

University of Missouri, St. Louis

IRL @ UMSL

Dissertations

UMSL Graduate Works

6-19-2018

Community Connections to Marine Heritage in China: Exploring the Factors that Influence Local Resident Support for Marine Heritage Conservation and Management

Aixia Feng
afxtf@mail.umsl.edu

Follow this and additional works at: <https://irl.umsl.edu/dissertation>



Part of the [Education Commons](#)

Recommended Citation

Feng, Aixia, "Community Connections to Marine Heritage in China: Exploring the Factors that Influence Local Resident Support for Marine Heritage Conservation and Management" (2018). *Dissertations*. 761. <https://irl.umsl.edu/dissertation/761>

This Dissertation is brought to you for free and open access by the UMSL Graduate Works at IRL @ UMSL. It has been accepted for inclusion in Dissertations by an authorized administrator of IRL @ UMSL. For more information, please contact marvinh@umsl.edu.

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

Community Connections to Marine Heritage in China: Exploring the Factors that
Influence Local Resident Support for Marine Heritage Conservation and
Management

Aixia Feng

M.Ed., Adult Education, University of Missouri-St. Louis, 2015

M.Ed., Theory of Curriculum and Instruction, Beijing Normal University, 2014

B.S., Environmental Science, Tianjin Agricultural University, 2011

A Dissertation Submitted to The Graduate School at the University of Missouri-St. Louis
in partial fulfillment of the requirements for the degree
Doctor of Philosophy in Education

August 2018

Advisory Committee

Theresa Coble, Ph.D.
Chair

Keith Miller, Ph.D.

Carl Hoagland, Ph.D.

Phyllis Balcerzak, Ph.D.

Copyright, Aixia Feng, 2018

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

Abstract

This study used a mixed-methods approach (i.e., exploratory sequential design) to identify the factors that influenced local resident connection to, involvement with, and support for marine heritage conservation and management in China. This study also developed a marine heritage site conservation and management model to maximize local resident support in China.

Through interviews with fifteen local residents and five marine heritage site managers in Changshan Islands National Marine Park (Changshan Islands) and Xinghai Bay National Marine Park (Xinghai Bay) in the Dalian area of Liaoning Province, and written questionnaires administered to 495 local residents in Changshan Islands, Xinghai Bay, and Xiamen National Marine Park (Xiamen) in Guangdong Province, results identified factors that influence local resident support for marine heritage conservation and management.

Through a thematic analysis of the qualitative data, five themes emerged related to local resident meanings, perceptions, and interactions with Xinghai Bay and Changshan Islands. Qualitative data analysis also explored manager perspectives toward marine heritage and local resident engagement with marine heritage sites.

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

Three implications emerged from the qualitative data analysis results. First, local resident perceptions of, and how much local residents know about, marine heritage in general, and its conservation and management in particular, influences local resident interactions with marine heritage conservation and management. Second, local resident perceptions of marine heritage and its conservation and management influences their interaction with marine heritage conservation and management. Third, park management efforts influence local resident interactions with marine heritage and its conservation and management. Results also suggest that there is a huge opportunity to enhance local resident connection to, involvement in, and support for marine heritage conservation and management through park manager education and outreach efforts. However, it may be unrealistic to expect marine heritage site managers to act independently at the site level in the absence of systemic change in China's marine heritage system. Thus, revising mandates, rethinking strategies, and/or increasing resource allocations at the national level could greatly strengthen onsite management efforts.

Explanatory factor analysis and multiple linear regression analysis indicates that local resident support for marine heritage conservation and management is a function of several influential factors, including local resident perceptions, connections, involvement, respondent annual income, the interaction of age, family composition, and years of residence, and the interaction of gender and birthplace. An updated conceptual framework was developed to better explain how key factors relate to each other and influence local resident support for marine heritage conservation and management

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

(Figure 6). Finally, the study presents six conclusions related to the research questions identified at the beginning of the study, outlines a series of management recommendations, and highlights areas for future research.

Keywords: local residents; marine heritage; support; connection; involvement; perception; conservation and management

Acknowledgements

A dissertation is a journey. I am so glad that I have been through this journey with joy, tears, happiness, disappointment, love, confusion, support, difficulties, encouragement, pressure and help. I feel like it is not a dissertation done by me alone, it is like a labor of love that I and other beloved friends and colleagues finished together. They provided love, support, encouragement and help during my dissertation journey.

I would like to thank Dr. Theresa Coble who is my advisor professor and the chairman of my dissertation committee. She has devoted so much time, effort and wisdom during my doctoral program. She provided me with a graduate assistantship for three years. Without the assistantship that she has provided, I would not be able to finish my degree program. A dissertation is not as easy as how you see it all laid out. I wanted to give up when I encountered some difficulties. It was her encouragement, support, help and love that pulled me back to the journey. I really appreciate it. I cannot finish my dissertation without her support, she really has made so many contributions to my dissertation.

I would like to thank my dissertation committee members. They gave me lots of insightful ideas. Dr. Keith Miller provided me lots of support and help during the quantitative data analysis process. Whenever I had problems with factor analysis and

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

multiple linear regression analysis, he was always there for me. Dr. Carl Hoagland gave me valuable suggestions on my literature review. He pointed out the disadvantages of early literature review efforts in detail, and gave me an explicit instructions to improve my literature review. Dr. Phyllis Balcerzak energized me when I lost my way during the coding process. She shared her personal experiences with me, releasing my anxiety and clearing my confusions away.

I would like to thank Dr. Dean Coble, who encouraged me a lot when I worked on my research design and quantitative data analysis. The suggestions he gave me were really wonderful. He was neither my advisor nor a professor on my committee, but when I asked him to read my quantitative data analysis and give me some feedback and suggestions, he did not hesitate to say yes. I really appreciate what he has done!

I would like to thank Dr. Dongying Wei and Dr. Min Wang from Beijing Normal University. Dr. Wei was my major professor for my master's degree program. Dr. Wang was the director of my master's degree program. I regard them as family members. Their love to me is just priceless. In addition, they provided me so much assistance during the data collection period. I could not have finished my dissertation if they had not helped me out gain access to marine heritage site managers.

I would like to thank Dr. Jim Wilson, who was my first advisor professor at UMSL. He retired in 2015. But his love for me has never retired. He often emails me to check on me and gives me encouragement and help. He is a role model for me.

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

I would like to thank everyone of E. Desmond Lee Technology Learning Center (TLC) Team, especially the director, Michael Butler. Mr. Butler provided me with an opportunity to work at both the TLC and Ed Collabitat front desk. He gave me a very flexible work schedule, ensuring that I had enough time to work on my dissertation. He is awesome! Everyone in the TLC is awesome. It's you guys who have helped me grow and shaped me into a better person. I just love you all. I will miss you so much when I am back in China.

I would like to thank all my friends in China and America. Friendship is always good, and it's the source of my spiritual strength. Words cannot express how beautiful it is.

I would like to thank the Chinese Students Bible Study Group. Thank you for your love and thanks for praying for me.

I would like to thank the Cultural Bridges Group. Thank you for your openness and inclusion. We are like a big family and I love it. I will miss you a lot when I am back in China.

I would like to thank Dr. Carol Murphy, Chewy, Dr. Richardson and Judith, who support me as my American family during my time in the U.S.

I would like to thank my family. I love you all, and I am glad I will go back to see you with a doctoral degree. I know this is what my parents expected of supporting me every step of the way. Love you all!

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

I would like to thank my fiancé, Da Zhao. Thank you for being with me all the time whether I was in a good situation or a bad situation. I love you very much and more than I can say. I am so excited that I will see you soon at the Beijing airport. I am excited to be your friend and partner forever!

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

Table of Contents

Abstract.....	iii
Acknowledgements.....	vi
Table of Contents.....	x
List of Tables.....	xiv
List of Figures.....	xvi
Chapter 1 Introduction.....	1
Problem Statement.....	6
Purpose of Study.....	7
Research Questions.....	8
Significance.....	9
Chapter 2 Literature Review.....	11
The Definition of Marine Heritage.....	11
Community and Heritage.....	13
Community perception.....	15

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

Community attachment and involvement	17
Sense of Place	19
The meaning of sense of place	19
Sense of place and heritage.....	22
Heritage Studies	29
Heritage values.....	30
Heritage conservation and management	32
Proposed Conceptual Model of the Study	36
Chapter 3 Research Methods	39
Overview.....	39
Research Design.....	39
The selection of study sites	44
Sampling strategy for interviews	50
Sampling strategy for surveys.....	52
Data Collection Procedures.....	53
Phase one: Qualitative data collection	53
Phase two: Quantitative data collection	59
Data Analysis Procedures	64
Qualitative data analysis procedures.....	65

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

Quantitative data analysis procedures.....	67
Delimitations.....	68
Ethics and Human Relations.....	70
Chapter 4 Results.....	71
Local Resident and Park Manager Interview.....	71
Overarching Themes.....	74
Theme 1: Local residents articulate marine heritage definitions that encompass natural and cultural heritage.....	77
Theme 2: Local residents form deep connections to the meanings and significance of marine heritage.....	80
Theme 3: Local residents want marine heritage to be protected for self and future generations.....	84
Theme 4: Although local residents support marine heritage protection, their day-to-day involvement in marine heritage conservation and management is extremely limited.....	87
Theme 5: To harness the power of an engaged local population, managers must expand their focus beyond marine ecosystem management and facility construction management.....	96
Local Resident Survey.....	103
Descriptive statistics from local resident survey.....	103

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

Interferential statistics from the local resident survey	106
Chapter 5 Discussion	115
Influential Factors of Local Support, Connection and Involvement.....	115
The Relationship between Factors and Local Support	120
Conceptual Framework.....	123
Conclusions.....	124
Management Implications.....	126
Linking people to marine heritage	126
Site ducation and outreach	128
Suggestions for Future Research	129
Acknowledgement of Limitations.....	131
REFERENCES	133
APPENDIX A The Definition of Outstanding of Univeral Value	154
APPENDIX B: Interview Protocol.....	158
APPENDIX C: Survey – English Version.....	169
APPENDIX D: Survey – Chinese Version.....	177

List of Tables

Table 1. The Importance of the Marine Environment and Its Different Features (IUCN, 2013)	14
Table 2. Kameli’s (2016) Dimensional Arrangement of Place.....	21
Table 3. Conceptualizing Heritage Visitors’ Sustainable Behaviour: General and Site- Specific Dimensions	25
Table 4. Jorgensen and Stedman’s (2001) 12-Factor Sense of Place Scale.....	28
Table 5. The List of Potential Study Sites	47
Table 6. Survey Design.....	61
Table 7. Common Factor Model of This Study	67
Table 8. Variables and Statistics of Quantitative Data	68
Table 9. Onsite Local Resident Interview Participants, Descriptive Statistics (N=15)	72
Table 10. Onsite Marine heritage site manager Interview, Descriptive Statistics (N=5)	75
Table 11. Onsite local resident surveys, Descriptive statistics (N=495)	104
Table 12. Rotated Component Matrix from SPSS Output for Factor Analysis	107

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

Table 13. Cronbach’s Alpha and Scale Statistics from SPSS Output for Factor Analysis..... 109

Table 14. ANOVA Output 1 from SPSS 110

Table 15. Coefficients from SPSS Output 1 111

Table 16. ANOVA Output 2 from SPSS 112

Table 17. Coefficients from SPSS Output 2 113

List of Figures

Figure 1. The Visual Model Explaining the Relationship Between the Variables of Sense of Place (Ardoin et al., 2012) and Resident Attitudes towards Future Generations 26

Figure 2. A Conceptual Model Linking Visitors, Sense of Place, and Interpretation 29

Figure 3. Proposed Model of Factors that Influence Local Resident Support for Marine Heritage Conservation and Management 36

Figure 4. A Visual Model of Research Design 41

Figure 5. The Location of Study Sites 46

Figure 6. Revised Conceptual Framework Based on Study Findings 123

Chapter 1

Introduction

My dissertation journey began with a news article about Woolworths in Australia. This retailer gave out about more than 3.2 billion single-use plastic bags each year (Hevesi, 2017). In January 2017, the local environmental organizations said that Woolworths provided some of the biggest resistance to the implementation of a ban on single-use plastic bags. But on July 14, 2017, Woolworths announced that it would phase out single-use plastic bags over the next 12 months (Hevesi). What happened during those five months? Why had the Woolworths CEO made this decision? I wanted to find the answer.

Research conducted by the Institute of Marine Science at Auckland University had shown that of eight species common in New Zealand, only one had not eaten plastic bags (Cann, 2017). These fish were regularly purchased at local markets in New Zealand. I also explored the decomposition rate of common marine debris items (Figure 1). It takes 10-20 years for a plastic grocery bag to decompose in the ocean, 450 years for a plastic bottle to decompose, and 600 years for fishing line to decompose (Dufoe, 2012).

This debris items stays in the ocean, destroying the ocean, wildlife habitat, and human well-being. In 2015, Figgner, a sea turtle expert at Texas A&M University in College Station, saved a sea turtle at the beach. There was something in its nose, which

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

made breathing difficult. Figgener and her team members tried to pull the stuff from the turtle's nose. But as the scientists pulled, the turtle started to bleed. After ten minutes, they extracted a complete drinking straw -- the kind we use in our daily life (Lee, 2015). A few months ago, a coastal cormorant landed on the beach; its feathers were dim and its body was thin. The cormorant soon died. When they opened its belly, they found they there were no fish, and no shrimp, only plastic bags (Best China News, 2017).

Pollution is only one of the major marine problems we face now. Other major marine problems include unsustainable fishing, aquaculture, inadequate habitat protection, shipping, climate change, and tourism and development (WWF, n.d.). We know that nearly 80% of life comes from the ocean, about 97% of earth's water is from the ocean, and nearly 50% of humans live near the coast. But less than 3% of marine resources are under protection (Abdulla, 2014; Spalding, Meliane, & Milam, 2013; Wan, Bai, & Wang, 2013). As inhabitants of this planet, what we can do? Woolworths Group CEO, Brad Banducci, said, "We currently give out more than 3.2 billion lightweight plastic bags a year and hence can play a significant role in reducing overall plastic bag usage. Commitment shows we are committed to taking our environmental and community responsibilities seriously" (Hevesi, 2017). Two key concepts have emerged from his comment: community and environment. The astronaut Yuri Alekseyevich Gagarin, the first human to journey into outer space, once lamented: "If you look at the earth from space, it is a blue planet." This is because 70% of the earth is covered by ocean. It should also be noted that the oceans are where life comes from. The marine

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

ecosystem has a huge influence on the functioning of the earth systems: 10% of the earth is covered by sea ice, and 50% of the earth's atmosphere is produced by the ocean. At present, human activities have contaminated marine environments, damaged animal and plant habitats, and threaten the sustainable use of ocean resources (Abdulla; Wan et al).

Many researchers have found out that local residents are critical stakeholders in the protection of World Heritage sites (Budruk & Wilhelm, 2013; Lee & Troy, 2012; Jones, 2005; Manzo & Perkins, 2006; Oviedo-Garcia, Castellanos-Verdugo, Vega-Vázquez, & Orgaz-Agüera, 2017; Liu, Yang, & Wang, 2017; Rasoolimanesh, Jaafar, Ahmad, & Bargh, 2017). Local resident support for and involvement in heritage conservation and management makes it easier to conserve marine heritage, engage in sustainable development, and strengthen local communities (Asa, 2005). Torn and associates (2008) found that local resident involvement in the management and conservation of protected areas had a significant and direct effect on the sustainable use of natural resources. Masud (2017) proposed that community-based ecotourism was an effective strategy to produce economic value, social value and environmental sustainability. So far, there are very few studies that examine marine heritage as it relates to the roles local residents can play in the conservation and management of marine heritage in China. Therefore, I propose to address this gap while also developing a model that identifies the factors that influence marine heritage conservation and management in China.

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

The United Nation's World Heritage System is one of the most extensive conservation systems in the world. Recognizing that World Heritage has a key role to play in ocean conservation, the World Heritage Committee of the United Nations Educational, Scientific and Cultural Organization (UNESCO) established the World Heritage Marine Programme in 2005. This program seeks to conserve marine environments that have Outstanding Universal Value (Appendix A) and fulfill the *World Heritage Committee's Global Strategy for a Representative, Balanced and Credible World Heritage List* (Wan et al., 2013; UNESCO, 2010). UNESCO has noticed an imbalance in the number of World Natural Heritage and World Cultural Heritage designations. Currently, there are other categories of World Heritage designations far outnumber marine heritage designations. There are 1, 973 heritage sites from 167 countries in UNESCO's *World Heritage List*, but only 49 of them are marine heritage (UNESCO, 2017). UNESCO has attempted to narrow the gap in designations among different types of heritage.

In January 2017, China had 52 World Heritage Sites included in UNESCO's *World Heritage List*, ranking second place in the world. But none of these sites represent marine heritage (UNESCO, 2017). China has Outstanding Universal Value (OUV) in marine geology, marine biodiversity, and marine biological habitat (Wang, Liu, & Su, 2013), thus, China has an untapped potential to designate marine heritage sites (State Oceanic Administration, People's Republic of China, 2012). What's more, the designation of marine heritage helps protect China's marine rights and interests, and it

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

may increase citizen awareness of and commitment to the conservation of marine ecosystems (Abdulla et al., 2013). Before site designation, researchers should assess a potential marine heritage area's history conservation and management, policy history and outcomes.

In recent years, negotiating marine rights among countries has become more complicated (Jiang, 2006). Coastal countries establish and implement marine protected area policies to maintain marine resources, establish zones of influence, and maintain quality marine ecosystems. If marine environments are to receive adequate protection, we must (1) define the value of marine heritage resources; (2) outline the actions required to sustain marine ecosystems; and (3) consider strategies for global cooperation.

The Chinese government established a bureaucratic system to administer marine protected area with administrative divisions work at city, county, national, and international levels (Cao et al., 2015). Cao and associates suggest that marine protected area management should ensure the long-term livelihood and well-being of local residents in China.

During the 1970s and 1980s, Yifu Tuan put forward the idea of creating symbolic spaces by establishing images and concepts as metaphors to make sense of 'place'. He suggested that a space only became a place when it was invested with meaning, and that places had two important aspects; the physical setting and the social relationship including relationship between people and between people and place (Tuan, 1977). Hawke (2010) explored the relationship between heritage, sense of place and social

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

sustainability, and how they affected each other. He concluded that it was fundamentally important to recognize how people ascribe meaning to achieve the goals of heritage protection.

Problem Statement

The World Heritage designation process, and research on world heritage conservation and management, have largely neglected the role of local residents in protecting marine heritage areas in China (Cao et al., 2017; Dang, 2014; Han, Yang, Shi, Liu, & Wall, 2016; Yu, 2012). However, the concept of community-based natural resources management and conservation was put forward in the 1990s (Han et al.; Masud et al., 2017). During the past three decades, a rich body of literature has explored the relationship between community perceptions, wildlife and habitat conservation, community involvement and protected area management (Han et al.; Jones, 2005; Lee, 2012; Lepp, 2007; Rasoolimanesh et al., 2017). Researchers conclude that attitude is a key and influencing factor (Han et al.; Jones; Lee; Lepp; Rasoolimanesh et al.). Researchers also have studied the relationships between perceptions of sustainable tourism development, tourism development support, place attachment, and perceived biophysical and social impacts. Other studies examine the relationship between individual attitudes, sense of place, and support for resource conservation (Sakurai, Ota, & Uehara, 2017) or the relationship between resource perceptions, land management policy, and attitudes toward resource conservation (Clements, Suon, Wilkie, & Milner-

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

Gulland, 2014). Thus, fewer researchers have studied sense of place, community connection to protected areas, community involvement, and community support for the conservation of protected areas in the context of marine heritage. Sakurai, Ota and Uehara (2017) showed that a community's sense of place influences their perceptions of biophysical and social impacts and their support for local tourism development. What's more, they show that studies on sense of place have mostly been conducted in North and South America and in Europe, but not in Asian countries. Fewer still have explored these factors for marine heritage areas in China.

Purpose of Study

The purpose of the study is to develop a marine heritage site conservation and management model that identifies the factors that influence local resident support.

In this study, I define marine heritage as places with diverse marine resources that fulfill the requirements for ecological integrity, have an adequate protection and management system to ensure the conservation of the sites, outstanding features, and meet at least one of the following descriptions. (UNESCO, 2013, p. 2):

- Superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

- Outstanding examples of major stages in the earth's history, including the record of life, significant on-going processes in the development of landforms or significant geomorphic or physiographic features;
- Outstanding examples of significant, ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and plant and animal communities, and
- The most important and significant natural habitats for in-situ conservation of biological diversity, including threatened species that are considered of Outstanding Universal Value from the point of view of science or conservation.

Research Questions

This study will address the followings:

1. What are local resident perceptions of marine heritage in China?
2. Which factors influence local resident connections to marine heritage conservation and management in China?
3. Which factors influence local resident involvement in marine heritage conservation and management in China?
4. Which factors influence local resident support for local marine heritage conservation in China?

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

5. What are manager perceptions of marine heritage conservation and management in China?
6. What actions have marine heritage managers taken to enhance local resident connection to, involvement in, and support for marine heritage conservation and management in China?

Significance

Initially, China did not pay attention to the rights and interests of local residents in their management of marine ecosystems and coastal zones. Compared to other countries, China was not an early adopter of research protocols and management strategies to protect marine environments and marine heritage. It was not until the 1990s, China started a national comprehensive investigation of the islands, marine and coastal resources. Today, however, China has established National Nature Reserves, National Marine Parks, National Marine Special Reserves and other marine protected areas to safeguard marine resources. These marine protected areas are mostly located in the Yalu River estuary, western Liaodong Peninsula, Shuangtaizi estuary, Bohai Bay, Yellow River estuary, eastern Shandong Peninsula, northern Jiangsu, Yangtze River estuary, Hangzhou Bay, Zhoushan Islands, Zhejiang and Fujian coast, Pearl River estuary, Leizhou Peninsula, North Bay, Hainan Island and other neighboring area. These eastern coastal areas are the most economically developed areas in China, (Ge, 2006; Jiang,

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

2006). But with the dramatic economic development, there has been a corresponding threat on marine resources.

Local residents not only have geographical proximity with a marine heritage site, but they also rely on the natural resources, and may have social connection to marine heritage site. A study that develops a local residents-based model for marine heritage conservation and management can fill in an important gap in literature. Utilizing the concept of sense of place has helped researchers examine the strength of people-place relationships. But the idea of exploring sense of place in conjunction with local resident perceptions of, connections to, involvement in, and support for marine heritage conservation and management in China is new. This study will show that these factors provide a useful lens to view coastal zone management.

Chapter 2

Literature Review

In 2005, the World Heritage Center launched the World Heritage Marine Programme. The program has three goals: 1) to manage marine heritage sites effectively; 2) to establish an international network of marine heritage sites; 3) to build a network of marine heritage site managers (Wan et al., 2013; UNESCO World Heritage Center, 2013).

By January 2017, there were 1052 World Heritage sites on World Heritage List from 165 State Parties. Among the designated World Heritage sites, 203 are World Natural Heritage, 35 are Mixed Heritage, and only 49 World Heritage sites are listed as marine heritage. Of the 165 State Parties with designated World Heritage sites, only 35 have designated marine heritage sites. There is less research on marine heritage than other types of heritage designations.

The Definition of Marine Heritage

In December 2010, the first World Heritage Marine Site Managers Conference was held in Hawaii, USA. One of the products of the conference was a preliminary of marine heritage. The heritage sites that met both of the following criteria were qualified to be marine heritage sites (UNESCO, 2010):

- (1) to meet at least one of the criteria for World Natural Heritage;
- (2) to meet the principle of integrity and authenticity.

Additionally, a complete and effective protection and management system was also required.

Although the conference did not generate a definitive definition of a comprehensive explanation of marine heritage. Jiang (2006) stated that marine heritage should meet at least one of the following requirements: 1) it should be located in the ocean or sea area; 2) it should be a marine island; 3) it should have direct connection with marine resources and environment at its location, and it should be in the coastal zone of the continent or continental coast and island. Ge (2006) classified marine heritage on the *World Heritage List* and gave a more detailed interpretation of the classification process. He pointed out that marine heritage could be put into two categories based on its geographical location: continent coast and island. The criteria for continent coastal marine heritage areas was: 1) it should be close to the ocean; 2) it should have a marine ecosystem as a key component; and 3) its function should be tied to marine systems. Although Jiang and Ge gave a clear definition of marine heritage from the point of geographical location and characteristics, the heritage value of marine ecosystems was not taken into account.

The International Union for the Conservation of Nature (IUCN) has been involved in the World Heritage Convention from the start. The IUCN World Heritage Panel provides high-quality technical and scientific advice on World Heritage, and

promulgates the official position of IUCN in its recommendations to the UNESCO World Heritage Committee. The Panel is composed of 10-12 conservation experts who have specialized in fields relevant to the World Heritage process. In 2013, IUCN (2013) published a report providing guidance for Marine Natural Heritage designations and the *World Heritage List*. The IUCN report interpreted World Heritage criteria in marine system, and analyzed the biogeographic representation of sites, and gave a roadmap for addressing gaps. Although this report did not give an explicit definition of marine heritage, it provided a detailed interpretation of how to apply for World Heritage Convention criteria to marine system. IUCN (2013) also pointed out the importance of the marine environment and its different features (Table 1).

Researchers and organizations like UNESCO and IUCN have fully explored the features of marine heritage areas. This study follows UNESCO's criteria and explanation of marine heritage. The Chinese government has preferentially designated World Natural Heritage marine sites using UNESCO's framework (Li, 2016).

Community and Heritage

Vodouhê and associates (2010) asserted that wildlife conservation and protected areas would be successful only when local communities were an integral and indispensable part of the whole conservation system. Youn (2009) concluded that the conservation approach of protected areas based on community involvement had evolved over the past twenty years. Since marine heritage is one important type of the protected

Table 1

The Importance of the Marine Environment and Its Different Features (IUCN, 2013)

Criteria		Content
Criterion viii	Geology	(1) plates and tectonic features (2) hotspots, seamount (3) sedimentary processes (slope, rise and deep seabed, submarine canyons) (4) vents, seeps, and other hydrogeological features
	Oceanography	(5) water masses (6) ocean currents (7) waves and other phenomena (8) coastal processes and land-sea interactions (9) ice
Criterion ix	Ecological and biological processes	(1) biogeochemical cycles and productivity (2) connectivity (3) marine ecosystem processes and services
Criterion x	Species and biodiversity	(4) diversity of marine life (5) biogeography (6) threatened and flagship species
Criterion vii	Superlative phenomena and/or exceptional beauty	(7) marine phenomena and spectacles

area in China and in the world, in this section, I will review the literature on community and heritage site conservation and management.

Community perception

Local community perceptions of heritage sites have an influence on their interactions with protected areas, and conservation effectiveness (Bennett & Dearden, 2014). Generally speaking, local residents had a mild positive attitude toward the conservation and management and conservation of nearby protected areas in general. An inadequate understanding of the protected areas themselves, and why it's important to protect them, is a significant factor that influences a community's attitude toward heritage conservation and management (Dewu & Røskaft, 2017). Local community perceptions of ecological resources and manage policy also influence on their attitudes toward the heritage sites (Clements et al., 2014). Therefore, it is important to understand local resident perceptions effective conservation and management of heritage sites (Baird & Leslie, 2013; Bennett, 2016).

Researchers have studied the factors that influence community perception, including:

- Gender (Allendorf & Allendorf, 2013; Gillingham & Lee, 1999);
- Ethnicity (Gillingham & Lee, 1999; Han et al., 2016);
- Education level (Han et al.; McClanahan et al., 2005);
- History of heritage sites (Ormsby & Kaplin, 2005);
- The community's awareness of heritage sites (Amin et al., 2015; Ormsby & Kaplin; Waeber et al., 2017)

These factors tend to influence efforts to build a positive relationship between local community and heritage sites.

Bennett (2016) demonstrated how to use individual perceptions to improve conservation and environmental management. Bennett and Dearden (2014) conducted a mixed-methods study with communities residing on the Andaman Coast of Thailand. They explored how marine protected area perceptions influence community livelihood resources. The researchers selected 17 National Marine Parks as study sites. The local communities they work with were highly dependent on coastal resources. Based on their interviews and household surveys, they concluded that local resident perceptions of national marine park governance and management processes positively influenced marine and terrestrial conservation outcomes. Abecasis and his associates (2013) conducted a mix-methods research study to explore the implications of community and stakeholder perceptions of the marine environment and marine protected area management. They found out that the perception that local marine areas were threatened, especially they had lived those areas they depended upon, had a strong influence on local support for marine conservation initiatives. Vodouhê and associates (2010) examined the relationship between community perception and park management at Pendjari National Park. They found that positive perceptions among local community members was reinforced when park management was involved. In turn, positive attitudes toward conservation facilitated opportunities for the park conservation department to work with local community.

