Multiple answers were allowed for this question, and most people had multiple answers. Because of the multiple answers, the final numbers will add up to more than 52. Fifteen people had single answers, which included all options except “jellyfish” and “the collaboration between the CSTN and local fishermen”. Two people chose “other” as an option. Unfortunately, there was no further clarification provided. I suspect one of these “other” responses was the life-size painted leatherback sea turtle on the floor of the Centre as per one of my interview volunteers, which seemed to be confirmed in question #9 when one person said they related to “the size of the painted to scale leatherback on the floor”. I did not include the two “other” in my final tally.

30/52 = 57.7% Staff

25/52 = 48.1% Pictures and storyboards

6/52 = 11.5% Activities

14/52 = 26.9% Collaboration between the CSTN and local fishermen

11/52 = 21.2% Jellyfish

36/52 = 69.2% Specimens (sea turtle skull, flipper bones, throat spines, satellite & flipper tags, etc.)

2/52 = 3.8% Other

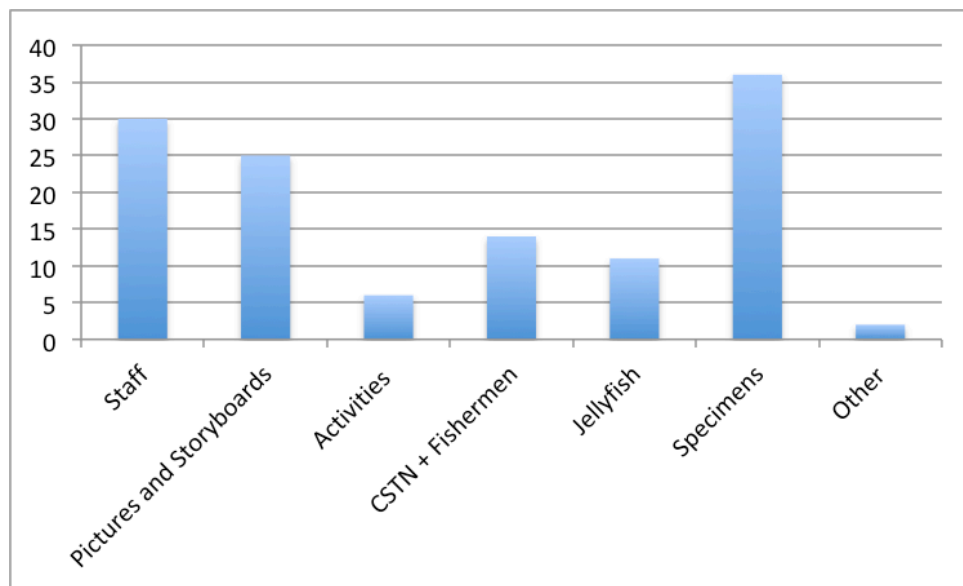


Figure 10: What the online survey respondents remembered most about the CSTC visit

Question #9: What did you relate to or connect with the most at the CSTC?

This was the response I was most looking forward to reading, as I believed this would be the key to my thesis. This was the point and heart of the interviews. Initially I didn't feel people answered this question how I expected or intended it to be answered, as it seemed to be more a continuation of question #8. However, on further analysis of the answers, the responses were what I was looking for, just maybe not the answers I expected.

Three people left this question blank, leaving 49 responses to this question.

As per my Methodology, I read through the 49 responses multiple times, making lists of categories each answer could be placed under and then developing a flow chart to include all the responses. In the end, I came up with two main categories: humans and turtles. Under the heading of “humans” I put all the responses I felt meant the respondent connected most with a human element of the Centre or the CSTN. Under the heading of “turtles” I put all the responses that related more to the turtles themselves and elements of their lives. Below I list all the responses under one of these two categories. Afterwards, I will further divide the two categories using a flow chart to illustrate the other subcategories and use the numbers that correspond to each response instead of writing out each response again. There are some responses that fit under multiple subcategories and so I placed them under both, meaning there are more than 49 numbers listed in the flow chart. However, I did not include any responses under both human and turtle category. I feel the flow chart helps explain why I put some responses under which category. For the “less-than-obvious” responses, I will explain my reasoning after the flow chart.

Humans

1. The story of scientists and fishermen coming together to work collaboratively
2. Really enjoyed the storyboards and pictures as well as specimens, staff knowledge also added to the experience
3. They were so good with the kids and very informative. Amazing staff last summer
4. Friendly and knowledgeable staff were great at explaining the story boards, photos, etc.
5. People working to understand and conserve an important species
6. Naming a turtle and following on social media
7. Hopefulness (the CSTC focuses more on optimism, and what we can do as humans to help)
8. Teaching people that they have an impact on the oceans (plastics etc.)
9. Collaboration with the fishermen

10. I really appreciate what they are doing to help sea turtles!
11. I connected with the staff- they were all great! Enjoyed our chat.
12. I really enjoyed seeing how passionate the staff and volunteers were.
13. The mission to raise awareness
14. The research and storyboards
15. The volunteers
16. How dangerous plastic bags are
17. Young women passionate about conservation
18. The passion of the staff
19. Knowledge of staff member. Throat spines exhibit
20. The staff were so friendly and informative!
21. Staff
22. Ability of staff to answer in depth questions
23. There [assumed to mean “their”] love of turtles
24. Making the jellyfish
25. Staff was knowledgeable and conveyed it well
26. The story of the leatherback research in Nova Scotia and the relationships built with fishers
27. Cool to track turtles
28. Helping the sea turtles
29. Appreciating and learning about our waters and animals that live in it.
30. The importance of marine conservation for particularly sea turtles
31. Pictures of the turtles

Turtles

32. The dangers they face

33. How turtles are awe-inspiring
34. I volunteer at Kejimikujik to help with the Blanding's turtles nesting program, so I found it really interesting to learn about conservation of other turtles in Nova Scotia
35. The migrations they make
36. The trip the turtles take to get there and how many jellyfish they eat!
37. I have always liked turtles.
38. The size of the painted to scale leatherback on the floor.
39. A greater interest in turtles over all.
40. I really enjoyed the information about the journey of some of the turtles
41. The turtles!
42. Turtles travel from NS to Trinidad and Tobago
43. The anatomy of the sea turtle was neat.
44. That these magnificent creatures are here in our waters
45. I had witnessed leatherback sea turtles laying eggs in St. Croix and was interested to learn how we contributed to the research and conservation here locally
46. Uniqueness of the journey
47. Leather turtles in general
48. Visited sanctuary in Borneo, volunteered with leatherbacks in Costa Rica so have an inherent interest in turtles.
49. I connected with the specimens the most because I can actually see the spines or the shell that makes the Leatherback unique

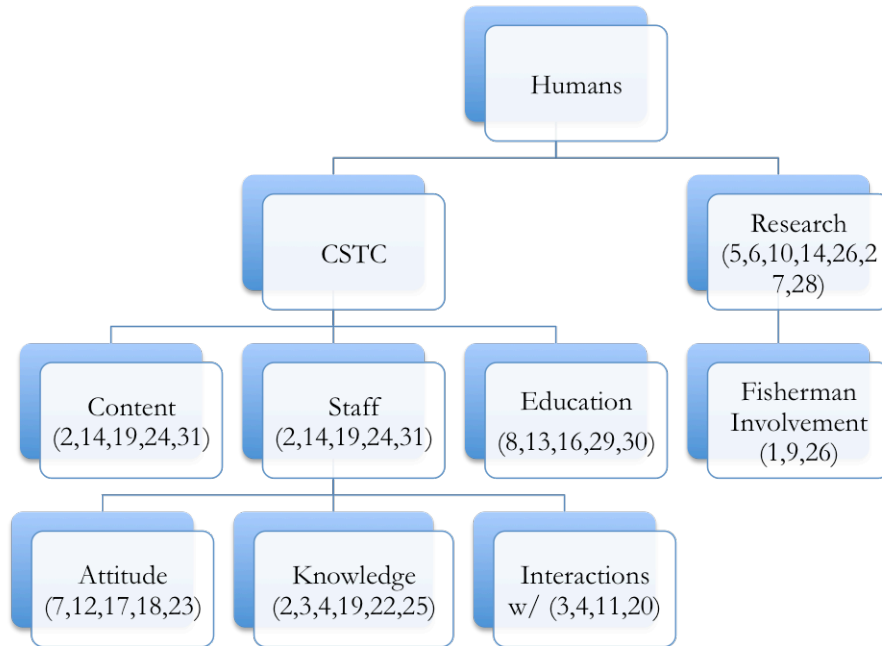


Figure 11: Flow chart of online survey respondents that connected with or related to the Human aspects of the CSTC. Numbers reference individual comments.

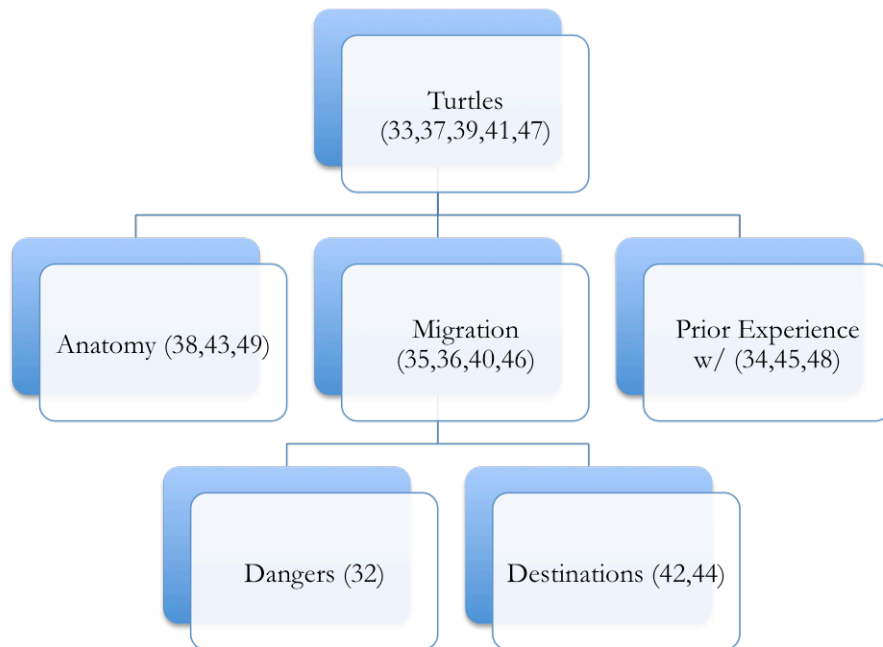


Figure 12: Flow chart of online survey respondents that connected with or related to the Turtle aspects of the CSTC. Numbers reference individual comments.

Under the “humans” category, I included research, storyboards and pictures because these were created by the staff to help relay the information of the CSTN interacting with the sea turtles and

thus, I feel, more reflective of the human connection with the turtles than the turtles themselves. The research, storyboards and pictures were also key elements of the Centre to which the visitors related. I felt responses #5: “People working to understand and conserve an important species”, #10: “I really appreciate what they are doing to help sea turtles!” and #41: “The importance of marine conservation for particularly sea turtles” related more on the work of the CSTN than the joy of saving the turtles themselves and so I included them in the human category. I felt response #16: “How dangerous plastic bags are” was more a connection with human impacts on the turtles than a connection with the turtles themselves and, given the way it was written, I implied it to mean they learned this through the education at the Centre. Response #6: “Naming a turtle and following on social media” was an interesting one. This is like the migration comments in the ‘turtle’ category however; the naming of the turtle and following it on social media, to me, humanizes the turtle’s trek and makes it more about the human enjoyment than the migration. It was also an element of the CSTN research and public education. I originally had #27: “Cool to track turtles” and #28: “Helping the sea turtles” under the turtle category as neither directly mentioned human involvement but after re-evaluating I felt both of these were more related to human activities or human involvement with the turtles (specifically the CSTN research) versus turtles independent of humans. Similarly, I also had response #29: “appreciating and learning about our waters and animals that live in it” originally under the turtle category but after further reflection felt “appreciating and learning” are referring to a human experience of education while at the Centre and the response doesn’t directly reference turtles. Response #19, I could have broken up and put it in both categories, with the “knowledge of staff member” under the human category and “throat spines exhibit” under the turtle category. However, as this was the only response that seemed to include both I thought it best to keep it simply in one category. Also, on closer examination, the inclusion of the word “exhibit” related it more to the components of the Centre instead of the anatomy of the leatherback.

In the “turtle” category there were responses that were like those in the “human” category, but I felt, given how the response was written, the visitor related more to the turtles. For example, #32: “the dangers they face” is similar to the #16: “how dangerous plastic bags are” but keeps it broad and refers to the turtles instead of a human caused danger. Responses #38: “the size of the painted to scale leatherback on the floor” and #43: “the anatomy of the sea turtle was neat” both references items experienced in the Centre. However, these responses sound as if the items allowed the individuals to directly connect with the leatherback sea turtle, making it more realistic and more tangible. This may be the closest contact the individuals will have with a leatherback as having a live leatherback is impossible at the Centre and in-person contact is difficult in Canadian waters and elsewhere. This is wonderfully articulated in response #49: “I connected with the specimens the most because I can actually see the spines or the shell that makes the Leatherback unique”.

In the end, I found more people connected with the humans than the turtles: $31/49 = 63.3\%$ for humans and $18/49 = 36.7\%$ for turtles. In the human category, most people related to the staff $17/37 = 45.9\%$, and were relatively evenly divided among attitude ($5/37$), knowledge ($6/37$) and interactions ($4/37$). $5/37 = 13.5\%$ related most to the education and $5/37 = 13.5\%$ connected with the content of the Centre. $10/37 = 27.0\%$ connected with the research and the results of that research conducted by the CSTN while three of those 10, or $3/37 = 8.1\%$ mentioned the fishermen involvement directly. In the turtle category, $5/18 = 27.8\%$ related just to the turtles themselves and $3/18 = 16.7\%$ connected their visit to the Centre with previous experiences with turtles. $3/18 = 16.7\%$ mentioned the anatomical features of the leatherback sea turtle as what they connected to the most and $7/18 = 38.9\%$ related to the migration of the leatherback, in one form or another.

Question #10: What would you say was the biggest take home message at the CSTC?

Two people left this question blank and one person answered “unsure” resulting in 49 responses. I divided these responses into six categories (order not of importance): Water Pollution, Conservation and Protection, Presence of Sea Turtles in Canadian Waters, Work of the CSTN, Turtles are Awesome and Other. I had planned to combine Water Pollution with Conservation and Protection as one is a broader outlook of the topic while the other is more specific. However, so many people reference plastics and it is an important message of the CSTC that I felt it deserved its own category. The category of “Other” was created to include the responses, often only one, that didn’t correspond with the other messages or were too broad of a statement to fit well in the other categories.

Water Pollution

1. Be more careful with plastics
2. Keep junk out of the waters
3. How garbage, in particular film plastic, is lethal to turtles.
4. Reducing the use of plastics etc.
5. The effects of garbage- girls talked about cleaning the ocean for a few days after
6. Plastic killing marine life
7. Reduce plastic use
8. That turtles are very vulnerable to plastic pollution as plastic bags look like their main food source of jellyfish.
9. Stop polluting the ocean

Conservation and Protection

10. Being more aware of the environment and our individual footprint

11. How humans impact sea turtles.
12. That everything is connected (i.e. what we do on land can impact many things in the sea- including sea turtles)
13. That we need to be careful to protect turtles
14. Even at the community level, people can make change towards a better outlook on the conservation of ocean species
15. That we all need to make changes in order to help out oceans.
16. Leatherbacks are an important part of the ecosystem and should be protected
17. Conservation
18. Dangers to them
19. Importance of preservation
20. The danger that the oceans have become because of human neglect
21. That the sea turtles are need of our help and we can do little things to help them
22. Be kind to our oceans.

Presence of Sea Turtles in Canadian Waters

23. Leatherbacks are a local species and deserve our help
24. Sea turtles make incredible journey to Can. Waters & we need to do our part to make the environment safer for them
25. There are animals in our area that need to be protected, and we should do our best to keep them safe and undisturbed
26. That we need to be aware of them
27. Just that they are great creatures to have in our oceans.
28. These turtles are an important animal in NS waters

- 29. There are beautiful turtles in our waters. It is important for us to understand their presence and why they are here so we can protect them.
- 30. We have leatherbacks in Canadian waters and we should learn more about them!
- 31. That marine life is part of the Canadian wilderness even if it is often thought of as a tropical species; we do get plenty of migratory species that are pretty cool up in Canadian waters.

Work of the CSTN

- 32. The cooperation with local fisherman to watch out for the turtles
- 33. Sea turtles face a lot of challenges, relationships with fishermen and educational outreach is important in protecting endangered species
- 34. That the turtles need protection. That working with the fisherman and educating them could help protect the turtles. That the journey the turtles make each year is amazing. Also that they have been around for one hundred MILLION years.
- 35. That it's a good field to get into and they need more NS volunteers to comb beaches.
Unfortunately we are too far away to help
- 36. I didn't know the group existed and that this work was being done. Was happy to hear that so much studying of sea turtles was being conducted and info shared
- 37. They really care [assume "they" referring to CSTN]
- 38. Educating the public is very important to make a difference for the conservation of wildlife
- 39. The sheer geographic area that the leatherbacks cover, and the partnership with the local fisherman here.
- 40. That it was a tangible presence on Halifax waterfront.
- 41. It brought awareness to their group.
- 42. The importance of community and education for environmental conservation

Turtles are Awesome

- 43. Sea turtles are lit.
- 44. Awesome creature
- 45. Turtles are awesome and need help
- 46. Be good to turtles
- 47. Turtles are amazing creatures

Other

- 48. That the warming temperatures of ocean are messing up sea turtle migration routes and food supply
- 49. Diversity of sea turtles

As you can see, some responses could have fit into different categories. Specifically, there were a few statements that could have worked in either “Conservation and Protection” or “Work of the CSTN” as education, conservation and protection is the work of the CSTN. In general I tried to keep the broader responses under the “Conservation and Protection” category like #21: “that the sea turtles are need of our help and we can do little things to help them” and used “Work of the CSTN” when the individual referenced more specific education, like #38: “educating the public” or #42: “community and education”. Response #22: “Be kind to our oceans” was so broad I initially had it under “Other” but then felt it took away from the other turtle statements in that category so placed it under “Conservation and Protection”.

Overall, there wasn’t one “take home” message of the CSTC according to the visitors:
9/49 = 18.4% referenced water pollution or plastics specifically

13/49 = 26.5% responses were broader references of conservation and protection

9/49 = 18.4% acknowledged the presence of sea turtles in Canadian waters

11/49 = 22.4% referenced work of the CSTN

5/49 = 10.2% felt the CSTC wanted the public to just appreciate turtles

2/49 = 4.1% thought the message was something else about turtles

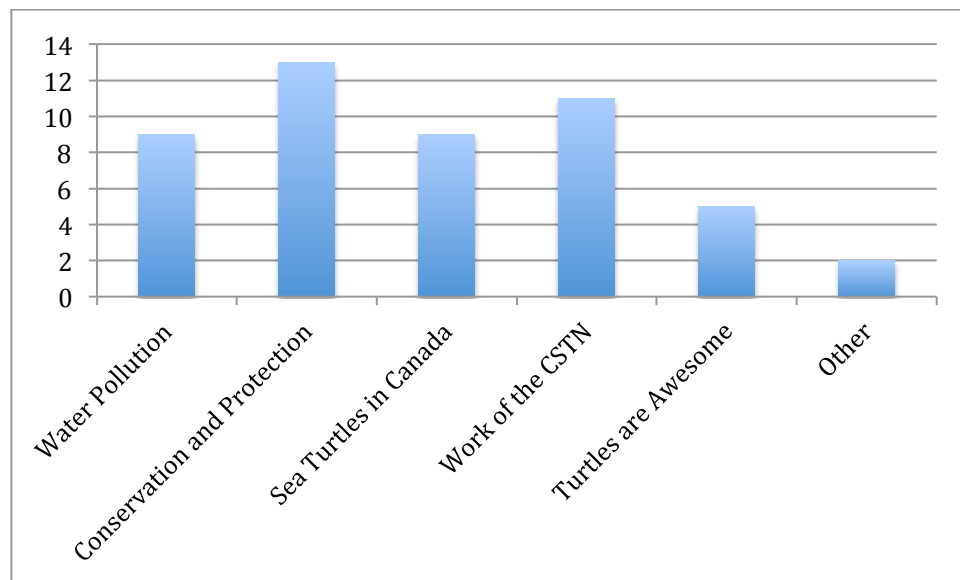


Figure 13: Biggest take-home message of the CSTC as per online survey respondents

Question #11: Did/ will you make any changes in your life as a result of your visit?

Four people did not respond to this question, resulting in 48 responses.

For this question I will list all the responses with numbers then, like question #9, illustrate in a flow chart how I categorized those response. There are some visitors that listed multiple changes, and I will place these in multiple categories meaning there will be more than 48 responses in the flow chart.

