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Dutch Heritage

Natural and cultural heritage in the Wadden Sea region



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Abstract

This research concerns the UNESCO World Heritage status of the Wadden Sea region. This Dutch region was placed on the UNESCO World Heritage List in 2009 on the basis of its natural heritage. However, the uniqueness of the region is to a large extent shaped by the interplay between natural and cultural factors. Because the cultural heritage is underrepresented, this research aims to uncover how both natural and cultural heritage are valued in the region. The research was carried out through a survey among both local residents and visitors of the Wadden Sea region. The main research question is *how are natural and cultural heritage valued in the Wadden Sea region?* Other questions in this research included how natural and cultural heritage are valued in the various distinguished groups and what the potential is for integrating cultural heritage into the UNESCO World Heritage status of the region. The analysis of the survey results showed natural heritage was valued higher than cultural heritage, confirming the hypothesis. The same result was found in almost all of the distinguished groups. However, This result does not indicate the natural heritage status is sufficient, since the region has the features needed to integrate cultural heritage into the UNESCO World Heritage status. This research recommends a re-evaluation of the criteria on which the Wadden Sea earned its UNESCO World Heritage status.

Introduction

Background

In 2009 the Wadden Sea region was granted UNESCO World Heritage status. The region in the North of the Netherlands was added as a natural site to UNESCO's World Heritage List. The uniqueness of the region according to UNESCO is based on several features (UNESCO World Heritage Centre (1)): One of these is the system of tides which exposes sand and mudflats during low tide, while covering them during high tide. The scale of this system makes it the largest of its kind in the world. Another feature leading to the World Heritage status is the importance of the region for migratory birds. The region is a large hub for migratory birds, and plays a key role in global systems of bird migration. Another feature highlighted by UNESCO is the rich biodiversity of the region. The region has many plant and animal species including rare and endangered species like seals. The region is also home to valuable biological ecosystems such as sea-grass meadows, mudflats and salt marshes.

UNESCO explicitly emphasises the interaction between biological and physical processes in the region with regard to its uniqueness. However, Bazelmans et al. (2012) argue the uniqueness of the region is based on an interaction between natural and cultural factors. The influence of humans on the region is considerable, and should be taken into account with regard to the protection of the Wadden Sea. Through the creation of polders, dikes and dwelling mounds humans have strongly engaged with the natural environment in this region throughout its history. Bazelmans et al. (2012) stress the complexity of the interactions between people and the environment in the region making it one of the most complex and one of the oldest cultural landscapes worldwide. According to these researchers, the cultural heritage of the region deserves preservation as much as its natural heritage.

Research problem

The Wadden Sea region is a natural site on the UNESCO World Heritage list, however the uniqueness cannot merely be attributed to its natural heritage. This provides an interesting problem to research in this region. Is the natural site status of the Wadden Sea supported or is cultural heritage underrepresented by UNESCO. This research will focus on those who use the environment of the Wadden Sea region, both local residents and tourists. By discovering the preferences of the public, this research will be able to assess whether natural heritage is indeed valued higher or whether cultural heritage is appreciated just as much. The research problem provides interesting thoughts about how people see the region, and whether their valuations match the internationally recognised status of the region. The question that will be central to this research is:

How are natural and cultural heritage valued in the Wadden Sea region?

The research will also distinguish between several groups in order to gain more insight into the valuation of natural and cultural heritage. The distinctions between the groups are represented in the secondary research questions listed below:

How are natural and cultural heritage valued distinguishing by gender?

How are natural and cultural heritage valued distinguishing by place of residence?

How are natural and cultural heritage valued distinguishing by age?

How are natural and cultural heritage valued distinguishing by stated preference for either natural or cultural heritage?

Can the cultural heritage of the Wadden Sea region be integrated into its UNESCO World Heritage status?

This research will create an overview of how both natural and cultural heritage are valued in the Wadden Sea region. This information can be used to assess whether there is a popular basis for the natural heritage status. However, combining theory and UNESCO documents, the research will also look at the practical possibility for the cultural heritage of the region to be integrated into its World Heritage status. This means the UNESCO World Heritage status of the Wadden Sea region will be critically evaluated regarding both its societal and its theoretical support by this research.

Hypothesis

Since the Wadden Sea region has earned its UNESCO World Heritage status on the basis of its natural heritage, this research assumes natural heritage will be valued higher by both residents of and visitors to the region. Therefore the hypothesis that will be tested, to be either assumed or rejected, is:

In the Wadden Sea region, natural heritage is valued higher than cultural heritage.