Vodouhe and associates also found that education level had a positive effect on community perception.

Dimitrakopoulos and associates (2010) explored community perceptions of environmental issues and various alternative management scenarios referring to management actions, funding sources, and management strategies for the conservation of biodiversity in three protected areas of Greece: The National Park of Eastern Macedonia and Thrace, the Wetland of Kalloni, and Lake Tavropou. They found that environmental awareness was “not accompanied by active” involvement in resolving environmental problems (p. 505). They also pointed out that citizens mildly supported involvement in some forms of participatory management.

Community attachment and involvement

Community attachment could be defined as “an individual’s social participation and integration into community life and reflects an affective bond or emotional link between an individual and a specific community” (Lee & Troy, 2012, p. 38), which can be regarded as an indicator to evaluate resident attitudes toward community. Emotional connection was a key concept for community attachment (Manzo & Perkins, 2006). Kyle and associates (2004) divided community attachment into four elements: community identity, community dependence, social bonding within a community, and affective responses to feelings regarding a community. The sustainable tourism literature on community attachment related to sustainable tourism focused on the connection between

community attachment and sustainable tourism (Budruk & Wilhelm, 2013; Oviedo-Garcia et al., 2017). But there was not a fixed conclusion that there was a direct and significant relationship between community attachment and sustainable tourism (Choi & Murray, 2010; Nicholas, Brijesh, & Yong, 2009). Researchers revealed that perceived benefits, including perceived financial benefits, had a significant effect when communities made decisions related to sustainable tourism, but there was no clear indication of a direct relationship between community attachment and, perceived benefits, even perceived financial benefits (Choi & Murray; Nicholas et al.; Rasoolimanesh et al., 2017).

Lee (2013) defined community involvement as “the extent to which residents are involved in sharing issues about their lives with their communities” (p. 39). Lee concluded that local community involvement in management and decision-making processes could benefit both the local economy and sustainable tourism development.

Previous studies have explored the relationship between community involvement and sustainable tourism. Jones (2005) and Lepp (2007) proposed that community involvement could be regarded as a community-based management approach for tourism, which not only enhanced the value of community, but also reduced the unpleasant effects that communities had on heritage sites. Rasoolimanesh and associates (2017) applied *Motivation, Opportunity, and Ability (MOA) Model* in their study and concluded that motivation was a key factor that influenced local community involvement.

Sense of Place

The concept of sense of place is originated from the field of human geography in 1970s. This is a basic and fundamental term and concept (Vong, Lai, & Li, 2016; Zhu, Liu, Wei, Li, & Wang, 2017). Researchers have studied sense of place in lots of contexts. In this section, I will explore the meaning of sense of place, and sense of place studies in the context of heritage.

The meaning of sense of place

There is a rich literature in the field of sense of place. Definitions vary, making it hard to find a solid definition of sense of place. Researchers in different fields explored the factors that influenced individual willingness to take place-protective behaviors, and they found that sense of place was one of the significant factors (Ajzen & Fishbein, 1980; Hirose, 1994; Sakurai et al., 2015; Sakurai, 2017; Zanetell & Knuth, 2004). Some researchers described sense of place as “symbolic meanings, attachment, and satisfaction with a spatial setting held by an individual or group” (Jorgensen & Stedman, 2001, p. 233). Many tourism researchers have studied sense of place as place attachment and examined it in two aspects: an emotional connection called place identification and a functional association called place dependence (Cheng, 2013; Kim, 2016; Zhu et al., 2017). Some asserted that place attachment was a social bonding between people, place and the symbolic meaning that people attribute to a specific place (Sakurai). Some researchers also studied sense of place as place identity (Hawke, 2011). Jorgensen and

Stedman (2001, 2006) defined sense of place as a multidimensional construct, comprised of three dimensions: place identity, place attachment, and place dependency. Vong and associates (2016) defined sense of place with reference to two key concepts: place satisfaction and “sense of place (focused)” (p. S76). Sense of place (focused) contained place attachment, identity, and dependence – and can mediate the relationship between perceptions of support for casinos and casino development (Vong et al.). Kameli and associates (2016) addressed sense of place as “the capability of the space or place in creating a unique sense in relation to place as a whole” (p. 1542). They reviewed the history of sense of place, and concluded that there was a three-dimensional arrangement of place: personal dimension, psychological dimension, and place dimension (Table 2). The personal dimension referred to the meaning that was ascribed by individuals and groups of people to place. The psychological dimension was understood as emotional connection, memories, knowledge and concepts that made a place meaningful and special for people. The place dimension acknowledged the importance to the place itself whether or not people recognize it. Zhu (2017) reviewed the research of Williams and Patterson (1992) and stated that that sense of place is comprised of place attachment, place identity, place image, and commitment to place. Peo, Donatuto, and Satterfield (2016) also defined senses of place as multi-dimensional, and he proposed that sense of place was “derived from: 1) activities in the near-shore; 2) cultural practices and familial heritage; 3) sensory and emotional experiences; and 4) the maintenance and strengthening of social connections” (p. 409).

Table 2

Kameli's (2016) Dimensional Arrangement of Place

Personal dimension of sense of place	Personal level	The personal level consists of individual relations which the person belongs to a place. For example, the sense of place is more powerful in places where reminds the person of his/her personal memories and this kind of sense of place is supposed to be accompanied by a feeling about him/her.
	Group level	The sense of place formed among the members of a group is studied among various cultures, sexes and religions. For example, the sense has become a public process and the group members belong to the place where they use to it and their culture remains intact.
Psychological process dimension of sense of place	Affect	The interdependence of person-place is undoubtedly an emotional relation to a place. The humanist geographers define the sense of place through using emotional words. Tuan, for instance, has created the word "topophilia" to describe this relation. Relph states that the sense of belonging to a place is a trustable and emotional relation with a place which meets an essential need of human being.
	Cognition	The relation between person and place include cognitive elements. Memories, knowledge and concepts that the person engaged would designate to the place and would recognize them as very important. The cognition of belonging to a place includes constructing and relating with the place. The cognitions which facilitate the closeness and intimacy to the place.
	Behavior	The third part of psychological process dimension of belonging to a place is the behavior level in which the sense of feeling is demonstrated through activities. Like personal sense, the behavioral dimension of sense of place is shown through behaviors which imply the intention of staying close to a place; "a positive emotional relation between a person and a special place is an important index which keep the closeness to the place.
Place dimension of sense of place		May be the most important dimension of sense of place is the place itself. What is about the place that attracts us? This dimension has been examined in different geographical scales. A room in a house, a city or the whole world, it is typically divided into two types: physical sense of place and social sense of place. Hidalgo and Hernandez studied the physical and social sense of place in three different spatial levels (house, neighborhood, and city).

Although many researchers have discussed and acknowledged that sense of place is an important concept that influences an individual's willingness to take care of, or protect a place (Jorgensen & Stedman, 2001), there is not a confirmed definition of sense of place, it is a "shifting notion, without consensus upon the definition or measure" (Hawke, 2011, p. 33). However, researchers have pointed out that the terms below are key concepts to define the meaning and implications of sense of place (Funk, 2006; Poe et al., 2016; Stevens, 2006; Thomson, 2005; Zhu et al., 2017):

- Interaction between humans and nature
- Personal emotions & place
- Unique personal experiences at a specific place
- Compelling tangible resources and intangible meanings at a specific place

Sense of place and heritage

Smith (2006) indicated that sense of place could help us comprehensively understand the meaning of heritage and heritage sites as a place by stating:

Heritage as place, or heritage places, may not only be conceived as representational of past human experiences but also creating an effect on current experiences and perceptions of the world. Thus, a heritage place may represent or stand in for a sense of identity and belonging for particular individuals or groups. (p. 77)

Many tourism researchers have studied sense of place as place attachment and examined it with respect to an emotional connection called place identification and a

functional association called place dependence (Cheng, 2013; Kim, 2016; Zhu et al., 2017).

Manzo and Perkins (2006) pointed out the factors that negatively affect place attachment, including the effects that a development project had on the physical fabric, crime, relocation, and environment disasters. They also indicated that place attachment could be regarded as an emotional bonding that facilitates community involvement in the planning and design process. Some researchers have framed sense of place as place identity. Place identity has a direct relationship with personal identity (Hawke, 2011). Many researchers agree that place identity is a part of personal identity; indeed it is a very significant component for personal identity (Buonincontri, Marasco, & Ramkissoon, 2017; Hernandez, Carmen, & Salazar-Laplace, 2007; Pretty, Chipuer & Bramston, 2003; Sontikul & Jachna, 2016; Twigger-Ross & Uzzell, 1996). Hawke found that “cultural heritage was found to contribute to sense of place as a source of pride and by supporting feelings of distinctiveness and senses of continuity across time. Engaging with heritage moreover develops belonging through forms of social capital thereby building stronger communities” (p. 32). He also advocated that engaging in memory talk could be regarded as an expression of cultural distinctiveness. Finally, Hawke concluded that “in its built or natural physical form, heritage contributed to the sense of place by providing a network of references, helping individuals place themselves in the past and the present” (p. 32). Buonincontri and associates found out that visitor experiences at heritage sites had a

positive effect on place attachment, and visitor attachment to place had a positive effect on sustainable heritage behaviors (Table 3).

Ardoin and associates (2012) explored the dimensions sense of place and hypothesized that sense of place was composed of four dimensions: biophysical, psychological, socio-cultural, and political-economic factors. Sakurai and associates (2017) examined the relationship between sense of place and attitudes towards future generations for conservation of coastal areas in the Satoumi Region of Japan by using Ardoin and associates four dimensions of sense of place (Figure 1).

They concluded that biophysical factors had the strongest effect on resident attitudes toward the conservation of coastal areas for future generations. Psychological factors ranked the second place, and socio-cultural variable did not have any significant effect on resident attitudes toward the conservation of coastal areas for future generations in the Satoumi region of Japan.

Jorgensen and Stedman's (2001, 2006) multi-dimensional approach to the sense of place construct puts the person-place relationship in the center: 1) *place identity* was defined as beliefs about the relationship between place and individual; 2) *place attachment* was understood as the individual's emotional connections to the place; and 3) *place dependency* was recognized as "the behavioral exclusivity of the place in relation to alternatives" (Jorgensen & Stedman, 2001, p. 233).

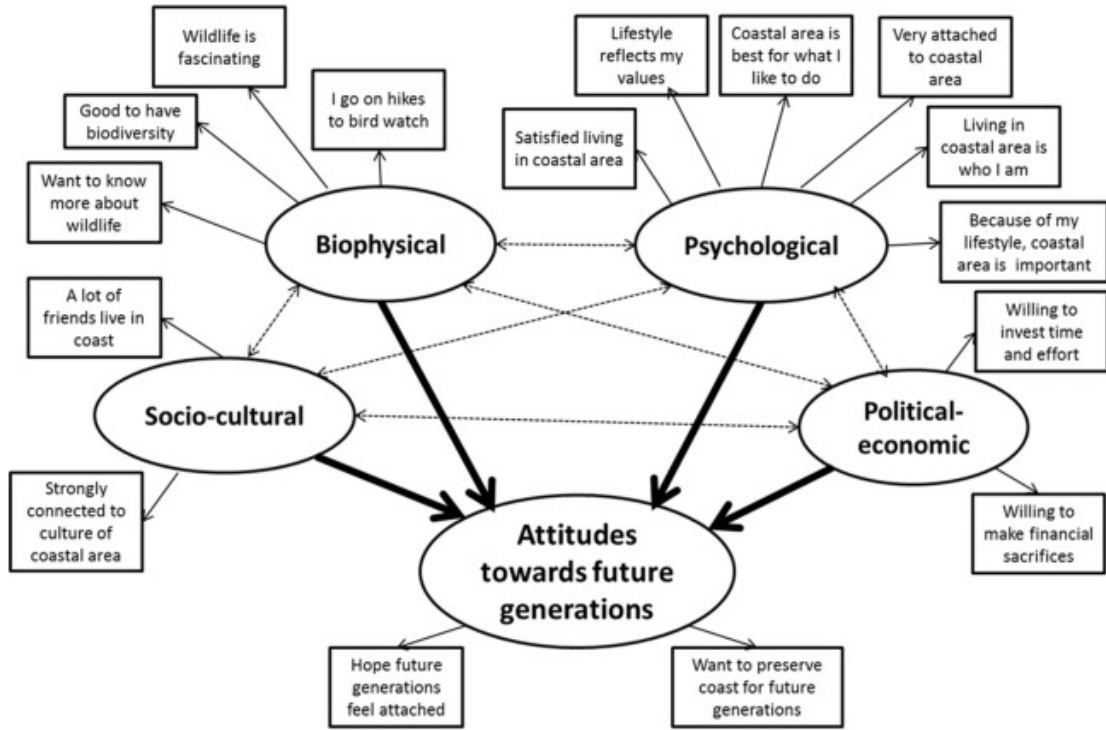
Table 3

Conceptualizing Heritage Visitors' Sustainable Behaviour: General and Site-Specific

Dimensions

Concept		Dimensions
General Behavior	<i>Civil actions</i>	<ul style="list-style-type: none"> • Willingness to pay more taxes in order to protect heritage. • Signing petitions to support heritage protection. • Writing letters to government officials about the heritage degradation. • Voting for elected officials with specific policies for heritage protection. • Donation of time to support and enhance heritage sites.
	<i>Educational actions</i>	<ul style="list-style-type: none"> • Reading publications, watching programs, and attending meetings and seminars about heritage issues
	<i>Financial actions</i>	<ul style="list-style-type: none"> • Donation of money to protect and enhance heritage sites. • Decisions of (not) buying products from companies that have (negative) positive impacts on heritage sites or on history, traditions and identity of communities.
	<i>Persuasive actions</i>	<ul style="list-style-type: none"> • Talking with friends and relatives about the issues related to heritage protection. • Trying to convince others to act responsibly at heritage sites and adopting sustainable decisions related to heritage.
	<i>Legal actions</i>	<ul style="list-style-type: none"> • Judiciary actions aimed at enforcing laws on heritage or on limiting negative behaviors related to it.
Site-specific Behavior		<ul style="list-style-type: none"> • Adopting a work of art. • Engaging in voluntary works at a specific heritage site (light maintenance, cleaning, surveillance, visit tours). • Giving money for protection of a heritage site. • Limiting visits (at the specific heritage site) for preservation purposes. • Respecting local culture and traditions of local community.

From Buonincontri et al., 2017, p. 3



From Sakurai, Ota & Uehara, 2017, p. 334

Figure 1. The Visual Model Explaining the Relationship Between the Variables of Sense of Place (Ardoin et al., 2012) and Resident Attitudes towards Future Generations

Place identity has been widely examined by researchers. Researchers tend to view place identity as having a strong connection to personal identity, encompassing an individual's interaction with places, and recognizing how individuals express themselves in terms of belonging to a specific place (Hernández, Carmen, & Salazar-Laplace, 2007). Hawke's (2010) study proposed that the factors of continuity, self-esteem, self-efficacy, and distinctiveness could be used to examine place identity.

Place attachment deals with an individual's emotional connection to place. Hawke (2010) explored how place attachment affected duration of residence. Based on Jorgensen and Stedman's (2006) study of 282 lakeshore property owners in northern Wisconsin, a lakeshore recreational site, he measured four indicators which were missing place, duration of residence, relaxing in place, and happiness in place, to find the relationship between place attachment and duration of residence. He concluded that duration of residence had a positive effect on place attachment, however, it is not a "necessary prerequisite" (p. 110) for people to tie themselves to a place, build emotional connection to a place, and have a desire to live in a place.

Place dependency focuses on an individual's behaviors related to place. Stokols and Shumaker (1981) proposed that place dependency measure whether a specific place meet an individual's needs and to what extent it met an individual's needs. Hawke (2010) examined place facilitating lifestyle and how places accommodated preferred, enjoyable activities to explore place dependency.

Jorgensen and Stedman (2001) established a 12-item scale featuring the three dimensions of place identity, place attachment, and place dependency, to quantitatively assess sense of place (Table 4). They validated these dimensions of sense of place, viewing these as a reflection of attitude with links to Attitude Theory. They concluded that the 12-item sense of place scale was capable of measuring a "general sense of place dimension that gained expression in property owners' thoughts, feelings and behavioral commitments for their lakeshore properties" (p. 232).

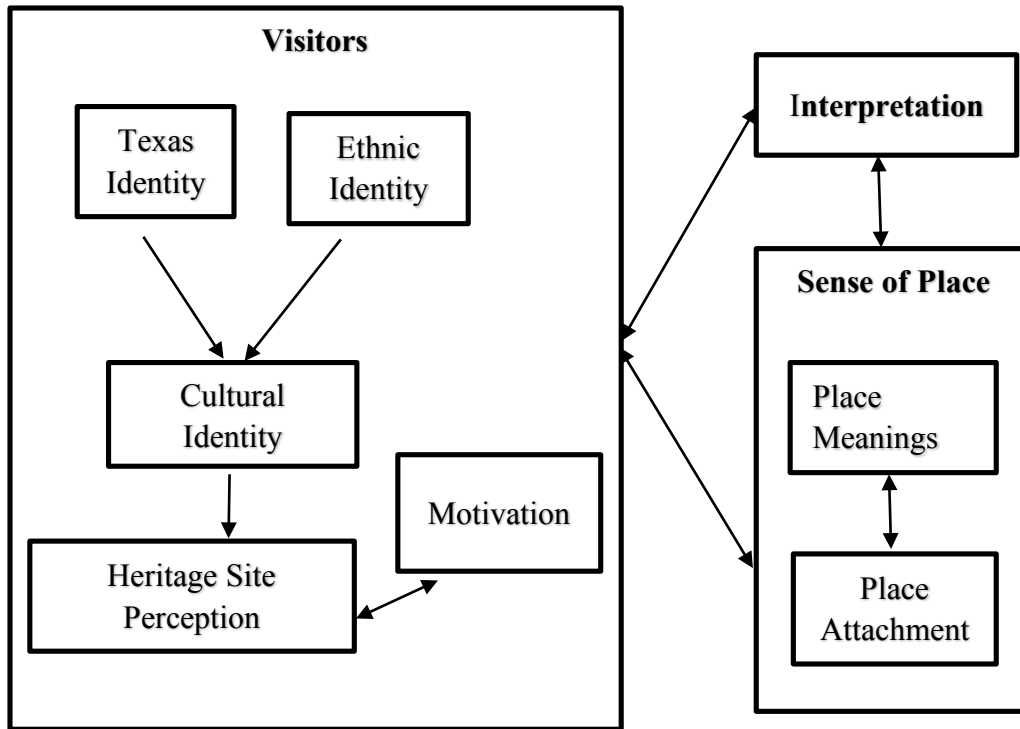
Table 4

Jorgensen and Stedman's (2001) 12-Factor Sense of Place Scale

Factor	Item label	Item description
Place Identity	Identity 1	Everything about this place is a reflection of me.
	Identity 2	This place says very little about who I am.
	Identity 3	I feel like I can really be myself at this place.
	Identity 4	This place reflects the type of person I am.
Place Attachment	Attachment 1	I feel relaxed when I am at this place.
	Attachment 2	I feel happiest when I am this place.
	Attachment 3	This place is my favorite place to be.
	Attachment 4	I really miss this place when I am away from it for too long.
Place Dependency	Dependency 1	This place is the best one for doing the things I enjoy most.
	Dependency 2	For doing the things I enjoy most, no other place can compare to this place.
	Dependency 3	This place is not a good place for doing the things I most like to do.
	Dependency 4	As far as I am concerned, there are better places to be than at this place.

From Jorgensen and Stedman, 2001, p. 241

In 2010, Lin (2009) explored Texas heritage as a factor influencing visitors, sense of place, and interpretation at the Alamo as her doctoral dissertation. She stated there were three factors that affected the people-place relationship: cultural identity, heritage site perception, and motivation. She examined sense of place with respect to place meaning and place attachment, which interacted with onsite interpretation and people (Figure 2).



Adapted from Lin, 2010, p. 41

Figure 2. A Conceptual Model Linking Visitors, Sense of Place, and Interpretation

Heritage Studies

There is rich literature that examines world heritage, especially on heritage value, heritage site designation process, and heritage conservation and management. In this section, I will look at this literature, summarizing existing knowledge, and identifying the gap in the literature of World Heritage studies.

Heritage values

There is much literature on heritage values in China and other countries, many of which are case studies that focus on specific heritage site (Sun, 2010). Researchers focus on the uniqueness of a site, its non-renewable nature, as well as the extent to which it displays the Outstanding Universal Value (Wang, 2009). Sichuan Giant Panda Sanctuaries - Wolong, Mt Siguniang and Jiujin Mountains, Three Parallel Rivers of Yunnan Protected Areas, and South China Karst are popular heritage sites for which Chinese researchers have examined their heritage values (Chen, 2008; Lin, 2007; Wang, 2009; Xiao, 2007).

Cheng (2010) classified World Natural Heritage into seven categories: environmental value, aesthetic value, tourism value, historical and cultural value, spiritual value, scientific research and educational value, and economic value. This study concluded that the greatest differences in how sites were valued occurred in the economic value category. Tourists thought that economic value was the least important of world heritage value; while local residents and the government believed that the importance of economic value was second only to the site's environmental values. As to the ownership of marine heritage, tourists believed that marine heritage should be owned by local people; while local residents and the government thought that the marine heritage should be owned by people around the world. In terms of the responsibility to protect the marine environment, local residents and the government thought the government should take the

primary responsibility; tourists believed that local tourism enterprises should be responsible for heritage conservation.

Scholars have explored the balance between tourism and development at marine heritage sites (Deng, 2004; Tao, 2000; Xu, 2004). They argued that the balance among protection, profitability, tourism and local economic development is a significant and complex process. They further argue that there is a need to attach specific, effective and practical measures to heritage site management. Moscardo (1996), and Newsome and Dowling (2006) employed the *Tourism Life Cycle Analysis* to illustrate a heritage management model that keeps the balance of tourism and heritage development.

Scholars have also conducted case studies to explore the unique value of a specific marine heritage site. Jones and associates (2016) examined the values people held toward waterways in southeast Queensland. Esparon and associates (2015) conducted a study at Australia's Great Barrier Reef World Heritage Area and investigated the significance of its environmental values. Andréfouët and Wantiez (2010) conducted a case study of the Lagoons of New Caledonia which is listed on *World Heritage List*. The authors pointed out that the site's coral reef habitat and fish communities were diverse, but the site would benefit from a more rigorous classification of the diversity of coral reef habitats and fish communities. They developed a sampling strategy that used remotely sensed images to understand the diversity of fish communities captured from coral reefs in different locations and in this way to capture the species composition and richness of

the New Caledonia lagoon (Andréfouët & Wantiez). Petoskey, Richardson and Doske (1995) and other scholars studied the Anasai people's living sites in Fred Terrace National Park, highlighting the uniqueness of the metamorphic sandstone construction and recommending the site for preservation. Samadi and Yunus (2012) discussed the values of Malacca and Georgetown in Malaysia, evaluating their suitability as a World Heritage marine site based on the evaluation criteria of World Natural Heritage.

In sum, scholars have focused on their inquiry into current and potential marine heritage sites using a case study approach. These studies have focused on aesthetic value, scientific value, geo-value, and other aspects of heritage value. Scholars have also studied environmental value, tourism value, and economic value. These studies tend to highlight the values that make heritage sites irreplaceable.

Heritage conservation and management

Heritage site management is an important part of heritage studies. Many conservation studies emphasize species biodiversity, habitat protection, and the interpretation of their scientific values. Attention to the interests, behaviors and attitudes of audiences and stakeholder has been prominent. However, Chinese scholars have only recently pursued research on heritage conservation and management late. Even so their research productivity has been notable, encompassing heritage site, including heritage site protection, various management model, and management mechanisms (Wang, 2006; Yu, 2012).

Treloar and associates (2016) assessed Australia's *National Marine Science Plan* in Australia, concluding that the national plan would be effective at conserving the marine ecosystems. Chan and Adekola (2013) analyzed the current flood risk management practices and policies in the Pearl River Delta, China, and concluded that the appropriate use of authority was a fundamental element for flood risk management. Cao, Peng and Liu (2017) indicated that legal systems in China were inadequate to protect heritage sites, including marine heritage sites in China. They recommended that a unified code of laws and regulations be established.

Gao (2011), Song (2011), Bao (2004), Chen (2006) and Ke (2007) examined Chengjiang Fossil Site, Mount Sanqingshan National Park, Three Parallel Rivers of Yunnan Protected Areas, Wulingyuan Scenic and Historic Interest Area, Jiuzhaigou Valley Scenic and Historic Interest Area, respectively. These studies concluded that being listed on the *World Heritage List* strengthened promotion efforts, the government oversight, and citizen awareness of heritage conservation. Scholars have explored threats to marine heritage systems (Hua, 2012; Malo, 2011; Moss, 2005; Wager, 1995), and proposed appropriate protection methods and sustainable development strategies to conserve ecosystem conservation (Dawson, 1995; Elliott, 2012). Kirkpatrick (1990) examined the Western Tasmanian World Heritage Area and proposed using landscape digitization to develop a management model.

Cui (2010) pointed out that studying successful heritage management approaches, and comparing differences in management systems between China and other countries in the world would improve a country's heritage management capacity. Xu (2009) argued that due to the popularity of regional World Heritage projects, like that applied in the Karst region in southern China, it may be with applicability to other types of composite heritage projects. Lu (2010) used the World Natural Heritage Site – Wulingyuan to explore the protection and management of World Heritage in China. Although the World Natural Heritage site management approaches used in this site were closely aligned with UNESCO requirements, they barely pulled local resident input into the conservation and management process. Matsuda, Makino, and Sakurai (2009) studied the marine ecological management system of the Shiretoko World Natural Heritage Site and proposed that coastal fisheries be co-managed by heritage site managers and local fishers. Sakurai (2017) suggested that marine heritage site managers should make an effort to get local residents involved in the conservation process, seeking their input regarding biophysical and psychological factors.

Han and associates (2016) proposed a community co-management framework that facilitates local community participate in the decision making and policy making process. Yang (2015) proposed to use an 'Interpretative Model' to design heritage landscape databases, applying the concept of interpretation to embed relevant information and meanings into heritage database. Dang (2014) proposed that developing marine protected

area networks and strengthening legal and political measures to support marine environments are essential next steps for marine protected areas.

Researchers have explored heritage management system reform and innovation, heritage area sustainable development, heritage database management, and strategies and tactics to address existing problems. Researchers also have conducted comparative analyses and explored different heritage management systems worldwide. Study results could enhance heritage site planning, design, development, and protection.

A persistent challenge, however, remains when comparing to other types of heritage. That is, there is far less scholarly literature devoted to marine heritage. There is also a gap in the research on local resident interactions with marine heritage conservation and management in China.

This study will explore the elements of a local resident-marine heritage site conservation model that maximizes local resident support for marine heritage conservation and management. Based on the literature review, Figure 3 highlights my proposed conceptual model illustrating the factors that influence local resident support for marine heritage conservation and management.

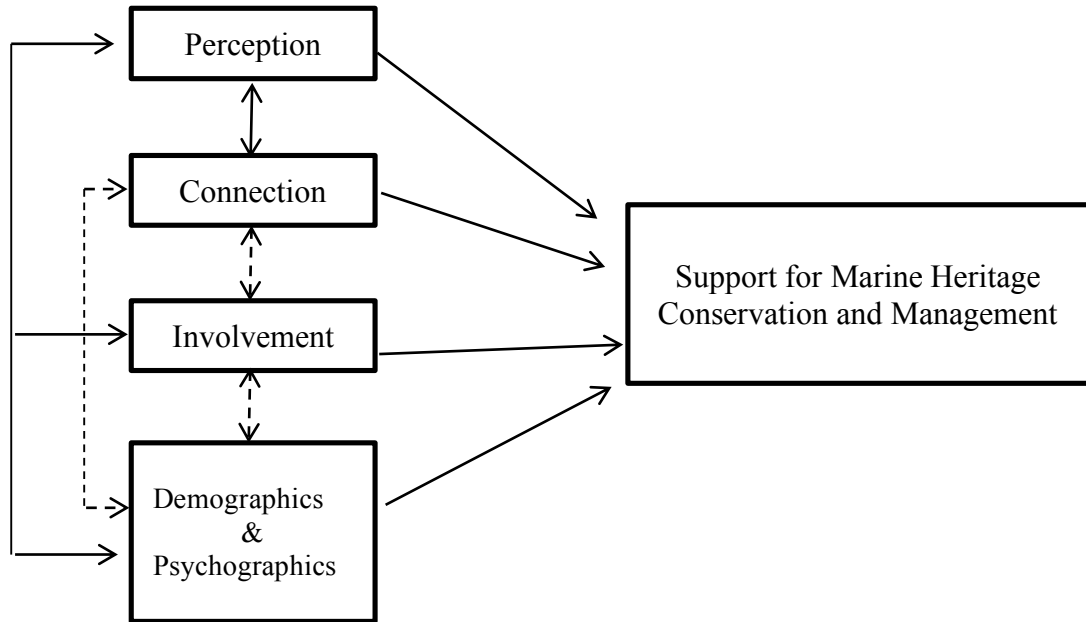


Figure 3. Proposed Model of Factors that Influence Local Resident Support for Marine Heritage Conservation and Management

Proposed Conceptual Model of the Study

The first proposed factor in Figure 3 is local resident perceptions of local marine heritage and its conservation. Local community perceptions of heritage sites influence on the interactions between local residents and protected areas, thus influencing by conservation effectiveness (Bennett & Dearden, 2014). Local resident perceptions also have a positive effect on conservation efforts, their involvement in promoting and supporting heritage sites, and their sense of belonging (Abecasis, Schmidt, Longnecker,

& Clifton, 2013; Bennett, 2016; Bennett & Dearden, 2014; Dimitrakopoulos et al., 2010; Jaafar, Noor, & Resoolimanesh, 2015; Vodouhê et al., 2010).