Responses

1. I definitely decreased my use of plastic when shopping and have no used balloons since learning about the effects. I have also signed various petitions in support of marine life
2. Share information with everyone
3. Def less plastic waste. Follow sea turtle activities and info on social media now as well.
4. I stopped putting produce in plastic bags as much as possible
5. I was already pretty aware of marine issues, but now I have more of an interest in our sea turtles.
6. Use way fewer plastic bags
7. No... already am conscious of the impact I can have
8. My husband belongs to a scuba club and we have always been mindful of nature conservation. We are lifelong nature lovers, especially animals, and continue to spread awareness via social media, etc.
9. I try to decrease the use of plastic bags, cutting other plastic material so it cannot harm animals.
10. I am more aware when I visit beaches and make a point of picking up garbage... I also now absolutely refuse plastic bags from stores.
11. I plan to volunteer with them
12. I am more aware of marine issues
13. Yes
14. I've visited the CSTC a few times, each time it reinforces the decisions I make in my day to day life (re-usable shopping bags, re-usable water bottles, etc.)
15. Yes and no- I was already very aware of turtles and the issues facing them but I have been trying to talk to my friends and family more about them.

16. Yes we have made a serious effort to reduce using plastic bags. We will never release balloons. Yes I am more aware of marine issues and I believe the oceans need all the help we can give them. I occasionally talk to others about turtles. I should lobby government officials to protect the turtles and the oceans.
17. Trying to use [less] straws and plastics
18. Talk about turtles and mindfulness of plastic
19. No more balloons
20. I have stopped using disposal straws and have put reusable bags into each of my cars in order to not need plastic bags while shopping.
21. We already avoid use of plastic bags, balloons and pick up garbage left everywhere, but particularly on the beach where we have our summer cottage.
22. Promote FB page
23. No, but I am already a very environmentally conscious person. I have volunteered working with sea turtles in Costa Rica and am well aware of the dangers they face. I do discuss the sea turtles in Canada more with people because I feel more educated.
24. I have told others about the conservation of leatherback sea turtles
25. I cut all plastic rings that come on pop and beer cans so they cannot get wrapped around necks and mouths etc... I would not release balloons anymore
26. We are always aware of our environment.
27. More aware of the issues
28. Reuse plastic bags, recycle more, no balloons,
29. I discuss marine life and the environment with my young children, and have told many neighbours and friends and the organization. We already use reusable fabric bags when grocery shopping.

30. Oh yah... hate hate plastic. FB share plastic petitions & in my home recycle or you get hurt
31. Longtime donations
32. Try to use less plastic all around
33. I take my own reusable bags to the grocery store
34. Haven't bought balloons since
35. I have cut back on plastic use and am vocal about it
36. I am more likely to consider marine issues when making decisions. I also discuss sea turtles with others.
37. No but I am a lot more conscious of them now
38. I started sewing upcycled fabric bags to give to people to replace plastic shopping bags and have invited others to join me. I would like to attend a field trip re turtle counts and monitoring, I tell people about the Centre, I will be taking other family members to the Centre.
39. Discuss with my high school students on a regular basis
40. More aware of marine issues
41. Already doing my best in daily life, encouraging friends, colleagues & students to be reduce/eliminate use.
42. I try to be aware of my littering/plastic use as well as pick up litter that isn't mine if I see it.
43. More aware
44. I have always loved turtles and the great oceans. I am always careful waste.
45. I will try to use fewer plastic bags when shopping and properly dispose of my garbage/plastic properly
46. Yes we will
47. Yes we will

48. I will teach my students about sea turtles in lessons about local science and the importance of environmental conservation. I will try to reduce my plastic waste.

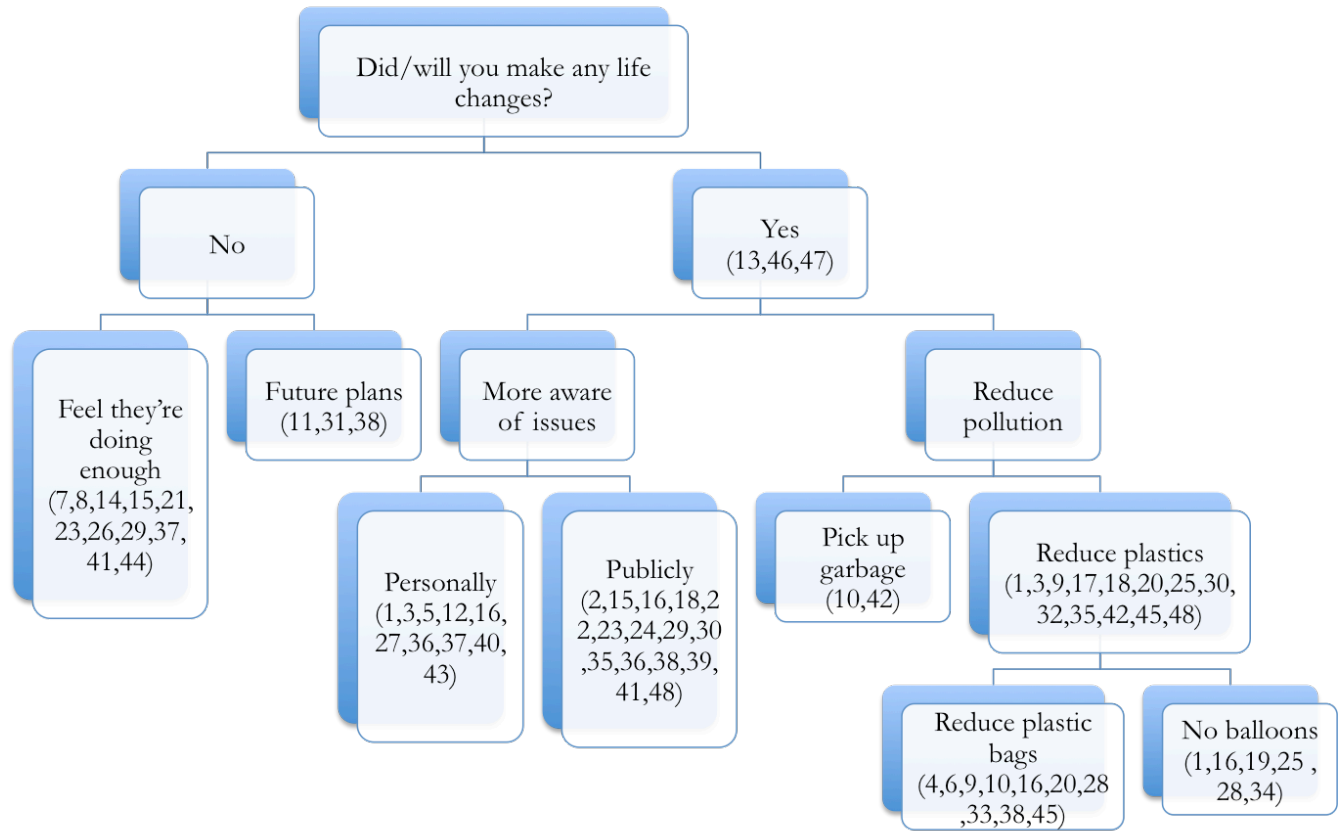


Figure 14: Flow chart of changes made by online survey respondents after their visit to the CSTC

Most of the responses were easy to assign into categories. I used “publicly” more aware when the individual tried to educate others, either by sharing on social media or talking with others. This is compared to “personally” more aware when the individual signed a petition, or follow on social media. Of the eleven individuals who said no to changes because they felt they were already doing enough, four specifically mentioned items they were doing, like #8: “continue to spread awareness via social media”; #14: “decisions I make in my day to day life (re-usable shopping bags,

re-usable water bottles)”; #21: “We already avoid use of plastic bags, balloons and pick up garbage left everywhere”; and #29: “We already use reusable fabric bags when grocery shopping”. I struggled with whether to add these into the appropriate “Yes” categories but in the end decided not to as the question asked if the Centre changed their habits, not reinforced or confirmed. I did, however, include five individuals (response #'s 15, 23, 29, 37, 41) who said they did not make any changes into the “more aware” categories (one under ‘personally’ and four under ‘publicly’) as most of those responses stated that: “no”, they hadn’t made any changes “BUT”. This indicates to me that these individuals, and probably more, considered “changes” to only mean physical or tangible actions. Also, there was one individual (#38) that made changes but also had plans “to attend a field trip re turtle counts and monitoring”, so, even though she didn’t answer “no” I thought it was worth including under the “Future Plans” category.

In the end, $11/48 = 22.9\%$ of respondents felt they were already doing enough for the environment to change, four of whom ($4/48 = 8.3\%$ or $4/11 = 36.4\%$) listed specific recommendations of the CSTC. $2/48 = 4.2\%$ respondents did not make changes but plan to help the CSTN in the future. This resulted in 72.9% of respondents who had made/will make changes. $3/48 = 6.2\%$ did or plan to make changes without providing specifics. $10/48 = 20.8\%$ felt more personally aware of the issues facing sea turtles and $15/48 = 31.2\%$ are helping spread the word of the CSTN. Of the respondents that are now helping reduce pollution, $2/48 = 4.2\%$ are picking up garbage they come across, $13/48 = 27.1\%$ are committed to reducing plastics in general, $10/48 = 20.8\%$ have or will reduce their use of plastic bags and $6/48 = 12.5\%$ will no longer purchase or release balloons.

Visitor Interviews

In total I interviewed eight people who had previously visited the CSTC. I conducted five of the interviews in person: three in the Halifax area and two about four hours outside of Halifax in

opposite directions. The average length for the in-person interviews was 60 minutes. I conducted the other three interviews via online chats: FaceTime, Skype and Facebook Messenger. The average length for the online interviews was approximately 25 minutes. The ages of these volunteers varied from early twenties to over sixty. Only one of the volunteers was originally from Nova Scotia, two were born outside of Canada and four were born outside of the Maritimes. The two volunteers originally from another country had heard about the Centre and came specifically to view it. All the others stumbled across it.

Visitor #1

I met with V1 on February 10, 2018 at a public library outside of Halifax, N.S. The setting was comfortable as we sat on basically a large couch beside each other, turning slightly to face each other. The library was busy as it was a Saturday afternoon and loud at times but never so loud it made it difficult to hear each other. I placed the recorder closer to V1 on the cushion resulting in a good recording, except for when people walked right behind us talking loudly or when the library cart rolled by us. V1 was very pleasant and social. He spoke confidently, and calculated; he articulated well, spoke with no over use of language and thought about his answers before speaking. This is in contrast to myself: I talk first before thinking, resulting in a lot of filler words and rambling. Our interview lasted almost two hours as we had a lot in common and both enjoy telling and listening to stories.

The major draw to the Centre for V1 initially was the name “leatherback” as his spouse dives with the Leatherback Scuba Diving Club. As part of the dive club they are aware of the endangered status of leatherback sea turtles and the presence of a reporting and tracking network. They have visited the Centre twice, once on their own (V1 and his spouse) and once with their niece who was visiting from Quebec “because we are very very devote animal lovers, nature lovers... we wanted to share that experience with her and as it was a great excuse to go back ourselves”. V1 is fascinated by

the prehistoric nature of turtles, specifically leatherbacks and snapping turtles. He had pet turtles as a child, is allergic to cats although he did have a few cats as pets for multiple years that required him to take daily prescription medication. V1 suspected they stayed 20 minutes with each visit to the Centre.

As previously quoted, V1 is a self-proclaimed animal lover. He talked about being a lifetime member of the World Wildlife Fund (25 years) and about his connection with his spouse and mother-in-law through animals. He could call his mother-in-law for comfort and support when, for example, he killed a squirrel when driving. His love for animals translates into an almost innocent excitement. For example, when he was describing animals in a wildlife reserve in Australia, he was almost child-like "...we have friends there and knowing that we're animal lovers they took us to some of the wildlife reservations that they have there and just I was in awe, just the coolest". He and I agreed on the common view that animals are often downgraded or trivialized:

V1: "I thought that was really good that they were humanizing them [great white sharks] so people would know these are creatures, these are living things and they are doing the same thing that we are, they need to eat, they need to socialize, they're breathing, they are doing all these things because they are living beings."

Me: "It's hard when you meet lots of people [who] think that we are the smartest species on the earth and that everyone else is kind of like."

V1: "Well humans are a very exploitive species if you will."

V1 is empathetic to both animals and humans; "I'm very sensitive to other people if they have phobias. I completely respect that. If I see a spider or something and I know that it is going to upset the other person then I will relocate it somewhere far, far away from them." His empathy is important in his day job, which involves helping people gain access to the resources they need as well as in his previous jobs in various health care settings and as a 911 operator. He told multiple

stories about friends or officers who have either saved or euthanized injured animals, revealing his moral character. One story stood out because it was about an officer that had rescued a turtle. The turtle had been hit by a car, so the officer transported it to a rehabilitation centre to be fixed up and later released. He made a point of telling the officer years later when he ran into him at the grocery store that he was his hero.

A common theme amongst V1's stories was an emphasis on giving back to the community; something, I feel, he views as an important necessity. He and his spouse regularly volunteer for organizations like the SPCA and we discussed volunteer opportunities that involved both humans and animals like veterinary dentistry. We discussed the importance of education and spreading awareness of issues as a way of also giving back to the community: "because out of all of our friends and family, you know they like animals but they're not quite as focused as I am such an animal lover, but I like to subtly spread awareness of causes that are important to me" (in regards to buying and sending out CSTN postcards).

The highlight of the Centre for V1 was the staff: how engaged they were with them and their willingness and enthusiasm to answer all their questions.

So, when we went in there, all the [staff were] marine biology students so we were very impressed by that because this is their interest this is their love and we always admire people that are very passionate about what they're doing and they were so knowledgeable... I'm a very curious person so I was asking them every question I could think of and they were professional, they were friendly, they were engaged, and I thought, I'm very impressed. V1 admires people that are passionate about what they are doing and questioned the volunteer's motivation for getting into marine biology (conveniently related to my thesis). He felt the Centre, and the CSTN were good at being honest instead of marketing hype.

Visitor #2

I met with V2 on February 15, 2018 at the CSTN office in Halifax. We used the director's office, which was in the back of the office. There were two other staff members present in the main area during the interview. We kept the door to the large office open, which resulted in a lot of noise as you could hear everything from the discussions from the staff. We sat in chairs facing each other next to a long table. I had the recorder on the table close to V2. There was a lot of echoing and background noise on the recorded interview as well as vibrations from the traffic outside. V2 is originally from Europe and spoke with an accent, which also made it difficult to decipher certain words on the recording and occasionally in person during the interview. He was friendly and keen to help but not as forthcoming about his past as V1. This resulted in a more interview style meeting instead of an easy conversation. The interview lasted just under 40 minutes.

V2 was a very interesting person to interview. V2 has, in the past, volunteered with the CSTN. If I had known that prior to the interview I would have left him out of my research, as I would not consider him a true "visitor". However, I am very glad to have his story as part of my research. The first time V2 visited the Centre, it was after learning about the CSTN. His excitement over visiting the Centre I think is my favourite:

...so, I've known about the Centre for at least 2 years before I had a chance to come to Halifax and go there and so I was super super excited... I was just like ... you read about places that you really want to visit and you're finally there and you're like oh my God ... the whole idea of face time with researchers I was like oh my god you can see ... the specific posters and the skull and the ... tracking devices that they had got from somewhere in Latin America and you're kind of like oh my god I've been reading about this and I've been reading about these people and I'm finally here.

V2 had been a tax litigation lawyer in busy Calgary for years. He liked tax law because he is a "detail" person. When deciding on a profession, his father (an engineer) cautioned him against going

into engineering as “that’s the education that kills your creativity”. He was also bad at math and physics, unlike his mother, so concluded becoming a scientist wasn’t an option. He instead decided on law. He grew up on the water, mainly sailing on lakes in Europe. In 2015 he was on a surfing trip in Florida when he and his friends decided to visit a turtle rescue centre, where he was introduced to the leatherback sea turtle and was hooked:

...we just ended up going to a turtle rescue centre there and the presentation there was basically like this is a leatherback turtle, it’s an amazing turtle, it’s five hundred million years old and then the Pacific turtle is going to go extinct, and I was like “wow, it’s going to go extinct”... so that is kind of what got me turtles... I was doing law and hating the stuff I was doing and kind of I have to be.... like save the turtles so that’s how I ended up in turtles... they were cool, they are beautiful to look at... after that [experience] it became like a mission.

This “mission” resulted in V2 leaving his job and moving to the Caribbean to volunteer with beach patrol groups and sort out what he wanted to do. I asked him if his friends were surprised by the change in career path and he said no, “out of my group of friends if someone was going to turn, like, I’m a good candidate.” He is now working on his Ph.D. in law on endangered species, focusing more on turtles and sharks. V2 thinks turtles have a lot going for them in the Caribbean for conservation because they come up on shore to nest, so it is easier to gain community support for them. This contrasts with shark conservation, which is “a lot more abstract” because they don’t come onto land and are “very intertwined with fisheries”. Shark conservation is just beginning in the Caribbean, which is where V2 is focusing: “where the easy stuff hasn’t been done”. I interpret “easy” to mean more focused and detailed work. Interestingly, he said conservation law with its international implications was what he hated in law school because it was very broad and not detailed and now “it’s driving me up the wall”. He says he likes the actual law part of tax law better.

V2 is not an animal lover. He was more into the science of nature and animal behaviour growing up. He did have some pet cats but they “didn’t stay long”. Since V2 has become enthralled with turtles, he has changed the view of others with his passion: “my parents were very much like ‘oh environment’ they were skeptical but once I got into turtles all of sudden my parents were like ‘oh’.” When asked about turtles specifically, he said his favourite turtle is a leatherback “obviously” because they are so big and “it’s Canadian”. Patriotism is not something I would have associated with leatherback sea turtles.

Visitor #3

I interviewed V3 on February 25, 2018 over FaceTime from the kitchen of my home in rural Nova Scotia because he was attending university in Newfoundland. V3 is the youngest of my interview volunteers and interestingly the only person originally from Nova Scotia. There were some technical difficulties from both his end and mine. The Internet connection resulted in delays and the conversation froze a couple times; he initially had tape over the camera of his computer and then when he got it removed, it would occasionally fall back down over the camera. At one point, he briefly lost the visual part of the conversation completely. The recording of the interview, however, was good quality. He was very open and forthcoming with information resulting in a pleasant conversation that would have been more seamless had it been done in person. The interview lasted just over 20 minutes.

V3 comes from an academic family; both of his parents have multiple degrees with his mother in the school system and his father working in marine management as a biologist. He agreed to my interview because he “always tr[ies] to support people’s research”, which I feel is a result of this academic upbringing. Despite his parents’ academic backgrounds, however, he does not feel he is “cut out” for university. When we spoke, he was finishing his degree in History and Psychology with plans of working on a farm when he graduated. His creative outlet is “reckless embroidery”.

He was drawn to the Centre because of the turtles:

I really like turtles. I do volunteer work with turtles... I went [to the Centre] and the people were really friendly and ... they like told me about the fishermen trying to help out and I thought it was really cool and it was mostly the people that drew me in even though I'm interested in turtles but the people were really excited that people wanted to hear about it.

He visited the Centre twice in the 2017 summer, both times staying about 10-15 minutes and talked lots about turtle conservation with the staff. He originally got into turtles because his older brother had a pet turtle and "you know how when your big [brother] is interested in something you kind of wanted to be interested in it too". Because of his interest in turtles, he and his family started volunteering over a decade ago with a Blandings turtle nesting program in southwest Nova Scotia.

V3 is also a self-proclaimed animal lover. Because of this, he has been a vegetarian for 11 years. As his "main passion is with animals", his dream is to have an animal sanctuary. He spent a few summers working on a farm museum so thinks he would like to focus on livestock for his sanctuary; however, the 'if I win the lottery' dream would be to have a seal rehabilitation centre.

When asked what type of livestock he'd like to rescue, he didn't have a clear goal:

... the problem with rescuing meat animals is that it doesn't really make a difference, it only makes a difference for that one rescued animal, so I don't know. If I bought an animal, like a meat animal, from someone I'd still be supporting them, so I'd have to think more about that.

I interpreted this to mean he is very passionate about being a vegetarian and is more focused on the overall promotion of not eating animals than on saving individuals.

Visitor #4

I met with V4 at a restaurant in a hotel approximately four hours outside of Halifax on March 11, 2018. He was keen to help with my research "as long as it helps the turtles and the people

working around them”. He came with his girlfriend who sat in for the interview but did not impede. The location was his recommendation and a good choice as it was comfortable (we sat in a booth facing each other) and not busy (there was only one other table occupied). We ordered warm drinks and I paid the bill when it was over. I went into the interview tired and with a slight migraine, but I think I did well not to let that interfere. Unfortunately, I did not correctly save the recording after the interview, so the interview wasn’t on my recorder when I went to download it the next day. Instead I wrote down as many details from the interview as I could remember to go with the notes I had written immediately after the interview. I do remember looking at the recorder after the interview and it said 46 minutes as the length of time of the interview.