Structure

The research consists of five parts. First of all a theoretical framework in which the important theories in this research will be discussed. This part also includes definitions of central concepts to the research. The theoretical framework is followed by the methodology, which will outline the practical features of the research. The methodology will explain the research method used as well as the way in which data was collected. The third part will contain the results of the research. This will include data about the sample, the valuations of both forms of heritage, and an analysis of the data. The results are followed by the conclusions. In the conclusions the theory will be linked to the results leading to the answering of the research questions. The last part is a reflection on the research process. In this part the research methods and the results will be critically evaluated in order to judge the reliability of the research.

Theoretical Framework

UNESCO World Heritage

The UNESCO World Heritage Centre (2008) describe heritage as “our legacy from the past, what we live with today, and what we pass on to future generations”. Natural and cultural heritage are also referred to as irreplaceable, sources of inspiration, and parts of our identity. The sites that feature on the World Heritage List are to be seen as the best possible examples in the world of natural and cultural heritage.

More specifically, UNESCO defines natural heritage as one of the following: physical and biological formations with aesthetic value; geological or physiographical formations which host threatened species; or natural sites which feature natural beauty or scientific interest (UNESCO World Heritage Centre, 2016). Cultural heritage is similarly defined in three categories: monuments including sites such as architectural works, sculptures or inscriptions; groups of buildings including historic city centres or ancient settlements; or sites including archaeological sites or places of combined works of man and nature. Besides showing at least one of these features, all of the natural and cultural World Heritage sites must be of outstanding universal value. A largely corresponding definition for cultural heritage is provided by Ferretti et al. (2014). They define cultural heritage as a set of values such as historical buildings, territorial systems, landscapes, itineraries and intangible heritage.

In developing the concept of World Heritage, UNESCO has attempted to integrate new forms of heritage into the list. They have tried to do so by recognizing sites that distinguish themselves in several ways, one of which is human coexistence with the land (UNESCO World Heritage Centre, 2008). This human coexistence with the land is an important argument for Bazelmans et al. (2012) to stress the need for the conservation of cultural heritage in the Wadden Sea region along with the conservation of its natural heritage. Despite the intention of UNESCO to preserve sites where human coexistence with the land is demonstrated, the Wadden Sea region is on the World Heritage List for its natural heritage only.

Bazelmans et al. (2012) argue that the interaction between people and the environment has shaped the Wadden Sea region, and that the results of this interaction are still visible in the landscape through features such as dwelling mounds and dikes. The interaction between people and the environment is important in understanding the complex nature of the unique qualities of the Wadden Sea region. This issue is also addressed by McNamara & Prideaux (2011), who state that the relationship between natural and cultural heritage is important in understanding how natural heritage can be created by cultural factors to be experienced in tourism as natural heritage.

A category within UNESCO's World Heritage List which seems to describe the interaction between people and the environment that can be found in the Wadden Sea region, is that of cultural landscapes. The category of cultural landscapes came into being after debate on how to represent places that are shaped by both humans and nature (Mitchell et al., 2009). Examples of cultural landscapes that feature on the World Heritage List are Uluru (Ayers Rock) in Australia, the Neolithic stone circle of Avebury in the United Kingdom, and the windmills of Kinderdijk in the Netherlands (Fowler, 2003). The cultural landscapes distinguish themselves by showing not only a combination of natural and cultural heritage, but by the interaction shown between both natural and cultural factors. Despite exhibiting both natural and cultural features, most of these cultural landscapes are on the World Heritage List as cultural heritage.

UNESCO criteria for the Wadden Sea

A more pragmatic view towards the inclusion of the Wadden Sea upon the UNESCO World Heritage List involves its selection criteria. The region was selected on the basis of three out of the possible ten UNESCO criteria, all being natural aspects of the site. These criteria are listed below (UNESCO World Heritage Centre (2)):

“ viii: to be outstanding examples representing major stages of the 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: to 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: to 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. ”

With regard to the Wadden Sea, the first of these criteria is mainly derived from the unique coastline which has a variety of special features including large tidal flats and barrier islands. The second of these criteria applies to the region because of its ecosystems which are a result of intertidal natural processes. The last of these criteria is part of the natural heritage status because of the high number of species in the region including some rare species. When looking at the other criteria of the UNESCO World Heritage list, at least one of the criteria for cultural heritage (criterion v) seems to be in accordance with the history of the Wadden Sea region (UNESCO World Heritage Centre (2)):

“ v: to 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. ”

This criterion corresponds with the view of Bazelmans et al. (2012) that the uniqueness of the Wadden Sea region is shaped by the shaping of the environment by its residents. The use of both land and sea to create an environment to live in and with is what makes the Wadden Sea suitable for a cultural heritage status along with its natural heritage status. The fine margins between what can be seen as natural or cultural heritage and the implications of this notion for this research will be outlined in the methodology section (page 10).