The second proposed factor in Figure 3 is local resident connections to marine heritage. Ardoin and associates (2012) stated that individual connection to a place is a sociocultural factor that influences their relationship with the place, and their attitudes toward the place. But they concluded that sociocultural factors were under-measured. Local resident connections to marine heritage is often symbolic and comprised of cultural elements that create and sustain beliefs. Thus, sense of place in this context is tied to the meanings local residents ascribe to place and people-place relationships (Ardoin 2006). Jorgensen and Stedman (2001) developed a 12-factor scale to measure sense of place in three dimensions: identity, place attachment and place. Sakurai and associates (2017) found out that sense of place influences resident attitudes toward and support for the conservation of coastal areas in the Satoumi region of Japan for future generations.

The third proposed factor in Figure 3 is local resident involvement in the local marine heritage area. Local residents are a significant part of the development, conservation, and management of local heritage conservation (Vong et al., 2016). Kyle and associates (2004) stated that the effect of involvement on conservation commitment varied across activities and settings. When facing complex natural resources management issues, participatory techniques have helped communities develop collective

responsibilities toward heritage conservation and resource management (Mutamba, 2004).

The fourth proposed factor in Figure 3 is respondent demographic and psychographic information. Socio-economic factors like household size, income, education level, and age have an effect on individual perceptions and their attitudes toward supporting heritage conservation and management (Amin et al., 2015; Allendorf, & Allendorf, 2013; Gillingham & Lee, 1999; Han et al., 2016; McClanahan et al., 2005; Ormsby & Kaplin, 2005; Waeber et al., 2017).

Based on the above research and previous studies, I propose that local resident perceptions influence their connection to, involvement in, and their support for marine heritage conservation and management in China. Local resident connections to, and involvement in marine heritage conservation efforts has an effect on their support for marine heritage conservation and management. Local resident demographics and psychographics affect both their perceptions of and support for marine heritage conservation and management. The model allows us to examine the relationships among local resident connections to, involvement in and support for marine heritage conservation and management and their demographic and psychographic information.

Chapter 3

Research Methods

Overview

This chapter focuses on the research methods that were used to achieve the purpose of the study, that is, to identify the elements of a local resident-based marine heritage site conservation model that maximizes local resident connection to, involvement in, and support for marine heritage conservation and management in China. This research used a mixed-method approach to explore local resident perceptions, connections, involvement and support with respect to marine heritage conservation and management. This research also investigates marine heritage site manager perceptions and their actions to strengthen local resident connections to, involvement in, and support for marine heritage conservation and management in China.

Research Design

This study used mixed-methods approach to identify the factors that influenced local resident support for marine heritage conservation and management.

Based on Creswell (2013), qualitative research seeks to explore and understand the meanings that individuals or groups ascribe to a social phenomenon or human problem. Quantitative research tests theory by examining relationships among variables.

This study employs a mixed-method approach that combines both quantitative and qualitative research methods. In this study, my interest is to explore the phenomenon of local resident support for marine heritage conservation and management in China, and to develop a marine heritage site conservation and management model that maximizes local resident support. I collected qualitative interview data, and then I followed up with a quantitative survey to help explain the initial qualitative results. I have both qualitative and quantitative data; and together both types of data give a better and more comprehensive understanding of the phenomenon of interest than either type by itself (Creswell, 2013; 2014). However, nothing is perfect in the world. Qualitative research lacks the sampling methods and numeric data required to generalize findings to the larger population, and quantitative data is weak at constructing the in-depth narratives that contribute to meaningfulness (Lin, 2009). Quantitative data can help me explore social problems in a natural setting “based on building a complex picture formed with words, reporting the detailed views of informants” (Creswell, 1994, p. 2). Quantitative data helps to understand and explain the relationship among variables, thus contributing to the process of making decisions, generating predictions, and revealing significance.

There are six mixed-method designs (Creswell, 2005; 2013): the convergent parallel design, the explanatory sequential design, the exploratory design, the embedded design, the transformative design and multiphase design. An exploratory sequential mixed method design was employed in this study as illustrated in Figure 4.

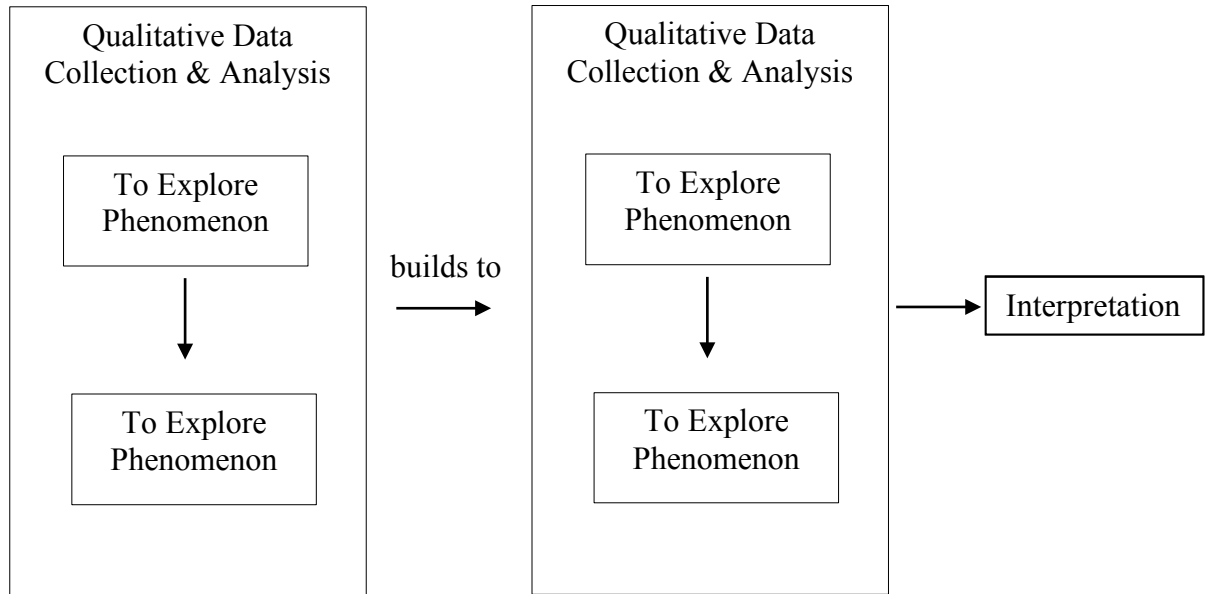


Figure 4. A Visual Model of Research Design

I performed interviews to collect qualitative data. I chose interviews to collect qualitative data for the following reasons: (1) The key advantage of interviews lies in its adaptability. If interviewers can build trust and a good relationship with respondents, they can get information that reveals meanings that might not emerge from any other data collection methods (Gall, Gall, Borg, 2006); (2) Interviewers can obtain a detailed description of respondents' personal information, ideas, perceptions, experiences, or beliefs around key concepts and central phenomena. The more detailed the information

is, the greater the likelihood of obtaining rich and valid data (Creswell, 2013); (3) Compared with other qualitative data collection methods, such as observations, interviews empower interviewers to have “better control over types of information received” (Creswell, p. 218). I used the most common form of interview in my study: the person-to-person encounter in which the interviewer elicits information from their respondent (Merriam, 2009, p. 88). My interviews were semi-structured in nature, allowing for flexibility and the pursuit of pertinent topics. The questions were phrased as open-ended questions, which gave the interviewees an opportunity to respond in their own unique way. The interview was designed with room for follow-up questions to emerge naturally within the interview, which can “obtain more information and clarify vague statements,” and allow respondents to expand on their ideas (Gall et al., p. 228). The structure of this interview approach fit with my research questions.

I used quantitative surveys to further explore the identified problem and explain the results from qualitative data analysis. The disadvantage of interviews is that the presence of the interviewer may affect how the interviewee responds. That is, interviewees may provide the information that the interviewer wants to hear (Creswell, 2013). Therefore, surveys can be used to supplement interviews. In addition, the cost of “sampling respondents over a wide geographic area is lower” (Gall et al., 2006, p. 228), and the time required to collect survey data is much less. In short, the economy of the survey design and the “rapid turnaround” in data collection allowed me to “identify attributes of a large population from a small group of individuals”; and to collect a large

amount of valid data in a short time (Creswell, 2014, p. 157; Fowler, 2009). In addition, I could choose to administer surveys in many ways: online surveys, email surveys, social media surveys, paper surveys, mobile surveys, telephone surveys, and face-to-face interview surveys. I used paper and face-to-face surveys, because I was expecting a high rate of survey completion. I collected the surveys as soon as the respondents finished the paper survey, which also helped guarantee a good response rate. Finally, the anonymity of surveys allowed respondents to answer with more candid and valid answers (DeFranzo, 2012).

Survey helped me collect a broad range of data (e.g., perceptions, opinions, beliefs, values, behavior, factual information) (Creswell, 2014; DeFranzo, 2012). The paper survey in my study had five parts: 1) local resident demographic and psychological questions of local residents; 2) local resident perceptions of marine heritage; 3) local resident connections to marine heritage; 4) local resident involvement in marine heritage site activities; and 5) local resident support for marine heritage conservation and management. Except for the first part of the survey, the other parts included questions with items on a 5-point scale. With professional data analysis software, I could incorporate advanced statistical techniques to analyze survey data, allowing me “to determine validity, reliability, and statistical significance, including the ability to analyze multiple variables” (DeFranzo, 2012, p. 1).

The selection of study sites

In this study, I selected study sites based on the lists of marine protected areas in China. There were four lists relevant to marine protected areas in China: *2012 National Plan of Island Conservation*, *2014 National Reserve List of China*, *2013 National Marine Special Reserve List of China*, and *2016 National Marine Parks of China*. Since most of the places on the *2012 National Plan of Island Conservation* were not developed into tourism destinations, they were not considered for this study. I did not emphasize the *2014 National Reserve List of China*, because it has a larger range of sites, with marine protected areas constituting only a small part. Thus, I focused on the *2013 National Special Marine Reserve List of China*, and the *2016 National Marine Parks of China*, as well as the *Nominated Sites for World Heritage Designation Tentative List of China*.

The criteria for selecting study sites included:

1. A history of marine heritage site management and local community interactions;
2. Geographic distribution to help stratify the sample;
3. A biophysical zone where community residents interact with the marine resources;
4. Diverse marine heritage resources that meet the UNESCO criteria for marine heritage site designation;
5. Diverse types of management issues and challenges;
6. Accessible and affordable for onsite data collection.

Thirteen sites met all six selection criteria (Table 5). Because I faced time and financial constraints, I decided to narrow it down to three study sites. Upon reviewing Table 5, *The Environmental and Heritage Interpretation Center* from Beijing Normal University, and *the World Natural Heritage Conservation and Research Center* from the Ministry of Housing and Urban-Rural Development of the People's Republic of China (MOHURD) agreed to provide a connection to Dalian Changshan Islands National Marine Park, Dalian Xinghai Bay National Marine Park, and Xiamen Marine National Park. Xiamen National Marine Park is located in the south of China. To maintain a geographic distribution, I also selected Dalian Changshan Islands National Marine Park and Dalian Xinghai Bay National Marine Park as the other two study sites. They are in the north of China in Liaoning Province (Figure 5).

Ultimately, three sites were selected from the list of potential research sites: 1) Xiamen National Marine Park (Fujian); 2) Dalian Changshan Islands National Marine Park (Liaoning); and 3) Dalian Xinghai Bay National Marine Park (Liaoning). Background information about these three sites was very limited. Thus, onsite site manager interviews allowed me to collect more detailed information.

Xiamen National Marine Park (Xiamen) was approved to become a national marine park in 2011. It is located east of Xiamen Island. It contains sea, land and island, and consists of two parts. The first part is the south park area that extends from Xiamen University Bathing Beach to Guanyinshan Beach. The second part is Wuyuan Bay. The



Figure 5. The Location of Study Sites

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

Table 5

The List of Potential Study Sites

Name	Criteria						Note
	1	2	3	4	5	6	
1. Yellow Sea Wetland (Jiangsu)	-	+	-	+	+	+	Yellow Sea Wetland is on the World Heritage Tentative List now. There are more than 80,000 hectares of land in the upper reaches of the Yellow Sea wetlands. There are residents at each side of the land. From the map, the closest village is Xiong Village, but I could not find relevant materials, so questions remained.
2. Techeng Island National Marine Park (Guangdong)	-	+	-	+	+	○	There are seven villages on the island, with a population of more than 4500.
3. Hailing Island National Marine Park (Guangdong)	-	+	-	+	+	-	There are five neighborhoods, 19 village committees, 132 villages, households by the population of nearly 98,000 people.
4. Haizhou Bay National Marine Park (Jiangsu)	○	+	-	+	+	-	Xisha Bay Beach is a very popular site of Haizhou Bay National Marine Park, and it is an ancient fishing village. A volunteer group called Clean the Coast organized an event to protect and clean the Xisha Beach environment in 2014.
5. Rizhao National Marine Park (Shandong)	○	+	-	+	+	-	Dongjiatan Folk Tourist Resort is the closet village near Rizhao National Marine Park, but it is primarily a tourism-based commercial enterprise.
6. Yushan Islands National Marine Park (Zhejiang)	+	+	-	+	+	-	Yushan Fishing Village is the community closest to the park. But there is not much information and research about the population.

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

7. Yueqing Ximen Island Marine Special Reserve (Zhejiang)	+	+	-	+	+	○	There are four villages on the island with a population of over 4800. The local residents rely on fishing.
8. Chongwu National Marine Park (Fujian)	○	+	-	+	+	○	Fujian Chongwu National Marine Park is located at the starting point of the Maritime Silk Road, Quanzhou City. It includes two towns: Shanxia Town and Chongwu Town.
9. Xiamen National Marine Park (Fujian)	○	+	-	+	+	+	It is located in the City of Xiamen, which, in 2016, was an island with a population of nearly 392 million. This park is located east of Xiamen.
10. Jinzhou Dabei Mountain National Marine Special Reserve (Liaoning)	-	+	-	+	+	○	Shangzhujiakou Village is the closest community to this park. But I could not find detailed information about this village.
11. Hainan Wanning Laoyehai National Marine Park (Liaoning)	-	+	-	+	+	-	Most of the sea in this park is located in Donggao Town, but there is not much information and research available on this town.
12. Dalian Changshan Islands National Marine Park (Liaoning)	○	+	-	+	+	○	It is divided into five scenic spots: Changshan Island, Guangde Island, Zhang Zi Island, Ocean Island, Haiwangjiu island. But there is not much detailed information about the local residents on these islands.
13. Dalian Xinghai Bay National Marine Park (Liaoning)	○	+	-	+	+	○	This park is located in the city of Dalian rather than on the islands. The residents of Dalian have witnessed the changes of this place over time.

Legend:

- Criteria 1: A history of marine heritage site management and local community interactions;
- Criteria 2: Geographic distribution to help stratify the sample;
- Criteria 3: A biophysical zone where community residents interact with the marine resources;
- Criteria 4: Diverse marine heritage resources, and meets the UNESCO criteria for marine heritage site designation;
- Criteria 5: Diverse types of management issues and challenges;
- Criteria 6: Accessible and affordable to collect data onsite.

Scoring Symbols (i.e. extent to which site fulfills selection criteria):

“-” = low

“○” = medium

“+” = high

park is 24.87 km² in total area, including 4.05 km² land area, accounting for 16.28% of the total area, and 20.76 km² of sea area, accounting for 83.47% of the total area. The islands encompassed 0.06 km², accounting for 0.25% of the total area.

Changshan Islands National Marine Park (Changshan Islands) is situated in the northern waters of the Yellow Sea. It lies on the east side of the Liaodong Peninsula. It is one of the eight major islands in China. The park is divided into five scenic spots: Changshan Island, Guangde Island, Zhang Zi Island, Ocean Island, and Haiwangjiu Island.

Xinghai Bay National Marine Park (Xinghai Bay) is located in the City of Dalian. It lies along the southern coast of the established continent area of Dalian

Xinghai Bay International Business Center. It was officially opened in the summer of 1997. Xinghai Bay National Marine Park is the place where citizens relax and spend their leisure time.

While onsite, I collected information about each of the three marine heritage areas included in this study. This additional information provided context for interpreting my interview and survey results.

Sampling strategy for interviews

Creswell (2005) stated that in a qualitative study “the intent is not to generalize to a population, but to develop an in-depth exploration of a central phenomenon” (p. 203), which is best achieved by using purposeful sampling strategies. A random sampling strategy is not an appropriate sampling method because the purpose of the interviews was not to generalize the study results to the general population. The purpose of this study was to explore the central phenomenon of this study (Creswell), examining the factors that influence local resident support for marine heritage conservation and management.

For the local resident interviews, my purposive sampling strategy combined elements of snowball sampling and maximum variation procedures. Snowball sampling is a form of purposeful sampling, which “involves asking well-situated people to recommend interviewees who suit the study and are willing to participate in interview process” (Gall et al., 2006, p.185). Snowball sampling “typically proceeds after a study begins and occurs when the researcher asks participants to recommend other individuals

to study (Creswell, 2005, p. 206).” The snowball process may begin with an individual who is willing to be interviewed and exclusively can serve as a “connector” to reach various snowball rolling. However, snowball processes need some control in its direction to ensure that I can hear voices from different backgrounds, and can get various perspectives on the central phenomenon (Gall et al.). Maximum variation sampling is a process in which researchers select sites or people that illustrate variations in certain characteristics or in a phenomenon (Creswell; Gall et al.). These sampling methods allowed me to obtain a diversity of participants to accomplish study objectives. To increase variability in respondent backgrounds, experiences, and perspectives, I asked local residents to participate in an interview or a survey while he or she visited public places such as marine park visitor centers, fish markets, schools, tourist agencies, places of entertainment, shopping venues, libraries, college campuses, and with the business owner’s permission, popular cafés or tea shops, boat or fishing supply stores, bait shops, etc. These sites provided convenient access to local residents and prospective study participants. Upon completion of each local resident interview, I asked the respondent if he or she could identify someone else in the community who had a connection with the marine heritage area. Consistent with snowball sampling procedures, I then attempted to schedule an interview with these prospective interviewees. The local resident interviews continued until the point of data saturation. Fifteen local residents from the two study sites and surrounding areas were interviewed. Ten were from Xinghai Bay National

Marine Park Area and five were from Changshan Islands National Marine Park Area.

Interviews lasted between 22 and 32 minutes.

For the manager interviews, five marine heritage site managers from two study sites were interviewed, including three from Xinghai Bay National Marine Park and two from Changshan Islands National Marine Park. I attempted to interview managers with diverse experiences, expertise, and management responsibilities. To identify prospective manager interviewees, I asked the director and associate director of the Environmental and Heritage Interpretation Center at Beijing Normal University to serve as a “connector” to reach managers at the three national marine parks. I also asked marine heritage site managers to identify local residents who would be helpful to interview.

Sampling strategy for surveys

For local resident surveys, I employed a sampling strategy that combined elements of purposive and maximum variation sampling procedures. Purposive sampling ensured that participants were able to address my study objectives, and maximum variation sampling ensured the diversity of participants. I recruited survey participants at Dalian Changshan Islands National Marine Park and Dalian Xinghai Bay National Marine Park visitor centers, and at local fish markets, schools, tourist agencies, entertainment hubs, shopping malls, cafes (with owners’ permissions), tea shops, libraries, college campuses, and boating and fishing stores, (Gall et al., 2006; Hajimia, 2010). As stated above, these public places provided access to individuals who could

assist me with fulfilling study objectives (Gall et al.; Hajimia). I recruited a total of 495 survey participants at the three national marine park areas.

Data Collection Procedures

My study sought to identify the factors that influence local resident support for, connection to, and involvement in marine heritage conservation and management in China. There were two phases of data collection in this study. First, I engaged in qualitative data collection; then I incorporated the results of my qualitative research into my quantitative data collection efforts.

Phase one: Qualitative data collection

“In most forms of qualitative research, some and occasionally all of the data are collected through interviews” (Merriam, 2016). The purpose of interviews was to explore local resident support for, connection to and involvement in marine heritage sites in China. In this study, I employed the most common type of interview used in qualitative studies, the semi-structured, person-to-person interview. Because the semi-structured interview is in-between a structured interview and an unstructured interview, it provides adequate flexibility. All interviews were conducted at the two Liaoning marine park locations.

My role in the qualitative research phase was research designer, data collector, interviewer, data analyst, and report writer. My responsibilities included:

- 1) Designing the interview protocol.
- 2) Identifying interviewees.
- 3) Conducting one-on-one interviews.
- 4) Obtaining consent from the interviewees to participate in the study.
- 5) Selecting an appropriate place to conduct the interviews.
- 6) Recording interviews and producing audio transcripts.
- 7) Compiling interview notes and memos.

As highlighted above in my discussion of sampling procedures, I interviewed 15 local residents and five marine heritage site managers who lived relatively close to Dalian Xinhai Bay National Marine Park and Changshan Islands National Marine Park Area. I was the only interviewer in this study. The researcher, myself, is a non-native English speaker, but a native Chinese speaker. The participants were native Chinese speakers, and were interviewed in Chinese. However, participants could choose to be interviewed in English if they preferred to do so. I received graduate training to develop my interview skills and I practiced beforehand to increase consistency and fluidity.

Local resident interviews. Local resident interviews began with a brief introduction to the study. The interviewer provided an informed consent form at the beginning of the interview, and expressed appreciation for the interviewee's time. I fostered a comfortable environment by telling interviewees that there was no right or wrong answer, and they were free to ask questions and express their ideas during the interview. Then I asked a series of

questions to understand local resident perceptions of marine heritage, and explore local resident connection to, involvement in, and support for marine heritage conservation and management. (Bennett & Dearden, 2014; Clements, Suon, Wilkie, & Milner-Gulland, 2014; Dewu & Røskaft, 2017).

Marine Heritage Perception Questions

Let's start out with a little bit of background information...

Where do you live? How long have you lived here? *[Show interviewee a map of the local area. Make the map accessible during the interview.]*

Probe: What do you like best about this marine heritage area?

Probe: What's your favorite thing about this marine heritage area?

Probe: Have you observed any changes in this marine heritage area over time?

Tell me more about what you have observed.

Probe: What do you like most and least of this marine heritage area?

Probe: What is your ideal day at the marine heritage site?

Probe: What do you value most about the marine heritage?

Probe: Why is that important to you?

The central government approved establishing the X National Marine Park. The government believes X National Marine Park is *valuable marine heritage*. What do you think marine heritage means?

Probe: Do you think it is a good idea to establish a national marine park?

Probe: Why do you think so?

Probe: Do you spend your time in X National Marine Park?

If yes, what do you do?

What are the differences between the X National Marine Park and other places you have visited?

"X National Marine Park" refers generically to one of the three study sites, i.e., Xiamen National Marine Park, Dalian Changshan Islands National Marine Park, and Dalian Xinghai Bay National Marine Park

The third part of local resident interviews explored participant connections to local marine heritage (Lewicka, 2011; Ardoin et al., 2012). The following textbox shows the interview questions that examined on local resident connections to marine heritage.

The fourth part focused on local resident involvement in local marine heritage site activities (Kyle et al., 2007). The textbox below lists the questions that I used to tap into local resident involvement in marine heritage site activities.

The fifth part of the interview focused on local resident support for marine heritage conservation and management, including specific contributions participants were willing to make (Han et al., 2016). The textbox below presents questions and probes used to examine support for marine heritage. The interview ended with the following question: *“In an ideal situation, how would you like to be involved in marine heritage conservation and management? Tell me more about it...”* After the interview, I asked the participant to fill out a follow-up questionnaire that captured relevant demographic and psychographic information.

Marine Heritage Connection Questions

How do you relate to the X National Marine Park?

Probe: What makes X National Marine Park special or significant to you personally?

Probe: Why is that important to you?

Probe: Does the marine heritage area generally reflect your beliefs and values? How so?

Probe: Does X National Marine Park reflect the type of person you are? Tell me more...

Probe: Will you miss this place if you are away from it too long? Why and what do you miss most?

Probe: What things do you enjoy doing here more than at other places?

Does the X National Marine Park elicit a sense of belonging? Please explain.

Is there anything about the X National Marine Park that you feel strongly connected to? Tell me more about that...

“X National Marine Park” refers generically to one of the three study sites, i.e., Xiamen National Marine Park, Dalian Changshan Islands National Marine Park, and Dalian Xinghai Bay National Marine Park

Marine Heritage Involvement Questions

How often do you visit the X National Marine Park? How long have you been coming to the site?

What do you like to do at the park?

Probe: How is that activity important to you?

Probe: How does the activity affect you?

Probe: Why did you decide to get involved in that activity?

Probe: Will you continue to be involved in that activity in the future? Why or why not?

As a local resident, how do you think you can be involved in conserving X National Marine Park?

“X National Marine Park” refers generically to one of the three study sites, i.e., Xiamen National Marine Park, Dalian Changshan Islands National Marine Park, and Dalian Xinghai Bay National Marine Park

Marine Heritage Support Questions

On a scale 1 to 10, where 1 is “not at all” and 10 is “100%,” how much do you support conserving X National Marine Park?

Probe: What are your perspectives about marine heritage conservation and management?

Probe: Are there some conservation activities what you think are very important? Please explain.

Probe: Are there some management regulations that you support? Any that you don't support? Please explain.

Probe: How do you respond when X National Marine Marine heritage site managers try to control your behavior? Tell me more about that...

Probe: What's your experience with site education and outreach efforts?

Probe: Has X National Marine Park been effective at engaging local residents? In what ways?

“X National Marine Park” refers generically to one of the three study sites, i.e., Xiamen National Marine Park, Dalian Changshan Islands National Marine Park, and Dalian Xinghai Bay National Marine Park

Marine heritage managers interview. The first section of the manager interviews was the introduction. At this point, the interviewer introduced the study, provided an informed consent form, and expressed appreciation for the interviewee's time. The interviewer briefly described the purpose of the interview, creating a comfortable environment by telling the interviewees that there was no right or wrong answer, and that they were free to ask questions and express their ideas during the interview.

The second section examined manager perceptions of marine heritage conservation and management, their connection to, involvement in, and support for

marine heritage. In this section, the interviewer asked the same questions as in the local resident interview.

The third section explored in what ways and to what extent marine heritage managers have attempted to enhance local resident connection to, involvement in, and support for their local marine heritage site. The textbox below shows the questions that were used to elicit information on these topics.

The fourth section of the interview asked managers, “*How would you advise future marine heritage managers to engage local residents in the conservation and management of Dalian Xinghai Bay National Marine Park (or Dalian Changshan Islands National Marine Park)?*” After the interview, I asked the manager to fill out a follow-up questionnaire that recorded relevant demographic and psychographic information.

Phase two: Quantitative data collection

My goal during the quantitative data collection phase was to collect 600 surveys from the local residents living close to Dalian Xinghai Bay National Marine Park, Dalian Changshan Islands National Marine Park, and Xiamen National Marine Park. In the end, I collected a total of 495 surveys. The target respondents were any members of a local household, not just heads of households. The purpose of the quantitative data collection was to understand the relationships between various local resident characteristics and their support for marine heritage site conservation and management.

Marine Heritage Conservation and Management Questions for Managers

How can managers at X National Marine heritage site strengthen local resident contributions and increase their efficacy?