V4 is originally from Russia. He moved to Vancouver in 2002 but found the place too busy and too expensive so moved back to Russia to research places to live in Canada. Five years later he returned to Canada to settle in a small community in Nova Scotia, which provides him with the quiet and slow pace of life he wanted. He lives in Nova Scotia with his 12-year-old son and works as a cashier at a grocery store. Prior to the cashier job, he worked with a commercial scuba diving company, helping the divers get into the water. He, however, does not dive and has no desire to dive as he has heard too many stories of divers being attacked by animals: an eel wrapping itself around someone’s arm, seals biting divers, and a diver fighting off a shark with a wrench. Outside of work, he enjoys snowshoeing and photography. He used to focus on nature pictures but is now moving more towards taking photos of people.

V4 had been to the Centre three times in total, often bringing his visiting family from Russia. He said he usually stays about 10 minutes, has not talked to the staff and really likes the sea turtle skull. He visited the Centre after seeing “Trek of the Titans”, a David Suzuki “The Nature of Things” hour-long program that originally aired on January 2015 featuring the CSTN and the work they do in Canada and Trinidad. The program sparked his interest and since then he has tried

multiple times to see a leatherback sea turtle. He has gone twice to Neil's Harbour in Cape Breton where the CSTN do part of their field research and where a whale watching company promotes leatherback sea turtle viewings. He also drove to the Canso causeway one day after reports of a leatherback sea turtle sighting. He has yet to see one. He likes leatherbacks because they are local, you can see them here in Canada (though he hasn't yet), and we are doing research on them here, not just in Florida. He is also impressed by their migratory journey.

Visitor #5

I interviewed V5 on March 12, 2018 over Skype in the kitchen of my house in Halifax. The Internet connection was much better at the house in Halifax so there were no technical difficulties. I found this interview the most challenging as she was not very talkative, and I was in an emotional state from my turtle injuring his shell just prior to the interview. Listening to the recording of the interview was awkward as I talked a lot and found the pauses in the conversation were shorter than they had seemed at the time and may have been more connection delays than V5 not having anything to say. This may have given the impression that V5 wasn't talkative. I tried to be more patient with future online interviews. The interview lasted under 20 minutes (my shortest interview) but it was after 10 minutes that I began wrapping up the interview, as we seemed to come to the end of the conversation. At this time, V5 started asking about my research seemingly trying to help me more, which extended the interview.

V5 was born and lives in Saskatchewan. She is a physician and doesn't have a lot of hobbies right now as her children, work and pet dog keep her busy. She does play shinny hockey in the winter once a week. Her wife's family is from Nova Scotia and they were visiting her family in 2015 when they came across the Centre on the Halifax waterfront. They took their two children into "this cute little quant place" and stayed about 20 minutes. They talked to the staff the whole time while the children made jellyfish (an activity at the Centre geared for children).

The thing that stuck out the most and forgive me I don't remember the names of everything but the picture of the turtle mouth where they basically have all of those like razor blade type things where it shreds the jellyfish when it goes down. That's what sticks in my mind the most.

V5 went into the Centre with her family because her sister, a diver for the past 10 years, loves sea turtles. V5 and her sister are four years apart and are now "starting to get to the same life stage". V5 is hoping that she can start travelling with her sister. Her hope is that when she is 40, she and her sister will do the trip to Trinidad offered by the CSTN: "ohh, I would love to do that trip sometime with my sister... that is what we're going to do when I'm 40 if it's still available". I asked her what intrigued her about the trip, other than turtles.

Probably just the turtles; doing research, helping out, well not that I actually know that I would be of any benefit but ... it just seems really cool.

It seemed to me that V5 was looking forward to the trip as a bonding experience with her sister, to bridge the gap in their relationship while also helping to contribute to research.

As mentioned, when I was going to end the interview after about 10 minutes, V5 tried to help contribute to my research:

I think one more thing that stuck out in my head, but I feel that a lot of people maybe in the Prairies feel is insignificant, that plastic bags can look very similar to jellyfish, right? ... so, our use of plastic bags in the Prairies feels very insignificant to what's going on out there. Basically, anything we do doesn't feel impactful to anything regarding turtles so I don't know if we could somehow tie that in.

I found this interesting, especially her use of the word "we" in "if we could somehow tie". To me, it is as if she already views herself as part of the "team", invested in research and conservation of the leatherback sea turtles. I am not sure if this is motivated by a basic interest and connection to

research, possibly because of her career and previous academic experience, or if she is more drawn to sea turtles than she lets on or if it really is just a connection with her sister.

Visitor #6

I interviewed V6 on March 18, 2018 after he had spent the previous night at a St. Patrick's party with musical friends from Ireland. We had corresponded via email a few times prior to the interview discussing how to conduct the interview as we both have a poor understanding of technology. The interview was conducted over Facebook Messenger video chat without becoming "friends" on Facebook at my house in Halifax. The audio was good but V6 was in a dark room, so I was not able to see him well. I enjoyed this interview because of V6's biology career and he did a good job at detailing his past. I related to V6 the most because of his academic pursuits, hobbies and lifestyle. I found myself reevaluating my current life trajectory as a result of our conversation. At the end of the interview he asked questions about the CSTN history and Trinidad. After listening to the recording, I realize I did a poor job articulating and answering his questions. This interview lasted 34 minutes.

V6 and his wife were visiting from Ontario in 2017 and stumbled across the Centre while on the waterfront and stayed for about 10-15 minutes. Both V6 and his wife are biologists, have travelled extensively and have seen turtles all over the world, including in Trinidad.

I just have a general interest in everything nature, [I] just went in to see and the people in there were very friendly... I noticed there was some large touch items that we looked at but mostly I liked to talk to the two women that were there ... because I work in wildlife biology myself I like to talk to other people who work in, trying to get ahead and because it is a passion of mine and like to hear about other people's passions in nature as well. And then I was also interested because my [wife] and I went to Trinidad and Tobago a couple of years ago and we went to a couple of turtle beaches ... I learned you guys were associated with

Trinidad and Tobago, so I found that particularly interesting as well because I had just learned what an important place it was for turtles and was interested that that's where our turtles go to nest within the North Atlantic....

V6 grew up on a hobby farm, has always loved animals and so pursued an animal focused career. He has University degrees and diplomas from Canada and Europe in zoology, conservation breeding and endangered species management. He has worked with many different animals under many different contracts doing many different things. He has been in his current government job for 15 years focusing on birds. He really enjoys “the technical side of working with wildlife like the capture and handling”. In his current position, one of his responsibilities is “ensuring high standards are held [when] animals are used in science”.

I'm pretty happy about this because I feel like I'm in a good position now to help elevate standards for how birds are used in science in Canada and I think it is really important. It goes hand in hand with ensuring high data quality and the validity of the science being done and the acceptance of the results and any management recommendations ... We can have the techniques if animals are handled appropriately. We're responsible to the public and the public perception of how animals are used in science. If we want public acceptance with these techniques then we have to demonstrate that animals are being used in a very respectful way and an appropriate way. We need to work with these animals to learn about them and about the environment. It just has to be done in a way that treats the animal in the best possible way because if not the integrity of the results are lost because the assumption is always that the animal you're sampling is representative of the population but if you do anything to change that by impeding the animal in some way or causing it harm it's no longer a representative sample and so then you lose the integrity of your results and it's no longer conservation.

To me, this demonstrates V6's commitment to the wellbeing of wildlife as well as to accurate research. This focus on research and his interest in "encouraging people" were his motivation for volunteering for my interview.

V6 does a lot of travelling, bird watching, walking, hiking, gardening, Tai Chi, and, on retirement, wants to "just spend time in nature". One of my favourite comments of the interview was when I asked him if he had a favourite animal.

I don't have a favourite animal, I don't. I find that a really difficult question. Same thing with birds, everyone always asks me "what's your favourite bird?" and, you know, your favourite bird is the bird that you're looking at now

I think that is a very true observation.

Visitor #7

I met with V7 on April 12, 2018 in a private room at the Mount Saint Vincent University library. We met there because she had always wanted to check out the university's library. The room had an oval table with seating for 8-10 people and a couple of windows looking outside. Before V7 arrived, there were people outside the room talking and I was concerned their conversation would be distracting. However, once the interview started, I did not notice them at all. The audio recording of our conversation was possibly the best and the setting was probably my favourite for the space and privacy. Unfortunately, V7 found the chairs uncomfortable and ended up trying different ones to try to get more comfortable. I was going to meet V7 at the entrance of the library at 1pm however she found her way to me by 12:50 pm. After our introductions she launched into stories about her life, so I started recording mid-story. We were about 10 minutes into our conversation before I even asked about her visit to the CSTC and 30 minutes in before I had a chance to explain the point of the interview. V7 was my second longest interview, over one hour. We could have kept

talking for a while longer but her parking meter was going to run out so that is what ended the interview. Like V1, V7 was very easy to talk to and had a lot of great stories.

V7 was drawn to the Centre because of her love for the ocean and all its “critters”. She and her husband had visited the Centre twice, both times staying 10 to 20 minutes. The first time they stumbled across the “little old shack” while walking the waterfront. She remembers there were people there but didn’t talk with either of them and knows there was stuff on the counters and pamphlets. The one thing she does remember is the life size painting of the leatherback on the floor.

I remember the turtle painted on the floor, and it was the life size of the leatherback and I was totally stunned, I mean, I knew they were big, but I didn’t know they were THAT big. She and her husband talked about that painting a lot afterwards. It obviously had an impact on her as she has since volunteered for the CSTN doing beach walks in the fall looking for stranded sea turtles. (She was also wearing her CSTN t-shirt under her sweater.) She sees this as her little way to help science.

The ocean for V7 is her passion, her spiritual place and it was love at first site:

Oh, first time I saw the ocean I was 18 years old and it was the Pacific Ocean and I went down to Seattle, Washington. I was living in Winnipeg, I was going to high school in Winnipeg my best buddy, his family moved to Seattle, Washington so I went down to spend two weeks with him and they took me out to Westport which is right on ... the Pacific and that’s the first I saw it, just blown away and that was August of 65 and I went back to school in September of 65 and while I was in Washington I toured a US warship destroyer and all I could think about was man, what a life that is, what a life. I hated school. I quit school and joined the Navy. And, of course, I got posted here [Nova Scotia]. I wanted to be posted out West, crap, now I’m sure glad I didn’t. I love it here.

Now that she is retired, she walks the beach at least once a week to look for glass, rocks, driftwood or “whatever [the ocean] wants to cough up that day”.

V7: I go [to the ocean] at least once a week. I’m not a religious person but when I go to the ocean, I say a prayer and I don’t go to church,

AN: It speaks to your soul

V7: That’s where I have my serious thinking. I just go out there and I call it watching the submarine race.

She also loves any creature in the ocean, especially whales. In her “lady-lair” she has one side of all ships and the other side is all whales.

V7 spent five years in the Navy travelling all over Europe and the Caribbean, then another eight years in the Navy reserves. After the Navy she joined the fashion industry, first as a sewing machine mechanic and then moving into sales of accessories like snaps and buttons. After fashion, she returned to Winnipeg to open a ceramics store with her husband and started doing “play by play” calls for local hockey games. The radio station liked her so much they offered her the morning show, where she DJed for 17 years. During this time, she also owned a DJ business and a custom-framing store. A health scare around this time caused her to re-evaluate her life and her desire to be wealthy. She left radio announcing to go back into sales for the radio station before “retiring”. Of course, V7’s retirement meant she was still working part time in a grocery store. Recently she started selling cedar BBQ scrapers and gives away painted rock necklaces, both of which she makes herself. (I was gifted one such necklace after the interview.)

She did not have pets growing up. They recently put down their 18-year-old cat and won’t be getting another one as they are getting older in age and she doesn’t think it would be fair to get another animal. She does, however, feed all the dogs in the neighborhood.

V7 would love to go back to university now that she has “somewhat matured” and take either marine biology or oceanography. She would also love to learn Swedish because she loves everything about that country, especially from an environmentalist perspective. In my opinion, V7 has led a very full life, and her zest for life is both wonderful and infectious.

Visitor #8

I interviewed V8 on May 6, 2018 at a Tim Hortons in Fredericton, New Brunswick. I chose a table as far away from the crowds as possible and it was not as loud as I thought it would have been. However, we were finished around noon on a Sunday so we probably missed the lunchtime crowds. The recording was initially hard to decipher due to the background noise and V8’s high voice. The recording got easier to understand the longer I listened to it and, when I was done transcribing, I went back and fixed a few things from the beginning once I was more accustomed to V8’s voice. V8 was different than any other person I interviewed. She was talkative enough, which made the conversation flow easily. She was more opinionated, strong willed and political than my previous interviewees. I had a difficult time with her “black and white” views of many issues, though I do not think my difficulty was evident given the flow of the conversation. I kept in mind the purpose of the interview was to let V8 talk, not to express my own opinions or views. Of course, I am not a confrontational person so even if that was not the purpose, I probably would not have countered her statements with my own. About 15 minutes after beginning the interview, V8 required a cigarette so we went outside so she could smoke. The recording during this time was surprisingly easy to decipher. The interview lasted 50 minutes.

V8 stumbled across the Centre while on the Halifax waterfront and “popped in”. She talked to the girl there and thinks she stayed about 30 minutes. She associated most with the leatherback sea turtle issue of plastic bags: “I didn’t realize that they ate jellyfish and that’s the problem”. When

we met, she had recently returned from a month-long fishing trip in Cuba. She talked about the amount of plastic pollution in that country, presumably because of that association.

Plastic bags, it's terrible, now they just had a hurricane a year ago [which] could have brought them from anywhere, but the trees, the bushes were just full of them, it's disgusting you know... it's one of the places in the world where the ecosystem hasn't been damaged too much but there certainly has been affected, there is plastic all over the place.

There was no mention of the economic difference between countries like Canada and Cuba as a potential difference in plastic pollution. She did feel we were "nipping at the edges" of the problem by banning plastic straws and coffee stir sticks.

V8 is a self-proclaimed environmentalist whose focus is the devastation of our forests and waterways. She spent some time informing me of this issue. She talked about how "the province of New Brunswick takes our tax money and gives it to Mr. Irving to spray the ... rows ... of spruce trees so that no deciduous, alders or oak trees or maple trees" will grow. She told me about glyphosate, the chemical they spray, and how "the Europeans and people in California" claim it is carcinogenic. We discussed how one spray lasts 30 years.

there is no food in the woods ... we wonder why there is no bees left and they're wondering why there's no trout left in the little brooks and so on and stuff, it's not because the kids are out there fishing them, the kids don't fish anymore, they're on their computers... I walk through it, there's no birds, there's nothing in [the woods]... and that spray leaches off to the little tiny brooks and so on and kills the whatever... that is something that just vibrates me and what doesn't bug enough people as far as I'm concerned.

As this was an issue I did not completely understand, I commented that probably not a lot of people are aware of the extent of the issue. She responded, "well I've got a big sign in my window [that says 'Stop Spraying New Brunswick'], well you know once you look at it". She also has the same sign on

the back of her car, and she belongs to the organization on Facebook and will put a post on there “every once and a while”. For this reason, I would consider her a mild to moderate activist. I found it interesting that she feels posting a sign is enough to educate the masses on this subject. At the end of our conversation we also discussed environmental issues like overpopulation, extinction, and shark fin soup. She said, “so I guess I do have some deep inner concerns about our environment, so it was easy for me to walk into the turtle Centre”.

V8 retired two years ago from insurance sales. She took science classes in university because her father wanted her to be a doctor. “I didn’t like business, chemistry was OK, biology was good, math was meh, and I walk by the geology lab, that’s where I wanted to be, looking at those rocks and so on, I like the outdoors.” After two years in a science degree she was making C’s “and that’s not good enough to get into medical school”. She didn’t want to “look at little gobs of [feces] under a microscope in a lab” for a living so didn’t think a Bachelor of Science would do anything for her. She decided to become an insurance salesman like her father, as investing had been a passion of hers since she was 14 years old. After losing her summer earnings in a bad investment choice of her father’s, she started taking books out of the library to learn about investments. “When I was in high school, I knew more about economics than my economics teacher. I corrected him numerous times and I got fairly good at it.” She says she’s a boring TV watcher because her “TV is on CNBC or business news all the time... I’ll watch 10% of a movie oh, I don’t like that”. She considers herself one of the “good” ones in the investment world:

I believe in the 80:20 rule, that 20% percent of all the dentists make 80% [of the money] ... same way with stockbrokers, lawyers or everything and I also believe that the 20% of all whatever profession we’re talking about truly do a good job and the other 80%, well, you know, same as investor advisors so it’s extremely difficult to get a good one and you’re more

likely to get some guy that is only interested in making as much money as he can. I've seen it countless times and it's disgusting, you don't have to do that.

She is thinking about writing a book about how to properly invest your money. She is also moving to Japan soon to start an insurance company with a Japanese friend and colleague that she met in the "smoking section" during breaks at work.

V8's passion is fishing: "just standing up to your knees with your waders on fly rod in your hand, salmon pool in front of you and the sun coming up ... this is good". She has been fishing since she was a girl and has travelled all over the Northern Hemisphere fly-fishing. Her favourite place "would have to be a river somewhere with a rod in [her] hand". She used to hunt but the appeal for her was spending time in the woods, not shooting the animal, which is the same for fishing as she mostly practises "catch and release". V8 is also a "kitty" person and forges steel to make knives as a hobby.

Visitor Motivational Factors

The visitors interviewed identified their motivating factor for entering the Centre, most of which were turtle related.

V1: leatherback sea turtles

V2: leatherback sea turtles

V3: turtles

V4: leatherback sea turtles

V5: sea turtles

V6: sea turtles

V7: marine life

V8: environment

Often the visitor's motivating factor for visiting the Centre was part of a bigger value in their daily lives. These life values were identified from my interviews, either by the visitor explicitly stating such a value or inferred from our conversation by what the visitor said was important to them.

V1: animals

V2: environment

V3: animals

V4: quality of life

V5: family

V6: animals

V7: ocean

V8: nature

In both cases, I used environment to include more of a conservational or activist approach to our natural world. I used nature in the case of V8 as a broader theme to include his love for spending time outdoors. I used the theme of animals when visitor's self-identified as "animal lovers". In these three cases, each visitor spent a large portion of our interview talking about how animals play an important part in their lives. I used ocean as a broader theme for V7 as her love extends beyond the "critters" found in the ocean. V5's life value of family was chosen because of her focus on her children and sister throughout our conversation. V4's 'quality of life' value may be slightly vague but that was the repeated comment or focus of the story he told me of his life.

Looking at the interviews in relation to Question #9 of the online survey (what did you relate to or connect with the most), though turtles were the main reason for the visitors to enter the Centre, more related to the human aspect of the Centre.

V1: Humans

V2: Humans

V3: Humans

V4: Turtles

V5: Turtles

V6: Humans

V7: Turtles

V8: Humans

From the interviews, neither V4 nor V7 talked to staff during their visits. Though V2 is focused on the leatherback sea turtle, he discussed his excitement for meeting the researchers the most during his visit. Similarly, V3 acknowledged that though it was the turtles that he was most interested it was the people really “drew him in”. V5 was the hardest one to assign. She did talk to the staff while her children played but she emphasized it was the throat spines of the leatherback that really made an impression.

Expert Interviews

These interviews were very interesting and filled with technical difficulty. I had originally planned to do these first. However, the survey offered more visitor interview volunteers than I had expected and I didn’t want to lose the momentum of these individuals. As a result, most of the expert interviews (8/10) occurred during July and August, which is peak sea turtle research season making it difficult to coordinate interview times. I knew the first two experts from my previous years involved with the CSTN. Shortly after my interview with E2, she attended a North American sea turtle meeting and gathered names and contact emails of 9 individuals with varying sea turtle related jobs that were willing to be interview. I interviewed 8 of these individuals over the Internet.

As per the informed consent, I emailed each expert a copy of his or her excerpt from my results except for the first paragraph describing the setting of the interview. This was to get their permission to use the information I had deemed important from the interview. As mentioned, the

sea turtle community is small, so I wanted to confirm the information I used and whether the information I changed (names and places) met their approval. Seven of the ten experts requested changes, most minor, when they reviewed their information. Two experts requested I use their actual information. I did not include the first paragraph because these were my own thoughts and feelings about the interview and not personal facts about the interviewees.

I began each interview with an overview of the three components of my thesis research, except for Experts 1 and 2 because they both have played a part in the development of my research. I did not have a script for this and, as a result, my overview was different for each person and evolved throughout the different interviews. I began mentioning motivation as my research topic by expert interview #5. My main interview question for each expert was for them to tell me the long version of how they got to where they are today. As I had not provided any questions in advance, the immediate response to this was entertaining: “that’s crazy”, “oh my God”, “oh boy”, and “oh geez” are some of my favourites. I felt that if I provided this question ahead of time, the experts would filter through their stories to provide me with what they thought I wanted to hear. My intention by posing the question during the interview was to get a genuine unedited response that would highlight the previous experiences that were important to the individual. I wanted to hear their story in their own words with their favourite moments or memories, thus highlighting their essence. I felt this would provide a truer answer. Most of everyone’s responses were what I was expecting: a story beginning in their childhood about why they chose the path they did and the values that resulted in this choice. Many, like me, have a “rehearsed” story that they have told over the years which included what is important to them. However, there were a few that did not start their story from childhood. I asked these individuals more questions about their childhood than others but, interestingly, it did not always result in more insight to their career path.

I transcribed the expert interviews after I had written the results section for both the online survey and visitor interviews (except E1, which was the first interview I transcribed). This was because I was still conducting interviews while I was writing the previous results sections and I wanted to keep the expert interviews separate for analyzing purposes, as I analyzed while I transcribed. I transcribed the expert interviews in October, two to three months after conducting them (six months for E2). I do not feel this impacted my results as it allowed me to revisit and reassess the interviews with fresh eyes and mind and to compare these to the notes I had taken during the interviews. The exceptions to this were E3 and E7, which I will explain later.

I did not ask the ages of the experts I interviewed but can estimate that E1 is under 30 years old, E5 and E10 are over 60 years old and the rest are between 30 and 50 years old. The average interview length was 30 minutes.

Expert #1

I interviewed Expert #1 in person at his place of work, a sea turtle non-profit organization, on February 1, 2018. The office (a former dental clinic) is small but open with a six-person round table at the front of the room with two working desks behind it. There are two rooms/offices that have doors that can be closed as well as a storage room and a bathroom. We conducted our interview at the round meeting table while a colleague sat at a desk behind E1 and his boss was down the hall in the office with her door open. E1 is in the early stages of his career and we have collaborated on different sea turtle projects in the past few years, so we were well known to each other prior to this interview. E1 was my first thesis interview so that I could practise interviewing and recording with someone I was comfortable with and, if something went wrong, could re-interview easily. This was not necessary. This interview lasted 30 minutes.

E1 grew up in Ontario and “was always someone who was super-interested in animals, loved playing outside, I love the environment that sort of thing although I wouldn’t have called it that as a

as a kid, I just had a natural affinity for the outdoors and for animals”. He, like me, grew up with a lot of allergies so had “slightly less conventional” pets as a child like birds and fish.

Growing up in Ontario, he was often by the water and relates the feeling to looking out over the Great Lakes and not seeing land to the feeling he gets when he looks out over the ocean. He remembers the first time he saw the ocean. He was in grade 4 and his family took a trip to the Maritimes. Their first stop was at the Grand Manan ferry. E1 remembers going down to the dock and watching a fisherman pull a starfish up from the water. “This was the first time I had ever seen any kind of unusual invertebrate like that and I got to hold the starfish.” The excitement for marine animals continued to grow as they saw harbour porpoise in a fishing weir and climaxed with their whale watching experience. They watched Right whales all day and he had a moment with one that surfaced slightly sideways so he could see his eye.

When they are just surfacing it almost looks like it is part of the landscape and then when you see the face of the animal it really gives you this perspective of like, oh that’s like a thinking, feeling creature just like me. That was very much my moment where I was like “these are my animals”, these are the kind of animals I can have and so I really fell in love with this idea of being out on the water, being [amongst] these big mysterious animals.

This [was] a very life changing experience for me, I really became motivated to want to become a marine biologist, which seemed like completely ridiculous in small town Ontario where nobody leaves Ontario period, much less to go off and pursue this impossible career.

E1 started volunteering at a wildlife center in his hometown around grade 8 or 9. This was his “first taste” of working hands-on with nature as well as gaining experience with tourism and environmental education. This was also his first real experience working with turtles as the centre had a zoo license and housed native turtles, snakes and amphibians. In high school he worked for Ontario Parks at a campground office. “I tried to always make choices that would lead me to what I

was interested in. It just makes work more rewarding when you feel like it's actually something you like to do."

With his focus on marine biology and oceanography, he was accepted into Dalhousie University with a scholarship that allowed him to study out-of-province. "I moved to Halifax in 2007 and have never looked back." For his honours project, he wanted to get back to his "initial love of the open ocean, environment and working with large [marine] animals". While researching different options he came across a paper about plastic ocean pollution and leatherback sea turtles and realized there was sea turtle research being conducted in Halifax. He contacted the lead researcher who agreed to co-supervise his honours project. During his honours research, E1 spent a month working on the 'turtle boat' helping to tag leatherback sea turtles off Nova Scotia, resulting in his second transformative moment.

[This was] one of these life changing experiences, partly because obviously the turtles are amazing animals but it also introduced me to the social aspects of conservation work, so living in a fishing community with people who make their money by harvesting things from the ocean was a really different point of view that I [hadn't] been exposed to in university where the attitude is like "save the animals, pass some legislation and it'll all just magically happen" and then when you have this immersion experience like living in a coastal community where that is everyone's life it really gave me a different perspective on things.

E1 admits that his honours project was challenging. It was based in the oceanography department so it involved a lot of coding and statistics, numbers and chemical factors. He wanted to get back to his ecology roots because he "felt a little disconnected from the biology". He moved to New Brunswick to do an invasive-species-focused Master's that provided rigorous training, a different perspective and a solid foundation in ecological theory. It was a great experience that provided him with a different perspective, but he ultimately missed the "ocean connection" and

moved back to Halifax after two and a half years. He was offered a specific contract that combined turtle biology with the human social factors that had interested E1 after working with the fishermen for his honours. This contact led to a full-time job working with sea turtles. He has been with the same non-profit organization for four years and is currently the Assistant Director of Conservation and Education. He now does more management tasks than hands-on tasks, but he enjoys the combination of running and organizing multiple projects, working on the turtle boat, educating the public in different capacities, helping with scientific research and especially the travel requirements, both local and international.

He enjoys the variety of work tasks as he enjoys having a couple of things on the go and, though he enjoys scientific research, he knows he wouldn't be happy working in a lab all day. He is what I would call a generalist, like me. He feels science communication - "connecting research to the public" - is an interesting and important component. He enjoys the flexibility, creativity and spontaneity his current position allows. He doesn't know his long-term trajectory as he is really enjoying what he does now. His dream job however would be a philanthropist:

They just have enormous amounts of money and they go around the world visiting interesting projects, meeting people who are doing amazing things and then supporting their work in different ways ... I find [this] so fascinating cause you would get to see and learn so much but then also support people on the ground who are doing amazing things cause I think the more I learn about this kind of field the more I'm interested in these very, like, small community based projects. The idea of it just being a small handful of people who are really dedicated to this particular goal and how much you can get done with so little in working in that kind of environment.

Travel is what brings joy to E1's life. He refers to his family's Maritime trip in grade 4 as his first and only big trip before he started travelling on his own as an adult. He enjoys travelling to see

friends and family scattered all over the world. E1 also enjoys dancing and has tried many different types of dance throughout his life. He says he got out of dance in high school to try other things because he didn't want to have just one hobby in life and, like most things, in dance you can only go so far "before it becomes your life".

E1 says he's "never been single mindedly focused on turtles as a group but I've encountered turtles as part of this all along just because they a big part of the different environment that I've fallen in love with".

It's been pretty fun getting to combine a lot of different things that I have been interested in over the years, it's never been driven by wanting to work with turtles specifically, but turtles have become this symbol of what has combined a lot of my interests.

Expert #2

I met with Expert #2 on April 15, 2018 for breakfast at a diner of her choosing. It was a smaller space attached to a motel, with lots of tables and slightly outdated decorations. We met just after 8 a.m. on a Sunday and there were only a couple tables occupied. However, by the time we left most of the tables were full. This, plus the music playing over speakers, resulted in the background noise continuing to get louder throughout the interview but I was able to make out pretty much everything when transcribing the interview months later. I have known E2 for about nine years now. She was my introduction into Canadian sea turtles, and I worked closely with her for three years before beginning my M.A.Ed. We have spent countless hours talking about our past and sharing turtle stories, so I already knew the quick version of her story. She is an animated character, very social and a great storyteller so I knew this was going to be an easy interview with little input needed. She thought it was great that I hadn't prepped her for the interview so she didn't have time to think of every possible story. We talked (well, I mostly listened) for just over an hour.

E2 grew up in New Brunswick with one brother and professional parents that worked long hours. Around grade 2 or 3, she became fixated on the idea of getting a pet guinea pig. After many hours of begging, Sharon the guinea pig arrived as a Christmas present. Sharon wasn't treated like a typical guinea pig. Her cage was in the basement but she would spend her time, including meals, with E2 in a wooden bed-shaped box made by E2's father. After Sharon, several rodent pets including other guinea pigs, hamsters and rabbits followed. E2 says her parents were hesitant about pets initially because neither of them had had pets growing up and they were worried about the mess and possible allergies, but they were very supportive once Sharon arrived.

When E2 was about grade 6 she went to a local pet store that had a "bunch of cool critters" but very little floor space, most of which was dedicated to dog and cat supplies. She remembers watching a worker come up from the basement with a bucket, show a group of people what was in the bucket then go back down to the basement. When he came back with another bucket, E2 went over to discover it contained aquatic turtles. On a later visit to the pet store, E2 discovered several box turtles for sale on display in a small aquarium on the main level. One box turtle caught E2's attention because it had brilliant red colouring on the underside of its neck. E2 eventually purchased "Curtis", which has remained her pet for almost 40 years. This was the beginning of a lifetime interest in reptiles.

The summer after Curtis arrived, E2 went to her first camp centered on teaching children about the natural world. "It was the right place for me because it was a camp that focused entirely on kids that were absolute nature freaks and who just wanted to be outdoors all the time." The camps were two weeks in length and took place in different locations every year.

I went to this first camp and there were people there who were teaching us about everything; learning bird calls and stuff, identifying tracks in the mud, how to recognize signs of wildlife... there was even someone who taught us about scat (animal poop) and what animals

left what behind. I was totally interested in all of this. There was a great reptile/amphibian expert there and I thought that bunch of critters was the coolest of any of them. I just became absolutely obsessed with reptiles and amphibians. I went to this particular camp for several years- until I was one of the oldest campers!

E2 spent most of her summers at overnight camps, including another camp that had a nature centre where she spent all her time feeding the frogs, snakes, and other captive critters and taking part in educational programs.

One day in junior high school, E2 was in the locker room when all the other kids were crowding around a girl that had something on her lap. It was a hatchling box turtle, and she clearly knew a lot about turtles. Long story short, this person became E2's "best friend for life".

So the two of us became a great pair because, until that point, she and I were pursuing this hobby seriously but almost in isolation because there just weren't that many kids with this same interest; and then, all of sudden, we discovered there were two of us and we went to the same school! We would go on field trips; we spent all kinds of time in canoes catching and releasing turtles; we'd ask our parents to drive us to specific areas so that we could see specific types of snakes and turtles. We became the youngest members of the local Herpetological Association and we'd go to all the group's meetings, all the field trips. When we started high school, we would go to the zoo on professional development days and we spent all our time looking at all the cool reptiles there, learning from the keepers, etc.

When E2 started university, she started a degree focused on psychology. However, after a few years, she realized she wanted to get back to "the wildlife side of things". She ended up doing a fifth year of undergrad to get enough credits for an honours B.Sc. and entered teacher's college with the goal of teaching high school biology. One of her first teaching placements was at an outdoor education centre, where city kids came for a week at a time to learn about the natural world. It was

an amazing experience but many such centres were closing (including this one) due to budget costs, so the “dream job” seemed like a remote possibility. During her university summers, E2 had worked with the National Parks system as an interpretive naturalist. She would conduct educational programs and patrol the backcountry trails to talk to people about nature.

It was the best job ever because you’re making good money for a summer job and [get to] hike around and tell people about nature... amazing people, amazing environment to work in, amazing animals, living in a staff house all summer with people your age, it was just super fun.

She strongly considered a career with National Parks because she enjoyed it and would be able to advance there “but then I got the itch, I thought I want to work more directly with reptiles”.

E2 began investigating graduate programs and found two professors with research programs that caught her interest. She enrolled in a program, with a plan to study freshwater turtles, and just weeks later met another university researcher who had recently acquired a grant of a few thousand dollars to encourage the public to report sea turtle sightings off Atlantic Canada but was short on time to get the project going. “I ran back to my advisor and asked if I could pursue this new opportunity, and he was completely supportive.”

E2’s Master’s focused on interpreting information associated with sightings of sea turtles reported by fishermen and other mariners. She began by talking with fishermen to see if they had encountered sea turtles. They responded, “yeah, of course we see them, the big ones, the big leatherbacks or whatever”. Over the next two years she worked with fishermen to identify potential patterns of turtle occurrence in different areas. She attributes much of her success to the fact that people simply had not asked the public about sea turtle observations in the same areas before, she was a student (people were more likely to assist her than management agencies, for example), and she enjoyed enlisting the help of coastal communities. E2 expanded her work into a Ph.D. thesis and

later pursued a post-doctorate. Before completing her second year of her post doctorate, she began working as a government biologist. As the Species-At-Risk Act's associated recovery implementation efforts took flight, her position narrowed to focus on sea turtles.

E2 clearly remembers the first time she saw a live leatherback:

Before long, [the captain] said, "you know you should join us and try to come out off shore and take a look at these turtles yourself". I just remember being out there while they're fishing and I was up on the roof, "spotting" for turtles, and the captain said "hey there's one of your turtles there" and there was a leatherback swimming RIGHT BY THE BOAT, I was freaking out, and super excited

When asked if she is living her dream job, she responded,

I love my job for sure ... in any kind of work you know there are the parts that you love and then there's the stuff that you find frustrating or even disheartening, but I can't imagine anything I would want to do more.

She repeatedly expressed her appreciation for the collaborative work with other countries and other professions. She enjoys the ever-changing nature of her position, the mentoring that now is present and the long-term relationships that exist.

Expert #3

I interviewed expert #3 on July 5, 2018 over the Internet from the kitchen in my valley home. At E3's request, we used Google Hangouts. She had been having Internet issues earlier in the day and I explained the Internet at my place in the valley could also be unreliable. This was a bad combination as the interview was filled with delays in video and audio. In the end I probably only heard about half the interview but got more by reading her lips, so we were able to have a mostly coherent conversation. I discovered with later interviews that Google Hangouts resulted in the poorest quality interviews. After our interview I wrote down what I could remember and used

Google to fill in some of the missing pieces like State and University names. I had hoped that the audio recording would be distinguishable, but it was inaudible. Despite the technical difficulty, I really enjoyed our conversation and connected with E3. I told more personal turtle stories to E3 than any other expert and would have liked to continue talking if the Internet connection had been better. The interview lasted 27 minutes.

E3 grew up in Wisconsin but spend her summers at her family's cottage in Michigan. The cottage is on a lake that is an "oasis" filled with turtles. She remembers spending hours as a child catching turtles and frogs with her cousin, making day habitats for them and then releasing them at night. These habitats were all made outside as her mother was not into slimy things and so they were not allowed in the house.

E3 says she always assumed she would be an artist when she grew up but went into biology for her undergraduate degree. While there, she began working with a federal sea turtle program, USFWS, and was hooked. She discovered Archie Carr, the "Father" of sea turtle conservation who died in 1987, and was inspired. She really wanted to be a behavioural biologist, but it is difficult to do behaviour research with turtles and ran into funding issues as a graduate student. So, she switched to lab-based research and started analyzing turtle bones. She now focuses on sex ratios, age and growth of sea turtles from her lab in North Carolina.

Family is very important to E3. She has two teenage sons, who are also into turtles, and a husband that is also a biologist. Growing up E3 only had pet dogs but now has two box turtles with babies. She doesn't travel much as her husband is often away with work.

When asked, "why turtles", she didn't know specifically but says she has always loved them for their uniqueness: their shells. She also loves sea turtles because they are not really adapted to the current environment and yet they are still surviving.

Expert #4

I interviewed expert #4 on July 19, 2018 over the Internet from the kitchen of my valley home. It was also conducted through Google Hangouts and resulted in several technical difficulties. When we started my video wasn't working properly but it was fixed early into the conversation. The audio/video also froze a few times during the interview, which we worked around. I feel I did a poor job with my research introduction with E4. It was awkward and not concise. I was trying to fix the video feed while I gave this introduction so that probably added to my distracted description. She was the only one that asked about my background prior to answering my main interview question. Our conversation lasted 36 minutes.

E4 grew up in Massachusetts. Her father owned a motorcycle and snowmobile parts business, and her mom stayed at home until E4 was older before going back to school to become an interior designer. She spent her summers with her parents on their boat going around the different bays and islands. This is where her love for the ocean began. "What I loved to do when I was a kid was pick up sea glass and just beachcomb or go around the marina and catch jellyfish in a plastic cup, that was like my favourite thing in the world." She says this introduced her to the world of being on the ocean with the salt air and diesel fumes. Her mom would take her on walks at night to teach her the constellations; they'd spend the day on the beach building sandcastles and playing in the water. "I was an only child, so I didn't have playmates, I didn't play video games, I didn't always have friends, so it was just me and the environment really." When they were moored in the marina her dad would set up a big magnet on a string so she could go "fishing", catching things like silverware. (Personally, this is my new favourite type of fishing.) As E4 was telling me her childhood stories, you could tell by her tone and the look on her face that she was re-living these fond memories. She expressed more than once her gratitude for having these experiences as a child.

E4 attended university at a little arts school in Virginia that wasn't necessarily known for their biology program, but she says she never questioned that she would study science, biology or

marine biology. The next big step in her career path was the study abroad marine ecology program she attended through Boston University and the School for Field Studies in the Turks and Caicos.

The program there was really awesome. It was marine ecology, sustainable development and sort of environmental economics, very basic level of all these things but it just brought me into the world of conservation, marine biology and direct hands-on field work, which I really hadn't ever done before. I waited tables for my whole high school career and everything leading up to this and so it just opened my eyes to a job in marine biology that could be field based and collecting data and doing research and I just thought it was fantastic.

It was during this experience she had her first interaction with sea turtles. On a night dive, she and her classmates woke up a sleeping male loggerhead sea turtle. A few days later, she witnessed a loggerhead being slaughtered on the fishing dock for food. The contrast between the natural beauty of the sea turtle in its environment and the "reality of a poor fishing community" had a real impact on her.

After graduation, she moved to Florida to live with her mother and started putting out resumes. "I actually thought I wanted to study sharks. I was always really interested in sharks and thought they were super cool and charismatic." However, nothing seemed to be available for either a job or graduate school, so she dropped off her resume to a sea turtle rehabilitation centre, which offered her a volunteer position. She began feeding and cleaning the turtles and made friends with the other biologists. Through these connections she got a job with the neighboring State park doing nesting surveys and helping with sea turtle projects. She also "did a stint as a waterfowl biologist", which "introduced me to some different elements of field work that were really interesting and kind of opened my eyes to birds too, which I hadn't really thought much about". These connections further led her to her Master's supervisor at Florida Atlantic University. Her Master's focused on the

migratory patterns and dietary overlap of leatherback sea turtles and ocean sunfish. “It was a really fun study. I learned a lot about GIS and how smelly a leatherback can be.”

Her thesis supervisor introduced her to the owner of the company she works for now and was hired to do night time leatherback monitoring, a position she was well qualified for given her past few years' experience. Since 2005 she has been with the same company working her “way up the ladder, so to speak” and now oversees the whole turtle department. A few years ago, she had begun to feel she had reached the pinnacle of her career and that her job was becoming routine. She contemplated returning to school to enroll in an MBA as the business and financial aspects of running a company was an interest. I wondered if this interest stems from her father being a business owner, but I didn't ask. She approached her employer and they agreed to give her more responsibility with the financial side of the business and client interactions. She spoke very eloquently about the interest and challenge of this move and her growth because of it:

I feel like I'm growing in that a lot more and learning how to run the business and not just be a turtle biologist or a contract supervisor for turtle work, and that is interesting to me so I think if anything I see myself continuing on that path to [learn] how to run a company and maybe someday I'll do that.

In her current position she has great autonomy, with the ability to do as much or as little hands-on as she wants. Time is her limiting factor.

E4 had a pet dog when she was growing up and now has 4 tortoises living in her backyard. Her hobbies include doing “lots of stuff on the beach” and “anything outside”. She scuba dives and paddleboards; she is a long-distance runner and enjoys hiking.

Expert #5

I interviewed expert #5 via live chat at my dental office on July 26, 2018. The Internet connection at the office was much better than my valley home and the interview was conducted

over Skype, which worked very well. E5 is at the end of his career with no intention of retiring soon. Because of this, he is a well-known and important figure in the sea turtle community. I was nervous and intimidated but mostly excited for this interview. I was on my best behaviour and didn't interrupt. I had thought about my research introduction and provided a better description about my thesis than the previous interview. E5 was a pleasure to interview. He was talkative, open, engaged and a good storyteller, which made the interview easy. He is not formal nor refined or polished, which I appreciate. He, like me, does not always finish his sentences and often uses fillers like "um, err, ahh" all together between words. This made transcribing a little challenging. He began the interview with "OK, let's have a chat". The interview lasted 41 minutes.