Probe: What support would you need to facilitate community-based conservation and management?

Probe: Do you have the required support? *Please explain.*

Probe: What things support or hinder your efforts to engage community residents?

What actions have you taken to enhance local resident support for, connection to, and/or involvement in marine heritage conservation and management?

Probe: How did you and you colleagues decide to do these actions?

Probe: To what extent have the actions led to the expected results?

Probe: Which factors influence the effectiveness of these actions? *Please explain.*

Probe: In your opinion, how do local residents view your outreach and engagement efforts?

“X National Marine Park” refers generically to one of the three study sites, i.e., Xiamen National Marine Park, Dalian Changshan Islands National Marine Park, and Dalian Xinghai Bay National Marine Park

I developed a written questionnaire to collect quantitative data. The survey included results derived from the qualitative data collection process (i.e., phase one). The survey was comprised of five parts, including: 1) Local resident perceptions of marine heritage; 2) Local resident connections to marine heritage; 3) Local resident involvement in the local marine heritage site; 4) Local resident support for marine heritage conservation and management; and 5) Local resident demographic and psychographic information (Table 6).

Table 6

Survey Design

DV/IV	Variable Name	Measurement	Survey Question
DV 1	Support for the Conservation & Management of Local Marine Heritage (Han, 2016)	<ul style="list-style-type: none"> • I am willing to protect the beauty of X National Marine Park • I am willing to protect the ecosystem of X National Marine Park, including plants and animals • I am willing to ensure the sustainability of X National Marine Park • I am willing to protect the X National Marine Park for future generation • I am willing to stop environmentally destructive behaviors • I am willing to advocate for the X National Marine Park conservation • I am willing to help solve management problems • I am willing to support the development of green business in the X National Marine Park area 	4
IV1	Individual's Demographic Information	<ul style="list-style-type: none"> • Gender • Age • Education • Family • Annual income • Birth place • Time amount of living at marine heritage area 	5, 6, 7, 8, 9, 10, 11
IV2	Perceptions (Derived from local resident interviews)	<ul style="list-style-type: none"> • Marine heritage includes everything related to ocean • Marine heritage includes the ecological environment in the ocean • Marine heritage contains the natural resources in the ocean, culture and history • Marine heritage partially refers to the ocean 	2

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

DV/IV	Variable Name	Measurement	Survey Question
		<ul style="list-style-type: none"> • Marine heritage includes coastal zone and the junction zone between sea and land • Protection system and mechanism is significant to marine heritage • Marine heritage is closely related to my daily life • Marine environment is very important for living environment • Local residents is a part of marine heritage conservation and management • Marine heritage is of much value for me • Protecting marine heritage is very important for my generation • It is very important to protect marine heritage for future generation 	
IV 3	Connection to Local Marine Heritage (Jorgensen, & Stedman,2001; Lewicka, 2011)	<ol style="list-style-type: none"> 1) Place identity <ul style="list-style-type: none"> • Everything about X National Marine Park is a reflection of me • X National Marine Park says very little about who I am • I feel like I can really be myself at the X National Marine Park • X National Marine Park reflects the type of person I am 2) Place attachment <ul style="list-style-type: none"> • I feel relaxed when I am at the X National Marine Park • I feel happiest when I am at the X National Marine Park • X National Marine Park is my favorite place to be • I really miss this place when I am away from the X National Marine Park for too long 3) Place dependency <ul style="list-style-type: none"> • X National Marine Park is the best one for doing the things I enjoy most • For doing the things I enjoy most, no other place can compare to X National Marine Park 	3

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

DV/IV	Variable Name	Measurement	Survey Question
		<ul style="list-style-type: none"> • X National Marine Park is not a good place for doing the things I most like to do • As far as I am concerned, there are better places to be than at the X National Marine Park 	
		4) Items derived from local resident interviews	
		<ul style="list-style-type: none"> • X National Marine Part provides food for me • The natural environment of X National Marine Park affects my living environment • X National Marine Park Area is the place where I live • I am proud of living in X National Marine Park Area • I have unforgettable memories in X National Marine Park • X National Marine Park influences my belief and the way I see the world • X National Marine Park has an effect on my personalities and the way I do things 	
IV4	Involvement in Local Marine Heritage Site Activities (Kyle et al., 2007)	1) Attraction <ul style="list-style-type: none"> • Taking actions to protect the X National Marine Park is one of the most enjoyable things I do • Taking actions to protect the X National Marine Park is very important to me • Taking actions to protect the X National Marine Park is one of the most satisfying things I do 2) Centrality <ul style="list-style-type: none"> • I find a lot of my life is organized around taking actions to protect the X National Marine Park • Taking actions to protect the X National Marine Park occupies a central role in my life • To change my preference from taking actions to protect the X National Marine Park to another certain activity would require major rethinking 3) Social bonding <ul style="list-style-type: none"> • I enjoy discussing taking actions to protect the X National Marine Park with my friends 	4

DV/IV	Variable Name	Measurement	Survey Question
		<ul style="list-style-type: none"> • Most of my friends are in some way connected with taking actions to protect the X National Marine Park • Participating in taking actions to protect the X National Marine Park provides me with an opportunity to be with friends 	
		4) Identity affirmation	
		<ul style="list-style-type: none"> • When I participate in taking actions to protect the X National Marine Park, I can really be myself • I identify with the people and image associate taking actions to protect the X National Marine Park • When I'm taking actions to protect the X National Marine Park, I don't have to be connected with the way I look 	
		5) Identity expression	
		<ul style="list-style-type: none"> • You can tell a lot about a person by seeing them taking actions to protect the X National Marine Park • Participating in taking actions to protect the X National Marine Park says a lot about whom I am • When I participate in taking actions to protect the X National Marine Park, others see me the way I want them to see me 	

“X National Marine Park” refers generically to one of the three study sites, i.e., Xiamen National Marine Park, Dalian Changshan Islands National Marine Park, and Dalian Xinghai Bay National Marine Park

Data Analysis Procedures

In this study, data analysis process was comprised of two phases, qualitative data analysis and quantitative data analysis.

Qualitative data analysis procedures

I used thematic analysis to analyze qualitative data. “Thematic analysis is a method for systematically identifying, organizing, and offering insight into patterns of meaning (themes) across a data set. Through focusing on meaning across a data set, thematic analysis allows the researcher to see and make sense of collective or shared meanings and experiences” (Braun & Clarke, 2012, p.60).

The overall analysis process consisted of six steps.

In step one, before I transcribed the interview, I listened to the recording, read the data, and tried to immerse myself in the data by making notes while reading and listening. This was a process of making myself familiar with the data, and starting to think about these data critically, analytically, and actively. During this step I started to think about what these data meant (Braun & Clarke, 2012).

In step two, I transcribed interviews into written documents, and then organized documents and artifacts. By reading through all the transcripts, field notes, documents and artifacts, initial codes were generated (Braun & Clarke, 2012).

In step three, I shifted from codes to themes. This was the place where my analysis started to take a shape. A theme “captures something important about the data in relation to the research question, and represents some level of patterned response or meaning within the data set” (Braun & Clarke, 2006). Therefore, this was a process of searching for themes (Braun & Clarke).

Searching for themes was not the end of thematic analysis. After searching for themes, I went back to the initial themes, and checked my themes “against the collated extracts of data and explore[d] whether the theme worked in relation to the data” (Braun & Clarke, 2012). I explored the themes that did not seem to work in relation to the data, and redrew the boundaries of overlapping data. In short, step four was a process of reviewing the initial data and potential data (Braun & Clarke).

Step five was a process of defining and naming themes. The challenge of this process was to sum up the essence of each theme, clearly revealing the uniqueness and specifics of the theme (Braun & Clarke, 2012).

The last step was to produce the report. At this stage, I kept my research questions in mind, and followed APA guidelines and requirements.

Thus, I analyzed my qualitative data by:

- 1) Organizing the data into folders, and creating a list of folders with names.
- 2) Transcribing the audiotapes from the interviews into written documents in Chinese (since local residents were interviewed in Chinese).
- 3) Employing a preliminary exploratory analysis to obtain a general sense of the data.
- 4) Identifying the codes, coding the transcripts, and developing the themes (coding process).
- 5) Finalizing the data analysis.

Quantitative data analysis procedures

I utilized IBM SPSS (Version 23) to analyze the quantitative data. I produced descriptive statistics to examine variable frequencies and means. I also used a variety of statistical techniques to accomplish study objectives. See Table 6 for the variables for a listing of the variables that formed the basis of my quantitative analysis.

I conducted Exploratory Factor Analysis to examine the relationship among the variables. Exploratory Factor Analysis seeks to discover the factor structure of a measure and to examine its internal reliability (Fabrigar & Wegener, 2011). Exploratory Factor Analysis is based on the Common Factor Model which is a “general mathematical framework for understanding or representing the structure of correlations among observed scores on a set of measures” (Fabrigar & Wegener, p. 5). There were five variables in my study. Table 7 shows the common factor model of this study. ρ refers to the correlations between two variables.

Table 7

Common Factor Model of This Study

	Variable 1	Variable 2	Variable 3	Variable 4	Variable 5
Variable 1	1.00				
Variable 2	$\rho_{2.1}$	1.00			
Variable 3	$\rho_{3.1}$	$\rho_{2.2}$	1.00		
Variable 4	$\rho_{4.1}$	$\rho_{3.2}$	$\rho_{3.3}$	1.00	
Variable 5	$\rho_{5.1}$	$\rho_{4.2}$	$\rho_{4.3}$	$\rho_{4.4}$	1.00

After Exploratory Factor Analysis, I revised and updated the current conceptual model. Then Multiple Regression was conducted to examine the relationship between independent variables and dependent variables and whether there was a significant difference in local resident support for the management and conservation of marine heritage based on their levels of sense of place, connection, and involvement. The multiple linear regression model for this study was:

$$E(y)=\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5+\varepsilon$$

X₁: local resident perceptions;

X₂: local resident connections to local marine heritage;

X₃: local resident involvement in local marine heritage area;

X₄: marine heritage manager actions;

X₅: local resident psychographic information

y: support for local marine heritage conservation

Delimitations

This study is delimited by the following:

1. This study was conducted at Xiamen National Marine Park, Dalian Changshan Islands National Marine Park, and Dalian Xinghai Bay National Marine Park and participants were non-native English speakers.

Table 8

Variables and Statistics of Quantitative Data

Objectives	Statistics	Dependent Variables (DV) and Independent Variables (IV)
Examine the correlations among variables.	Factor Analysis	Variable: Support for local marine heritage conservation
Examine the relationship between demographics and psychographics and local resident perceptions, connections to, involvement in, and support for local marine heritage conservation and management.	Multiple Regression	DV: Support for local marine heritage conservation IV1: Perceptions IV2: Connection IV3: Involvement IV4: Respondent demographics and psychographics

2. The focus of this study will be marine heritage in China, not marine heritage in other world locations. Regardless of their status as important marine heritage sites, Xiamen National Marine Park, Dalian Changshan Islands National Marine Park, and Dalian Xinghai Bay National Marine Park are not representative of all marine heritage sites in China and worldwide.
3. Survey participants in this study were limited to the local residents living close to Xiamen National Marine Park, Dalian Changshan Islands National Marine Park, and Dalian Xinghai Bay National Marine Park in China.

Ethics and Human Relations

Ethical issues encompass questions of how to protect research subjects during the research process. Ethical concerns need to be taken care of at each stage in the research, not only during the data collection process. Researchers need to protect research subjects, and develop a trusting relationship with them (Creswell, 2014).

There was a minimal risk that participants might feel uncomfortable about being recorded. Also when the surveys and interviews were conducted, there was a risk that participants would think that the process was time consuming. But consent forms clearly stated time commitments and potential risks. I reviewed UMSL's code of ethics. I then submitted a proposal to, and obtained approval from, the UMSL Institutional Review Board (IRB).

When I distributed the informed consent form, I told interviewees that they did not have to sign the form if they did not want to be a part of the study. I indicated that if they chose not to participate, that was fine. I detailed the purpose of this case study again in this stage, and I did not deceive them. When I was interviewing them, although I had the interview protocol at hand, I still tried hard to avoid leading questions, and to stick to the questions in my interview protocol. When I analyzed the qualitative data, I definitely respected interviewees' privacy and anonymity, and reported multiple perspectives instead of positive results only. When I made sense of data and wrote results, I tried my best to be honest, and followed APA guidelines, being careful with data storage (Creswell, 2014; Creswell, 2013; Merriam, 2016).

Chapter 4

Results

I will present the data analysis results in two sections. The first section is an analysis of face-to-face interviews with local residents and marine heritage site managers. I intend to reveal local resident perceptions of marine heritage, their connections to, involvement in, and support for marine heritage conservation and management, as well as marine heritage site manager perceptions, experiences, and efforts to engage local residents in marine heritage conservation and management. The results of qualitative analysis were used to develop questions used in a written questionnaire to be given to other local residents during phase two. The second section is an analysis of local resident surveys that explores the relationship between local residents and marine heritage sites.

Local Resident and Park Manager Interview

A summary of local resident face-to-face onsite interviewee demographics is provided in Table 9. Fifteen local residents from two study sites and surrounding areas participated in the onsite interview. Ten participants were from Xinghai Bay National Marine Park and the surrounding area (Xinghai Bay) and five were from Changshan Islands National Marine Park and the surrounding area (Changshan Island). The number of female and male participants was almost even: eight were female, and seven were male. All local residents were older than 18 years old and younger than 54

Table 9

Onsite Local Resident Interview Participants, Descriptive Statistics (N=15)

	Xinghai Bay	Changshan Islands	Overall
Numbers of Interview Participants	10 (67%)	5 (33%)	15 (100%)
Gender			
Male	4 (27%)	3 (20%)	7 (47%)
Female	6 (40%)	2 (13%)	8 (53%)
Age			
18-24	1 (0%)	0 (0%)	1 (7%)
25-34	2 (13%)	2 (13%)	4 (27%)
35-44	6 (40%)	1 (7%)	7 (47%)
45-54	1 (7%)	2 (13%)	3 (20%)
55 and over	0 (0%)	0 (0%)	0 (0%)
Education Level			
Middle school and less	1 (7%)	0 (0%)	1 (7%)
High School	2 (13%)	4 (27%)	6 (40%)
Some college or associate degree	0 (0%)	1 (7%)	1 (7%)
Four-year college degree	4 (27%)	0 (0%)	4 (27%)
Masters, doctoral, or professional degree	3 (20%)	0 (0%)	3 (20%)
Family Composition			
Single	3 (20%)	1 (7%)	4 (27%)
Married, no children	1 (7%)	0 (0%)	1 (7%)
Married, with one or more children at home	6 (20%)	4 (27%)	10 (67%)
Married, with one or more parents at home	3 (20%)	0 (0%)	3 (20%)
Annual Income (\$1557.97 ≈ CNY 10,000)			
CNY 20,000 and less	2 (13%)	2 (13%)	4 (27%)
CNY 20,001-40,000	0 (0%)	0 (0%)	0 (0%)
CNY 40,001-60,000	3 (20%)	1 (7%)	4 (27%)
CNY 60,001-80,000	1 (7%)	0 (0%)	1 (7%)
CNY 80,001-100,000	2 (13%)	1 (7%)	3 (20%)
CNY 100,000 and more	2 (13%)	1 (7%)	3 (20%)

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

	Xinghai Bay	Changshan Islands	Overall
Born in the Study Site or Surrounding Area			
Yes	6 (40%)	3 (40%)	9 (60%)
No	4 (27%)	2 (13%)	6 (40%)
Years of Living in This Area			
Less than one year	1 (7%)	0 (0%)	1 (7%)
1-10 years	0 (0%)	0 (0%)	0 (0%)
>10-20 years	4 (27%)	0 (0%)	4 (27%)
>20 -30 years	2 (13%)	3 (20%)	5 (33%)
>30-40 years	2 (13%)	1 (7%)	3 (20%)
>40- 50 years	1 (7%)	0 (0%)	1 (7%)
>50 -60 years	0 (0%)	1 (7%)	1 (7%)
>60-70 years	0 (0%)	0 (0%)	0 (0%)
Over 70 years	0 (0%)	0 (0%)	0 (0%)

years old. Unfortunately, I did not have a chance to have a deep conversation with local residents who were over 54 years old.

The fifteen local residents that I interviewed had diverse education backgrounds, ranging from middle school or less to masters, doctoral or professional degrees. The fifteen local residents differed in family composition. Four of them were single, and ten were married. One was married without children. Ten of them were married with one or more children at home. Three of them were married and had one or more parents at home.

The annual income of the fifteen local residents varied widely. Four local residents made CNY 20, 000 or less annually ($\$1557.97 \approx \text{CNY } 10,000$), eight local residents had annual incomes in the range of CNY 40,000 to CNY 100,000, and three local residents made four made over CNY 100,000 annually.

Not all the local residents were born in the study site or the surrounding area. Nine of them were born in study site or the surrounding area, and four moved to study site or the surrounding area after they were born. The fifteen local residents had lived in study site or the surrounding area an average of 26 years, with a range of 0-60 years.

There were three high-level managers at Xinghai Bay National Marine Park and two high-level managers at Changshan Islands National Marine Park. All of them agreed to be interviewed. The managers of the two study sites differed in terms of gender. All the managers at Xinghai Bay were female and both managers at Changshan Islands were male. The average age of the managers was 37 years old. All the managers at both study sites had a four-year college degree, or a graduate degree. They worked at the study site at an average of 11 years with a range of one to 30 years. The annual income of the five managers also differed, with a range of CNY 20, 000 to CNY 100,000 (\$1557.97 \approx CNY 10,000). Table 10 presents a summary of the demographics for marine heritage area managers who participated in a face-to-face onsite interview.

Overarching Themes

Results indicate local resident perceptions of marine heritage, and how they interact with marine heritage conservation and management. Through the analysis of interview participants, five themes emerged, including:

Theme 1: Local residents articulate marine heritage definitions that encompass natural and cultural heritage.

Table 10

Onsite Marine heritage site manager Interview, Descriptive Statistics (N=5)

	Xinghai Bay	Changshan Islands	Overall
Numbers of Interview Participants	3 (60%)	2 (40%)	5 (100%)
Gender			
Male	0 (0%)	2 (40%)	2 (40%)
Female	3 (60%)	0 (0%)	3 (60%)
Age			
18-24	0 (0%)	0 (0%)	0 (0%)
25-34	1 (20%)	1 (0%)	2 (40%)
35-44	2 (40%)	0 (0%)	2 (40%)
45-54	0 (0%)	1 (20%)	1 (20%)
55 and over	0 (0%)	0 (0%)	0 (0%)
Education Level			
Four-year college degree	2 (40%)	1 (20%)	3 (60%)
Masters, doctoral, or professional degree	1 (20%)	1 (20%)	2 (40%)
Family Composition			
Single	0	1 (20%)	1 (20%)
Married, no children	2 (40%)	0 (0%)	2 (40%)
Married, with one or more children at home	1 (20%)	0 (0%)	1 (20%)
Married, with one or more children who do not live at home	0 (0%)	1 (20%)	1 (20%)
Years of Working at Their Sites			
1-5 years	1 (20%)	0 (0%)	1 (20%)
5.1-10 years	1 (20%)	1 (20%)	1 (20%)
10.1 -15 years	1 (20%)	0 (0%)	1 (20%)
15.1-20 years	0 (00%)	0 (0%)	1 (20%)
20.1- 30 years	0 (0%)	1 (0%)	1 (20%)
30.1 years and over	0 (0%)	0 (0%)	0 (0%)
Annual Income (\$1557.97 ≈ CNY 10,000)			
CNY 20,000 and less	0 (0%)	0 (0%)	0 (0%)

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

	Xinghai Bay	Changshan Islands	Overall
CNY 20,001-40,000	2 (40%)	0 (0%)	2 (40%)
CNY 40,001-60,000	0 (0%)	1 (20%)	1 (20%)
CNY 60,001-80,000	0 (0%)	1 (20%)	1 (20%)
CNY 80,001-100,000	1 (20%)	0 (0%)	1 (20%)
CNY 100,000 and more	0 (0%)	0 (0%)	0 (0%)
Born in the Study Site or Surrounding Area			
Yes	1 (20%)	2 (40%)	3 (60%)
No	2(40%)	0 (0%)	2 (40%)
Years of Living in This Area			
Less than one year	0 (0%)	0 (0%)	0 (0%)
1-10 years	1 (7%)	0 (0%)	1 (7%)
>10-20 years	0 (0%)	0 (0%)	0 (0%)
>20 -30 years	2 (13%)	1 (7%)	3 (20%)
>30-40 years	0 (0%)	0 (0%)	0 (20%)
>40- 50 years	0 (0%)	1 (7%)	1 (7%)
Over 50 years	0 (0%)	0 (0%)	0 (0%)

Theme 2: Local residents form deep connections to the meanings and significance of marine heritage.

Theme 3: Local residents want marine heritage to be protected for themselves and future generations.

Theme 4: Although local residents support marine heritage protection, their day-to-day involvement in marine heritage conservation and management is extremely limited.

Theme 5: To harness the power of an engaged local population, managers must expand their focus beyond marine ecosystem management and facility construction and maintenance.

Taken together, these themes illustrate the range of meanings and perspectives that emerged from the qualitative research process.

Theme 1: Local residents articulate marine heritage definitions that encompass natural and cultural heritage.

First, local residents view the marine ecosystem as the container of life, as representing the balance of humans and nature, and as a source for sustainable development. Local residents at Xinghai Bay regard marine heritage as including the ecosystem of the national marine park area, including animals and plants.

Marine heritage is the ecosystem of the sea, the plants, the animals and some endangered species. We should conserve it. We, humans, are supposed to apply some scientific methods to let it reproduce. This is marine heritage. (Interviewee 5, Xinghai Bay)

Local residents indicated a desire to seek the sustainable development of marine heritage to keep the balance of humans and nature. Local residents indicated that human actions could have an influence upon marine heritage areas. Some local residents at Xinghai Bay worried that excessive infrastructure construction and development could damage the natural landscape and resources, and influence the water quality of the marine heritage area. They mentioned that there were many tall commercial buildings near Xinhai Bay National Marine Park. They did not like them, because the commercial district interfered with the beauty of the natural landscape.

Objectively speaking, I do not applaud the development planning of Xinghai Bay during recent decades. The government planned to reconstruct coastline and fill the sea. I think all these actions and constructions are excessive and they damage the ecology of the whole coastline. I feel like you can barely find natural coastline within the city, most have been reconstructed. (Interviewee 1, Xinghai Bay)

One local resident at Changsha Islands also worried that overfishing and land reclamation had damaged the ecosystem of the marine heritage area.

There are less fish in the sea compared to the past. One of the reasons is over fishing, I think. This also has something to do with the laws and regulations of our country. We did not follow the relevant laws and regulations well, so we have way less fish to fish...What we, as local residents, know about is fishing and facilities near the sea. In the bigger Dalian area, we fill the sea to build new houses. That's really bad. If we want to build an airport, we fill the sea. That is not right. The whole north part of Dalian has many buildings, that's the result of filling the sea. That's too bad. (Interviewee 12, Changshan Islands)

Second, local residents recognize that marine heritage represents their culture, beliefs, and history. Most Changshan Islands resident participants also regarded marine heritage as encompassing marine culture.

I think the most important about marine heritage is folkways. The folkways on this island are very simple, pure, and honest. The culture of fisher families is unique, folkways are what make it different from other culture.” (Interviewee 14, Changshan Islands)

One local resident from Changshan Islands mentioned that island residents had beliefs related to the god of the sea, who is called “Hai Shen Niangniang” (i.e., the mother of the sea).

I don't know whether you have heard of Mazu Culture, which is worshiped by most fishermen in Fujian and Taiwan, including some southeastern

Asian countries. We have it here on our island too, our belief. But we have our own goodness of the sea, we call it Hai Shen Niangniang. (Interviewee 14, Changshan Islands)

One local resident stated that marine heritage also included history.

When I hear the term of *marine heritage*, it makes me think about the biology or living creature in the sea, something like that. I feel like it is left over by history, it is history... We should preserve and conserve it as culture, therefore more people can know about it. (Interviewee 7, Xinghai Bay)

Third, local residents identify marine heritage as a source of their survival. Local residents stated that the marine heritage could provide survival essentials, including food, clean water resources, recreation areas, and a pleasant climate and environment.

I think the so-called marine heritage is very important for us. When the water was very clean before, the seafood that we had was also pretty good. But recently, I feel like that sometimes the seafood has a smell of gas, maybe because there's a lot of waste in the sea, or the leaking gas of the cruise, in a result, I think, the seafood is not very fresh now. (Interviewee 2, Xinghai Bay)

Local residents from Changshan Islands pointed out that they are deeply attached to marine heritage, because the many households on the island derive the majority of their income from aquaculture industries.

The aquaculture density on our islands is high. The income of many resident families rely on this. The fishery is a big thing for us... Recent years, there is less fish in the sea. Many years ago, you can catch a fish by gigging, but now it's not that easy any more. (Interviewee 13, Changshan Islands)

Theme 2: Local residents form deep connections to the meanings and significance of marine heritage.

First, local residents connect to marine heritage as *home*, *love*, and *belonging*. Local residents felt geographically connected to Xinghai Bay and Changshan Islands because they were places where they grew up, lived, and worked.

I grew up here, and I never left this city. It is also where I work (Interviewee 11, Changshan Islands)

Local residents have developed quite an affection for these places, and they regard them as home.

I was born here. It is my hometown. How can't I love it? I have never left here, all the important moments in my life so far happened here. It is my home. It means a lot to me. (Interviewee 11, Xinghai Bay)

Some local residents said that although they were not born in either of the two areas, they still love them and they view them as home.

This island is so closely connected to me. The sea is my mother to me, it gives me life and brings me up. This is what I feel like. I live here now, I will stay here until I am very old. I will die here. I will not go back to my hometown. It's really true, I love this island. (Interviewee 13, Changshan Islands).

These two marine heritage sites provided a treasure-trove of memories to local residents, and gave them a sense of belonging.

What comes to my mind first is, if someone mentioned Xinghai Square which is located in this park, I know it is in this city where I live. First of all, I am very proud of it. Whenever you mention this area, I know it is an

awesome place. Second, I ever played in the park, I viewed the beautiful landscape, I had experiences there. I mean I have lots of good memories there, I have been there with my friends, my classmates and my family. For me, it is where I spend my leisure time, I have had wonderful memories there. (Interviewee 2, Xinghai Bay)

This sense of belonging causes local residents to form a deep love of marine heritage.

Personally speaking, in my mind, it is like a piece of land reserved for myself. I have personal emotions to this place. Because it's where I grew up. Maybe it's not accurate to say 'grew up'. But I always went there when I was young. So for me as an individual, I love this place and Dalian, I love it since it is my hometown. The sense of belonging that this area gives me comes from my childhood experiences and my experiences there. When I was a little boy, probably in the 1990s, there was nowhere that could compare with the sea here, and also the square. It was so wonderful. (Interviewee 3, Xinghai Bay)

There are specific locations in the park that remind local residents of wonderful experiences they have had there. This makes these places special for local residents.

My family had lunch together at that area. After lunch, we visited the park. We talked, we laughed, the kids played and jumped. Because they were happy, so I was also happy. That experience was impressive. We took a walk along Binhai Road from Xinhai Square. Everyone in our family were together, we felt so comfortable and happy in such relaxed environment.” (Interviewee 5, Xinghai Bay)

Second, local residents have an identity that's tied to marine heritage. Living in a marine heritage area gives local residents an identity tied to where they live. Their attachment to marine heritage locations gives local residents a sense of pride.

First of all, I am a Dalianian, I absolutely hope it becomes better and better. Because it is my hometown, I will proudly tell others what we have in Dalian, and show them Xinghai Bay. (Interviewee 5, Xinghai Bay)

Some local residents indicated that living in a marine heritage area influenced their personalities, beliefs, and values in certain ways.

Living in this area can have some influence upon my personalities, but absolutely huge influence. Living in this area make me be able to endure hardships and be capable of hard work. You cannot imagine how much hardship I have to endure when I put out to the sea. (Interviewee 13, Changhsan Islands)

One local resident mentioned that visiting Xinghai Bay helps her become a more grateful person. She said:

It influences my personality, my beliefs and the way I do things. Whenever I go there and walk around the sea. I always have a pleasant mood. I will be grateful of the sea. I appreciate the happiness that the sea brings me, and also appreciate the ecology of this area in under protection. I buy some food to feed pigeon and sea mew. I feel like it is so good to look at strong and powerful sea mew flying in the sky. It's such a wonderful thing. And that makes me to be grateful, be grateful of living in such a wonderful place. (Interviewee 5, Xinghai Bay)

One local resident indicated that living in marine area makes her open her mind and be more inclusive.