E5 can easily explain how he became interested in turtles: dinosaurs. When he was a kid, he was given toy dinosaurs (he showed me a few of these that were in his office). He learned all about them, including how to say their Latin names. He was so interested in them that one day he asked his mother if he could have one as a pet. She explained to him why he could not and what a fossil is, but then suggested a turtle as a substitute. His first couple turtles were red-eared sliders brought for 10 cents at the Dime Store. After the first couple died, E5 and his mother borrowed books from the State library to learn about the natural history of turtles and how to provide them with better diets and habitats. They converted their outdoor flowerbed back into the pool it previously had been, built a chicken wire fence around the pool and syphoned it out once a week. One of these turtles survived for 29 years. A couple years later, when he was five, E5's grandmother found a box turtle in her yard. Felix, the box turtle, sadly died two years ago but leaves behind his offspring, including the nasty, vampire-like turtle, "Bad Boy".

E5 grew up amongst the corn and bean fields of Nebraska. His mother was an art teacher and his father a florist. He attributes his understanding of organismal biology to the art background

from his mother: his ability to draw and sculpt means he has no trouble thinking biologically in three-dimensions.

E5's undergraduate degree is a major in biology with a minor in chemistry and philosophy. During this degree, E5 did a biomechanics project on how turtles and tortoises walk, which piqued his interest in graduate school. "I had to read all this really cool stuff in the library from the parts that you never went to otherwise and what it taught me was that I was really more interested in the question."

Nobody at my university had gone to graduate school, they'd all been funneled into medical, dental, and veterinary medicine, or med-tech careers and I didn't fit any of those molds so by the time they were helping me with graduate school I missed the main deadline so I went into this Master's program and then after one year transferred into the Ph.D. program. It was a mechanism to get me into the door so I never did a Master's.

As a graduate student, E5 was driven by the question of movement: evolution biomechanics, "movement onto land from water, movement from land into the water". His first attempt at a graduate thesis was wiped out a year and half into his project with the publication of similar data by someone else. His second attempt was with fish, which were inadvertently killed off when the university painted the basement where he had created a mangrove habitat. At this point E5 was four+ years into his Ph.D. without a project so his professor asked, "Ok, so what is it you know?" From his biomechanics project, he knew sea turtle literature so turned his thesis into a project on locomotion and anatomy of sea turtle limbs. Over the years, his research interests have expanded to include the migratory behaviour of hatchlings and long-term sex ratios, all because he loves the question.

He moved to the California coast because his partner took a chairman position at a university. They figured being on the coast would provide them both with more opportunities. He

also started working at the same university. This exposed an underlying culture at the university that disagreed with couples working in institutions together. For 10+ years, E5 worked under the university for soft money, until a job finally opened that he fought for amongst more than 50 applicants. He is currently the director of the university's marine lab, where he's been working for years. From his training for this position, he's gained experience delegating and now has time to get back to his passion for answering questions. E5 loves being a scientist and credits tenacity for how he got to where he is today. His wife swears he'll never retire. "The only thing that I think would make me retire is if they added more regulatory stuff that makes it impossible to answer the questions."

His hobbies include snorkeling and travelling, with the South Pacific being his favourite place to visit. He was a competitive sailor, which is how he met his wife. He enjoys drawing, painting and sculpting but his vision isn't what it used to be, which "changes how you see things, but it also changes with how you interact with what you see". He also enjoys photography but again finds it less rewarding with his deteriorating vision.

Expert #6

I interviewed expert #6 on July 28, 2018 over Facetime from the basement of my valley house. I decided to see if sitting closer to the Internet source in the basement helped with the connection. There were still some technical difficulties, but it was better. I had previously met E6 a few years prior at a sea turtle conference so there was no personal introduction needed. We had emailed quite a few times prior to our interview date trying to find a time that worked for both of our schedules. E6 used her phone for the interview and moved around a lot because of it, which was slightly dizzying at times. Her audio however was wonderfully clear and easy to hear both during the interview and when transcribing. This was my easiest transcription. During my introduction to my research I said, "my thesis basically is about motivation". She knew exactly what her motivation was

and provided a concise answer at the beginning. After most interviews, when writing my notes, I would think of questions I should have asked the individual. I realized after my interview with E6, I never asked her why travel was such a motivating factor or how she got the “travel bug”. Our conversation was 29 minutes.

E6’s initial motivation for working with sea turtles was travel.

I never thought I would stick with turtles; I just saw them as a way to facilitate travel and have great experiences. But it turns out they’re pretty fun and interesting and they’re challenging and complex ... so I sort of stuck with it and it’s been a really good way to travel throughout my life.

This opportunity arose late into her undergraduate degree in History and Philosophy at the University of Toronto. She was working in a circadian rhythms lab under a professor who worked with sea turtles on the side, unbeknownst to E6. One day the professor gave a talk about sea turtles and said he really wanted to send a graduate student to Suriname. E6 didn’t know much about sea turtles but thought Suriname sounded like an amazing place so she told the professor she would be that graduate student. Of course, it wasn’t that simple; E6 had to prove herself to the professor before he would let her go. She did this by working with him for her Master’s on the circadian rhythms of hamsters.

E6 did get to travel to Suriname for her Ph.D. and spent three months in St. Croix, USVI. She then worked in Brazil for her two-year post-doctorate. Now, she gets to travel with work and takes students from a local university back to St. Croix to help “different projects on the ground” while providing a unique hands-on experience for the students. When asked about her favourite place to travel, she reminisced:

The place I always wanted to go to and finally did get to go to was Angel Falls in Venezuela, about 15 years and that, that was just magical, that always comes into my head when I think

about how lucky I was to go to a place that I had always wanted to go to, and I managed to go there.

E6 grew up in Ontario with three siblings and parents that worked as caterers. Her parents encouraged secondary education, resulting in all four of their children acquiring university degrees. They were especially fond of McGill University for the good reputation and low tuition fees. Growing up she used to bicycle a lot and played hockey. In high school, she began refereeing for hockey games, as hockey practices were too early in the morning. She is married with two kids and a new dog. She enjoys running in her spare time.

E6 describes her younger self as a “live-in-the-moment”, laid-back type of person (my interpretation). She chose her undergraduate degree in History and Philosophy because she liked reading and writing and found subjects like medieval and intellectual history fascinating.

At that time, I could not look further ahead than maybe two months or two weeks and I really had no conceptual idea of what life might be after. I didn't think about what's going to happen after I graduate. It was all about “I'm in school now, it's great, I'm going to do what I want, I want to take classes that I like-.

From our interview, she still comes across as easy and laid back: “I'm pretty flexible. You can put me anywhere so long as it's not too much pressure; people get along and I'll be OK.” When asked about her dream job, she sounded content with her life and appreciative for her autonomy.

It's a pretty good set up here... my job is pretty flexible, I work out of my house, my supervisor is three hours away, he's very hands-off, they trust what I'm doing. It's kind of a unique set up so I value all the things I get from it and I think it's fine. I'm not looking to go anywhere else.

Her only negative comment was the presence of political issues and administrative tasks.

When asked, “what do you like most about turtles”, E6 obviously responded with “that they let me travel”, but then she pointed out their accessibility.

I like that they are accessible, that people are able to see them and interact with them without the fear of being hurt. It’s rare to be on the nesting beach [with] a huge wild animal sitting there that you can approach and manipulate, tag, measure without fear of being ... attack[ed].

Expert #7

I interviewed expert #7 on August 13, 2018 from the basement of my valley home. It was over Facetime and E7 also used her phone, resulting in a lot of movement on her end. I had learned from E6’s interview not to focus on the screen as much and so didn’t find it as dizzying. I also spent this interview hurriedly taking notes as I realized once the interview started, I had forgotten my recorder. When the interview finished, I went back through my notes to expand and finish shorthand and incomplete notes. There were little to no technical difficulties. E7 came across as an honest, chaotic and busy whirlwind, which reminded me of myself, so I liked her a lot. I do not know how long our interview lasted but suspect it was between 30 and 40 minutes.

E7 grew up in Nova Scotia as an only child of parents that loved to travel. Her dad worked in insurance and her mom stayed at home for the first few years and then worked in the condominium building in which they lived. They spent their summers driving everywhere. Her dad liked itineraries and moving around but didn’t like making reservations. As a result, E7 remembers pulling into places late at night in Quebec that only spoke French and trying to communicate with hand gestures about needing a room.

She doesn’t remember being obsessed with turtles as a kid but apparently her friends say differently. She does remember always being interested in nature. She had “random goldfish” for pets and negotiated to finally get two pet birds. The condominium she grew up in, however, had a

“resident” turtle that she visited often until its accidental and untimely death because of the gardener. When she was nine or ten years old, her family took a trip to San Francisco. In Chinatown there were kids selling baby turtles on the street and she begged her parents to let her bring one home. It didn’t happen.

When she was in high school she wanted to be a biologist but, for personal reasons, was initially interested in cancer research. During high school she went back to her love of nature but wondered what such a job would entail. In her last year, her advisor recommended she get experience working with turtles if she wanted to pursue such a career. There was an amazing WWF opportunity in Europe that he suggested would be perfect but, it was too expensive. Instead, she found a program in Nova Scotia that worked with turtles. She assumed it was the oceanside Kejimikujik National Park and thus on sea turtles; however it was the in-land Kejimikujik National Park and on Blandings turtles.

She really wanted to go to university in Australia but couldn’t afford it so she attended Dalhousie University. She originally was focused on marine mammals but found the courses were too subjective and she preferred more of an objective approach. A couple years into her five-year degree she started talking with a professor about doing an honours project on either sea turtles or coral reefs. He suggested she investigate Costa Rica because of his own personal experience. She initially looked at the National Biodiversity Institute of Costa Rica but found they were more focused on fish and plants. From there, however, she got into contact with a sea turtle person. She had a difficult time interacting with this person as he kept postponing his plans to have her join him in Costa Rica. After 21 months of email conversations and Spanish lessons, she arrived in Costa Rica to discover that no one at the sea turtle centre knew she was coming. She had arrived with her parents as they were going to stay for the beginning of the vacation; however, multiple people told her parents not to leave E7 because it wasn’t safe. So, her adventure ended before it began, and she

left feeling like she had just wasted two years of time and money. In the end, she did her honours project on a subject she was not interested nor liked.

In the two years she spent researching Costa Rica and during the limited time she spent in the country, she noticed there were a lot of international collaborations with projects there. She decided this would be her focus: find a partnership based in another country to get her back to Latin America.

During her Costa Rica research time, she had met a veterinarian that had worked with a sea turtle biologist in Florida. E7 had emailed the sea turtle biologist but had never heard back. After she graduated, she emailed the Florida biologist again to enquire about working with her and this time she got a response. She moved to Florida to work with sea turtles for two years, getting as much experience and as little sleep as possible. She applied for a Master's program both with a university in Florida and Dalhousie. E7 was unable to get funding for a Masters' in the USA and was going to come back to Canada, but Florida then offered her funding for a Ph.D. instead, which she happily accepted. Her thesis topic took a while to develop as her first two ideas fell through. During her Ph.D., she travelled to many different places with a sea turtle expert she had connected with during her two-year post- degree experience in Florida. With him, she travelled back to Costa Rica where she did finally meet the person that was supposed to have helped her back in her undergraduate degree.

She presently works for a State-run conservation group. It wasn't initially the job she thought she wanted but she enjoyed the interview so much it won her over. She cried for three days when she got the job. There are some days she feels she is living her dream job. She has great autonomy in her position as her boss is laid-back and lets her do what she wants, so long as she doesn't burn herself out. (I got the impression she has overextended herself in the past.)

She sometimes struggles with why she does what she does. Why do we care about sea turtles? It isn't like we're saving the world. She finds the turtles fascinating; the more she learns the more she realizes she doesn't know. She feels close to them but says she isn't a "turtle hugger". They are not mammals.

E7 still has no pet turtles, just a lucky bamboo plant as it is the only thing she can keep alive. She learned the hard way that rosemary and thyme plants won't come back a third time after you kill them twice. Her favourite place she has travelled is the Red Sea and wants to go to the less popular countries in Africa like Botswana to see the big animals before they are gone. She still has not been to Australia. E7 says she is "with turtles because of stubbornness"; I called it perseverance.

Expert #8

I interviewed expert #8 on August 16, 2018 from my home in Halifax. We used Google Hangouts and despite the better Internet connection we still had technical difficulty at the beginning where we had to basically start the interview over again. However, after that it seemed to be much better, only briefly freezing a couple of times. E8 also used his phone for the conversation but was good at holding it still. He was on vacation at his sister's house. I had met E8 a couple of times before the interview, including spending a night in South Carolina on the beach with him tagging loggerhead and leatherback sea turtles. He had emailed me a week or two prior to our interview to let me know the leatherback I had named with him in 2012 had just re-nested. Our conversation was 23 minutes.

E8 has been interested in marine life ever since he was a kid, though he doesn't know why. He grew up in Wisconsin with working parents, one sister and a lot of cousins. He had a lot of pets growing up: cats, dogs, horses, hamsters, etc. He's "definitely an animal person". He spent a lot of time as a child on a lake but remembers the first time he saw the ocean was on a family trip to Disney World. "We did a day trip over to the Coco Beach area. I remember that was the first time

I'd seen the ocean and that was the first time I had seen dolphins, too. Of course, my sister and I are freaking out."

"When I was in college, I didn't really know what I wanted to do, I just knew I wanted to be working on or near the ocean." He approached his advisor about pursuing a career in marine mammals. "He said no, there's no jobs doing that" and instead recommended a guy he knew at a sea turtle rehabilitation hospital in South Carolina. "I said sure, that sounds like fun, I'll go spend my summer down in South Carolina." He did and he loved it.

I did kind of a split role where I worked on the beach doing the nesting surveys and then I spent a lot of time in the rehab hospital too. I just had so much fun and ended up asking if I could come back the following summer and work as a tech.

The following summer he ended up working with their nesting team and "that solidified it for me. I had so much fun working on the beach at night".

After graduation, E8 moved to Florida and got his first full time job working at an aquarium doing a variety of sea turtles roles including nesting surveys, rehabilitation care and stranding responses. From here, he moved to a marine lab inland doing mostly captive animal care. While working at the lab full time, he also started a Master's program with the local university. He worked with one of the adjunct professors at the lab for his thesis research, which involved starting a basic husbandry-training program with four non-releasable captive turtles that not only provided a form of nourishment for the turtles but also allowed for basic medical treatments to be performed with less stress on the animal. He was interested in this after hearing about a similar program with manatees. "I didn't want [the turtles] just sitting in a tank, I wanted to give them something more. I said 'don't just keep them alive, actually do something with them'." He says the training was a lot of fun, but "training turtles is slow".

“But my passion had always been beach work and I wanted to get back to the East Coast.” So, with his Master’s complete, he moved back to the coast and took a job with a local government agency.

It is still turtle work but more administration. Any of the beach nourishment and restoration projects that the county is responsible for, I oversee the contracts that make sure we’re not impacting sea turtle monitoring at all with our projects. I’m also doing lighting enforcement, so I go on the beaches at night and make sure that all the lighting complies with our local code to prevent disorientations and ... I’ve got a little in-water project that we’re doing. He also started his own non-profit five years ago doing “mark, recapture, tagging” of leatherback sea turtles on a local high-density beach because he had a passion for working with leatherbacks and wanted to continue beach work with them. “It’s a lot of fun, it’s all volunteer, we have a great group of people.” His dream job is “what I’m doing with the leatherbacks right now, if I could just figure out a way to get paid... So, I think that is the goal ultimately.”

“Turtles consume my life most of the year” but when he has spare time, he helps with dog rescue by volunteering at a local public animal shelter. He also enjoys photography as a fun side hobby. His pets include a large tortoise and, like most of us, he “can talk turtles all day”.

Expert #9

I interviewed expert #9 over Skype from a quiet room at my dental office on August 20, 2018. She had some trouble with her computer video initially so called me back on her phone, which worked well. It was apparently very hot in her apartment during our conversation, which she commented on at least once as she stopped to fan herself and the video screen fogged slightly. I, however, was wrapped in a blanket because of the air conditioning at the office. I had met E9 briefly at a sea turtle conference a few years prior. I’m not sure if she completely remembered or recognized me but I seemed at least a little familiar to her. She was easy to talk to and I enjoyed the fundamental

similarities and differences between us that we discovered. Though the conversation was easy at the time, her voice was difficult to make out on the recorder for transcribing. During the transcription I noticed that I might have cut her off a couple of times, which I didn't notice at the time of the interview. I assume this is because of Internet delays. Our conversation lasted 30 minutes.

E9 grew up in Ontario with one brother and various pets. Her mother became a nurse and her father worked in real estate and woodworking. When E9 was little, she knew she wanted to be a marine biologist or a foreign correspondent. She had a passion for writing and her schoolteachers told her she should pursue a writing career. But eventually she did her undergraduate degree in marine biology. For her honours project she had worked on fish physiology, which she found interesting but hated having to kill the fish to study them.

After graduation, E9 worked as a forestry biologist. It was during this time that she learned a lot about stakeholder meetings and stakeholder values and how important diplomacy, understanding and listening is for lots of different people when there are issues close to their hearts. Because of this, she has worked hard to try to make sure that people's values are considered in her work. The opportunity for a permanent job came up but she didn't apply, preferring to get back to marine biology. "I like water stuff more than I like landscapes." So, she worked at different jobs while looking for Master's programs in Canada and the U.S. She found the Canadian-based programs at that time were mostly fish research related, very competitive and required students to bring a lot of research money up front.

While looking for Master's programs, E9 found the Student Conservation Association, which provided internships, including some in North Carolina on shorebirds and sea turtles. She was accepted for the shorebird internship and headed south for the summer. She spent her days off helping with the turtle patrol and returned the following year as the "turtle intern".

This chance that she had in North Carolina to work with birds and turtles was really motivating; she realized that there were so many questions that needed answers. E9 started contacting sea turtle biologists and completed her Master's in Florida with sea turtles and then moved on to a Ph.D.

I wasn't going to do my Ph.D. but then I got offered a position in North Carolina and I decided that I couldn't turn it down. I was worried that I would not be able to do the fun things anymore; I'd have to do administrative tasks and write grants, while rarely getting in the field. I got over that [and] realized that it wasn't a door closed, it was lots of doors open. E9 applied for a post-doc in California, completed that and continues to work there now as a research scientist. She feels she is more broadly trained with interests in birds, fish, marine mammals and other creatures, "it's just that sea turtles take up a lot of my time." She works for a foundation that is a soft-money position. Given her love for writing, she enjoys the challenge of writing grants and finding money for her projects.

She thinks her love for the ocean began around age eight when she lived in Ireland across the street from a beach. "We lived on the coast and I spent a lot of time over there on the beach, just poking around and looking at things." She also feels that most eight year olds want to be marine biologists, "I think if you ask any nine year old, they are going to tell you they want to work with dolphins." She still returns to Ireland to visit family almost every year.

Her dream job is, in part, to be a refuge biologist: "where you are stationed in one spot and you know that piece of land and the water around it really well and you see the changes over time." This is because she enjoys having a "deeper kind of knowledge about one place". I found this interesting considering she spends most of her time travelling for work. However, she says she is "a mostly hesitant person when it comes to saying things" on a subject about which she doesn't have a deep understanding or knowledge. I told her she was a specialist instead of a generalist.

When E9 has a free moment, she likes running and reading and just being outside. She writes a monthly natural history guide for the local newspaper and hopes to publish a guidebook one of these days.

Expert #10

I interviewed expert #10 over Facetime from the basement of my valley home. It took quite a few emails to finally get an interview with E10, who is nearing the end of his career. Between family deaths and health concerns, 2018 has not been a good year for him. He slept through one scheduled interview after being on the beach looking for turtles all night long. When we did connect online, the technical difficulties returned by freezing twice and dropping the call completely once. Despite all of that, it was a pleasant conversation. He was the only expert that asked about me personally, about how I was making out in school and what my future involved, not just what I planned to do with the research. He was also different than the other experts in that his career in sea turtles started later in life. I was glad to have his story as part of my research. His voice was easy to hear on the recording, which made transcribing easy. Our conversation lasted 30 minutes.

E10 grew up in San Diego. His mom stayed home with him and his brother and his father worked for a telephone company. They owned a boat and spent all their time either on or below the water. They did a lot of recreational fishing mostly in salt water, enjoyed the wildlife and would go diving for lobsters. He had an abundance of pets growing up, including “little painted turtles, just like most of us did”.

E10 began his working life in a bank, spending eight years in the mortgage department. “I’d go to work and wouldn’t know if it was daylight ... you sit in a cubicle all day and you don’t go outside.” He considers it lucky that the bank decided to do away with their mortgage department. He was offered the choice of a job in another department or a payout. He took the payout and treated himself with a trip to the Virgin Islands, complete with a whale-watching cruise. “That was

my gift to me for quitting my job.” He decided to go back to school part-time and pick up where he left off as a biology major.

Late spring, early summer of that year E10 came across a “really great article” in the paper about a university professor working on sea turtles that “went into telling how the recliner chair didn’t recline and something didn’t work and he’d wake the students up by tapping on his cereal bowl in the morning and how they went out and did surveys” on the beach. He was inspired and began his turtle quest. E10 spent the next two weeks phoning the professor but was unable to get hold of him. Finally, he left his number and the professor called him back.

I said, “well I saw the article in the paper about what you’re doing, and I think it sounds so great and I’d like to know what I can do to help”. He says, “nothing”. I said, “no, no, that’s not what I want to hear”, I said, “I’ve quit my job, I’ve gone back to school ... and I think I’d like to do something like what you’re doing. What can I do?” He says, “look, you’re not on the permit so you can’t handle the animals, you’re not a student [here] so you can’t drive the trucks and you can’t do any of that stuff.” He says, “there is really nothing you can do.” I said, “I don’t think you understand, I’m not your typical 19 year old college student, I’m 35.” I said, “I’m not kidding and really I’m interested in what you’re doing over there.” So, he finally said, “alright, you can come and observe, why don’t you come observe one weekend.”

E10 and the professor chose a weekend for him to observe and when he showed up two of the professor’s students didn’t show, so he helped with the turtles, drove the trucks and filled in wherever he could. When the professor left on Sunday “he said, ‘you were a big help you can come back any time’, so I said, ‘I’ll see you next weekend’”. The following weekend he returned and did the same thing. Unfortunately, it was the last weekend of turtle season. The professor asked E10 if he wanted to help him out the rest of year. He said he would, but the professor never contacted E10.

By mid-winter E10 assumed he had done something to upset the professor and started calling around California to

see who else was doing sea turtle stuff and if they would take me on. At this point I wasn't really thinking very far ahead, just that I was excited about the turtles and wanted to continue to do this. Because I was still struggling with a couple of jobs, I needed something that was going to pay at least gas money to get to the coast. I found one place that would take me, but they didn't pay anything; the other places either already had their people in place or didn't need help. So, I thought, well last-ditch effort, I'll call out to the professor [to] see if I can get him to answer the phone.

When the professor answered the phone, he sounded like he had just seen E10 the day before. Turns out, he had put E10 on his permit for that summer and all he had to do was show up for orientation on a date in May.

So that's how it started... I did beach surveys, I did netting work, I did anything that we could do. [I] worked with the turtles at night and it was just addicting. I thought they were the coolest thing ever and so that's how it all got started and I'm still there all this time later so I guess it was real, can't tell you exactly why I've stayed so long but yeah, it's the turtles.

That first summer, E10 did not get paid for his work because he wasn't a student with the university so in the fall he transferred. He dragged out graduating

as long as I could because I thought once I graduated it was over. I thought you couldn't keep doing this after you graduated so I stretched. I finish[ed] my bachelors and then I started a Master's... When it was time to graduate, [the professor] looked at me and said, "OK, well are you going to stick around or what." I said, "I didn't know that was even possible." He said, "We'll work it out."

E10 just finished his 30th year on the beach.

E10 put everything he had into turtles, which left little time for anything else. He loves to travel, with Hawaii, the Virgin Islands and Malaysia being some of his favourite places. Fishing is also still a favourite pastime. However, limited money and skin damage from the sun have impacted these hobbies in recent years. He did have a pair of cats for many years but when they died, he did not replace them because of his work schedule. He does miss having a pet. His dream job would be travelling “from place to place putting transmitters on turtles and trying to figure things out from that”. In reflecting on his career, he says, “it was hard work, but the turtles made the difference, I can’t think of anything else I’d work that hard for”. “Once the turtle stuff gets in your blood, I guess it doesn’t really go away.”

Expert Motivational Factors

The motivational factors behind pursuing a career in sea turtles are multifactorial but involve a combination of seven common themes that I identified: turtles, nature, ocean, travel, animals, research and marine biology. The theme of turtles was used when individuals identified experiences with turtles as a major contributing factor for their career motivation. I used the theme of nature to include the love for being outdoors. The theme of ocean is specific to those who love the ocean or being on the ocean. The theme of travel was used when it was explicitly mentioned as their motivation, not just a hobby or benefit of the expert’s career. The theme of animals was used when the experts identified themselves as an “animal person”. The theme of research is the expert’s drive to conduct research, or as commonly mentioned, the love for asking and answering “the question”. The theme of marine biology I added after reviewing the list of motivational factors. In most cases, marine biology seemed to include nature, ocean and animals. However, so many experts specifically referenced wanting to be a “marine biologist” when they were little, that I felt it warranted its own theme. The list of the most emphasized motivational factors for each expert is as follows:

E1: nature, ocean, animals, marine biology

E2: turtles, nature

E3: turtles, nature

E4: ocean, nature, marine biology

E5: turtles, research

E6: travel

E7: nature, turtles, research

E8: ocean, animals, marine biology

E9: ocean, research, marine biology

E10: turtles, ocean

With the potential exception of E10's turtles, all these motivational factors stemmed from interests from childhood. Except for E6, each expert had at least two or three motivational factors that have led him or her to their current career. I considered adding "nature" to E6's factor as most of his stories seemed to include the enjoyment of being outdoors; but as this was more implied rather than highlighted or stated like the other experts, I decided against it. E1 said travel is what brings him joy in life, but it did not seem to be a motivating factor in choosing his career. E9 strongly implied that nature and animals have been significant themes in her life. I debated whether to include these but, again, decided these were not major motivating factors in her career decision.

Chapter Five: Discussion

Online Surveys

I will look at the different questions from the online survey; however, I will not be going in order of question as the Demographics questions (Questions 1-4) are simply stated in the results. The Discussion related interest of these questions lies in relation to the other questions and will be discussed as such.

If you remember, Faulk *et al.* 2007 discussed five categories of motivational factors for visitors entering a Free Choice Learning Setting: Explorers, Facilitators, Professional/Hobbyists, Experience Seekers and Spiritual Pilgrims. Five of the six options for “what brought you into the CSTC” (Question #6) were designed to help identify the visitors into each of these categories. The sixth option of “friends or family of staff member/volunteer of the CSTN” was added by the CSTN given the common occurrence of friends, family and volunteers visiting the Centre and the increased likelihood that these individuals are also people that would fill out the survey. As 42.3% (22 of 52) of the visitors selected more than one answer, it may indicate it is difficult to place each visitor in only one category. Fifty percent of visitors stumbled across the Centre, which was intended as the “Explorer” category, as these individuals did not come to the Centre with an itinerary in mind. I would consider 13.5% “Facilitators” as they visited the Centre with a person or group that wanted to view the Centre, though I didn’t ask specifically if they brought the person or group. I would classify 21.2% as “Professional/Hobbyists” as these people had heard about the CSTC and came to specifically view it, presumably because they had a passion for the specific topic of sea turtles. I interpreted 13.5% of visitors to be “Spiritual Pilgrims” as they entered the CSTC looking to make a connection with an element of nature. The category of “Experience Seekers” was not easy to identify with the question options provided, which I didn’t realize till after the survey was

completed. I believe I had intended the option of “had a previous interest in sea turtles” to identify the “Experience Seekers” but I do not think this was accomplished, as it is broad and can be combined with any other option. I will discuss this answer more in the following paragraph. The “Experience Seekers” are individuals looking for adventure rather than knowledge. Given the small size of the CSTC, it would seem unlikely someone would view it as an “adventure”, like a museum or aquarium may be viewed. However, exploring Peggy’s Cove or the Halifax waterfront are both noteworthy adventures so it could be that many of the “Explorers” could also be classified as “Experience Seekers”. Given my results, I am unable to distinguish between these two categories. In hindsight I should have added an option like “looking for a sea turtle experience”, or “interested in the educational experience”.

Of the CSTC visitors selected, 44.2% “had a previous interest in sea turtles” as one of their answers to Question #6. Three visitors cited this as their only reason for entering the Centre while the other 20 individuals stated additional reasons for entering the Centre. The discovery that 19.2% of the visitors were volunteers of the CSTN or friends/family of staff members might explain the high percentage of respondents that selected this answer. I was disappointed to learn so many friends and family answered the survey because I feel these ~20% respondents will have skewed my results away from the general public opinion given their background knowledge. I wonder if the survey had been emailed to previous visitors that had supplied their contact information, as was initially planned, if I would have gotten more responses from the general public. Looking at the 44.2% of visitors with a previous interest in sea turtles, I was interested to know if a previous interest in sea turtles could predict whether the visitor connected more with the turtle aspect of the CSTC than with the human aspect. To assess if this prediction could exist, I went back through the survey to look at those visitors that had a previous interest in turtles and what they connected with the most at the Centre. Of the 23 visitors that had a previous interest in sea turtles, 12 related more

to the human element of the Centre and 10 related to the turtles (one did not provide an answer). Clearly a previous interest in sea turtles does not predispose a visitor to connect mostly with the turtle element of the CSTC.

The literature review of FCLS addressed learning factors. Storksdieck, Ellenbogen & Heimlich (2005) amongst others showed that prior knowledge and interest were the most important factors in learning in FCLS. If we look at the reasons for each visitor entering the Centre, based on these findings, I would expect the visitors that stumbled across the Centre (the Explorers and possible Adventure Seekers), the Facilitators and the Spiritual Pilgrims to have made fewer changes in their life as a result of their visit. To analysis this suspicion, I compared the answers from Question #6 (What brought you into the CSTC?) with the answer from Question #11 (Did you make any changes in your life as a result of your visit?). When I look at the fourteen visitors that I listed in the “no” category for changes, four of these individuals fell under one of these categories (Explorers, Adventure Seekers, Facilitators, Spiritual Pilgrims) for entering the Centre. These four individuals answered the following in regards to their changes: “We already avoid use of plastic bags, balloons and pick up garbage left everywhere, but particularly on the beach where we have our summer cottage”; “We are always aware of our environment”; “No but I am a lot more conscious of them now”; “I have always loved turtles and the great oceans. I am always careful waste”. Given that only four individuals that I interpreted as having the least amount of prior knowledge of sea turtles before entering the Centre did not make changes because of their visit, I would say the lack of prior knowledge and interest in leatherback sea turtles was not reflective of the changes the individual made in their lives after their visit. I do acknowledge that “learning” and action are different and so not making changes did not mean they did not learn. I am assuming, however, that if changes were made then learning did occur. In particular, the response of “No but I am a lot more conscious of them now” implies that though no changes were made, learning did occur.

Continuing to look at the learning in FCLS, Falk & Storksdieck (2005) discussed the strong influence of visitors learning by the interactions with staff and their own social group. Prinbeck, Lach & Chan (2011) also discussed that the most effective way to influence a person's behaviour is with social motivation including personal stories or testimonials in support of the behavioural change. This, I feel, is highly reflected in my results. The staff was the second most mentioned memorable part of the visitors' experience at the CSTC (57.7%) (Question #8) and were an important part in the human connections the visitors made (Question #9): 14 of 31 visitors referenced the staff at the Centre directly as what they related to the most during their visit, and many of the visitors interviewed discussed interactions with the staff as their highlight despite entering the Centre because of turtles. Morton, Rabinovich, Marshall & Bretschneider (2011) referenced uncertain optimism as more motivating than uncertain pessimism. The staff at the CSTC certainly follows this lead as noted in one visitor's answer for what they connected with the most: "Hopefulness (the CSTC focuses more on optimism, and what we can do as humans to help)". Barriault & Pearson (2010) also encouraged context and everyday life examples to help visitors reflect on past experiences or prior knowledge. I am extrapolating from the visitors' responses about the staff's passion about sea turtles and conservation that the staff provided through stories of their own lives and experiences, which may have also helped connect the visitors with the staff and the Centre's messages. The interaction with and personal stories of the staff may have been one of, or, the main reason for the large number of visitors that made changes to their daily lives after their CSTC visit: 72.9% (Question #11). I will discuss this more in the next paragraph in relation to the motivation literature. In a digital age it is interesting and heart-warming to discover or confirm that human connection and interaction with enthusiastic, optimistic and educated staff is an important and probably vital role in each of the surveyed visitors' experiences.

Looking back at the Motivation Towards the Environment Scale (METS), Pelletier, Tuson,

Green-Demers, & Noels (1998) discussed that self-determined individuals were more likely to perform environmental behaviours than non-self-determined individuals, especially ones that were more complex and demanding, and the lack of motivation for performing environmental behaviours was because of the absence of three specific beliefs: strategy, capacity and effort. The high compliance rate of behavioural change (72.9%) as determined by Question #11 after CSTC's visits may be because the staff and Centre do a good job at addressing these beliefs. The changes proposed by the CSTC include simple and small choices each person can make in their daily lives like reducing plastic bag use, not releasing balloons and spreading the awareness of sea turtles in Canadian waters. The Centre and staff make these changes relevant to sea turtle conservation by illustrating, for example, that plastic bags look like jellyfish. Therefore, the CSTC addresses strategy beliefs by showing that the proposed changes can be effective, capacity beliefs by showing that anyone can help as the changes are simple, and effort beliefs by showing that because the life changes are simple, the changes are sustainable. Using the METS and looking at the CSTC success at stimulating visitor change seems to, again, highlight the importance of staff interaction in a FCLS.

Looking at the METS and the CSTC from a different perspective, I wonder if the CSTC does not provide a complex or demanding enough option for change for those already environmentally conscientious individuals. These individuals, as mentioned in the literature review, could be those adults that have grown up with environmental education and are hungry for more advanced challenges. This could explain why most of the individuals that did not change a behaviour, did not change because they were already doing what was suggested. For those already environmentally conscientious individuals, the CSTC could consider adding "next level" recommendations for change. These could include a more political or activist role by providing guidance for conservation at the government level. I would encourage the CSTC to look at different options to address this gap that would benefit the conservation of sea turtles and the workings of

the CSTN. I personally would be very interested to know where my “next level” efforts would be most effective.

In the literature review chapter, the research also looked at short term versus long term effects of visits to FCLS regarding the visitor’s enthusiasm and commitment to change. I did not interview individuals as they first were leaving the Centre so I could not compare their plans of change with their actual change. I also will not be following up with the four individuals that visited the Centre in 2018 to see if they implement the changes they said they planned to make. However, as 72.9% of those surveyed admitted to changes made in their lives due to their visit, it would appear that their experience was significant enough to result in change. I am just unable to quantify or qualify the change in the visitors’ enthusiasm and commitment over time.

When discussing my results with the CSTN, they were intrigued by the heavy emphasis on plastics pollution, as they did not feel the Centre displays such an emphasis. It was proposed that this might be related to the YouTube video of the straw being removed from the sea turtle’s nose. They were curious if more people mentioned the plastics pollution or straws specifically if they visited the Centre after viewing this video. The video in question was posted in August 2015 but I know I did not see it until late 2017 or early 2018. I went through the results and compared those that mentioned plastics to the year they visited the Centre. Two individuals that visited the Centre in 2017 specifically mentioned that they now try to use fewer disposable straws. The rest of the visitors that mentioned a reduction of plastics (usually in the form of bags or balloons) were from 2016 and 2017 visits, except one visitor that visited in 2015 and one visitor from 2018. This isn’t surprising, nor I feel reflective, as 81% of the visitors were from these two years. As all the visitors filled out the online survey in 2018, it is difficult to know if this emphasis on specific plastics reduction is a result of their visit or if images and videos they have viewed after their visit has been a contributing factor. This is like the point in the previous paragraph in that, because I did not evaluate the visitors

immediately after their visit, I cannot gauge level of enthusiasm nor when knowledge was acquired. It could be argued that because of their Centre visit, they are more aware of such images. I did think it was interesting that the visitor from 2015 that mentioned a reduction in their plastics use since their visit said they “cut all plastic rings that come on pop and beer cans so they cannot get wrapped around necks and mouths, etc.”. Common media images before the straw video were of freshwater turtles with these plastic rings wrapped around their shells, resulting in abnormal growth. I know I grew up seeing these images and as a result began cutting these rings before throwing them out more than 15 years ago. I suspect this individual has also seen these images, which highlights again the effect media images can have on the public. Overall, I feel the mention of plastics pollution reduction is a combination of education from the Centre as well as social media. The Centre does run a “bubbles not balloons” campaign and as such I feel the mention of not releasing balloons any longer by the visitors is probably directly related to their visit. The reduction of plastic bags is probably a combination of social media and the Centre as the resemblance between jellyfish and plastic bags is an important factor in sea turtle conservation. There is also, however, a large drive outside the sea turtle world to reduce single use plastic bags for pollution reasons. The specific mention of disposable straws and plastic pop/beer rings, I feel, is strongly related to the YouTube video and images available involving turtles.

Along the same lines as the media influenced plastics awareness, it should be mentioned that during the beginning of my data collection, in February 2018, a leatherback sea turtle was found dead in the Bras d’Or Lake in Cape Breton, Nova Scotia. This is a partial salt/fresh water lake located in the center of Cape Breton Island in the northern part of the province. The stranding received a lot of media coverage. At least two or three of the visitors I interviewed mentioned this during or after our conversations. I wonder if it influenced for the better the number of individuals that took the time to complete the online survey. It may have also provided a reminder to the

visitors about the presence of the turtles and the issues that surround them. The stranding may have reignited the spark of enthusiasm the individuals may have experienced during their CSTC visit.

I had specifically thought that where the visitors lived would predict what they were interested in and connected with at the Centre as well as their knowledge of sea turtles in Canadian waters. I had thought the visitors that remembered the collaboration between the CSTN and the fishermen would be mostly or completely people living in a coastal province and thus may have a previous connection with the fishing community. I, however, was wrong, as only 50% of the visitors that listed the fishermen collaboration as one element they remembered most were from coastal regions. Of these fourteen visitors, seven were from Nova Scotia, four were from Ontario and three were from the U.S. Of the three from the U.S., two were from states that border the Great Lakes (Illinois and Wisconsin) and one was from the middle of the country: Oklahoma. Clearly, living amongst a fishing-dominant culture did not predict a person's connection with the fishermen's role in the CSTC. Along the same lines, of the 11 visitors that remembered jellyfish as part of the Centre, four were from Nova Scotia, five were from other provinces and two were from the U.S. I had also wondered if living on the coast would impact what the visitors related to or connected with the most. It did not. Of the 16 visitors that did not know sea turtles were present in Canadian waters, only two were from Nova Scotia though one did not provide a location. The rest of the "no" visitors were from Ontario, Manitoba, New Brunswick and out of country. This may indicate that Nova Scotians are more aware of the presence of sea turtles than I was expecting. From personal experience, most people I talk with about leatherback sea turtles were unaware of their presence in Canadian waters. Because of common unawareness, I was surprised that 69% of the visitors to the Centre were aware of sea turtles in Canadian waters prior to their visit. However, as mentioned almost 20% of those surveyed were volunteers or connected with staff, which more than likely skewed these numbers. I would still expect a lower percentage of visitors are unaware of the sea

turtle presence if a larger sample size of the public had been obtained. Overall, it seems to be much more of an individual difference instead of location as to whether the visitor connected more to the coastal elements of fishermen and/or jellyfish. It should be noted, however, that I asked where the visitor is living, not where they were born or grew up. It is possible that where the visitors grew up may have a greater affect and maybe would have been the better question to ask, or at least an additional question.

The CSTN were specifically interested if there was a difference in the visitors' experience based on what year they visited the Centre, as this could indicate which location was better and what material displayed had the greatest impact. As I am unaware of the content change in the Centre from year to year, the impact of materials would have to be an analysis by the CSTN. However, it does not appear to make a difference what year the individual visited the Centre as to what they remember most because each year has multiple of the same answers. I will note that none of the four visitors from 2018 mentioned staff, jellyfish or the collaboration between the CSTN and local fishermen. I think the absence of these three items is related to sample size rather than changes in the Centre. As the fishermen collaboration and jellyfish were not the most overall popular answers, I do not find it surprising these were not mentioned. I was, however, surprised that no one had answered "staff" as this was the overall second most popular answer. I would question whether the 2018 staff was as engaged as in previous years, but one of the four visitors discussed the staff as what they related to or connected with most during their visit. In the end, either my results are not enough to provide the feedback for the CSTN about the changes to the CSTC each year, or it does not make a significant difference.