We are so close to the sea, which makes us to have an open and broad mindset. Because of that, when you do something as you gradually grow up, you will be influenced by pleasant and harmonious environment. Everyone has the power to work hard. But your frame of mind can contain lots of tolerance, and that is consistent with this area, a heart of openness and wideness. (Interviewee 10, Xinghai Bay)

Third, local residents view marine heritage areas as places that absorb anxiety, pressure, and discomposure. Several local residents indicated that the reason they felt connected to marine heritage was because the place made them feel relaxed.

There was a period when I did not feel very well, I was in bad mood and had lots of pressure, I liked to go there. I would like to walk around at that area. That made me feel better and relaxed. (Interviewee 6, Xinghai Bay)

Marine heritage areas are the places where participants experienced release. One local resident said that Xinghai Bay National Marine Park was his spirit totem.

It influences my personality, my beliefs and the way I do things. When I am not in good mood, I really love to walk around at the Xinghai Bay. When I am walking around there, I feel relieved and learn to switch off and let it go over my head. It makes me think difficulty is not a big deal. I can shout at the seaside, and then come back to reality and make efforts to do what I want to do. (Interviewee 5, Xinghai Bay)

During the interviews, local residents revealed how they were connected to marine heritage. In fact, almost all the local residents expressed a sense of connection to marine heritage.

This area is absolutely has something to do with me. It is, after all, a part of the city where I live. I often pass by here. Although it is only a single place, ecological environment is a whole. So ecosystem has the feature of integrality, you cannot say that it does not influence me. Therefore, I am connected to this area. (Interviewee 1)

Although local residents did not directly discuss their connections to marine heritage conservation and management, the connections they experienced to marine heritage could serve as a foundation, and enhance local resident motivation, to engage in

marine heritage conservation and management. In addition, when local residents were asked about their perceptions of marine heritage, two participants indicated that it is important for local residents to be involved in the process of marine heritage conservation and management. One mentioned that local residents could and should play a meaningful role in marine heritage conservation and management.

Marine heritage site managers are also a part of us as local residents, and also stakeholders. Therefore, everyone should involve in marine heritage conservation and management. (Interviewee 2, Xinghai Bay)

The other local resident recommended that all the local residents should work together as a union to protect marine heritage.

It is a good idea to establish a national marine park. However, it will be better if we can bring the society and everyone into play. Because this is not only marine heritage site managers' responsibilities, but also what everyone should do together as a whole. (Interviewee 10, Xinghai Bay)

Theme 3: Local residents want marine heritage to be protected for themselves and future generations.

First, local residents want to protect marine heritage areas for themselves. Local residents are able to identify the values and significance of marine heritage. They express their vision to protect marine heritage.

I also value its natural resources. I think marine heritage is very important and valuable, especially for Dalian City, since we sit beside the sea. We depend upon the sea to survive." (Interviewee 1, Xinghai Bay)

Local residents said that they valued the ecosystem and environment of marine heritage areas.

Personally speaking, I think the ecosystem and environment is the most valuable part about marine heritage. No matter coastline or biodiversity, as long as you destroy them, basically they are not recoverable, including natural coastline, and species in it. In addition, it involves fishery industry, and it's unrecoverable. (Interviewee 1, Xinghai Bay)

Local residents at both park areas agreed that establishing a national marine park was a good idea and that marine heritage needs to be protected.

Absolutely it is a wonderful idea to establish a national marine park. We need to protect our marine heritage. If not, and we abuse natural marine resources, it is a huge damage to the sea, I think. (Interviewee 4, Xinghai Bay)

Some local residents believed that establishing a national marine park could improve public awareness of the importance of protecting marine heritage.

I think it is good to have a national marine park at the area where we live. At least it reminds us this is a place that needs us to protect. As a result, it increases our awareness of protecting marine heritage, which makes us to actively protect it. (Interviewee 2, Xinghai Bay)

Some local residents held that *the protection framework*, including policies, regulations, and leadership measures, is extremely important once an area becomes designated as a national marine park.

I think establishing a national marine park could be considered as a good measure to protect marine heritage. However, what more important is to have strict protection mechanism that consist with national marine park. (Interviewee 1, Xinghai Bay)

One local resident emphasized the importance of marine heritage area leadership.

After a national marine park is established, a good leader is very important. Will the leader consider ecosystem protection when making decisions? Does the leader have the awareness of protecting marine heritage? (Interviewee 11, Changshan Islands)

Two local residents from Xinghai Bay mentioned that local residents should be part of marine heritage conservation and management.

It is a good idea to establish a national marine park. However, it will be better if we can bring the society and everyone into play. Because this is not only marine heritage site managers' responsibilities, but also what everyone should do together as a whole. (Interviewee 10, Xinghai Bay)

And one of these two local residents insisted that local residents benefit from marine heritage, so they should not be absent from marine heritage conservation and management efforts.

This national marine park is at the area where we live. So we and managers together can make it [preservation work]. This is absolutely right. Because this national marine park provides us services, and brings us many benefits. Marine heritage site managers are also a part of us as local residents, and also stakeholders. Therefore, everyone should be involved in marine heritage conservation and management." (Interviewee 2, Xinghai Bay)

Second, local residents want to protect marine heritage for future generations. Local residents also indicated that they valued the continuity of marine heritage, which ensures that future generations can "have it, enjoy it, and benefit from it." (Interviewee 8, Xinghai Bay)

The most value of it is that it's preserved over time, and we still have it nowadays, and future generation will be able to have it in the future. (Interviewee 9, Xinghai Bay)

Local residents indicate that protecting marine heritage is equivalent to leaving an inheritance.

We need a way to preserve such wonderful and rare stuff. I think it can be considered as a kind of culture, and be preserved, so more people and future generation can know about it. (Interviewee 7)

Local residents think protecting marine heritage involves human population and the future of the human race.

Because this is not only park managers' responsibilities, but also what everyone should do together as a whole. Because it involves the issue of reproduction of humans, the issue of future generations, the issue of survival. (Interviewee 10)

Theme 4: Although local residents support marine heritage protection, their day-to-day involvement in marine heritage conservation and management is extremely limited.

First, local residents express that they are willing to support marine heritage conservation and management. During the interview, I gave local residents a scale from 1 to 10, where 1 was "not at all" and 10 was "100%," and asked them how much they would support conserving Xinghai Bay or Changshan Islands. Eleven of the 15 local residents said 100%, and one resident said 90%, 80%, 70%, 50% respectively. One local resident indicated that the reason why she could not fully support for marine heritage

conservation and management was because she was always out of town for business trips: “My time is not flexible. There’s much time that I am on a business trip, not in Dalian” (Interviewee 7). Another resident expressed that she would not fully support marine heritage conservation because she did not know how to provide high-level support: “In addition, another 3% of the reason why I did not support [marine heritage conservation] is because I was wondering whether there were other ways that I could provide better support, but I did not know what they were” (Interviewee 9). One local resident from Changshan Islands pointed out that he could not fully support marine heritage conservation and management because he thought that attitudes were not the same as actions. His attitude was positive, but his actions may not consistent with his attitude.

From my personal perspectives, supporting for Changshan Island conservation and management is not only I say that I would like to support, it is supposed to turn to actions. (Interviewee 14)

Generally speaking, local resident attitudes toward supporting the conservation and management of Xinghai Bay and Changshan Islands was positive. However, they have differing conceptions about what marine heritage conservation and management means.

On one hand, some local residents feel like marine heritage conservation and management is necessary and important, but they do not have an awareness of marine

heritage conservation and management in their daily lives as local residents. One local resident said:

Really, I don't think it's part of my daily life. The conservation and management of Xinghai Bay. Well, not something I think about in my daily life. (Interview 1, Xinghai Bay)

One local resident did not have a sense of day-to-day involvement in marine heritage conservation and management, because he did not have the knowledge of what and how he could take actions to support marine heritage conservation and management in his daily life.

I strongly support for the conservation and management of Changshan Islands. It is necessary. But I don't think local residents have the awareness of involvement. We more or less depend upon the government. (Interviewee 15, Changshan Islands)

Many local residents indicated that their ability to help conserve and manage marine heritage is very limited, and they can only be policy followers.

I support for its conversation and management, because it is important. The government should take actions that consist with its conservation and management...I think what I can do to support is just to follow park regulations and be a good visitor. There is little I can do as a local resident. (Interviewee 12, Changshan Islands)

On the other hand, some local residents regard themselves as stakeholders and believe that their actions are very important. Even so, they felt that it is difficult for their voices to be heard by the government.

I absolutely support for its conservation and management. I love this island. Our country established this park, what our government does is right. The government is always right. But the government's shortcoming is in its weak enforcement. You are writing a dissertation on this, you care, I do too. But ten thousand sentences from us cannot do better than one sentence from you. The leaders may read your research. But our voice cannot be heard. Our strength is very weak. (Interviewee 13, Changshan Islands)

One local resident emphasized the importance of knowing what to do to support for marine heritage conservation and management.

As for supporting conserving Xinghai Bay, I think, first it is important to let us learn about it. (Interviewee 5, Xinghai Bay)

Second, although local resident attitudes toward marine heritage conservation and management is supportive, their day-to-day involvement in marine heritage conservation and management is extremely limited.

During the interviews, local residents discussed their main reasons for visiting the site. For both Xinghai Bay and Changshan Islands, the majority of local residents expressed personal interest in spending their leisure time at the sites.

I probably go to Xinghai Bay once a month.....I don't have any purposes when I go there. I just want to go there. I usually go there at weekend. I go there to relax. Sometimes there are exhibitions, I will go for that.” (Interviewee 1, Xinghai Bay)

When they visit the two study sites, local residents like to take a walk, fish, swim, do exercise, view natural landscapes, visit exhibitions and museums, spend time with family and friends, and take a sea bath. (Note: “Taking a sea bath” is a term that local

residents normally use. It refers to playing in the water in the area where they are allowed to do so.)

I love fishing at the site. Through May to October, those are good months to do some activities at the area. The temperature and climate are very pleasant on the island. Pleasant enough for me to do some outdoor activities. Like biking, running, fishing, taking a walk. That's all, probably. (Interviewee 14, Changshan Islands)

During the interviews, local residents agreed that they could make contributions toward marine heritage conservation and management.

Xinghai Bay is already a part of my life. Because I would love to visit it. That's all. If you say that Xinghai Bay is turning worse, or polluted, and the site needs volunteers. I can sign up to be a volunteer. It's also OK for me to pick up trash if it needs me to do so. (Interviewee 5, Xinghai Bay)

They pointed out the way that they preferred to get involved in marine heritage conservation and management. Some local residents said that they try to be environmentally friendly visitors and follow park regulations while visiting the sites.

As an individual, what I can do is to behave myself when I visit the site. I will try to not make too much trash. Especially I will not throw the trash into the sea. I think most local Dalianians do not have this problem" (Interviewee 1, Xinghai Bay)

Some stated that they take government requests regarding domestic waste classification seriously, and they would like to follow the relevant rules and regulations.

The government is promoting domestic waste classification on our island. I think that is what I can do. Treat this issue seriously. (Interviewee 14, Changshan Islands)

Others vowed to pay attention to the issue of marine heritage conservation and management and be more concerned about it. Many local residents had an interest in volunteering at the sites.

I think, at least, I will throw away trash at the beach. Do not leave trash around when I visit the site. Secondly, I will pay attention to the issue of the park conservation and management. I will support for it. (Interviewee 3, Xinghai Bay)

Not all the local residents realized their importance as a local resident. Some expressed deep convictions that their ability to be involved in marine heritage conservation and management was very limited.

As a local resident, I think my strength is weak and limited. I can help maintain the environment and practice what I preach. This is the first point. The second point is not to destroy public facilities while visiting the site. My individual strength and contribution is weak and limited, after all. (Interviewee 7, Xinghai Bay)

Local resident interviews provide clues to why local residents' day-to-day involvement in marine heritage protection is limited. Their perceptions of marine heritage conservation and management make them stay outside of it, even if they think marine heritage conservation and management is important and necessary. They do not realize that marine heritage conservation is not only the government's responsibility, but theirs too.

Some local residents do not agree that they can do much to support marine heritage conservation and management.

I think conservation and management is very necessary. As what I have said, the government established some entertainment programs and facilities to get economic benefits. It is not good. Since they are already, if the government does not take the responsibility of conservation and management, it will become a chaos and terrible place. (Interviewee 8, Xinghai Bay)

Local residents pointed out that the lack of the knowledge about marine heritage and how it is conserved and managed prevented them from getting involved in marine heritage conservation and management. They were not sure how to get involved and what they can do. One local resident said:

If I have some knowledge about it, perhaps I will know better about how to get involved. Therefore, first I have to say related knowledge is very important. (Interviewee 2, Xinghai Bay).

Many local residents indicated that marine heritage conservation was more on the government responsibility. One local resident said:

I think since we have a powerful government, the government's leading role is the biggest, and the awareness of each local resident is the most important. (Interviewee 3, Xinghai Bay)

A perceived knowledge gap hinders local resident involvement in marine heritage conservation and management. Local residents indicated that awareness was also a factor that influenced them to get involved in marine heritage conservation and management. "Our country should carry out related laws and regulations strictly. Marine heritage conservation and management cannot rely on local resident conscientious contributions or involvement. We do not have that high level of awareness" (Interviewee 13). One local

resident thought that nowadays local residents on Changshan Island did not have the awareness of marine heritage conservation and management in their daily lives.

I think conservation and management should depend on our country's law and regulations. It is very difficult to let local residents get involved in conservation and management. Because we do not have the awareness. (Interviewee 13, Changshsan Islands)

Besides a lack of awareness and knowledge, there were other limiting factors including time constraints, how much it costs, distance from a marine heritage site, mood, and weather conditions. Local residents hope that their involvement in marine heritage conservation would not cost them much money. "If I do not need to spend some money on it, I can make some contributions to Xinghai Bay conservation and management" (Interviewee 6, Xinghai Bay). They also expect that their involvement in marine heritage conservation and management would not occupy too much of their personal time. "I would love to help with Xinghai Bay conservation and management if there is something that I can do. But I am a little worried that I don't have enough time to get involved in all this kind of stuff" (Interview 11, Changshan Islands). Local residents indicated they also thought about climate and their mood when they decided whether to get involved in marine heritage conservation and management. One local resident said:

It's difficult to say whether I would like to get involved in conservation and management or not. It really depends. Like time, how far away I am from here, the climate or weather. Also my mood, and my emotional connection to this site can somehow affect my decision. (Interviewee 7, Xinghai Bay)

Some local residents do not think there is much room for them to get involved. “For local residents near the coast, personally speaking, there is not too much we can do, no more than not leaving trash around” (Interviewee 1, Xinghai Bay). One local resident indicated that he did not have a sense of involvement, but he did not know why.

Time constrains and the money they need to spend were factors that influenced whether local residents took actions to support for marine heritage conservation and management. Local residents indicated that they prefer not spending much time and money on marine heritage conservation and management. “Ideally, if I have time, and I do not need to pay for anything, I think I am able to take actions to support for conserving Changshan Islands” (Interviewee 12, Changshan Islands).

One local resident also mentioned personal interest as a restriction that prevented him from taking actions to support for marine heritage conservation and management.

Personally speaking, if I do have enough time, I can make myself get involved in some activities to support for its conservation and management. But for me personally, I don't have strong personal interest about it. (Interviewee 4, Xinghai Bay)

Emotional connection is one factor that promotes local residents to be involved in marine heritage conservation and management.

This is my hometown, I love it so much. I definitely love to do something to support its conservation. I can be a volunteer, or I can tell people around me to make contributions to help conserve it. (Interviewee 10)

In addition, almost all the local residents indicated that both sites had very weak education and outreach efforts. Almost all of them did not know that Xinghai Bay and

Changsha Islands were national marine parks, although they are very familiar with those two areas since they live and work at those two areas. Hence site education and outreach efforts may be another reason why local residents do not take actions to support marine heritage conservation and management. One local resident said:

I have never heard about it is a national marine park. I have not seen any efforts from the site to promote us to support for its conservation and management (Interviewee 3)

Theme 5: To harness the power of an engaged local population, managers must expand their focus beyond marine ecosystem management and facility construction and maintenance.

During the interviews, marine heritage site managers discussed how they viewed marine heritage. Park managers indicated that they focus on marine ecology conservation, marine ecosystem management, and facilities construction and maintenance. That is, their site management efforts focused on environmental quality, the water quality, the beach, the species, and the facilities. To some extent, they do not view local resident engagement in marine heritage conservation as central to marine heritage conservation and management. One park manager at Xinghai Bay thought that marine heritage was protecting the sea and its natural resources:

I think marine heritage is the sea, fish and plants in the sea. My duty as a manager is to protect the sea, and the fish and plants in the sea. (Manager 3, Xinghai Bay)

Park managers at Changshan Islands National Marine Park thought that marine heritage conservation and management was more than protecting the sea and its natural resources like fish and plants, it was also about preserving marine culture.

I think the biggest value of this area lies in its culture. Human history tells us fishing culture. This is what makes marine heritage unique and different from other. There is a place called Qiyuan Garden in the park. Generally speaking, it talks about the same god of Mazu, but different names, because people in the south and north call it differently. This is a part of our culture... June 16th on lunar calendar each is the time when we have temple fair... Fishman also has a work song sung to synchronize movement. It seems that it is a world heritage now. Marine heritage is about culture, is about spiritual civilization. And We need to preserve the marine culture. (Manager 3, Xinghai Bay)

A park manager at Xinghai recognized that the site has a value for scientific research.

There is much black reef in our park, it took hundreds or thousands of years to form black reef. My statement may be not accurate. But I think it somehow has values for geological development and research (Manager 1, Xinghai Bay).

Park managers deem the greatest value of marine heritage to be the sea itself, including its natural resources and its natural landscape. One manager said:

I lived on this island for more than 30 years. My favorite thing about this area is the sea, the island, and the natural landscape. (Manager 5, Changshan Islands)

Park managers emphasized that marine heritage needs to be conserved and managed. Although their perceptions of marine heritage conservation and management is limited to marine ecosystem management and facility construction and management, they

do realize that protecting marine heritage is not their only responsibility. One manager said that everyone was responsible for marine heritage conservation and management:

I think this is not only a manager responsibility and work duty. Everyone should make contributions. We should do it together. It's not only for our generation, but also future generation. (Manager 1, Xinghai Bay).

Park managers understand that marine heritage relates to local residents' daily life. It relates to the food they eat and their living environment.

The sea can purify the air. Also, the fish and shellfish we eat, if the sea and environment is good and clean, the food we eat is healthy. In addition, the marine ecology is healthy too (Manager 1).

They stated that the site also provides a recreation place for local residents.

In the park, citizens have more and more space to do activities, work out, exercise, and spend their leisure time. There is a fishing ground and flat beach for local residents (Manager 2, Xinghai Bay).

Park managers at Xinghai Bay treated marine heritage conservation and management as the conservation of marine environment and the surrounding green space.

One marine heritage site manager said:

Marine heritage conservation and management is a new field for us. We made out measures to conserve the green space and facilities, but we did not have measures for marine heritage conservation and management. But we realized that we needed to have such kind of measures. That's the reason we submitted the application to make Xinghai Bay become a national marine park. It's about the conservation of maritime space, including ecology, water quality. The current measures that we have focus on environmental health. If there are floating materials, seaweed, we have boats and facilities to clean them. In addition, how do we face the pollution of marine environment? We will try our best to control this problem. (Manager 1, Xinghai Bay)

One park manager's perception of marine heritage conservation and management at Changshan Islands originates from his understanding of 18th Communist Party of China (CPC) National Congress.

At the 18th CPC National Congress, President Xi put forward that it is an essential national development strategy to exploit, utilize and protect the seas and oceans, and build China into a maritime power. National marine park is a special marine reserve. And it involves some related functions of marine park. Its conservation and management is mainly about the ecological environment of this island, and the construction of humanistic and spiritual civilization, including conserving some local species, like Dalian purple sea urchin, which is very famous. (Manager 4, Changshan Islands)

However, when asked what they thought about local resident contributions to marine heritage conservation and management, they stated that local resident contributions were important. "If we can well and fully employ the power of this society, or everyone's power, the conversation outcome probably will be better" (Manager 1). Park managers at Changshan Islands National Marine Park explained that they wrestled with the issues of garbage treatment, marine debris, and the damage that the fishery and aquaculture industry created:

A pressing matter of the moment, we face two major issues: one is aquaculture intensity. Fishman and many local residents rely on it to make money and survey. You cannot make local residents lose the way that they used to make money, at the same time, as a marine heritage site manager, you have to think about a sound conservation and management measure. It is super difficult. The other issue is garbage treatment. Some aquaculture projects destroy the ecology of the island, including water, soil, even some have influence on air quality. There is not a sound measure to deal with aquaculture waste. (Manager 4)

Unfortunately, park managers have taken few actions to enhance local resident connection to, involvement in, and support for marine heritage conservation and management. Park managers at Xinghai Bay indicated that they had not made much of an effort to enhance local resident engagement: “Our park has not worked on enhancing local resident contributions yet.” (Manager 2, Xinghai Bay). The conservation and management of those two parks focus on facilities, beach conservation, environmental protection, and tourism development. One park manager said:

Xinghai Bay is changing every year. We have upgraded the facilities in this area and other aspects, including beach conservation, environment protection. Every year you come here, you have new impression and experiences. Xinghai Bay is very beautiful in the evening. We have such a big square in the park, and we have started a Lightening Project to make Xinghai Bay bright and pretty at night. The city government also organize many activities here. This past December 31, we organized a firework show here. That was what my department helped with. We hope to attract more visitors through these activities. (Manager 1)

Many Changshan Island residents rely heavily on the fishery and aquaculture industry, but these industries have caused some serious ecological and environmental problems. Therefore, park conservation and management has tended to focus on the ecological remediation of the island. One marine heritage site manager said:

Our local revenue heavily relies on the sea. As the aquaculture density increases, local residents on the island do not pay attention to the ecology and environment...Since 2011, We have implemented five national island ecological remediation projects, total funding is 134 million dollars. These include breakwater remediation, beach remediation, conductor landslide remediation, garbage sewage treatment, and solar streetlight construction and environmental protection infrastructure construction. With our efforts

and advocates, as well as the efforts of the County Garbage Classification Management Committee, from up to local government and down to local communities, we put environment protection at a high position. Local residents have kind of realized the importance of it, much better than before. (Manager 4)

One park manager of Changshan Islands mentioned that there were many fishing and aquaculture families on the island, and they relied on the sea and its natural resources a lot. He thought one side effect of fishing and aquaculture was an underlying conflict with marine heritage conservation and management.

We have not made many efforts to attract local residents to be a part of it, because I think the marine park has conflict with local residents. When it becomes a national marine park, if you were engaging in aquaculture industry, we did not allow you to do it anymore. That's not right (Manager 5, Changshan Islands).

There are many factors that prevent marine heritage site managers from enhancing local resident connection to, involvement in, and support for marine heritage conservation and management. As discussed above, manager perceptions of what constitutes marine heritage conservation and management is probably one factor. "Local residents' engagement is a matter of subconscious. We are the leading role" (Manager 1).

Additionally, all the park managers had multiple duties. This limits their ability to focus on getting local residents involved. The management department of Xinghai Bay National Marine Park and Changshan Island National Marine Park were under Dalian Xinghai Bay Development and Construction Management Center and Changhai County

Oceanic & Fishery Administration separately, thus being a marine heritage site manager was only one of their duties.

We are the staff who prepared application materials, and after it were entitled as a national marine park in August 2016. We have not done much on the park after it. Except for the park, we also have duties from Dalian Xinghai Bay Development and Construction Management Center. This is the truth. (Manager 3).

The absence of government pressure or directives to engage local residents in marine heritage conservation and management is also a factor. The relevant government departments do not require park managers to promote community participation.

At present, we have done nothing to promote local resident's efforts and contributions to park conservation and management. That's because the government does not require us to do so. (Manager 4)

Park managers acknowledged that getting local residents involved in marine heritage conservation and management would require community-level support.

If we want to promote local residents be a part of marine heritage conservation, we need to work with communities. We can work together. (Manager 2)

Park managers at Changshan Islands indicated that they need assistance from other government departments to get local residents involved in marine heritage conservation and management. For example, the Department of Frontier Defense and Public Security, the Department of Environment Protection, and the Department of Tourism were viewed as important allies.

First of all, I need support from the Department of Frontier Defense and Public Security. There must be a guarantee of security at the port. The

Department of Frontier Defense and Public Security and the Department of Fishery Law Enforcement provide legal security. Those are helpful for park management. I also need support from the communities, the Department of Environmental Protection and the Department of Tourism. (Manager 4)

One park manager also pointed out that unreasonable planning expectations negatively affected their work progress. He said:

National marine parks is something new for us. We started last year. Honestly, the marine park gives me lots of pressure. The current planning of Changshan Islands National Marine Park is unreasonable. I want to adjust the planning. We want to submit application to the province, then our country. We want to make it better, and try our best to adjust the planning. But we got obstacles at province level. They did not allow us to adjust the unreasonable part of the planning. They asked us to submit a new and very detailed planning. This is a biggest problem we are facing now. (Manager 5)

Local Resident Survey

I conducted local resident surveys at Xinghai Bay National Marine Park, Changshan Islands National Marine Park, and Xiamen National Marine Park. I collected a total of 495 valid surveys onsite from local residents. The response rate for the local resident survey was approximately 87%. In this section, I will present descriptive and inferential statistical results derived from an analysis of survey data.

Descriptive statistics from the local resident survey

There were 495 local residents at the three study sites who completed a written survey. Descriptive statistics for the sample population are presented in Table 11. More male participants than female participants took the local resident survey. The survey

sample was comprised of 37% male and 63% female local residents. The average age of the 495 local residents was 33 years old. The participants had diverse education backgrounds. Forty-five percent of the 495 local residents had a four-year college degree or a masters, doctoral or professional degree. The family composition of these local

Table 11

Onsite local resident surveys, Descriptive statistics (N=495)

	Changshan Islands	Xinghai Bay	Xiamen	Overall
Numbers of Survey Participants	214 (43%)	181 (37%)	100 (20%)	495 (100%)
Gender				
Male	95 (19%)	52 (11%)	35 (7%)	182 (37%)
Female	119 (24%)	129 (26%)	65 (13%)	313 (63%)
Age				(n=495)
18-24	16 (3%)	70 (14%)	26 (5%)	112 (23%)
25-34	42 (8%)	45 (9%)	18 (4%)	105 (21%)
35-44	58 (12%)	29 (6%)	45 (9%)	132 (27%)
45-54	65 (13%)	21 (4%)	11 (2%)	97 (20%)
55-64	23 (5%)	14 (3%)	0 (0%)	37 (7%)
65-74	6 (1%)	2 (0%)	0 (0%)	8 (2%)
75 and over	4 (1%)	0 (0%)	0 (0%)	4 (1%)
Education Level				
Middle school and less	49 (10%)	2 (0%)	28 (6%)	79 (16%)
High School	86 (17%)	7 (1%)	15 (3%)	108 (22%)
Some college or associate degree	43 (9%)	20 (4%)	23 (5%)	86 (17%)
Four-year college degree	33 (7%)	11 (22%)	29 (6%)	173 (35%)
Masters, doctoral, or professional degree	3 (1%)	41 (8%)	5 (1%)	49 (10%)
Family Composition				
Single	41 (8%)	93 (19%)	37 (7%)	171 (35%)
Married, no children	14 (3%)	22 (4%)	3 (1%)	39 (8%)

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

	Changshan Islands	Xinghai Bay	Xiamen	Overall
Married, with one or more children at home	121 (24%)	59 (12%)	59 (12%)	239 (48%)
Married, with one or more children who do not live at home	38 (8%)	7 (1%)	1 (0%)	46 (9%)
Married, with one or more parents at home	22 (4%)	43 (9%)	42 (8%)	107 (22%)
Annual Income (\$1557.97 ≈ CNY 10,000)				
CNY 20,000 and less	72 (15%)	76 (15%)	42 (8%)	190 (38%)
CNY 20,001-40,000	69 (14%)	25 (5%)	8 (2%)	102 (21%)
CNY 40,001-60,000	34 (7%)	18 (4%)	11 (2%)	63 (13%)
CNY 60,001-80,000	21 (4%)	23 (5%)	8 (2%)	52 (11%)
CNY 80,001-100,000	7 (1%)	17 (3%)	8 (2%)	32 (6%)
CNY 100,001 and more	11 (2%)	22 (4%)	23 (5%)	56 (11%)
Born in the Study Site or Surrounding Area				
Yes	187 (38%)	91 (18%)	51 (10%)	329 (66%)
No	27 (5%)	90 (18%)	49 (10%)	166 (34%)
Years of Living in This Area				
Less than one year	0 (0%)	11 (2%)	0 (0%)	11 (2%)
1-10 years	2 (0%)	53 (11%)	18 (4%)	73 (15%)
>10-20 years	16 (3%)	43 (9%)	48 (10%)	107 (22%)
>20 -30 years	49 (10%)	33 (7%)	21 (4%)	103 (21%)
>30-40 years	48 (10%)	12 (2%)	7 (1%)	67 (14%)
>40- 50 years	65 (13%)	16 (3%)	6 (1%)	87 (18%)
>50 -60 years	19 (4%)	10 (2%)	0 (0%)	29 (6%)
>60-70 years	9 (2%)	3 (1%)	0 (0%)	12 (2%)
Over 70 years	6 (1%)	0 (0%)	0 (0%)	6 (1%)

residents was spread out across all six categories: 35% were single, 48% were married with one or more children at home, 22% were married with one or more parents at home. The annual income of the majority of local residents who took the survey was under CNY 60, 000 (around \$9423.90) and 66% of the local residents were born at the study

sites or in the surrounding area. Finally, the majority of the local residents had lived in the study area for over 10 years.

Interferential statistics for the local resident survey

I conducted Exploratory Factor Analysis and Multiple Linear Regression Analysis IBM SPSS (Version 23) to explore the relationships among the variables and answer my research questions.

Exploratory Factor Analysis. I identified four principal components through factor analysis when varimax rotation used 0.05 factor loading as the inclusion threshold. They explained 65.62% of the variance with the Kaiser-Meyer-Olkin measure of sampling adequacy of 0.670 (Table 12). That means 67% of the variance in how respondents answered survey questions might be common variance. Table 12 shows the loadings of twelve variables, including perception, connection, involvement, support, gender, age, education level, family composition, living with parents, annual income, born in study location, and years of residence, on the three factors extracted. The higher the absolute value of the loading, the more the factor contributed to the variable.

I define the first component as *residency aspects*, and it explains 22.39% of the variance. There are three factors included in this component: age, family composition, and years of residence. This component indicates that age, family composition, and years of residence as a whole could be a potential factor predicting local resident support for marine heritage conservation and management.

Table 12

Rotated Component Matrix from SPSS Output for Factor Analysis

Item	Component			
	1	2	3	4
Perception	.013	.760	.160	.010
Connection	.100	.861	-.160	-.024
Involvement	.075	.797	-.178	-.096
Support	.068	.784	.103	.107
Gender	.070	.032	.820	-.166
Age	.890	.119	-.104	.189
Education Level	-.511	.024	.235	.549
Family Composition	.836	.112	.033	.176
Living with Parents	-.325	.022	-.077	.148
Annual Income	.157	-.012	-.117	.881
Born in Study Location	-.372	-.064	.562	.201
Years of Residence	.801	.137	-.366	-.091

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization

a. Rotation converged in 5 iterations.

I describe the second component as *marine heritage interaction*, and it explains 21.84% of the variance. Four factors were included in this component: perception, connection, involvement, and support. This component suggests that perception, connection, involvement and support correlate with each other.

I label the third component as *identity*, and it explains 10.86% of the variance. Gender and birthplace are the two factors in this component, which suggests that I can

combine gender and birthplace when I test whether these factors are influential in determining local resident support for marine heritage conservation and management.

I call the fourth component *professional status*, and it explains 10.53% of the variance. There are only two factors in this component: education level and annual income. This component implies that education level and annual income correlate with each other, and that professional status could influence local resident support for marine heritage conservation and management.

I calculated Cronbach's Alpha to measure the internal consistency of each factor in each component. Table 13 shows the values of Cronbach's Alpha and scale statistics, including means and standard deviations for each component. The SPSS Output for factor analysis indicates that the final scale includes all the measurement factors.

The value of Cronbach's Alpha for the residency aspect and interaction with marine heritage conservation and management factors is more than 0.80, which implies good reliability of the measurement items for the two components. However, the reliability of identity and professional status are 0.193 and 0.362 respectively, which is poor. In addition, the Correlated Item-Total Correlation for the component of professional status is 0.232. Briggs & Cheek (1986) recommend that the optimal mean inter-item correlation values range from 0.2 to 0.4. As a result, I include gender,

Table 13

Cronbach's Alpha and Scale Statistics from SPSS Output for Factor Analysis

Component	N	Cronbach's Alpha	Mean	Standard Deviation
Residency Aspect	495	0.841	9.33	3.68
Interaction	495	0.814	16.38	2.10
Identity	495	0.193	2.97	0.711

birthplace, and professional status in my analysis. The results indicate that people who live in the area tend to show more support for marine heritage. The second component indicates that perception, connection, involvement, and support contribute to positive attitudes toward marine heritage conservation and management.

Multiple Linear Regression Analysis. I performed multiple regression analysis to explain the relationship between demographic and psychographic variables and local resident perceptions of, connections to, involvement in, and support for local marine heritage conservation and management. I identified local resident support for marine heritage conservation and management as the dependent variable (DV), and others as independent variables (IV). I used the stepwise method to build a multiple linear regression model. The R-square of the model was 0.411, and the Adjusted R-square was .406. I show the ANOVA output from SPSS in Table 14. It shows that the multiple linear regression model significantly predicted local resident support for marine heritage conservation and management, $F(df=494)$ equaled to 85.324, $p < 0.001$.

Table 15 shows the coefficients for each predictor variable. Four predictor variables emerged, and taken together, these variables significantly explain local resident support for marine heritage conservation and management. The variables include: Perception with $\beta = 0.446$, $t = 9.670$ and $p < 0.05$, Connection with $\beta = 0.231$, $t = 3.651$ and $p < 0.05$, Involvement with $\beta = .146$, $t = 2.844$ and $p < 0.05$, and Annual Income with $\beta = .040$, $t = 2.844$ and $p < 0.05$.

The stepwise multiple linear regression model was:

$$E(\text{Support}) = 1.064 + 0.446 \times \text{Perception} + 0.231 \times \text{Connection} + 0.164 \times \text{Involvement} + 0.040 \times \text{Annual Income}$$

The standardized coefficients indicate that all the independent variables have a significantly positive influence upon the dependent variable. Perception had biggest positive effect upon local resident support for marine heritage conservation and management (standardized beta=0.391). Connection had the second biggest effect

Table 14

ANOVA Output 1 from SPSS

	Sum of Squares	df	Mean Square	F	Sig.
Regression	96.968	4	24.242	85.324	<0.001
Residual	139.219	490	.284		
Total	236.187	494			

Predictors: Perception, Connection, Involvement, Annual Income

Table 15

Coefficients from SPSS Output 1

Predictor	Unstandardized Coefficients		Standardized Coefficients	t-value	p-value
	Beta	Std. Error			
Percept	1.064	0.191		5.584	<0.001
Perception	0.446	0.046	0.391	9.670	<0.001
Connection	0.231	0.063	0.201	3.651	<0.001
Involvement	0.164	0.049	0.171	3.345	0.001
Annual Income	0.040	0.014	0.099	2.844	0.005

Dependent Variable: Support for Marine Heritage Conservation and Management

(standardized beta=0.201). Involvement had the third biggest effect (standardized beta=0.171). Annual Income had the fourth biggest effect on support for marine heritage conservation and management (standardized beta=0.391). Other demographics and psychographics factors like gender, age, education level, born in study location, and years of residence were not selected in the stepwise multiple linear regression model as a single variable, because they did not have a significant effect upon local resident support for marine heritage conservation and management individually. However, they could exert a significant effect upon the dependent variable if combined with other variables.

Based on factor analysis, residency aspect (a group of age, born in study location, years of residence), identity (a group of gender and birthplace) and professional status (a group of education level and annual income) mattered. Therefore, I performed another multiple linear regression to examine additional potential relationships among variables. I

still defined the dependent variable as local resident support for marine heritage conservation and management. The independent variables were local resident perceptions of marine heritage, connection to, and involvement in marine heritage conservation and management, residency aspects, identity and professional status. I built another regression model. The R Square of the model was 0.429, and the Adjusted R Square was 0.423. The ANOVA output from SPSS is included in Table 16. It shows that the multiple linear regression model significantly predicts local resident support for marine heritage conservation and management, $F(489)$ equals to 73.541, $p < 0.05$.

Table 16

ANOVA Output 2 from SPSS

	Sum of Squares	df	Mean Square	F	Sig.
Regression	101.374	5	20.275	73.541	<0.001 ^e
Residual	134.813	489	0.276		
Total	236.187	494			

e. Predictors: Perception, Connection, Involvement, Residency Aspect, Identity, Professional Status

Table 17 shows the coefficients of each predictor variable. Five predictors emerged, and taken together they significantly explain local resident support for marine heritage conservation and management in the model. They are Perception with $\beta = 0.389$, $t = 8.214$ and $p < 0.05$, Connection with $\beta = 0.261$, $t = 4.140$ and $p < 0.05$, Involvement

Table 17

Coefficients from SPSS Output 2

Predictor	Unstandardized Coefficients		Standardized Beta Coefficients	t-value	p-value
	B	Std. Error			
Intercept	1.175	0.183		6.404	<0.001
Perception	0.389	0.047	0.341	8.214	<0.001
Connection	0.261	0.063	0.227	4.140	<0.001
Involvement	0.194	0.049	0.202	3.975	<0.001
Professional Status	0.088	0.024	0.128	3.711	<0.001
Identity	0.084	0.025	0.121	3.333	0.001

Dependent Variable: Support for Marine Heritage Conservation and Management

with $\beta = 0.194$, $t = 3.975$ and $p < 0.05$, Professional Status with $\beta = 0.088$, $t = 3.711$ and $p < 0.05$, Identity with $\beta = 0.084$, $t = 3.333$ and $p < 0.05$, and Residency Aspect with $\beta = .068$, $t = 2.502$ and $p < 0.05$.

The multiple linear regression model is:

$$E(\text{Support}) = 1.175 + 0.389 \times \text{Perception} + 0.261 \times \text{Connection} + 0.194 \times \text{Involvement} + 0.088 \times \text{Professional Status} + 0.084 \times \text{Identity}$$

Based on the regression model, marine heritage interaction, profession status, identity, and residency aspects had a positive influence upon local resident support for marine heritage conservation and management. The results indicate that although gender, age, education level, being born in they study location, and years of residence did not have a significant effect upon local resident support for marine heritage conservation and

management individually, the combination of age, family composition, and years of residence, the combination of gender and being born in the study of location, and the combination of education level and annual income do positively affect local resident support for marine heritage conservation and management. According to the regression model, among the five independent variables, local resident perceptions of marine heritage had the biggest positive influence on local resident support for marine heritage conservation and management. The second biggest influence was local resident connections to marine heritage conservation and management, followed by local resident involvement in marine heritage conservation and management, their professional status, and their identity.

Chapter 5

Discussion

This study makes several major contributions to the theoretical investigation of community connections to marine heritage. First, the qualitative results reveal the factors that influence local resident connection to, involvement in, and support for marine heritage conservation and management. Second, the relationship between local resident knowledge and awareness, perceptions, connections, involvement, demographics and psychographics, and support play a significant role in understanding local resident experiences and interactions with, and values attributed to, marine heritage. This chapter will present the two major findings through the lens of qualitative and quantitative results. By interpreting the qualitative and quantitative data results, this chapter will also: (1) explain the meaning of the findings and why they are important; (2) relate findings to similar studies; (3) acknowledge the limitations of this study; (4) and make suggestions for future research.

Influential Factors of Local Marine Heritage Support: Connection and Involvement

Through a thematic analysis, this study has provided a representation of place interactions that local residents construct at Xinghai Bay and Changshan Islands. A total of five themes emerged based on the coding process to reflect local resident experiences and place interactions at Xinghai Bay and Changshan Islands.

Three implications emerged from the qualitative data analysis results. First, local resident perceptions of, and how much local residents know about, marine heritage in general, and its conservation and management in particular, influences local resident interactions with marine heritage conservation and management. In marine heritage settings, local resident knowledge and awareness of marine heritage conservation and management was positively correlated with their connection to, involvement in, and support for marine heritage conservation and management. Almost all the local residents knew of the existence of the study sites, but they did not have the awareness of marine heritage conservation and management. They indicated that they had not thought about or made local contributions to marine heritage conservation and management yet. They also did not know that, as local residents, they could play a crucial role in marine heritage conservation and management process. They implied that even though local residents would like to get involved in marine heritage conservation and management, they did not know how to take actions to support marine heritage. In part that's a function of their lack of knowledge of marine heritage conservation and management. Kameli and associates (2016) indicated that the knowledge of a place and an awareness of the how to conserve the make places meaningful and special for people. Ormsby and Kaplin (2005) suggested that knowledge and awareness about the history of heritage sites changes how people perceive heritage sites and its conservation. They commented that resident knowledge of conservation and management issues could positively influence their response to protected area conservation and management practices. They found out that a lack of

awareness of “the purpose and potential benefits” of protected areas and its conservation and management could influence their attitude toward conservation (p. 161).

Second, local resident perceptions of marine heritage and its conservation and management influences their interaction with marine heritage conservation and management. Local residents feel connected and attached to marine heritage. This enables them to see and articulate the relationship between marine heritage and themselves. Because of their strong connection to the study sites, their attitude toward marine heritage conservation and management tends to be favorable. However, they frequently don't get involved in or take actions to support marine heritage conservation and management. Many local residents think marine heritage conservation and management is the government's responsibility. Others indicated that local residents should shoulder some of the responsibility for marine heritage conservation and management. My study results are consistent with previous studies. Bennett and Dearden (2014) indicate that local community perceptions of heritage sites have an influence on their interactions with protected areas, and strengthen or hinder conservation effectiveness. Maever and associates (2017) found out that local community perception is “an essential step towards conservation and management, as local support for [a] conservation project is crucial” (p. 6). Jaafar, Noor, and Rasoolimanesh (2015) found that a positive perception among local residents (e.g., with respect to voice, agency and self-efficacy) could increase their involvement in conservation and promote their support for conservation and management.

Third, park management efforts influence local resident interactions with marine heritage and its conservation and management. Two findings emerged from the marine heritage site manager interviews. First, the study shed light on how park managers understand marine heritage conservation and management in China. They tend to think marine heritage conservation is about marine ecology, ecosystem conservation and management, and facility construction and maintenance. Managers assume that local residents will passively follow laws and regulations. This research suggests that marine heritage site managers did not view local resident connections to, involvement in, and support for marine heritage conservation and management as instrumental in accomplishing management goals. The qualitative data suggest that robust, ongoing conversations between park managers and local residents could deter outside groups from using legal and/or political means to dictate policies or regulations. Public engagement could prove essential in marine protected areas where local resident incomes and livelihood rely on sustainable fisheries, a viable aquaculture industry, or other marine ecosystem benefits. Second, I could barely see any park manager efforts to enhance local resident connections to, involvement in, and support for marine heritage conservation and management. One reason may lie in the fact that these marine parks do not have a specific management department. The park managers are government staff members and have multiple job duties. The management of national marine parks is only one of them. Marine heritage sites in China may need specialized staff who specialize in conservation and management efforts. Another reason may be that the government does not push,

require, or expect park managers to encourage local residents to become active participants in the conservation and management process. My results suggest that there is a huge opportunity to enhance local resident connection to, involvement in, and support for marine heritage conservation and management through park manager education and outreach efforts.

However, it may be unrealistic to expect marine heritage site managers to act independently at the site level in the absence of systemic change in the national/international marine heritage system. Revisioning mandates, rethinking strategies, and/or reallocating resources could greatly strengthen onsite management efforts. These management changes could strengthen the functioning of natural and cultural heritage systems, because “Ecosystems integrate with several interconnected and interacting elements into a single functional entity” (Cao, Peng, & Liu, 2015, p. 15622). Cao and his associates found that a watershed ecosystem often requires management by multiple government jurisdictions and departments. Marine heritage conservation and management involves water and marine resources, water and marine environments, fishery resources, and typically they are governed by different government entities. “The administration of upstream and downstream areas is assigned to the jurisdiction of multiple departments, which therefore distributes the aforementioned resources among different administrative management departments” (p.15623). Taken together, results suggest that marine heritage systems may need a comprehensive plan to engage local residents to build a constituency that supports management goals to ensure environmental

quality, nurture local resident connections to place, enhance visitor onsite experience, foster community pride in place, and create a context within which sustainable development can take place. Thus, these results provide a basis for tourism and sustainable development in marine heritage corridors.

Local Resident Characteristics and Marine Heritage Support

The results confirmed that we can understand local resident support for marine heritage conservation and management in part by examining a series of influential factors.

Local resident perceptions of marine heritage positively influence their support for marine heritage conservation and management. Thus, cultivating positive perceptions of marine heritage among local residents could strengthen support for conservation and management outcomes in China. This conclusion is also consistent with the finding of Bennett and Dearden (2014). They suggest that the poor “perception of marine protected area livelihood impacts, conservation and management in Thailand” is the reason why local residents do not support conservation and management (p. 107).

Local resident connections to marine heritage, and their support for marine heritage conservation and management, have a mutual positive influence on each other. Multiple linear regression analysis explains how connection can affect local resident support for marine heritage conservation and management. That is, the more deeply local residents connect to marine heritage, the more strongly they support its conservation and

management. Furthermore, this study measured connections by (1) developing survey items on the basis of local resident perceptions generated through onsite interviews, and (2) incorporating sense of place scale items validated by previous research. This dual measurement strategy created a more robust measurement of the connection construct and may have contributed to observed results.

Local resident involvement in marine heritage conservation and management positively influences local support. Exploratory factor analysis shows that local resident involvement and their support for marine heritage conservation and management influence each other. By performing multiple linear regression analysis, I found that the more local residents get involved, the more likely it is that they will support marine heritage conservation and management. Previous studies have explored the relationship between community involvement and sustainable tourism development. Jones (2005) and Lepp (2007) proposed that community involvement could be regarded as a community-based management approach for tourism development, not only enhancing the value of community, but also reducing unpleasant impacts on the community.

Local resident demographic and psychographic characteristics have a positive effect upon local resident support for marine heritage conservation and management. Previous research indicates that demographic and psychographic characteristics, including age, household size, income, education level, gender and ethnicity, can affect community member support for natural resource and heritage conservation and

management, (Allendorf & Allendorf, 2013; Gillingham & Lee, 1999; Han et al., 2016; McClanahan et al., 2005).

Through this study, three demographic and psychographic characteristics emerged from the factor analysis. Quantitative analysis results indicate that *respondent annual income* increases local resident support for marine heritage conservation and management. But there is not a significant relationship between education level and support. However, professional status which is a combination of education and annual income, *does* have a positive effect upon marine heritage support. Higher professional status leads to stronger local support. The second characteristic was labeled *residency aspect*, which is the combination of age, family composition, and years of residence. It positively influences support for marine heritage conservation and management. The factor analysis results indicate that people who live in the area more strongly support marine heritage conservation above and beyond other variables like gender and income. The third characteristic is *identity* which is the combination of gender and birthplace. If a local resident were female and if she were born at the marine heritage area, it was more likely that she would support marine heritage conservation and management compared with a male local resident who was not born in the marine heritage area.

Local residents mentioned that time, money, park services, and personal interests are also what they consider when they make decisions regarding taking actions to support marine heritage conservation and management.

Conceptual Framework

The original conceptual framework of this study, presented in Chapter 2, proposed a series of factors that influence local resident support for marine heritage conservation and management (Figure 3). The results of qualitative and quantitative data analysis led to some revisions to the conceptual model. That is, an updated conceptual framework will better explain how various factors relate to each other and influence local resident support for marine heritage conservation and management (Figure 6).

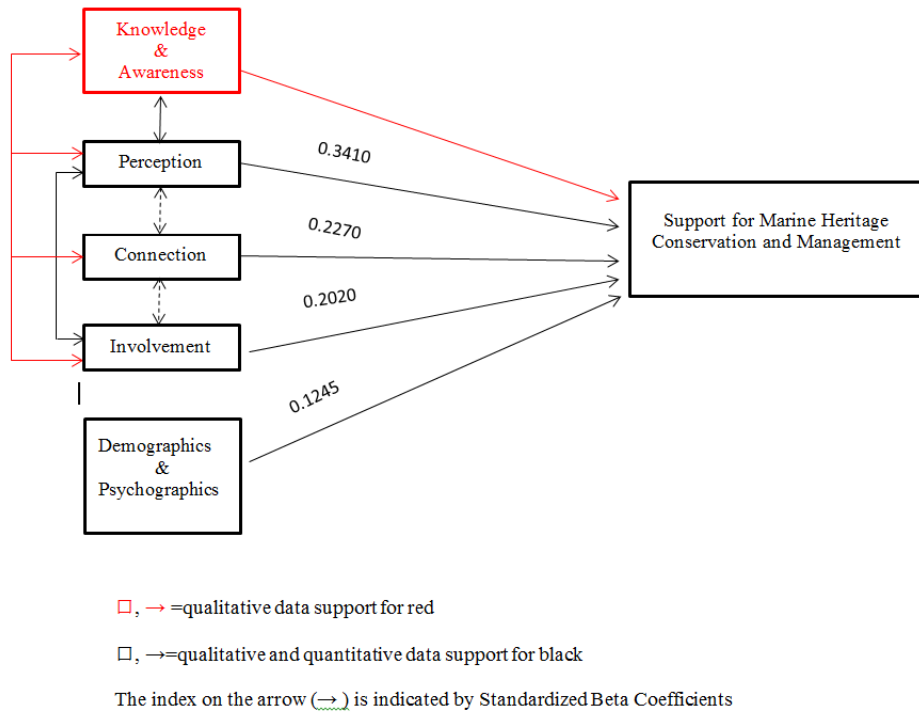


Figure 6. Revised Conceptual Framework Based on Study Findings

Conclusions

Based on the qualitative and quantitative data analyzed for this study, there are six conclusions that address the six research questions outlined at the beginning of the study:

- (1) *What are local resident perceptions of marine heritage in China?* Local residents think marine heritage encompasses the ecosystems of ocean and coastal zone areas; marine heritage also interfaces with culture and history. Local residents understand that marine heritage relates to them in a variety of ways. They articulate diverse marine heritage values and agree that marine heritage needs to be protected.
- (2) *What factors influence local resident support for marine heritage conservation and management in China?* There are six major factors that influence local resident support for marine heritage conservation and management: (a) local resident perceptions of marine heritage; (b) local resident connections to marine heritage conservation and management; (c) local resident involvement in marine heritage conservation and management; (d) local resident awareness and knowledge of marine heritage conservation and management; (f) marine heritage site education and outreach efforts; (g) park manager perceptions of and commitment to engage local residents; and (h) demographic and psychographic characteristics, including professional status, residency, gender and birthplace, the flexibility of their time, investment of their money, and personal interests. In conclusion, perception, connection and involvement were the most important

factors for local resident support for marine heritage conservation and management. By comparison, the other factors are equally minor in their contribution to explaining support for marine heritage conservation and management.

- (3) *What factors influence local resident connections to marine heritage conservation and management in China?* Both local resident perceptions of and involvement in marine heritage conservation and management play an important role in local resident connections to marine heritage and its conservation and management.
- (4) *Which factors influence local resident involvement in marine heritage conservation and management in China?* There are various factors that impact local resident involvement in marine heritage conservation and management: awareness and knowledge of marine heritage and its conservation and management, site education and outreach efforts, time constraints, financial cost, and distance between the marine heritage site and local residents.
- (5) *What are manager perceptions of marine heritage conservation and management in China?* Park managers think marine heritage conservation and management involves the ecological conservation of ocean, marine and coastal resources, the conservation of marine protected areas and coastal greenspace, and monitoring marine and coastal environments. The relationship between local residents and marine heritage conservation and management did not factor prominently into the thinking of the marine heritage site managers interviewed in this study.

- (6) *What actions have marine heritage managers taken to enhance local resident connection to, involvement in, and support for marine heritage conservation and management?* Park managers have taken few actions to enhance local resident connection to, involvement in, and support for marine heritage conservation and management. There were three factors that prevented marine heritage site managers from targeted efforts to strengthen local resident support: (a) marine heritage site manager perceptions of marine heritage conservation and management; (b) park managers multiple responsibilities and, potentially, insufficient time to tackle this task; and (c) the absence of upper-level government mandates and requirements and/or a system for holding managers accountable for these outcomes.

Management Implications

This paper has examined local resident experiences at marine heritage sites in China. Based on the discussion above, I will suggest three management implications.

Linking people to marine heritage

Marine heritage area is just one duty. Manager time is divided. There is a tendency of parks and protected areas to focus on resource conservation more than visitor experiences or community engagement. This is a missed opportunity and may be counterproductive in the long-run since effective marine heritage site management

requires a constituency that supports management decision making and engages in resource protective behaviors. Finally, linking people to marine heritage increases opportunities for economic development and pride in place.

Local residents are important stakeholders for local marine heritage sites, and may play a crucial role in its conservation and management. Community-based management has been widely applied in the world (Han, et al., 2016). A positive relationship between local residents and marine heritage sites can promote its conservation and management (Davis, 2010). This study provides insights for marine heritage site managers to enhance their strategies to enhance local resident engagement in marine heritage conservation and management. I strongly encourage marine heritage site managers to establish educational and interpretive programs to give local residents knowledge of marine heritage, and increase their awareness of marine heritage conservation and management (Buonincontri, Marasco, & Ramkissoon, 2017; Zhu et al., 2017). Local resident connections to marine heritage can serve as the basis for ongoing involvement in and support for marine heritage conservation and management (Clements, Suon, Wilkie, & Milner-Gulland, 2014; Sakurai & Uehara, 2017; Yeo-Chang, 2009).

Through the interview process, I found that park managers at Xinghai Bay and Changshan Islands did not include local residents in their perceptions of marine heritage conservation and management. Not surprisingly, they had taken few actions to encourage local residents to participate in marine heritage conservation and management. Marine heritage site managers may not fully understand the whole concept of local resident-

based management and the potential benefits of its application. To increase local resident-based management in marine heritage sites, it may be necessary to provide site managers with relevant professional development and skills training. Site managers also need to learn how to develop sound and local resident-based strategies, which can “truly result in joint management” with local residents (Mutamba, 2004, p. 112).

Site education and outreach

I suggest that the three study sites improve site education and outreach efforts. This finding implies that site education and outreach efforts maybe one of the reasons why local residents do not take actions to support marine heritage conservation and management. All the study sites are national marine parks, but none of them have visitor centers or education departments. Changshan Islands became a national marine park in 2014. Since then, its education and outreach efforts have been accomplished through the island’s local government. Xinghai Bay became a national marine park in 2016, however, they have not yet started working on site education and outreach efforts. Almost all the local residents point out that they do not know very much about the three study sites, although they are familiar with those areas. In conclusion, increasing site education and outreach efforts might enhance local resident involvement with marine heritage conservation and management and strengthen local support.

Troxell and associates (2009) found that all four U.S. Wolf Recovery Plans recommended using public education to promote wolf conservation. They revealed that

educational efforts within the region were the key component for wolf conservation in the Great Lakes region. Sharp, Cleckner and DePillo (2017) found that “an approach combining education and outreach efforts to control aquatic invasive species may be the best course of action” (p. 1200). These previous studies, combined with my findings, suggests that education and outreach efforts could serve as a bridge between local residents and marine heritage sites, leading to improved relationships and increased levels of local support.

Based on their strong connections to marine heritage sites, and positive attitude toward marine heritage conservation and management, local residents have the potential to be transformed from the passive recipients of education and information to active contributors to marine heritage conservation and management (Han et al., 2016; Mutamba, 2004; Sakurai et al., 2017).

Suggestions for Future Research

Based on the findings and conclusions of this study, I will put forward several recommendations for future research (Rasoolimanesh et al., 2017).

Local residents have a huge impact on local marine heritage sites and their long-term conservation and management. Marine heritage conservation benefits from a positive relationship between local residents and local marine heritage sites (Han et al., 2016). In this study, I have proposed a conceptual model of factors that influence local resident support for marine heritage conservation and management. Future research

should examine how park managers could apply these factors into management strategies and tactics to design community-based marine heritage conservation and management plans in China. Research into the philosophy of local resident involvement in heritage site management in China is an important next step.

Therefore, efforts to develop and maintain strong relationships between local residents and marine heritage sites is very important. In fact, this is the crux of community-based marine heritage conservation and management. This study found that park managers have made few efforts to enhance local resident connection to, involvement in, and support for marine heritage conservation and management in China. Future research needs to contribute to a deep understanding of this phenomenon. Future studies should also explore which factors strengthen and hinder park manager efforts to enhance local resident connection to, involvement in, and support for marine heritage conservation and management. Similarly, how can park managers promote positive factors and avoid negative factors in their local education and outreach efforts in China? And what practical strategies can marine heritage sites managers pursue to bring local-resident-based management into practice?