From my results, six visitors listed 'activities' as something they remember most about their visit to the CSTC. I assumed all these visitors would have visited the Centre with children under the age of 12, as that is the audience the jellyfish fabrication station is geared towards. I was interested to

discover that though four of the six did indeed come with children, two of the six visitors came to the Centre by themselves, and one of these visitors listed only activities as what they remembered most. I, then, was curious to see how the rest of this visitor's experience unfolded. She was between the ages of 50-59, did not provide where she is presently living, stumbled across the Centre and was unaware of sea turtles in Canadian waters. I was relieved to see she cited "a greater interest in turtles over all" as what she connected with the most. She felt the take-home message of the Centre was "being more aware of the environment and our individual footprint" and only said "yes" she had made changes in her life because of her visit. I suspect this visitor did not interact with the staff but looked around the Centre by herself. If this is the case, it is promising to note that though she seems to have had a limited experience in the Centre compared with other visitors, she still experienced some level of learning on turtles and the environment.

In continuing to look at one individual's experience from the online survey, I was interested to learn that the visitor that brought the group of Girl Guides was from Ontario, which I infer to mean the Girl Guides also came from Ontario. I was impressed that they made the journey to Nova Scotia and had heard about the Centre previously so came specifically to view it, show it to the girls and make a connection with nature. She remembered the life and journey of the leatherback along with the specimens and related most to the staff's passion. The visit had at least a short-term effect on the Girl Guide group because the visitor said the girls talked about cleaning the ocean for a few days after their visit. She did not mention if the girls made any life changes as a result of their visit but said she would no longer release balloons and mentioned things she was already doing.

Overall, the online survey provided a good start for beginning to understand the individuals that visit the CSTC. Moving forward, if the CSTN is interested in gathering more information about the motivational factors of their visitors, I would recommend someone at the Centre to conduct the research because getting individuals to fill out surveys online is difficult. However, as mentioned in

the Methodology chapter, I still do not feel having someone interview the visitors before or after their visit is the best idea due to the limited space at the CSTC and the short duration of the visits. I would now recommend an Ethnography style approach, which is interesting as I easily ruled this out as a method initially. Given the successful interactions the staff have with the visitors, I would recommend either an individual that listens and observes the conversations or for the staff to make notes after their conversations with visitors about the visitor's interests. I would also suggest, after these visitor interactions, the individuals could be asked to provide their contact information (i.e., email) if interested in participating in a follow up survey 6+ months later to look at changes they made in their daily lives as a result of their visit.

Visitor Interviews

The visitor interviews were a great way to get a better understanding of the people behind the surveys. I enjoyed the variety of people I met and feel the individuals I interviewed were a good representation of my limited sample size of survey respondents. Following the phenomenological approach for my research allowed me a glimpse of the visitors' essence as an individual. I say a glimpse as I know it takes more than 20-60 minutes with a person to truly know what makes them "tick", but, in most cases, people can and did identify their values or motivational factors, whether explicitly or implied, within the first few minutes of the interview.

The motivational factors for the visitors being drawn to and entering the Centre reflected the values each have in their daily lives. In the case of V1, V3, and V6, the turtles are part of the larger appeal and focus of animals, or the ocean in the case of V7. The sea turtles drew in V5 because of her sister's love of sea turtles, which represented her value for family. For V4, the leatherback sea turtle is Canadian and maybe even more so, Atlantic Canadian, which is the location he finally found the quality of life he wanted when leaving Russia. V2's newfound passion or calling for environmental conservation was sparked by his introduction to the endangered Pacific

leatherback sea turtle. V8, the only non-turtle-specific visitor I interviewed, is an environmental activist, mostly focused on forest degradation, but given his affinity for nature, appreciated the connection between plastics pollution and sea turtle challenges.

I didn't ask each of the visitors why they had agreed to be interviewed but could infer from most of our conversations their motivation. V1 and V7 are great conversationalists, extroverted, and always willing to help. V2, V3, V6 and possibly V5 come from research backgrounds so were willing to be interviewed to help further my research and general sea turtle education. V4 and V5 really want to help the sea turtles. V8 is also a conversationalist but I feel was more drawn to volunteering for the interview because of his activist nature and because he is retired, so had time to spare. As mentioned in the results, I discovered during my interviews that both V2 and V7 have volunteered for the CSTN on varying levels in the past. This association would have also been a large motivating factor.

Of the eight visitors I interviewed, only two had known about the Centre previously and came to visit it specifically. Six visitors were drawn to the Centre because of a previous interest (or family interest) in turtles; five of these six had a previous interest in sea turtles and four of these five (V1, V2, V4, V6) were interested specifically in leatherback sea turtles. V7 loves all ocean creatures so could be included but I didn't, as her main love is whales. V7 also visited the Centre before she started volunteering for the CSTN. V8 was the only visitor I interviewed that didn't have this previous affinity to turtles or sea turtles. This is a very high percentage compared with the numbers from the online survey. I infer from this that people with a previous turtle connection were (and probably are) more likely to volunteer for an interview, as they were more motivated to invest more time. More specifically, these are most likely the 'Professional/Hobbyists' visitors to the CSTC. This was also evident in the people that volunteered but I didn't interview: of the five people I was in contact with that didn't qualify for an interview, two are previous or current CSTN volunteers and

the two that live outside of Canada both expressed their love of sea turtles in our email exchanges.

As with the online survey, V1, V2, V3, V6 and to a lesser extent V8 all mentioned how much they enjoyed talking with the staff at the CSTC, resulting in these five visitors being classified as relating most to the “human” element of the Centre. However, this staff interaction was not necessary for V7 to feel connected as she did not talk with staff and began volunteering for beach walks after her visit. These interviews further support the importance of social interaction with visitors to the CSTC and, more broadly, Free Choice Learning Settings.

I had not expected to find two individuals (V2 and V4), both born outside of North America, that connected with leatherback sea turtles prior to visiting the CSTC because they are found in Canadian waters. This sense of national pride was not evident with anyone else that I interviewed, visitors or experts. It also isn’t something with which I associate, or at least not to the same level. I like to think of myself as patriotic and love the fact that Canadian waters provide nutrient-rich waters for leatherback sea turtles as well as many other marine species that live or migrate here every year. I feel protective of them but not pride. My love for travel and their migration between countries means I do not view them belonging to one place, which may be why I do not view them as “Canadian”. It was an interesting perspective nonetheless that the CSTN could maybe capitalize on in their education.

V2 brought up the issue of conservation for a species that cannot be readily touched. In my interview with him, he said he thinks it is easier to gain community support for sea turtle conservation in the Caribbean than shark conservation because the sea turtles come up on shore to nest compared to sharks, which do not come onto land. This means the sharks are “more abstract” and are “very intertwined with fisheries” for the Caribbean people. This is like Kathleen Martin’s, Director of the CSTN, thinking about sea turtle conservational support in Canada. As sea turtles do not come ashore in Canada, their presence is not well known, and their presence is intertwined with

fisheries (personal conversation, March 2014). This is a challenge of the CSTN that began my thesis question: How do you get people to care about a species that is difficult to see and touch? In the same conversation, however, Ms. Martin pointed out that people also love the non-tangible dinosaurs and unicorns (personal conversation, March 2014). The problem of conservational support for the less tangible animals is not isolated to leatherback sea turtles in Canada but is a common issue for many.

V5 was different than my other visitor interviews. I found her the least forthcoming about her previous life experiences and the most difficult to interpret her life values. She connected with the Centre through her sister's love of sea turtles. Unlike V3 who initially connected with turtles because of his brother but then made it his own, V5 has not seem to make that step to take personal ownership of a connection with sea turtles. However, V5 talked longingly about her hope to go on the trip to Trinidad that is offered by the CSTN to help with leatherback sea turtle research. When asked directly about this dream, she answered that it was a great opportunity for her to spend time with her sister, but I felt from the way she talked about the trip that she was also excited about the turtles. She did state that she was looking forward to helping with the research. My conclusion would be that V5, like V3, has begun to adopt her sister's love for sea turtles as her own, or at least has created a tangled web of sister/turtle love that she is still sorting through. She could also just be a more private person than the others I interviewed and wasn't prepared to share as much of her life experiences as my other interviewees. I was happy she was part of my research as it was important for me to realize not everyone is as forthcoming about his or her lives despite me trying to be supportive and inquisitive.

Expert Interviews

Before commencing this research, I had assumed that all the experts were, like myself, going to have had pet turtles or at least transformative experiences with turtles as children. I was wrong.

Only E2, E3, and E5 had significant childhood turtle experiences highlighted during their interviews, with E7 and E10 revealing childhood turtle experiences later in the interviews. Similarly, I also expected to find more people with allergies to animals like E1 and me, but we were the only two. However, when I mentioned my allergies to E5, he said, “oh, you’re one of those”, so clearly there are more people working with sea turtles with similar allergies. I was surprised to learn how few experts had these childhood turtle moments. Clearly these moments are not necessary to dedicate your life career to sea turtle conservation. This is promising for educational programs like the CSTC because it may mean they do not have to provide such an experience to a child in order to elicit sea turtle passion. The pressure is off!

I was surprised that not one expert began their journey with the goal of working on sea turtles. E1 expressed it well when he said, “I’ve never been single mindedly focused on turtles as a group but I’ve encountered turtles as part of this all along just because they are a big part of the different environment that I’ve fallen in love with”. E7 was the only expert that seemed to consider a career in sea turtles in high school, though she started her undergraduate degree with the focus of marine mammals, along with E8 and (sort of) myself. All the experts discovered sea turtles in either undergrad or when considering graduate school, often through connections with professors.

Looking at self-determination theory and the experts’ history, these individuals have high self-determination in relation to their own personal behaviour and dedication to achieve their goal of higher education. Green-Demers, Pelletier & Menard (1997) and Pelletier, Tuson, Green-Demers & Noels (1998) discuss three characteristics of an individual’s social environment, which can undermine or enhance their level of self-determination: autonomy support, constructive competence building support, and genuine interest or involvement. Many of the experts discussed stories and expressed gratitude of the support they received from their parents and peers. Many experts had stay-at-home mothers (which I will discuss again further in this chapter), which theoretically

could/would provide needed love and attention or genuine interest and involvement. E2 had her best friend to share her turtle love. Many experts expressed their appreciation for their autonomy in their current positions and more implied as such. The connections most experts revealed were positive (except some of E7) and supportive leading to further developments in their careers.

I felt E1, E2, E3, E4, E5, E10 and maybe E6 all had rehearsed stories, like me, about how they “got into” turtles. Most of these rehearsed stories began in childhood, but E6, E7, E8 and E10 started their stories in university or later. It doesn’t seem to be related to where they were in their career, nor does it seem related to their motivational factors. When I asked E7 and E10 more about their childhood, they both revealed a history involving turtles but explained this almost passively. I inferred from this that they do not see these childhood experiences as significant to their essence or critical to their present careers. E7 and E8 had a hard time articulating why they wanted to be a marine biologist. Though there were some stories from their childhood that seemed relevant to this decision, both seemed to decide on a marine biology career without a transformative physical experience as a child. The experts with rehearsed stories from childhood revealed to me more about themselves as an individual whereas those experts whose stories started later in life provided more of a summary of their credentials, like a verbal resume. As a result, I definitely felt like I got to know these individuals better and felt more connected to them as people.

Connections are a big theme in all experts’ stories and those that didn’t have great connections, like E7, struggled. E1, E2, E5, E6, and E10 connected with turtles through one or two people whereas E3, E4, E8 and E9 had a snowball effect of connections: one person led to another, which led to another expert, resulting in where they are today. Interestingly, but not surprisingly, four of the experts mention the same sea turtle expert as an influential and critical person in their career. As mentioned, the sea turtle community is small but has been growing over the decades with growing interests and connections.

These connections, along with personal attributes, resulted in some experts having an easier time than others achieving their present careers. From the interviews, E1, E8 and arguably E6 had a mostly linear path to their current career. E2, E4, E9 (and I) took a while to decide on a sea turtle path but, once they found it, smoothly ascended. E5, E7 and E10 cite tenacity, stubbornness, or perseverance for how they arrived at where they are today. I don't know about E3 given the poor technical-quality interview. With all that being said, no one has had an easy ride and the amount of effort everyone has put into his or her career is astonishing. It would appear only the hard working and dedicated survive the journey to become a sea turtle expert. At this point it should be noted that my definition of a "sea turtle expert" in this thesis is formally academic based: all experts have either a Master's or Ph.D. As a result, I will also include "academically inclined" to the requirements but I am not implying it is not possible to be a sea turtle expert without formal academic training.

Another common theme amongst the experts is that a career in sea turtles does not allow much (or any) time for anything else. E6 says she does "turtles all the time"; E8 confesses, "turtles kind of consume my life most of the year"; E9 admits, "I am more broadly trained it's just that sea turtles take up a lot of my time"; and E10 stated, "I put everything I had into turtles". Of everyone, only E10 seems to question this dedication but, as he is near the end of his career and reminiscing about his life in general, this perspective was understandable. However, most experts still make time for family, exercise, and creative outlets.

Many experts mentioned that they do not enjoy the political and/or administrative aspect of their jobs, especially E2, E5 and E6. E1 enjoys doing administrative and management work because it provides him with variety. He does indirectly acknowledge his absence of political restraints by crediting his flexibility to working in a small non-for-profit organization. E9 seems comfortable with these tasks given the mention of her previous experience dealing with them as a forestry biologist. E4, with her new business management focus, is the most encouraged by and embracing of political

and administrative tasks. Given that the experts are trained biologists and not business majors, this is understandable. Most of the experts' focus is/was on the turtles and the research instead of the workings of the company or university; however, most have had to adopt these tasks as they have advanced in their careers.

During my interviews, I had asked every expert except E3 what their dream job would be. I found it satisfying that none of the experts that I asked had a dream job that was completely different than what they are doing now, apart from E9. E1, the youngest of my interview experts, had the broadest "if-I-were-rich" dream job of being a philanthropist but that was only after I pushed. His initial response was "I don't really know my long-term trajectory. I'm really enjoying what I'm doing". As his boss was within earshot, I felt this might have affected his answer. E2, E4, E5, E6, E7, and E10's dream jobs were basically what they are doing now with a minor tweak or two. E8 is working on his dream job with his non-profit; he just has to figure out how to get paid for the work. E9's dream job, however, would be to stay in one location and become a specialist of the ecosystem of one piece of land, though would probably still include turtles. I think E9 travels the most of all the experts I interviewed. As mentioned in the results, I find this contrast interesting. I wonder if this desire is related to travel burnout, or the "grass-is-greener-on-the-other-side" syndrome, as she did talk about how much she enjoys her job. Or, it could just credit the flexibility of E9 or highlight that we can be happy doing multiple different things. The amount of focus and effort required to reach the "expert" point in a sea turtle career has most likely resulted in each of the individuals I interviewed being where they want to be. If I had asked them many years ago about their dream job, I suspect some of their answers would be different.

During my interviews, I asked the experts about their parents and siblings. I found it interesting that the four of the eight experts had stay-at-home mothers for part or all their childhoods (E4, E7, E9, E10). I didn't ask E1 or E3 what their parents did for work. However, on

reflection, it might just be me that finds this to be a high ratio as both my parents worked and, even now, I can only think of two friends growing up that had stay-at-home mothers. I've considered generational and location differences to explain this but suspect it boils down to financial security, as higher education is a luxury not always afforded to lower class homes.

Money was another common theme of my interviews. E2 mentioned more than once the ease of which her graduate work was accomplished because of the funding she received. E7 was unable to study in Australia, almost didn't finish her undergraduate and almost didn't work on turtles because of the absence of money. E9 felt she couldn't do graduate school in Canada because of his lack of funding. E10 feels he didn't have enough to spare to do the amount of travelling he would have liked. E5 discussed life decisions his partner and him made in order to save money. However, given that "money makes the world go around" and that education is expensive, it isn't surprising that money has played an important part in the experts' lives.

Finally, in each of my interviews, I asked each expert where their favourite place was to travel. As mentioned in the Results chapter, this was both for my own personal benefit to learn about great vacation locations but also provided a topic for easy and enjoyable conversation. As sea turtles travel long distances, experts often collaborate and work all over the world. Amongst these conversations, each expert discussed travel as either a hobby or highlight of his or her position, but it was only E6 who seemed to highlight travel as a major reason for his career choice. E1 said during his interview that he thought someone who is interested in travel is well suited to work with sea turtles. That appears to be true, and I feel E6 would agree.

Interviews Overall

There were many common motivational life factors or life values between the visitors and experts. Almost everyone I interviewed could be placed under the umbrella of either nature or animals or both. Overall, most people that I interviewed enjoy spending time outdoors: finding

peace either in the woods, or by/on/in the water. If it wasn't mentioned enough in their life stories to be included as a theme, factor or value, then it was mentioned in their hobbies, like running and biking for E6, sailing for E5 and V2 and nature photography and snowshoeing for V4. Animal lovers without the emphasis on nature were found in the visitors with V1, V3, and V6. The only exception to this was V5, who didn't emphasize either nature or animals as an important element in her life or as a hobby (beyond her pet dog).

The prehistoric nature of turtles was a common theme: V1, E3, and E5 all mention this as a major factor that connected them with turtles. This connection between sea turtles and dinosaurs has also been mentioned by Ms. Martin, the Director of the CSTN, and is included in information displayed at the CSTC. Interestingly, for me, this connection has never been an important factor or an attractive quality of turtles. I assume the turtle-dinosaur connection is not important to me because I have only recently begun to enjoy or appreciate the importance of history. It served as a good reminder to me, however, that what each individual values is different.

I am a self-proclaimed environmentalist and interviewed experts in sea turtle conservation. And yet, I found V8 was the only person between the two groups I interviewed that came across as an activist. V2 did discuss that because he was more environmentally aware, his parents were also becoming more environmentally conscious. He, like many of the experts, is focusing his career on conservation. However, the attitude and intensity of V8 compared with V2 and the experts was different. This may be the difference in personalities as V8 is confrontational and thus may find it easier to be outspoken. It may also reflect educational sources. As discussed in the literature review chapter, media allows many people to voice their opinion and cite information from non-credible references. Sometimes those with the loudest voice are not the most knowledgeable on a subject. Scientists are often strictly supportive of peer-reviewed information which, when published, may lack the emotions and glamour necessary to spark public attention or action. It may also be difficult

for the general public to access this information from scientific journals. I do not want to imply that V8 is inaccurate with her activist forestry claim; I would just like to confirm her information before following in her footsteps, as I would encourage anyone to do. I do, however, admire her passion and am reminded of my own goal to take on more of an activist role.

I was fascinated to discover two of my interviewees had transformative experiences as an adult involving sea turtles. As mentioned, V2 has volunteered for the CSTN on numerous occasions and had I known that prior to our conversation, I would not have interviewed him. However, I am glad he was part of my research because V2 and E10 are prime examples of why education should not be solely focused on children. It is possible to have a transformative experience as an adult and this transformative experience could be significant enough to change the (career) path of one's life. V2 changed focus from tax litigation law to marine conservation after an experience with sea turtles, a major shift in his life direction. E10 had already begun to make the change from finance to biology but became turtle focused after reading a newspaper article on sea turtle research. These experiences probably provided the right motivation at the right time, but again, both occurred later in life, in their 20s or 30s. It is important for anyone providing education, especially environmental education, to realize and acknowledge that it is not just children that can be impacted by knowledge and as such, should not be the sole focus of educational programs. In the beginning of my research, I was having such a discussion as this with Ms. Martin of the CSTN. She was highlighting the impact educating children can have on the whole family as the CSTN found support of many fishermen through the education of their children (personal conversation, December 2016). V2 describes this phenomenon in her interview as she talks about her parents who have become much more environmentally aware now that she is focused on marine conservation. I feel this again supports the importance of including adults in educational programs as they can also affect their parents, presumably also their peers and children.

The topic of fishermen involvement with sea turtles was a subject mentioned by a few experts. E1, E2 and E4 told stories about working with or living amongst fishermen. E1 and E4 specifically talked about this experience being a transformative moment. The economic considerations and implications of the fishing industry were important for both these experts to be able to see conservation from a different perspective. Interestingly, E1 saw it from a rich-country perspective compared with E4's more poor country perspective. As a result, E1's experience involved fishermen helping to save sea turtles that may indirectly become harmed or killed compared with E4's experience of fishermen directly killing sea turtles. Comparing these three individuals' fishing connection to the online survey, they also did not grow up in a coastal community. Maybe the connection between sea turtles and fishermen is more impactful if you grow up inland because you are not numb or accustomed to the presence of the fishing community, thus having the opposite effect I had initially hypothesized.

I enjoyed learning about the creative side of each expert as well as a few visitors. E1 has spent his life dancing and E3 assumed she would be an artist when she grew up but didn't elaborate as to what kind. E5's mother was an art teacher and he was good at drawing but also sculpted and painted and now enjoys photography, as does E8 and V4. E6 enjoys baking as a result of her caterer parents. E9 has been a writer since childhood and continues today. E2 didn't mention any sort of creative outlet, but, as I have known her for many years, I can say she is a fantastic storyteller, complete with voice changes and accents, and is great at singing show tunes. V8's hobby of forging knives out of steel is the most original but my favourite creative outlet amongst all my interviews is V3's "reckless embroidery".