The study found that poor site education and outreach efforts, and weak knowledge and awareness of marine heritage and its conservation and management, are two factors that prevent local resident connections to, involvement in, and support for marine heritage conservation and management in China. But it is not clear how park managers should promote marine heritage site education and outreach in China. There is

a need for future research to explore what educational programs and initiatives can assist local residents understand information, gain knowledge about, and elicit local resident contributions to marine heritage conservation and management in China. Future research should also explore practical strategies to address conflicts and foster mutual collaboration between marine heritage sites and local residents.

Acknowledgement of Limitations

This study was limited by the following:

- (1) Local resident connections to, involvement in, and support for marine heritage conservation and management as identified in this study are site-specific; thus, it limits the possibility of the generalizing study results to other sites.
- (2) The quantitative analysis skill of the researcher may lead to some important implications of the data not being identified.
- (3) The survey and interview protocol were designed in English, but my respondents were Chinese. The translation of the survey and interview protocol may generate some latent effects.
- (4) Although 15 local residents participated in the interview, and 495 local residents participated in the written survey, none of the 15 local residents who were interviewed were older than 54 years old. There is a possibility

that the lack of older interviewees influenced the results of my qualitative results.

REFERENCES

- Aas, C., Ladkin, A., & Fletcher, J. (2005). Stakeholder collaboration and heritage management. *Annals of Tourism Research*, 32(1), 28–48.
- Abecasis, R. C., Schmidt, L., Longnecker, N., & Clifton, J. (2013). Implications of community and stakeholder perceptions of the marine environment and its conservation for MPA management in a small Azorean island. *Ocean & Coastal Management*, 84(Supplement C), 208–219.
- Abdulla, A. A., Obura, D., Bertzky, B., & Shi, Y. (2013). Marine Natural Heritage and the World Heritage List: Interpretation of World Heritage Criteria in Marine Systems, Analysis of Biogeographic Representation of Sites, and a Roadmap for Addressing Gaps [Monographie]. Retrieved October 31, 2017, from <http://aires-marines.uqar.ca/51/>
- Admin. (2011). Chongmingdao National Geopark. Retrieved on February 28, 2017, from: <http://www.cmgeopark.com/wzxx.aspx?id=1032fd9d-aefb-4c71-851a-be6b31037fc9>
- Allendorf, T. D., & Allendorf, K. (2013). Gender and Attitudes toward Protected Areas in Myanmar. *Society & Natural Resources*, 26(8), 962–976.
- Ajzen, I. (1985). From intentions to actions: a theory of planned behavior. In: Kuhl, J., Beckman, J. (eds). *Action Control: from Cognition to Behavior*. Springer-Ver-Lag, Berlin, Heidelberg, New York, 11-39.

- Ajzen, I., Fishbein, M., (1980). *Understanding Attitudes and Predicting Social Behavior*. London: Prentice-Hall International, Inc.
- Amin, A., Zaehringer, J. G., Schwilch, G., & Koné, I. (2015). People, protected areas and ecosystem services: a qualitative and quantitative analysis of local people's perception and preferences in Côte d'Ivoire. *Natural Resources Forum*, 39(2), 97–109.
- Andréfouët, S., Wantiez, L. (2010). Characterizing the diversity of coral reef habitats and fish communities found in a UNESCO World Heritage Site: The strategy developed for Lagoons of New Caledonia. *Marine Pollution Bulletin*, 61, 612–620.
- Ardoin, N. M. (2006). Toward an interdisciplinary understanding of place: Lessons for environmental education. *Canadian Journal of Environmental Education*, 11, 112–126.
- Ardoin, N. M., Schuh, J. S., & Gould, R. K. (2012). Exploring the dimensions of place: a confirmatory factor analysis of data from three ecoregional sites. *Environmental Education Research*, 18(5), 583–607.
- Baird, T. D., & Leslie, P. W. (2013). Conservation as disturbance: Upheaval and livelihood diversification near Tarangire National Park, northern Tanzania. *Global Environmental Change*, 23(5), 1131–1141.
- Bao, G. (2004). *Protection and development of natural and cultural heritage based on man-land relationship* (Published master thesis). Retrieved from CNKI.

- Bennett, N. J., & Dearden, P. (2014). Why local people do not support conservation: Community perceptions of marine protected area livelihood impacts, governance and management in Thailand. *Marine Policy*, 44(Supplement C), 107–116.
- Bennett, N. J. (2016). Using perceptions as evidence to improve conservation and environmental management. *Conservation Biology*, 30(3), 582–592.
- Braun, V. & Clarke, V. (2012a). *Successful qualitative research: A practical guide for beginners*. London: Sage.
- Briggs, S. R. and Cheek, J. M. (1986). The role of factor analysis in the development and evaluation of personality scales. *Journal of Personality*, 54, 106-148.
- Budruk, M., & Wilhelm Stanis, S. A. (2013). Place attachment and recreation experience preference: A further exploration of the relationship. *Journal of Outdoor Recreation and Tourism*, 1(Supplement C), 51–61.
- Buonincontri, P., Marasco, A., & Ramkissoon, H. (2017). Visitors' Experience, Place Attachment and Sustainable Behaviour at Cultural Heritage Sites: A Conceptual Framework. *Sustainability*, 9(7), 1112.
- Cai, L., Wang, Q. (2012).. Research on the status quo and strategy of China's world heritage declaration. *Chinese Academy of Cultural Heritage Research* , 2, 26-30.
- Cao, M., Peng, L., & Liu, S. (2015). Analysis of the Network of Protected Areas in China Based on a Geographic Perspective: Current Status, Issues and Integration. *Sustainability*, 7(11), 15617–15631.

- Chan, F. K. S., Adekola, O., Mitchell, G., Ng, C. N., & McDonald, A. (2013). Towards Sustainable Flood Risk Management in the Chinese Coastal Megacities. a Case Study of Practice in the Pearl River Delta. *Irrigation & Drainage*, 62(4), 501–509.
- Chen, J. (2006). *Study on the protection of ecotourism resources in Wulingyuan Scenic and Historic Interest Area* (Published master thesis). Retrieved from CNKI.
- Chen, P. (2008). *Global comparative analysis of Libo cone Karst* (Published master thesis). Retrieved from CNKI.
- Cheng, M. (2010). *Study on the cognition difference of World Natural Heritage value* (Published master thesis). Retrieved from CNKI.
- Cheng, T. M., Wu, H. C., & Huang, L.-M. (2013). The influence of place attachment on the relationship between destination attractiveness and environmentally responsible behavior for island tourism in Penghu, Taiwan. *Journal of Sustainable Tourism*, 21(8), 1166–1187.
- Choi, H. C., & Murray, I. (2010). Resident attitudes toward sustainable community tourism. *Journal of Sustainable Tourism*, 18(4), 575–594.
- Clements, T., Suon, S., Wilkie, D. S., & Milner-Gulland, E. J. (2014). Impacts of Protected Areas on Local Livelihoods in Cambodia. *World Development*, 64(Supplement 1), S125–S134.
- Creswell, J. W. (1994). *Research design: qualitative & quantitative approaches*. London: Sage.

- Creswell, J. W. (2005). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*. Merrill.
- Creswell, J.W. (2013). Qualitative Inquiry and Research Design. (2015, September 29). Retrieved August 20, 2017, from <https://granolagradschoolandgoffman.wordpress.com/2015/09/29/creswell-j-w-2013-qualitative-inquiry-and-research-design/>
- Creswell, W. J. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches*. London: Sage.
- Cui, J. (2010). *A comparative study on the protection and development of the world natural heritage* (Published master thesis). Retrieved from CNKI.
- Dang, V. H. (2014). *Marine Protected Areas Network in the South China Sea : Charting a Course for Future Cooperation*. Leiden: Brill | Nijhoff. Retrieved from <http://ezproxy.umsl.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=e000xna&AN=691917&site=ehost-live&scope=site>
- Dawson, K. J. (1995). A comprehensive conservation strategy for Georgia's greenways. *Landscape and Urban Planning*, 33, 27-43.
- DeFranzo, S. E. (2012). Advantages and Disadvantages of Surveys. Retrieved November 21, 2017, from <https://www.snapsurveys.com/blog/advantages-disadvantages-surveys/>
- Deng, M. (2004). Research on coordinated development of World Heritage tourism and community. *Social Scientists*, 4, 107-110.

- Dewu, S., & Røskaft, E. (2017). Community attitudes towards protected areas: insights from Ghana. *Oryx*, 1–8.
- Dimitrakopoulos, Panayiotis G. et al. 2010. “Local Attitudes on Protected Areas: Evidence from Three Natura 2000 Wetland Sites in Greece.” *Journal of Environmental Management* 91(9): 1847–54.
- Dufoe, A. (2012). New Method Soap Bottles Made of Ocean Debris. Retrieved November 25, 2017, from <https://abbeydufoe.com/2012/10/15/new-method-soap-bottles-made-of-ocean-debris/>
- Elliott, M. A., Schmutz, V. (2012). World heritage: Constructing a universal cultural order. *Poetics*, 40 (3), 256-277.
- Esparon, M., Stoeckl, N., Farr, M., & Larson, S. (2015). The significance of environmental values for destination competitiveness and sustainable tourism strategy making: insights from Australia’s Great Barrier Reef World Heritage Area. *Journal of Sustainable Tourism*, 23(5), 706 – 725.
- Fabrigar, R. L., & Wegener, T. D. (2011). *Exploratory Factor Analysis*. Oxford, New York: Oxford University Press.
- Fowler, J. F. (2009). *Survey Research Methods (4th Edition.)*. California: SAGE Publications, Inc.
- Funk, D. C., & James, J. D. (2006). Consumer loyalty: The meaning of attachment in the development of sport team allegiance. *Sport Management*, 20, 189–217.

- Gall, D. M., Gall, P. J., & Borg, R. W. (2006). *Educational research: An introduction* (8th Edition). New York City: Pearson.
- Gao, Y. (2011). *Study on tourism management of World Natural Heritage in Shilin* (Published master thesis). Retrieved from CNKI.
- Ge, Y. (2006). *Research on value and development trend of World Heritage marine project* (Published master thesis). Retrieved from CNKI.
- Gillingham, S., & Lee, P. C. (1999). The impact of wildlife-related benefits on the conservation attitudes of local people around the Selous Game Reserve, Tanzania. *Environmental Conservation*, 26(3), 218–228.
- Hajimia, H. (2010). *Research Method - Sampling*. Data & Analytics. Retrieved from https://www.slideshare.net/hafizahhajimia/research-method-sampling?from_action=save
- Han, F., Yang, Z., Shi, H., Liu, Q., & Wall, G. (2016). How to Promote Sustainable Relationships between Heritage Conservation and Community, Based on a Survey. *Sustainability*, 8(9), 886.
- Hawke, S. (2010). *Thesis: Heritage Landscapes, Sense of Place and Ecomuseum Potential in the North Pennines AONB*. Retrieved from http://www.academia.edu/10279733/Thesis_Heritage_Landscapes_Sense_of_Place_and_Ecomuseum_Potential_in_the_North_Pennines_AONB

- Hawke, S. K. (2011). Local residents exploring heritage in the North Pennines of England: Sense of place and social sustainability. *International Journal of Heritage and Sustainable Development*, 1(1), 32–40.
- Hernández, B., Carmen Hidalgo, M., Salazar-Laplace, M. E., & Hess, S. (2007). Place attachment and place identity in natives and non-natives. *Journal of Environmental Psychology*, 27(4), 310–319.
- Hevesi, B. (2017, July 14). Woolworths announces plan to BAN single use plastic bags. Retrieved November 24, 2017, from <http://www.dailymail.co.uk/~/article-4695344/index.html>
- Hirose, Y., (1994). Determinants of environment-conscious behavior. *Jpn. Soc. Soc. Psychol.* 10, 1, 44–55 (in Japanese with English abstract).
- Hua, S. (2010). World Heritage classification and related Issues—A case study of the “Convention Concerning the Protection of the World Cultural and Natural Heritage”. *Procedia - Social and Behavioral Sciences*, 2, (5), 6954-6961.
- IUCN. (2013). *Marine Natural Heritage and the World Heritage List*. Switzerland: The International Union for Conservation of Nature.
- Jaafar, M., Noor, S. M., & Rasoolimanesh, S. M. (2015). Perception of young local residents toward sustainable conservation programmes: A case study of the Lenggong World Cultural Heritage Site. *Tourism Management*, 48(Supplement C), 154–163.

- Jiang, J. (2006). *The Marine Heritage system in China and the heritage value of the small Tan Hong oyster reef* (unpublished master thesis). Nanjing Normal University, Nanjing.
- Jones, S. (2005). Community-based ecotourism: the significance of social capital. *Annals of Tourism Research*, 32(2), 303-324.
- Jones, N. A., Ross, H., Shaw, S., Witt, K., Pinner, B., & Rissik, D. (2016). Values towards waterways in south east Queensland: Why people care. *Marine Policy*, 71, 121–131.
- Jorgensen, B., & Stedman, R. (2001). Sense of Place as an attitude: Lakeshore owners attitudes toward their properties. *Journal of Environmental Psychology*, 21, 233–248.
- Jorgensen, B. S., & Stedman, R. C. (2006). A comparative analysis of predictors of sense of place dimensions: Attachment to, dependence on, and identification with lakeshore properties. *Journal of Environmental Management*, 79(3), 316–327.
- Kameli, M., Fallah, M., & Nahavandi AsgShahr, N. (2016). The Impact of Sense of Place, Form and Environment Design on Increasing the Security of Commercial Complexes. *Ciência e Natura*, 38(3).
- Kaplin, B. (2005). A framework for understanding community resident perceptions of Masoala National Park, Madagascar. *Environmental Conservation*, 32, 156–164.
- Ke, K. (2007). *Sustainable development of tourism in Jiuzhaigou* (Published master thesis). Retrieved from CNKI.

- Kim, S. (2016). World Heritage Site Designation Impacts on a Historic Village: A Case Study on Residents' Perceptions of Hahoe Village (Korea). *Sustainability*, 8(3), 258.
- Kirkpatrick, J. B. (1990). A synusia-based mapping system for the conservation management of natural vegetation, with an example from Tasmania, Australia. *Biological Conservation*, 53 (2), 93-104.
- Kyle, G. T., Mowen, A. J., & Tarrant, M. (2004). Linking place preferences with place meaning: An examination of the relationship between place motivation and place attachment. *Journal of Environmental Psychology*, 24(4), 439–454.
- Kyle, G., Absher, J., Norman, W., Hammitt, W., & Jodice, L. (2007). A Modified Involvement Scale. *Leisure Studies*, 26(4), 399–427.
- Lee, Matthew R., and Troy C. Blanchard. (2012). “Community Attachment and Negative Affective States in the Context of the BP Deepwater Horizon Disaster.” *American Behavioral Scientist* 56(1): 24–47.
- Lee, T. H. (2013). Influence analysis of community resident support for sustainable tourism development. *Tourism Management*, 34, 37–46.
- Lee, J. J. (2015). How Did Sea Turtle Get a Straw Up Its Nose? Retrieved November 25, 2017, from <https://news.nationalgeographic.com/2015/08/150817-sea-turtles-olive-ridley-marine-debris-ocean-animals-science/>
- Lepp, A. (2007). Residents' attitudes towards tourism in Bigodi village, Uganda. *Tourism Management*, 28, 876-885.

- Lewicka, M. (2011). Place attachment: How far have we come in the last 40 years?
Journal of Environmental Psychology, 31(3), 207–230.
- Li, C. (2016). *A Hope of Listing Marine Heritage on World Heritage List in China*.
Retrieved on February 16, 2017 from the website:
<http://www.oceanol.com/wenhua/whqy/2016-09-08/62772.html>
- Lin, J. (2007). *The reserve value of natural resources and protection management strategy of Three Parallel Rivers of Yunnan Protected Areas* (Published master thesis). Retrieved from CNKI.
- Lin, H. (2009). *Texas heritage: Linkages between visitors, sense of place, and interpretation at the Alamo* (Ph.D.). Retrieved from
<https://search.proquest.com/docview/305185405/abstract/EC73E7FFAFD84B95PQ/1>
- Liu, Q., Yang, Z., & Wang, F. (2017). Conservation Policy-Community Conflicts: A Case Study from Bogda Nature Reserve, China. *Sustainability, 9*(8), 1291.
- Lu, Y. (2010). *Governance of China's world heritage sites from the perspective of the tragedy of the Commons* (Published master thesis). Retrieved from CNKI.
- Magrini, M., Moroni, D., Pascali, M. A., Reggiannini, M., Salvetti, O., & Tampucci, M. (2016). Marine virtual environment to access underwater cultural heritage. In *2016 International Workshop on Computational Intelligence for Multimedia Understanding (IWCIM)* (pp. 1–5).

- Makino, M., Matsuda, H., Sakurai, Y. (2009). Expanding fisheries co-management to ecosystem-based management: A case in the Shiretoko World Natural Heritage area, Japan. *Marine Policy*, 33(2), 207-214.
- Malo, J. E., Acebes, P., Giannoni, S. M., et al. (2011). Feral livestock threatens landscapes dominated by columnar cacti. *Acta Oecologica*, 37, 3, 249-255.
- Manzo, L. C., & Perkins, D. D. (2006). Finding common ground. *Journal of Planning Literature*, 20(4), 335–350.
- Matsuda, H., Makino, M., Sakurai, Y. (2009). Development of an adaptive marine ecosystem management and co-management plan at the Shiretoko World Natural Heritage Site. *Biological Conservation*, 142 (9),1937-1942.
- Masud, M. M., Aldakhil, A. M., Nassani, A. A., & Azam, M. N. (2017). Community-based ecotourism management for sustainable development of marine protected areas in Malaysia. *Ocean & Coastal Management*, 136, 104–112.
- McClanahan, T., Davies, J., & Maina, J. (2005). Factors influencing resource users and managers' perceptions towards marine protected area management in Kenya. *Environmental Conservation*, 32(1), 42–49.
- Merriam, S. B. (2016). *Qualitative research: A guide to design and implementation*. Hoboken, NJ: Jossey-Bass.
- Moscardo, G. (1996). Mindful visitors: Heritage and tourism. *Annals of Tourism Research*, 23, 2, 376–397.

- Moss, A., Brodie, J., Furnas, M. (2005). Water quality guidelines for the Great Barrier Reef World Heritage Area: a basis for development and preliminary values. *Marine Pollution Bulletin*, 51, 76-88.
- Mutamba, E. (2004). Community Participation in Natural Resources Management: Reality or Rhetoric? *Environmental Monitoring and Assessment*, 99(1-3), 105-113. <https://doi.org/10.1007/s10661-004-4010-x>
- Newsome, D., Dowling, R. (2006). *The scope and nature of geotourism. in: Dowling, R. K. and Newsome, D. (eds.). Geotourism : sustainability, impacts and management. Oxford: ElsevierButterworth-Heinemann, 23-25.*
- Nicholas, L. N., Brijesh, T., & Yong, J. K. (2009). "Residents' perspectives of a world heritage site: The Pitons Management Area, St. Lucia." *Annals of Tourism Research* 36(3): 390-412.
- Ormsby, A., & Kaplin, B. A. (2005). A framework for understanding community resident perceptions of Masoala National Park, Madagascar. *Environmental Conservation*, 32(2), 156-164.
- Oviedo-García, M. Á., Castellanos-Verdugo, M., Vega-Vázquez, M., & Orgaz-Agüera, F. (2017). The Mediating Roles of the Overall Perceived Value of the Ecotourism Site and Attitudes Towards Ecotourism in Sustainability Through the Key Relationship Ecotourism Knowledge-Ecotourist Satisfaction. *International Journal of Tourism Research*, 19(2), 203-213.

- Petuskey, W. T., Richardson, D. A., & Dolske, D. A. (1995). Aspects of the deterioration of sandstone masonry in Anasazi dwelling ruins at Mesa Verde National Park, Colorado, USA. *Science of The Total Environment*, 167, 145-159.
- Poe, M. R., Donatuto, J., & Satterfield, T. (2016). “Sense of Place”: Human Wellbeing Considerations for Ecological Restoration in Puget Sound. *Coastal Management*, 44(5), 409–426.
- Pretty, G. H., Chipuer, H. M., & Bramston, P. (2003). Sense of place amongst adolescents and adults in two rural Australian towns: The discriminating features of place attachment, sense of community and place dependence in relation to place identity. *Journal of Environmental Psychology*, 23(3), 273–287.
- Reser, J. P. (2005). Bentrupperbäumer J M. What and where are environmental values? Assessing the impacts of current diversity of use of ‘environmental’ and ‘World Heritage’ values. *Journal of Environmental Psychology*, 25, 2, 125-146.
- Rasoolimanesh, S. M., Jaafar, M., Ahmad, A. G., & Barghi, R. (2017). Community participation in World Heritage Site conservation and tourism development. *Tourism Management*, 58(Supplement C), 142–153.
- Sakurai, R., Kobori, H., Nakamura, M., Kikuchi, T. (2015). Factors influencing public participation in conservation activities in urban areas: a case study in Yokohama, Japan. *Biol. Conserv.* 184, 424–430.

- Sakurai, R., Ota, T., & Uehara, T. (2017). Sense of place and attitudes towards future generations for conservation of coastal areas in the Satoumi of Japan. *Biological Conservation*, 209(Supplement C), 332–340.
- Samadi, Z., & Yunus, R. M. Physical and spiritual attributes of urban heritage street's revitalization. *Procedia - Social and Behavioral Sciences*, 36, 342-349.
- Shaolian, D. (2017). Impacts of urban renewal on the place identity of local residents – a case study of Sunwenxilu traditional commercial street in Zhongshan City, Guangdong Province, China. *Journal of Heritage Tourism*, 12(3), 311–326.
- Sharp, R. L., Cleckner, L. B., & DePillo, S. (2017). The Impact of On-Site Educational Outreach on Recreational Users' Perceptions of Aquatic Invasive Species and Their Management. *Environmental Education Research*, 23(8), 1200–1210.
- Smith, L. (2006) *Uses of Heritage*. London and New York: Routledge.
- Song, Y. (2011). *Study on the conservation and sustainable development of the World Natural Heritage site* (Published master thesis). Retrieved from CNKI.
- Spalding, M. D., Meliane, I., Milam, A. (2013). Protecting marine success: Global targets and changing approaches. *Ocean Year Book*, 27, 213-248.
- State Oceanic Administration, People's Republic of China. (2012). National Planning of Marine Functional Zones (2011 ~ 2020). Retrieved October 31, 2017, from http://www.gov.cn/jrzg/2012-04/25/content_2123467.html

- Stevens, M. J., Oddou, G., Furuya, N., Bird, A., Mendenhall, M. (2006). HR factors affecting repatriate job satisfaction and job attachment for Japanese managers. *Int. J. Hum. Resour. Manag*, 17, 831–841.
- Stokols, D. and Shumaker, S. A. (1981) 'People and places: A transactional view of settings.', in Harvey, J.(ed), *Cognition, social behavior and the environment*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Suntikul, W., & Jachna, T. (2016). The co-creation/place attachment nexus. *Tourism Management*, 52(Supplement C), 276–286.
- Sun, Y. (2010). *Study on the tourism value and display of the ancient stone forest as the World Heritage* (Published master thesis). Retrieved from CNKI.
- Tao, W. (2000). Chinese "World Heritage" sustainable tourism development research. *Tourism Tribune*, 5, 35-41.
- Tashakkori, A., & Teddlie, C. (2010). *SAGE Handbook of Mixed Methods in Social & Behavioral Research*. 2455 Teller Road, Thousand Oaks California 91320 United States: SAGE Publications, Inc. Retrieved from <http://methods.sagepub.com/book/sage-handbook-of-mixed-methods-social-behavioral-research-2e>

- Thomson, M., MacInnis, D. J., Park, C. W. (2005). The ties that bind: Measuring the strength of consumers' emotional attachments to brands. *Consum Psychol*, 15, 77–91.
- Troxell, P. S., Berg, K. A., Jaycox, H., Strauss, A. L., Struhsacker, P., & Callahan, P. (2009). Education and outreach efforts in support of wolf conservation in the great lakes region. *Recovery of Gray Wolves in the Great Lakes Region of the United States: An Endangered Species Success Story*. https://doi.org/10.1007/978-0-387-85952-1_19
- Treloar, G., Gunn, J., Moltmann, T., Dittmann, S., Fletcher, R., Hone, P., ... Walshe, T. (2016). The National Marine Science Plan: informing Australia's future ocean policy *. *Australian Journal of Maritime and Ocean Affairs; Abingdon*, 8(1), 43–51.
- Törn, A., Siikamäki, P., Tolvanen, A., Kauppila, P., & Rämetsä, J. (2008). Local People, Nature Conservation, and Tourism in Northeastern Finland. *Ecology and Society*, 13(1).
- Tuan, Yifu. (1977). *Space and Place*. Retrieved from <https://www.upress.umn.edu/book-division/books/space-and-place>
- UNESCO. (1972). *Convention Concerning the Protection of the World Cultural and Natural Heritage*. Paris: World Heritage Center.
- UNESCO. (2010). First Marine World Heritage Site Managers Meeting to be held in Hawaii. Retrieved on February 16 from the website:

http://www.iocunesco.org/index.php?option=com_content&view=article&id=278:
first-marine-world-heritage-site-managers-meeting-to-be-held-in-
hawaii&catid=14&Itemid=100063

UNESCO. (2012). *Operational Guidelines for the Implementation of the World Heritage Convention*. Paris: World Heritage Center.

UNESCO. (2013). *Marine World Heritage: Safeguarding the Crown Jewel of the Ocean*. Paris: World Heritage Center.

UNESCO. (2017). *World Heritage List*. Paris: World Heritage Center.

Vodouhê, F. G., Coulibaly, O., Adégbidi, A., & Sinsin, B. (2010). Community perception of biodiversity conservation within protected areas in Benin. *Forest Policy and Economics*, 12(7), 505–512.

Vong, T. N., Lai, K., & Li, Y. (2016). Sense of Place: Affective link missing between Casino impact perception and support for Casino development? *Asia Pacific Journal of Tourism Research*, 21(sup1), S76–S100.

Waeber, P. O., Reibelt, L. M., Randriamalala, I. H., Moser, G., Raveloarimalala, L. M., Ralainasolo, F. B., ... Woolaver, L. (2017). Local awareness and perceptions: consequences for conservation of marsh habitat at Lake Alaotra for one of the world's rarest lemurs. *Oryx*, 1–10.

Wager, J. (1995). *Developing a strategy for the Angkor World Heritage Site*. *Tourism Management*, 16, 7, 515-523.

- Wan, F., Bai, L., & Wang, Q. (2013). The analysis of the development of World Heritage marine sites and suggestions for marine heritage designation. *Ocean Development and Management*, 6, 26–31. Retrieved from <http://shuniujr.com/html/a/lunwenziliao/guanlilunwen/xiangmuguanlilunwen/2013/0601/23296.html>
- Wang, L. (2009). *The scientific value of geological relics in Dalian Binhai National Geopark* (Published master thesis). Retrieved from CNKI.
- Wang, R. (2009). *The study on the evaluation of the non-use value of giant panda habitat* (Published master thesis). Retrieved from CNKI.
- Wang, Y., Liu, R., Su, J. (2013). *Marine Geography of China*. Beijing: CSPM.
- Wang, Z. (2006). *Comparative analysis and application of historical data and texts of World Cultural heritage* (Published master thesis). Retrieved from CNKI.
- Williams, Daniel R., Michael E. Patterson, Joseph W. Roggenbuck, and Alan E. Watson. 1992. “Beyond the Commodity Metaphor: Examining Emotional and Symbolic Attachment to Place.” *Leisure Sciences* 14(1): 29–46.
- WWF (World Wildlife). (n.d.). Threats to oceans and coasts | WWF. Retrieved November 25, 2017, from http://wwf.panda.org/about_our_earth/blue_planet/problems/
- Xu, S. (2003). Operating system selection of tourism. *Tourism*, 4, 30-37.
- Xiao, S. (2007). *Study on the developmental characteristics and heritage value of South China's Karst* (Published master thesis). Retrieved from CNKI.

- Xu, X. (2009). *Study on the management mode of binding world heritage projects in China* (Published master thesis). Retrieved from CNKI.
- Yang, C. (2015). Using an “Interpretative Model” for Contextual Design of Heritage Landscape Databases: The Case of St Helena Island National Park in Queensland, Australia. *Geographical Research*, 53(3), 321–335.
- Youn, Y. C. (2009). Use of forest resources, traditional forest-related knowledge and livelihood of forest dependent communities: Cases in South Korea. *Forest Ecology and Management*, 257(10), 2027–2034.
- Yin, G. (2009). Statistical analysis of spatial distribution of World Heritage. *Geography & Geo Information Science*, 25, 2, 104-108.
- Yu, M. (2012). *Study on the value of world natural heritage and sustainable development* (Published master thesis). Retrieved from CNKI.
- Zanetell, B. A., Knuth, B. A. (2004). Participation rhetoric or community-based management reality? Influence on willingness to participate in a Venezuelan freshwater fishery. *World Dev.* 32, 793–807.
- Zhang, J. (2010). *Study on government behavior in World Heritage management* (Published master thesis). Retrieved from CNKI.
- Zhang, S. (2007). Strategic analysis of Shanxi tourism attractions (area) inscription. *Economic Issues*, 1, 122-124.
- Zhao, X. (2007). A comparative study of the world Mountain Heritage and suggestions for the declaration of natural heritage in China. *Geological Review*, 8, 165-170.

Zhu, J. (2004). Study on government positioning. *Journal of World Heritage tourism*.

Tourism, 4, 79-84.

Zhu, H., Liu, J., Wei, Z., Li, W., & Wang, L. (2017). Residents' Attitudes towards

Sustainable Tourism Development in a Historical-Cultural Village: Influence of

Perceived Impacts, Sense of Place and Tourism Development

Potential. *Sustainability*, 9(1), 61.

APPENDIX A: The Definition of Outstanding of Universal Value

Outstanding Universal Value

Marine heritage in this paper refers to the definition of UNESCO, and it's expect to meet the description of Outstanding Universal Value. *The Operational Guidelines for the Implementation of the World Heritage Convention* (UNESCO, 2016) explicitly points out that only the heritage sites of Outstanding Universal Value can be listed in World Heritage List by UNESCO. And it gives the definition of Outstanding Universal Value as follow:

Outstanding Universal Value means cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. As such, the permanent protection of this heritage is of the highest importance to the international community as a whole. The Committee defines the criteria for the inscription of properties on the World Heritage List.

The Operational Guidelines for the Implementation of the World Heritage Convention (UNESCO, 2016) gives the criteria for the assessment of Outstanding Universal Value that the World Heritage Committee considers when they review nominated heritage sites. The nominated heritage sites should:

- (i) “represent a masterpiece of human creative genius;

- (ii) exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design;
- (iii) bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;
- (iv) be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;
- (v) be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;
- (vi) be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria) ;
- (vii) contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;
- (viii) be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features;

- (ix) be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;
 - (x) contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of Outstanding Universal Value from the point of view of science or conservation.”
- (UNESCO, 2016)

These criteria were formerly presented as two separate sets of criteria: (1) criteria (i) - (vi) for cultural heritage; (2) (vii) - (x) for natural heritage and marine heritage.

Marine heritage should meet one of (vii), (viii), (ix), (x).

APPENDIX B: Interview Protocol

Local Resident Interview Protocol

(Please note: Respondents will not be asked every probing question listed below.)

Consent Form	Informed consent form
Greeting	Express appreciation for interviewee's time to participate in this study.
Introduction	The purpose of this interview is to understand local residents' thoughts about marine heritage, how they relate to marine heritage, how they get involved in marine heritage activities and conservation initiatives, their support for marine heritage conservation and management, and who they are. The amount of time required for the interview will be 20-30 minutes, followed by a 2-minute questionnaire. Therefore, the total time required for the interview will be 22-32 minutes.
Environment	I will create a comfortable environment for interviewees, indicating that their participation is voluntary and they may choose not to participate in this research study or to withdraw your consent at any time. They may choose not to answer any questions that they do not want to answer. They will NOT be penalized in any way should they choose not to participate or to withdraw. I will also tell them that there is no right or wrong answer. Finally, they are free to ask questions and express their ideas freely during the interview.
Perceptions	<p>Let's start out with a little bit of background information...</p> <p>Where do you live? How long have you lived here? [<i>Show interviewee a map of the local area. Make the map accessible during the interview.</i>]</p> <p>Probe: What do you like best about this marine heritage area?</p> <p>Probe: What's your favorite thing about this marine heritage area?</p> <p>Probe: Have you observed any changes in this marine heritage area over time?</p> <p>Tell me more about what you have observed.</p> <p>Probe: What do you like most and least of this marine heritage area?</p> <p>Probe: What is your ideal day at the marine heritage site?</p> <p>Probe: What do you value most about the marine heritage?</p> <p>Probe: Why is that important to you?</p> <p>The central government approved establishing the X National Marine Park. The government believes X National Marine Park is <i>valuable marine heritage</i>. What do <i>you</i> think marine heritage means?</p>

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

	<p>Probe: Do you think it is a good idea to establish a national marine park? Probe: Why do you think so? Probe: Do you spend your time in X National Marine Park? If yes, what do you do?</p> <p>What are the differences between the X National Marine Park and other places you have visited?</p>
Connection	<p>How do you relate to the X National Marine Park? Probe: What makes X National Marine Park special or significant to you personally? Probe: Why is that important to you? Probe: Does the marine heritage area generally reflect your beliefs and values? How so? Probe: Does X National Marine Park reflect the type of person you are? Tell me more... Probe: Will you miss this place if you are away from it too long? Why and what do you miss most? Probe: What things do you enjoy doing here more than at other places?</p> <p>Does the X National Marine Park elicit a sense of belonging? Please explain.</p> <p>Is there anything about the X National Marine Park that you feel strongly connected to? Tell me more about that...</p>
Involvement	<p>How often do you visit the X National Marine Park? How long have you been coming to the site?</p> <p>What do you like to do at the park? Probe: How is that activity important to you? Probe: How does the activity affect you? Probe: Why did you decide to get involved in that activity? Probe: Will you continue to be involved in that activity in the future? Why or why not?</p> <p>As a local resident, how do you think you can be involved in conserving X National Marine Park?</p>
Support	<p>On a scale 1 to 10, where 1 is “not at all” and 10 is “100%,” how much do you support conserving X National Marine Park? Probe: What are your perspectives about marine heritage conservation and management?</p>

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

	<p>Probe: Are there some conservation activities what you think are very important? Please explain.</p> <p>Probe: Are there some management regulations that you support? Any that you don't support? Please explain.</p> <p>Probe: How do you respond when X National Marine Park managers try to control your behavior? Tell me more about that...</p> <p>Probe: What's your experience with site education and outreach efforts?</p> <p>Probe: Has X National Marine Park been effective at engaging local residents? In what ways?</p>
	<p>In an ideal situation, how would you like to be involved in marine heritage conservation and management? Tell me more about it...</p>
Demographics & Psychographics	<p>Please fill out a short demographic questionnaire. Thank you!</p>
Thank-you	<p>Thanks for your participation. I appreciate your time and input!</p>

“X National Marine Park” refers generically to one of the three study sites, i.e., Xiamen National Marine Park, Dalian Changshan Islands National Marine Park, and Dalian Xinghai Bay National Marine Park

Demographic Questionnaire

1. What is your gender?
 - a. Male
 - b. Female

2. How old are you? _____ years

3. What is your education level?
 - a. Middle school or less
 - b. High school
 - c. Some college or associates degree
 - d. Four-year college degree
 - e. Masters, doctoral, or professional degree

4. Which best describes your immediate family? Please circle all that apply.
 - a. Single
 - b. Married, no children
 - c. Married, with one or more children at home
 - d. Married, with one or more children who do not live at home
 - e. Married, with one or more parents at home
 - f. Other:

5. What is your annual income?
 - a. CNY 20, 000 or less
 - b. CNY 20, 001 - 40, 000
 - c. CNY 40, 001 - 60, 000
 - d. CNY 60, 001 - 80, 000
 - e. CNY 80, 001 - 100, 000
 - f. CNY 100, 001 and above

6. Where were you born? _____ (Province and city)

7. How long have you lived in this area? _____ years

THANK YOU FOR YOUR TIME!

Marine Heritage Site Manager Interview Protocol

(Please note: Respondents will not be asked every probing question listed below.)

Consent Form	Informed consent form
Greeting	Express appreciation for interviewee's time to participate in this study.
Introduction	The purpose of this interview is to understand local residents' thoughts about marine heritage, how they relate to marine heritage, how they get involved in marine heritage activities and conservation initiatives, their support for marine heritage conservation and management, and who they are. The amount of time required for the interview will be 20-30 minutes, followed by a 2-minute questionnaire. Therefore, the total time required for the interview will be 22-32 minutes.
Environment	I will create a comfortable environment for interviewees, indicating that their participation is voluntary and they may choose not to participate in this research study or to withdraw your consent at any time. They may choose not to answer any questions that they do not want to answer. They will NOT be penalized in any way should they choose not to participate or to withdraw. I will also tell them that there is no right or wrong answer. Finally, they are free to ask questions and express their ideas freely during the interview.
Perceptions	<p>Let's start out with a little bit of background information...</p> <p>Where do you live? How long have you lived here? <i>[Show interviewee a map of the local area. Make the map accessible during the interview.]</i></p> <p>Probe: What do you like best about this marine heritage area?</p> <p>Probe: What's your favorite thing about this marine heritage area?</p> <p>Probe: Have you observed any changes in this marine heritage area over time?</p> <p>Tell me more about what you have observed.</p> <p>Probe: What do you like most and least of this marine heritage area?</p> <p>Probe: What is your ideal day at the marine heritage site?</p> <p>Probe: What do you value most about the marine heritage?</p> <p>Probe: Why is that important to you?</p>

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

	<p>The central government approved establishing the X National Marine Park. The government believes X National Marine Park is <i>valuable marine heritage</i>. What do <i>you</i> think marine heritage means?</p> <p>Probe: Do you think it is a good idea to establish a national marine park?</p> <p>Probe: Why do you think so?</p> <p>Probe: Do you spend your time in X National Marine Park? If yes, what do you do?</p> <p>What are the differences between the X National Marine Park and other places you have visited?</p>
<p>Connection</p>	<p>How do you relate to the X National Marine Park?</p> <p>Probe: What makes X National Marine Park special or significant to you personally?</p> <p>Probe: Why is that important to you?</p> <p>Probe: Does the marine heritage area generally reflect your beliefs and values? How so?</p> <p>Probe: Does X National Marine Park reflect the type of person you are? Tell me more...</p> <p>Probe: Will you miss this place if you are away from it too long?</p> <p>Why and what do you miss most?</p> <p>Probe: What things do you enjoy doing here more than at other places?</p> <p>Does the X National Marine Park elicit a sense of belonging? Please explain.</p> <p>Is there anything about the X National Marine Park that you feel strongly connected to? Tell me more about that...</p>
<p>Involvement</p>	<p>How often do you visit the X National Marine Park? How long have you been coming to the site?</p> <p>What do you like to do at the park?</p> <p>Probe: How is that activity important to you?</p> <p>Probe: How does the activity affect you?</p> <p>Probe: Why did you decide to get involved in that activity?</p> <p>Probe: Will you continue to be involved in that activity in the future? Why or why not?</p>

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

	<p>As a manager <i>and</i> a local resident, how do you think you can be involved in conserving X National Marine Park?</p>
<p>Support</p>	<p>On a scale 1 to 10, where 1 is “not at all” and 10 is “100%,” how much do you support conserving X National Marine Park? Probe: What are your perspectives about marine heritage conservation and management? Probe: Are there some conservation activities what you think are very important? <i>Please explain.</i> Probe: Are there some management regulations that you support? Any that you don’t support? <i>Please explain.</i> Probe: How do you respond when X National Marine Park managers try to control your behavior? Tell me more about that... Probe: What’s your experience with site education and outreach efforts? Probe: Has X National Marine Park been effective at engaging local residents? In what ways?</p>
<p>Conservation & Management <i>(Managers Only)</i></p>	<p>What do you think about marine heritage conservation and management? What are the needs and challenges? Probe: How do your work activities affect you? Are they enjoyable? Are they frustrating? Etc. Probe: Do you think local residents should be a part of X National Marine Park conservation and management efforts? Why do you think so? Probe: How can local residents contribute to X National Marine Park conservation and management? What is the most strategic contribution they could make?</p> <p>How can X National Marine Park managers strengthen local residents’ contributions and increase their efficacy? Probe: What support would you need to facilitate community-based conservation and management? Probe: Do you have the required support? <i>Please explain.</i> Probe: What things support or hinder your efforts to engage community residents?</p> <p>What actions have you taken to enhance local resident supportfor, connection to, and/or involvement in marine heritage conservation and management? Probe: How did you and you colleagues decide to do these actions?</p>

	<p>Probe: To what extent have the actions led to the expected results?</p> <p>Probe: Which factors influence the effectiveness of these actions? <i>Please explain.</i></p> <p>Probe: In your opinion, how do local residents view your outreach and engagement efforts?</p>
	<p>What are your hopes for the future of marine heritage area?</p> <p>What are your hopes for the future of local involvement in conservation and management?</p>
Demographics & Psychographics	Please fill out a short demographic questionnaire. Thank you!
Thank-you	Thanks for your participation. I appreciate your time and input!

“X National Marine Park” refers generically to one of the three study sites, i.e., Xiamen National Marine Park, Dalian Changshan Islands National Marine Park, and Dalian Xinghai Bay National Marine Park

Demographic Questionnaire

8. What is your gender?
 - a. Male
 - b. Female

9. How old are you? _____ years

10. What is your education level?
 - a. Middle school or less
 - b. High school
 - c. Some college or associates degree
 - d. Four-year college degree
 - e. Masters, doctoral, or professional degree

11. Which best describes your immediate family? Please circle all that apply.
 - a. Single
 - b. Married, no children
 - c. Married, with one or more children at home
 - d. Married, with one or more children who do not live at home
 - e. Married, with one or more parents at home

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

- f. Other: _____
12. What is your job title? _____
13. How many years have you worked at your site? _____ years
14. What is your annual income?
- a. CNY 20,000 or less
 - b. CNY 20,001 - 40,000
 - c. CNY 40,001 - 60,000
 - d. CNY 60,001 - 80,000
 - e. CNY 80,001 - 100,000
 - f. CNY 100,001 and above
15. Where were you born? _____ (Province and city)
16. How long have you lived in this area? _____ years

THANK YOU FOR YOUR TIME!

APPENDIX C: Survey – English Version

Local Resident Survey at Xiamen National Marine Park / Dalian Changshan Islands National Marine Park/ Dalian Xinghai Bay National Marine Park



Xinghai Bay National Marine Park



Changshan Islands National Marine Park



Xiamen National Marine Park

Dear local residents,

Marine heritage sites tell stories of their history, natural value, meanings and connections to local residents over time. I am from Inner Mongolia, China. I graduated from Beijing Normal University. And now I am studying at the University of Missouri - St. Louis, U.S. I want to have a better understanding of the interactions between local residents and marine heritage sites, exploring local residents' perceptions of and involvement with marine heritage conservation and management.

and how to make local residents effectively and positively support for and involve with heritage conservation and management. **I would like to ask you to participate in this survey. Your response will be greatly appreciated.**

Thanks in advance for you time and comments.

Sincerely,

Aixia Feng

Section 1. Your thoughts about marine heritage

1. Please indicate your level of agreement with each statement about marine heritage area?

Statement	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
Marine heritage is everything related to ocean	1	2	3	4	5
Marine heritage includes the ecological environment in the ocean	1	2	3	4	5
Marine heritage contains the natural resources in the ocean, culture and history	1	2	3	4	5
Marine heritage partially refers to the ocean	1	2	3	4	5
Marine heritage includes coastal zone and the junction zone between sea and land	1	2	3	4	5
Protection system and mechanism is significant to marine heritage	1	2	3	4	5
Marine heritage is closely related to my daily life	1	2	3	4	5
Marine environment is very important for living environment	1	2	3	4	5
Local residents is a part of marine heritage conservation and management	1	2	3	4	5
Marine heritage is of much value for me	1	2	3	4	5
Protecting marine heritage is very important for my generation	1	2	3	4	5
It is very important to protect marine heritage for future generation	1	2	3	4	5

Open-ended question: Are there anything else you want to tell me about your thoughts of marine heritage?

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

Section 2 Your perspectives on how you relate to the X National Marine Park as a local resident

2. Please indicate your level of agreement with each statement.

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
X National Marine Part provides food for me	1	2	3	4	5
The natural environment of X National Marine Park affects my living environment	1	2	3	4	5
X National Marine Park Area is the place where I live	1	2	3	4	5
I am proud of living in X National Marine Park Area	1	2	3	4	5
I have unforgettable memories in X National Marine Park	1	2	3	4	5
X National Marine Park influences my belief and the way I see the world	1	2	3	4	5
X National Marine Park has an effect on my personalities and the way I do things	1	2	3	4	5
Everything about X National Marine Park is a reflection of me	1	2	3	4	5
X National Marine Park says very little about who I am	1	2	3	4	5
I feel like I can really be myself at the X National Marine Park	1	2	3	4	5
X National Marine Park reflects the type of person I am	1	2	3	4	5
I feel relaxed when I am at the X National Marine Park	1	2	3	4	5
I feel happiest when I am at the X National Marine Park	1	2	3	4	5
X National Marine Park is my favorite place to be	1	2	3	4	5
I really miss this place when I am away from the X National Marine Park for too long	1	2	3	4	5
X National Marine Park is the best one for doing the things I enjoy most	1	2	3	4	5
For doing the things I enjoy most, no other place can compare to X National Marine Park	1	2	3	4	5
X National Marine Park is not a good place for doing the things I most like to do	1	2	3	4	5
As far as I am concerned, there are better places to be than at the X National Marine Park	1	2	3	4	5

Open-ended question: Are there anything else you want to tell me about your relationship to the X National Marine Park?

Section 3 Your involvement in local marine heritage conservation and management

3. Please indicate the extent to which these statements describe your activity involvement with the X National Marine Park.

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Taking actions to protect the X National Marine Park is one of the most enjoyable things I do	1	2	3	4	5
Taking actions to protect the X National Marine Park is very important to me	1	2	3	4	5
Taking actions to protect the X National Marine Park is one of the most satisfying things I do	1	2	3	4	5
I find a lot of my life is organized around taking actions to protect the X National Marine Park	1	2	3	4	5
Taking actions to protect the X National Marine Park occupies a central role in my life	1	2	3	4	5
To change my preference from taking actions to protect the X National Marine Park to another certain activity would require major rethinking	1	2	3	4	5
I enjoy discussing taking actions to protect the X National Marine Park with my friends	1	2	3	4	5
Most of my friends are in some way connected with taking actions to protect the X National Marine Park	1	2	3	4	5
Participating in taking actions to protect the X National Marine Park provides me with an opportunity to be with friends	1	2	3	4	5
When I participate in taking actions to protect the X National Marine Park, I can really be myself	1	2	3	4	5
I identify with the people and image associate taking actions to protect the X National Marine Park	1	2	3	4	5
When I'm taking actions to protect the X National Marine Park, I don't have to be connected with the way I look	1	2	3	4	5
You can tell a lot about a person by seeing them taking actions to protect the X National Marine Park	1	2	3	4	5
Participating in taking actions to protect the X National Marine Park says a lot about whom I am	1	2	3	4	5
When I participate in taking actions to protect the X National Marine Park, others see me the way I want them to see me	1	2	3	4	5

COMMUNITY CONNECTIONS TO MARINE HERITAGE IN CHINA

Open-ended question: Anything else you want to tell me about your activity involvement with the X National Marine Park?

Section 4 Your support for marine heritage conservation and management.

4. Please indicate how much you support the conservation and management actions at The X National Marine Park?

Statements	Do not Support at All	Support Quite a Bit	Support Moderately	Support a Lot	Fully Support
I am willing to protect the beauty of X National Marine Park	1	2	3	4	5
I am willing to protect the ecosystem of X National Marine Park, including plants and animals	1	2	3	4	5
I am willing to protect the X National Marine Park for future generation	1	2	3	4	5
I am willing to stop environmentally destructive behaviors	1	2	3	4	5
I am willing to advocate for the X National Marine Park conservation					
I am willing to help solve management problems					
I am willing to support the development of green business in the X National Marine Park area					

Open-ended question: Anything else you want to tell me about your support the conservation and management actions at the X National Marine Park?

Section 5 Demographics and psychographics

5. What is your gender?
 - a. Male
 - b. Female

6. How old are you? _____ years

7. What is your education level?
 - a. Middle school or less
 - b. High school
 - c. Some college or associates degree
 - d. Four-year college degree
 - e. Masters, doctoral, or professional degree

8. Which best describes your immediate family? Please circle all that apply.
 - a. Single
 - b. Married, no children
 - c. Married, with one or more children at home
 - d. Married, with one or more children who do not live at home
 - e. Married, with one or more parents at home
 - f. Other:

9. What is your job title? _____

10. How many years have you worked at your site? _____ years

11. What is your annual income?
 - a. CNY 20, 000 or less
 - b. CNY 20, 001 - 40, 000
 - c. CNY 40, 001 - 60, 000
 - d. CNY 60, 001 - 80, 000
 - e. CNY 80, 001 - 100, 000
 - f. CNY 100, 001 and above

12. Where were you born? _____ (Province and city)

13. How long have you lived in this area? _____ years

THANK YOU FOR YOUR TIME!

APPENDIX D: Survey – Chinese Version

厦门国家海洋公园/大连长山群岛国家海洋公园/大连星海湾国家海洋公园地
区
居民调查问卷



大连星海湾国家海洋公园



大连长山群岛国家海洋公园



厦门国家海洋公园

尊敬的当地居民，

您好！海洋遗产具有深远的历史意义、自然价值，同时与靠近海洋遗产居住的居民紧密联系。我想更好地了解当地居民与海洋遗产之间的联系，想要探索当地居民是如何看待海洋遗产的保护与管理，以及当地居民是如何参与到海洋遗产的保护与管理中的。同时想要探讨如何使当地居民可以有效支持并参与到海洋遗产的保护与管理中。因此，我真诚邀请您帮忙填写这份调查问卷。我们会非常感谢您的参与！

提前对您花费宝贵的时间填写此调查问卷和评论表示感谢！

冯媛霞

第一部分 你对海洋遗产的看法

17. 请表明您对以下表述的同意程度

表述	非常不同意	不同意	中立	同意	非常同意
海洋遗产是指所有与海有关的事物，包括动物和植物	1	2	3	4	5
海洋遗产是指海底的生态环境	1	2	3	4	5
海洋遗产是指海底的资源	1	2	3	4	5
海洋遗产就是海洋	1	2	3	4	5
海洋遗产包括海岸带和海陆交接带	1	2	3	4	5
保护机制对海洋遗产很重要	1	2	3	4	5
海洋遗产与老百姓的日常生活息息相关	1	2	3	4	5
海洋环境与生活环境至关重要	1	2	3	4	5
老百姓与海洋遗产的保护与管理有关	1	2	3	4	5
海洋遗产对当地老百姓很重要	1	2	3	4	5
保护海洋遗产对当代人很重要	1	2	3	4	5
为了后代人而保护海洋遗产很重要	1	2	3	4	5

关于您对海洋遗产的看法，您还有什么想分享的吗？

第二部分 作为当地居民，您是如何与 X 国家海洋公园联系的

18. 请表明您对如下表述的同意程度

表述	非常不同意	不同意	中立	同意	非常同意
X 国家海洋公园的海洋资源为我提供食物	1	2	3	4	5
X 国家海洋公园的自然环境影响着我的居住环境	1	2	3	4	5
X 国家海洋公园是我生活的地方	1	2	3	4	5
居住在 X 国家海洋公园所在的城市很自豪	1	2	3	4	5
我在 X 国家海洋有美好的回忆	1	2	3	4	5
X 国家海洋公园对我的信仰和价值观有影响	1	2	3	4	5
X 国家海洋公园对我的性格、处世之道有影响	1	2	3	4	5
X 国家海洋公园的一切都对有所影响	1	2	3	4	5
国家海洋公园几乎与我无关	1	2	3	4	5
在 X 国家海洋公园我能真正做自己	1	2	3	4	5
X 国家海洋公园反映我是什么样的人	1	2	3	4	5
当我在 X 国家海洋公园的时候，我感到很放松	1	2	3	4	5
当我在 X 国家海洋公园的时候，我感到是最快乐的	1	2	3	4	5
X 国家海洋公园是我最喜欢待的地方	1	2	3	4	5
我离开 X 国家海洋公园很长时间，我真的会很想念它	1	2	3	4	5
X 国家海洋公园是做我最喜欢的事情的场所	1	2	3	4	5
若选择一个地方去做我最喜欢的的事情，没有哪个地方可以媲美 X 国家海洋公园	1	2	3	4	5
如果我要做我最喜欢的的事情，X 国家海洋公园不是一个好地方	1	2	3	4	5
据我目前所知，没有比 X 国家海洋公园更好的地方了	1	2	3	4	5

关于您与 X 国家海洋公园的联系，您还有其他想法想要分享吗？

第三部分 您对当地海洋遗产保护与管理的参与度

19. 请表明您对如下表述的同意程度

表述	非常不同意	不同意	中立	同意	非常同意
采取行动保护 X 国家海洋公园是我做过的最欣喜的一件事	1	2	3	4	5
采取行动保护 X 国家海洋公园对我来说非常重要	1	2	3	4	5
采取行动保护 X 国家海洋公园是我做过的最满意的一件事情	1	2	3	4	5
我发现我生活中的很多部分都是围绕采取行动保护 X 国家海洋公园开展的	1	2	3	4	5
采取行动保护 X 国家海洋公园是是我生活的重心所在	1	2	3	4	5
如果让我把我的偏好从采取行动保护 X 国家海洋公园改变为其他事情，我需要慎重考虑	1	2	3	4	5
我喜欢和朋友讨论采取行动保护 X 国家海洋公园	1	2	3	4	5
大部分我的朋友都与采取行动保护 X 国家海洋公园有所联系	1	2	3	4	5
参与到采取行动保护 X 国家海洋公园的活动中，为我提供了和朋友在一起相处的机会	1	2	3	4	5
当我参与到采取行动保护 X 国家海洋公园时，我能够真正做我自己	1	2	3	4	5
我可以识别采取行动保护 X 国家海洋公园的人和意境	1	2	3	4	5
当我采取行动保护 X 国家海洋公园的时候，我可以识别出可以采取行动保护国家海洋公园的人物和景象，我不需要和我的外表联系起来	1	2	3	4	5
通过观察一个人采取行动保护 X 国家海洋公园的过程，你可以对这个人有很多了解	1	2	3	4	5
参与到采取行动保护 X 国家海洋公园可以反映我是什么样的人	1	2	3	4	5
当我参与到采取行动保护 X 国家海洋公园的时候，其他人看待我的方式和我期望一样	1	2	3	4	5

关于采取行动保护 X 国家海洋公园，您还有什么想分享的吗？

第四部分 您对海洋遗产保护和管理的支持

20. 请表明您支持 X 国家海洋公园保护与管理行动的程度。

表述	一点都不支持	轻度支持	中度支持	重度支持	全力支持
我愿意保护 X 国家海洋公园的美丽	1	2	3	4	5
我愿意保护 X 国家海洋公园的生态系统，包括植物和动物	1	2	3	4	5
我愿意确保 X 国家海洋公园的可持续性	1	2	3	4	5
我愿意为后代保护 X 国家海洋公园	1	2	3	4	5
我愿意停止不环保行为	1	2	3	4	5
我愿意提倡保护 X 国家海洋公园	1	2	3	4	5
我愿意帮助解决 X 国家海洋公园管理问题	1	2	3	4	5
我愿意支持 X 国家海洋公园地区的绿色产业的发展	1	2	3	4	5

关于支持 X 国家海洋公园的保护与管理行动，您还有什么其他看法？

第五部分 人口信息

21. 您的性别是什么？

- c. 男
- d. 女

22. 您几岁了？ _____ 岁

23. 您的受教育程度是什么？

- f. 中学或中学以下
- g. 高中
- h. 专科
- i. 四年本科
- j. 硕士、博士或其他职业学位

24. 您的家庭结构是什么样的？请选择所有适用项。

- g. 单身
- h. 已婚，没有孩子
- i. 已婚，有孩子，并与孩子同住。
- j. 已婚，有孩子，但与孩子同住
- k. 已婚，与老人同住
- l. 其他：

25. 您的年收入范围是？

- g. CNY 20,000 及以下
- h. CNY 20,001 - 40,000
- i. CNY 40,001 - 60,000
- j. CNY 60,001 - 80,000
- k. CNY 80,001 - 100,000
- l. CNY 100,001 及以上

26. 您的出生地是？ _____ （请精确到省、市）

27. 您在这个地区居住多长时间了？ _____ 年

非常感谢您的参与!