Along the same lines as being creative is the topic of dream jobs, already mentioned in the expert interview section. I wanted to compare the dream jobs of the experts to V3's lofty dream job of running a farm animal sanctuary. V3 is the youngest of my interviewees. I found it interesting,

though maybe not surprising, that the younger interviewees: V3, E1, followed by E4, E7, E8, and E9 all had varying levels of career aspirations beyond their current position. It makes sense that those individuals that have not reached the peak of their career still have wiggle room in their career aspirations because they have not worked themselves into a narrow, well-defined position. It was inspiring to hear the creative daydreaming and career planning of the interviewees, as I often dream about lofty career goals or changes.

Finally, I will return to the topic of motivation and the interviewees' understanding of their own values in order to evaluate my choice of Methodology. Most people I interviewed, visitors as well as experts, told me in the first few minutes of our conversation what their motivation was for either entering the CSTC or why they chose a career in turtles. I did not expect it to be that easy; people apparently know themselves better than I had expected. I had expected it was going to take 30-90 minutes or more to tease out of each visitor how their motivational factors for entering the CSTC reflected their essence or life values. I do believe I got a better understanding for each individual and their values by taking the time to have a conversation about their past, but for the benefit of a larger sample size this could have been reduced. I did expect the experts to have a more concise answer for why they are in the careers they are in now because it was a more specific question, one that I expect they had been asked before. I was still surprised by E6's short, quick response of "my motivation initially was travel". With this information, I no longer think a phenomenological approach is the only way to discover this information. From my results, I think you could survey a larger number of experts, either in person or through written communication, to ask what motivated them to enter a career focused on sea turtles and get similar results to what I achieved (though it would not have been as fun). This, again, is because most experts have a rehearsed story of their journey or at least are aware of why they made the choices they did. Instead of the visitor interviews, I think I could have asked a series of short or long answer questions about

their life values and how that related to their CSTC visit. For example, in the online survey after question #9, “What did you relate to or connect with the most at the CSTC”, I could have included the following follow-up questions: “Why did you relate or connect with this the most?” and “How does this relate to what you value or what motivates you in your everyday life?” I think this would have provided similar results with a larger sample size. This approach would have been more of a quantitative method instead of a phenomenological approach. I, however, have no regrets about my approach to my research.

Chapter Six: Conclusion

Canadian Sea Turtle Centre

The purpose of the online survey was to identify for the CSTN the different types of people who are entering the Centre, establish a baseline of public sea turtle knowledge, determine what the public are connecting to and learning, and to discover if this knowledge is motivating visitors to change their behaviours.

This research has revealed that the people who enter the Centre are mostly local, of different ages, and female. Of course, the predominance of females and the findings that more people visited the Centre in 2017 is probably a reflection of the respondents than the visitor demographic. Most visitors come with their families; fewer people come to the Centre by themselves or with friends. I interpret this to mean most people that come into the Centre are on vacation or on a day off. They are out enjoying what the Halifax waterfront has to offer, instead of, for example, coming in on their lunch break during work; as reflected in the only one mention of colleagues with whom they came. This seems to be confirmed by the fact that half of the respondents stumbled across the Centre. However, many respondents had previously known about the Centre, meaning the existence of leatherback sea turtles in Canadian waters and the work of the CSTN isn't completely unknown. Again, these results may be slightly skewed due to the number of respondents that either volunteered for the CSTN or were friends or family of volunteers. It was also encouraging to see that people return to the Centre for repeat visits, which was assumed from the multiple visit answers in the survey and confirmed during the interviews. I interpret this to mean the Centre provided a memorable experience so that the visitors wanted to return, often bringing others with them to enjoy the experience.

Looking at the baseline of public knowledge, two-thirds of people were aware of turtles in Canadian waters. As mentioned, I feel this number is higher because of the respondents connected

to the CSTN. More than 44% of respondents said they had a previous interest in sea turtles. Even with the CSTN connected respondent numbers (19.2%), this indicates that the interest and at least a minimal amount of knowledge are present within the public.

The adult visitors to the Centre found the staff, pictures, storyboards and specimens the most memorable. All of these would allow the visitor to connect more directly to the turtles than the activities, fishermen and jellyfish. Almost 2/3 of the visitors connected most with the human side of the Centre and the “humanizing” of the turtles, and five of eight visitors interviewed referenced the staff interactions as the highlight of their CSTC visit.

The visitors felt the main take-home messages of the Centre involved the existence of sea turtles in Canadian waters, the work of the CSTN with these turtles, the conservation and protection of sea turtles, and water pollution. These messages clearly have had an impact on the visitors as almost 80% of visitors claimed to have made changes in their daily lives because of their visit. Also, most of the 22.9% that didn’t change their behaviours stated it was because they were already doing what the Centre recommended.

The interviews provided a deeper insight into a few of the visitors of the Centre. To begin with, people know themselves better than I expected as most interviewees could easily identify their motivational factors for entering the Centre and their life values. This was a good lesson for me and may be important for future research as this may allow a different research method and larger sample sizes. As this is clearly a limited sample, I am unsure if everyone can identify their values as well as the people I interviewed or, because these were mostly sea turtle motivated individuals, the initial motivation or connection was already established, making the rest easier to identify. It would be interesting to know if the individuals that didn’t offer interviews or didn’t enter the Centre at all are less self-aware or just unable to make that initial connection with sea turtles and their other life values.

As mentioned, most people who were motivated to give interviews were drawn to the Centre because of the sea turtles. I conclude from this that the people with a previous interest or passion with turtles are more likely to be motivated to do more, go that extra step towards research and, ultimately, conservation. Looking back to self-determination theory, Osbaldiston & Sheldon (2003) proposed that people are more likely to engage in behaviours if the motivation for that behaviour comes from themselves rather than an external force. If the visitors I interviewed were more self-determined with sea turtle conservation as a high personal motivator, then these individuals would have a larger connection, hold a bigger value for sea turtles and thus would be more engaged than other visitors.

The motivational factor of sea turtles that brought the visitors into the Centre that I interviewed related to broader key values in their daily lives that they were able to identify. It was interesting to see how turtles related to these life values for each person. These individuals had all made this connection between their life values and sea turtles on their own before their visit. This self-identification may be the key to helping more people make this connection.

Overall, I would conclude the location of the CSTC is ideal and the staff makes all the difference when it comes to the visitors' experience. The CSTN is doing a good job engaging and interacting with the audience, which follows the recommendations for Environmental Adult Education to promote learning and encourage behavioural change.

Experts

A childhood transformative experience is unnecessary to motivate an individual to pursue a career focused on sea turtles. However, the motivating factors for pursuing such a career were connected to values each expert developed during childhood. It was less surprising that the experts knew their motivational factors for entering their careers, as my questions were more specific to a major focus in their lives. I was surprised to discover that not more experts had pet turtles as a child,

that only one expert mentioned having allergies and not one expert wanted to be a sea turtle biologist as a child. I do acknowledge that all the experts I interviewed were academic experts, resulting in a skew of the results towards education (appropriate for a Master's in Education). Like the visitors, almost every expert values nature or animals in one form or another and is aware how these values are connected to their motivation for pursuing a sea turtle career.

My conclusion from my expert interviews is that to be a sea turtle expert, you need to be educationally driven, dedicated and value several motivational factors that co-exist with such a career.

Recommendations

The CSTC should continue to be in a high traffic area with free admission. I feel more effort could be focused on letting people know about the Centre, whether through media, schools, community centres, or areas frequently visited, so that people can come specifically to visit the Centre. This, as mentioned, brings people already with that initial connection allowing for more knowledge transfer and engagement. For those who continue to stumble across the Centre, I acknowledge that space is a large limiting factor so there are only so many things you can put outside and inside to entice people to enter. However, more items geared towards adults and the connection between sea turtles and nature may draw more visitors. With the limited space and limited staff, it isn't possible to talk with every visitor so it is important to have a variety of information that can appeal to multiple motivational factors, like animals, nature, environment, and ocean.

Looking at the take-home message of the CSTC, I feel the CSTN needs to take this information and decide if those are the messages they want to be communicating. I would also recommend the CSTC use well known YouTube videos and what is in the media, like the recent local strandings of leatherbacks, to their advantage to connect with the public. These could provide

one strategy for embracing the leatherback sea turtle as a local and Canadian icon, as per the draw for V2 and V4.

The CSTC clearly has an effect on their audience, as so many visitors made changes to their daily lives. From this research, however, I would recommend it is important to have many levels of suggested behavioural changes to appeal to the high and low environmentally self-determined individuals. For those individuals who are already doing everything the CSTC recommends, those individuals that are assumed to have a history of environmental education like myself, the CSTC should consider adding more complex recommendations like behaviours beyond personal changes. These could include support for government policies or policy changes, support for environmental companies, etc. If these more environmentally aware individuals could leave the CSTC with motivation and direction, big changes are possible.

The biggest recommendation from my research for the CSTC (and other Free Choice Learning Settings like it) is to continue to have knowledgeable, optimistic, enthusiastic staff to talk with visitors and answer their questions. I encourage the staff to let the visitors dictate and guide the discussion to ensure it is a conversation, not a lecture. This way the staff can tailor or highlight educational components of sea turtle information to factors that are valued by that individual.

As illustrated with V2 and E10, the education at the CSTC and FCLS should be geared towards adults as well as children as it is possible to develop a passion for turtles later in life. So much in fact, that it is possible to change one's career path if all the necessary elements align. If that career path change is towards becoming a sea turtle academic, the CSTC could be the first in many necessary connections in the sea turtle community to progress such a career.

Broader Implications and Future Research

It would be great if this research benefited other sea turtle educational centres. To begin with, the centres should identify their main goals (education or action or both) as this may affect

their approach to education. For the smaller centres, I would recommend following the examples and recommendations set out by and for the CSTC focusing on personal attention to visitors, highlighting the multiple connections sea turtles have with broader topics to establish a connection for the individual. For larger centres, like those established in an aquarium, this personal attention may not be possible so providing displays or experiences that connect the sea turtles to broader topics like nature and animals is important. It is important that the experience be geared towards both adults and children and provides recommendations for all levels of environmental education. The message should be optimistic and demonstrate examples of simple to complex changes that others have successfully made. These messages could be highlighted by known videos and images in the media.

Moving forward from this research, I would like to see if others are able to find a broader range of motivational factors in visitors to sea turtle educational centres, including the CSTC, beyond the dominant nature and animal factors. I would like to know the life values of individuals that are not drawn to the Centre and if we can connect sea turtles to those values. I want to know what actions beyond personal changes would be the most beneficial for sea turtle conservation and what type of individuals are more likely to commit to these actions. I hope this is just the beginning of turning education into global change.

Personal

My personal conclusion after this entire process is that in order to make significant change in and for this world, more than personal change is required. After reading about EAE, I now see the value in politics. As pointed out by Clover (2003), “activism and protests are no substitute for democratic governance. And the political arena remains the space in which most of the power lies” (p.13). I am cautious but committed to lending my voice and time to the organizations that undertake this challenge and hope to be a source of action and change in the future.

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Appendices:

Appendix 1: Online Survey Instrument

Survey purpose

Thank you for your interest in participating in this survey. I, April Nason, am conducting this survey as part of my Master's in Education degree at Mount Saint Vincent University (MSVU). I am researching the effectiveness of the educational messaging at the Canadian Sea Turtle Centre (CSTC), and I am interested in your experience there. The results of this survey will be shared with the Canadian Sea Turtle Network (CSTN) for their program development and used as data for my thesis and any subsequent related publications.

Eligibility

In order to participate in this survey, you must have previously visited the CSTC either in its Peggy's Cove or Halifax Waterfront location. You must be over the age of 19 and agree to the use of your answers for both CSTN program development and my MSVU research.

Survey format and prize

There are 11 questions (multiple choice and short answer). All answers are anonymous, and there are no personal identification questions beyond demographics. You may choose to quit the survey at any time. If you complete the survey and submit your email address at the end, you will be eligible to win a CSTN T-shirt.

Results

The results of this study will be available through the CSTN. Send an email to: info@seaturtle.ca.

Questions

Should you have any questions about the survey, please feel free to email me at nasona@dal.ca or contact the Research Ethics Coordinator at MSVU (902-457-6788).

Qualifying Questions

Have you previously visiting the CSTC?

1. Yes
2. No

Are you over the age of 19?

1. Yes
2. No

Do you consent to the use of your information?

1. Yes
2. No

Demographic Questions

1. Where do you live? (City/Town, Province/State, Country)
2. What age range do you fall in?
 - a. 19-29
 - b. 30-39
 - c. 40-49
 - d. 50-59
 - e. 60+
3. What gender do you identify with?
 - a. Female
 - b. Male
 - c. Non-binary/Third Gender
 - d. Prefer not to say
 - e. Other

4. What year did you visit the Canadian Sea Turtle Centre? (If more than one year, pick one and answer the following questions with that visit in mind).
- a. 2013
 - b. 2014
 - c. 2015
 - d. 2016
 - e. 2017

Multiple Choice Questions

5. Who did you come to the Centre with? (check all that apply)
- a. I came by myself
 - b. Friend(s)
 - c. Colleague(s)
 - d. Family
 - e. Children (under 12 years old)
 - f. Teens (13-18 years old)
 - g. Other
6. What brought you into the Centre? (check all that apply)
- a. Heard about the Centre and came specifically to visit it
 - b. Was with a person or group that wanted to view it
 - c. Had a previous interest in sea turtles
 - d. Stumbled across it
 - e. Came in to make a connection with an element of nature
 - f. Friends or family of staff member/volunteer of the CSTN
 - g. Other

7. Prior to your visit, were you aware of sea turtles in Canadian waters?
 - a. No
 - b. Yes
8. What do you remember most about the Centre? (check all that apply)
 - a. Staff
 - b. Pictures and storyboards
 - c. Activities
 - d. Life and journey of the leatherback sea turtle
 - e. Collaboration between the CSTN and local fisherman
 - f. Jellyfish
 - g. Specimens (sea turtle skull, flipper bones, throat spines, satellite & flipper tags, etc.)
 - h. Other

Short Answer Questions

9. What did you relate to or connect with the most at the Centre?
10. What would you say was the biggest take home message at the CSTC?
11. Did you make any changes in your life as a result of your visit? For example, do you use fewer or no plastic bags when shopping? Do you no longer use or release balloons? Are you more aware of marine issues and consider them when making decisions? Do you lobby your government in support of marine life? Do you discuss sea turtles, their presence and their condition, with others?

Thank you very much for your time!

To be entered in the draw for one free CSTN t-shirt, please provide your email address below. The winner will be drawn randomly from the completed surveys using the email address provided in this section on April 1, 2018. You will be contacted via email on that day if your name is chosen. Should

you have any questions about the survey, please feel free to email me, April Nason, at nasona@dal.ca or contact the Research Ethics Coordinator at MSVU (902-457-6788). The results of this study will be available through the CSTN by sending an email to: info@seaturtle.ca.

Additional Research Information

As part of my research, I am also conducting in-depth, in-person interviews looking at a more detailed account of what brought you into the Canadian Sea Turtle Centre, what you connected with and why. Your participation would be greatly appreciated. If you live in Canada and would be interested in participating in such an interview, please provide your name and email address below and I will contact you with further information.

Appendix 2: Visitor Interview Invitation Letter

Dear (insert visitor name),

Thank you very much for your interest in the interview component of my research. As mentioned, I am looking at conducting interviews to explore connections made while at the Canadian Sea Turtle Centre. The purpose of the interview will be to get more detail on what brought you into the Centre, what you remember and/or connected with the most and why. I anticipate the interview taking 30-60 minutes and it will be non-structured and recorded. You may choose to stop the interview at any time or not answer specific questions or not discuss topics if you are not comfortable. The interview will be performed ideally in person or, if not possible, via live chat over the Internet. If you reside in one of the three Maritime provinces, I'd like to arrange to meet you in person, at a public but quiet location at a time that is convenient for both of us. It is my goal to keep your identity confidential, if you choose, so names of people and places will be changed. Only I will have knowledge of your identity. The transcription of the interview, once encrypted, may be also be viewed by my thesis supervisors: Dr. Donovan Plumb, MSVU professor and Kathleen Martin, Executive Director of the Canadian Sea Turtle Network. All information collected will be deleted or destroyed five years after my thesis is approved to allow time for publication. The results of my research can be sent to you once my thesis has been accepted. If you have any questions about this research, feel free to contact me at nasona@dal.ca or the Research Ethics Coordinator at MSVU (902-457-6788). Please let me know if you are or are not interested in proceeding with the interview. Thank you for your time.

Sincerely,

April

MSVU M.A.Ed candidate

Appendix 3: Visitor Interview Letter of Informed Consent



Informed Consent for _____. (please print name)

Thank you for agreeing to participate in this audio-recorded interview for the purpose of April Nason's MSVU thesis research. By signing this consent form, it means you have understood and agree to the following:

- The purpose of this interview is to discuss your experience at the Canadian Sea Turtle Centre.
- All names and places will be changed to help protect your identity, if you choose, and only April Nason will have access to the key
- The encrypted transcription of the interview may be viewed by April Nason's thesis supervisors: Donovan Plumb and Kathleen Martin
- All information collected including the identification key, recorded interview, transcriptions and notes will be deleted or destroyed 5 years after the thesis acceptance to allow time for publications.
- You have the right to stop the interview at any time or not discuss any topic or answer any questions you do not want.
- You may retract your interview information at any time between now and when the thesis is submitted. You will be notified prior to thesis submission to ensure you still agree to the use of your information.

- You are not waiving any legal rights by signing this consent form.
- The results of this research can be sent to you, once accepted, if you choose.

If you have any questions about this research, you may contact April Nason at nasona@dal.ca or the University Research Ethics Board at MSVU

Signature

Date

Appendix 4: Expert Interview Invitation Letter

Dear (insert expert name),

My name is April Nason, and I am currently enrolled in the Master's in Arts in Education at Mount Saint Vincent University in Halifax, N.S. For my thesis, I am working with the Canadian Sea Turtle Network with the hopes of improving their public education by researching motivational elements of individuals that visit the Canadian Sea Turtle Centre. My affiliation with the CSTN began in 2009 when I started a Masters in Science degree with Dr. Mike James. I have volunteered with them since 2011, tagging leatherbacks at sea. Some of my research was poster presented at the 2013 International Sea Turtle Conference in Baltimore, MD. As part of my research, I am investigating what motivates an individual to focus their lives on one specific species, in this case, sea turtles. To support this research, I am looking to conduct 20-90 minute non-structured, recorded interviews with researchers who have focused their careers on sea turtles. The purpose of the interview will be to learn what motivated you and how you arrived in the position or career you are in today. You may choose to stop the interview at any time or not answer specific questions or not discuss topics if you are not comfortable. The interview will be performed via live chat over the Internet, either Skype, FaceTime or over Facebook. It is my goal to keep your identity confidential so names of people and places will be changed. However, I acknowledge that the sea turtle community is small and even pseudonym stories of your past may be identifiable by fellow colleagues. Because of this, you will have the opportunity to review the encrypted transcripts before giving approval of your interview for my research. The encrypted transcription of the interview may be also viewed by my thesis supervisors: Dr. Donovan Plumb, MSVU professor and Kathleen Martin, Executive Director of the Canadian Sea Turtle Network. All information collected will be deleted or destroyed 5 years after my thesis is accepted to allow time for publication. The results of my research can be sent to

you once my thesis has been accepted. If you have any questions about this research, feel free to contact me at nasona@dal.ca or the University Research Ethics Board at MSVU. Please let me know if you are or are not interested in proceeding with the interview. Thank you for your time.

Sincerely,

April Nason

MSVU M.A.Ed candidate

Appendix 5: Expert Interview Letter of Informed Consent



Informed Consent for _____. (please print name)

Thank you for agreeing to participate in this audio-recorded interview for the purpose of April Nason's MSVU thesis research. By signing this consent form, it means you have understood and agree to the following:

- The purpose of this interview is to discuss how you ended up with a sea turtle focused career.
- All names and places will be changed to help protect your identity, if you choose, and only April Nason will have access to the key. However, as the sea turtle community is small, those interested in the results of this study may still identify your identity.
- You may review this interview once it is transcribed and encrypted.
- The encrypted transcription of the interview may be viewed by April Nason's thesis supervisors: Donovan Plumb and Kathleen Martin
- All information collected including the identification key, recorded interview, transcriptions and notes will be deleted or destroyed 5 years after the thesis acceptance to allow time for publications.
- You have the right to stop the interview at any time or not discuss any topic or answer any questions you do not want.

- You may retract your interview information at any time between now and when the thesis is submitted. You will be notified prior to thesis submission to ensure you still agree to the use of your information.
- You are not waiving any legal rights by signing this consent form.
- The results of this research can be sent to you, once accepted, if you choose.

If you have any questions about this research, you may contact April Nason at nasona@dal.ca or the University Research Ethics Board at MSVU.

Signature

Date