K’gari: a case of recognised natural and unrecognised cultural heritage

A case of a natural heritage site with significant cultural heritage can be found in K’gari (Fraser Island) off the coast of Queensland, Australia. The indigenous population of this island (the Butchulla) aims to protect its cultural heritage values by having the cultural heritage of the island recognised in the World Heritage status (Brown et al., 2015). The study of Brown et al. aims to evaluate the share of indigenous cultural heritage values in the tourism marketing material of the site. In doing so they want to address the marginalisation and voicelessness of the Butchulla people, and encourage the promotion of the indigenous cultural values in the tourism marketing of the island. This research similarly wishes to investigate a natural heritage site which bears important cultural heritage values. However the method of this research is different, it will not be looking at the representation of natural and cultural heritage in tourism promotion material but rather at the valuation of both natural and cultural heritage features of the Wadden Sea region by both local residents and visitors.

Conceptual model

The conceptual model below (figure 1) outlines the two ways in which this research will critically evaluate the UNESCO World Heritage status of the Wadden Sea region. The first way is by looking at the popular support for the natural heritage status by looking at the valuation of both natural and cultural heritage within the region. This is represented by the top two brackets, which have a one-way relationship with the World Heritage status. This connection is a one-way relationship because only the valuation of the heritage by residents will be researched, not the Influence of the heritage on residents.

The second way the UNESCO World Heritage status will be critically evaluated is by linking theory and UNESCO documents to see whether there is a basis for integrating cultural heritage into the UNESCO World Heritage status of the Wadden Sea region. This is depicted by the bottom two brackets of which one has a full link. This shows natural heritage is currently the form of heritage on which the World Heritage status is based, whereas the potential for integrating cultural heritage has to be assessed.

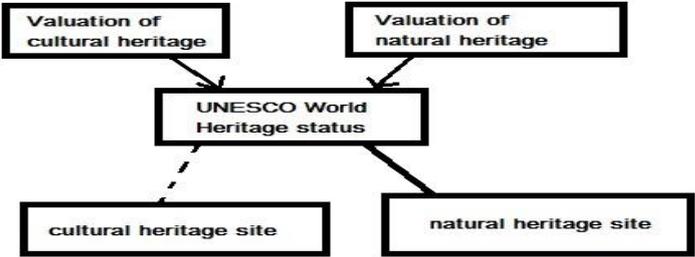


Figure 1

Methodology

Research method

The basis for this research is provided by a survey among local residents of as well as visitors to the Wadden Sea region, those who make use of the World Heritage site on a daily basis. This is a quantitative research method, which allows for large numbers of response. This quantitative method is selected over qualitative alternatives because this research is not looking for the meanings behind or the reasons for the level of valuation of natural and cultural heritage, but rather for the level of valuation itself. And to be able to make up a general picture of the valuations, quantitative research methods are more effective (Hanson, 2008).

The survey

The survey is used to determine the valuation of both natural and cultural heritage. The first part of the survey contains fourteen examples, accompanied by pictures. The respondents value these examples by giving them a grade from one to ten. Seven of these examples resemble natural heritage, and seven examples resemble cultural heritage. The choice of examples was based on academic literature on the Wadden Sea region as well as information provided by UNESCO. The examples were all mentioned as components of either the natural or the cultural heritage of the region. Respondents were allowed to skip examples if they were not sure how to value them.

The examples of natural heritage include: the tidal system, seals, salt marshes, the Lauwersmeer (a lake), migratory birds, the experience of nature, and beaches & dunes. The following examples represent cultural heritage: dikes, arable farming, dwelling mounds, polders, lighthouses, traditional farmhouses, and churches typical to the region. According to Bazelmans et al. (2012) the margins between what is natural heritage and what is cultural heritage can be thin. Added to this, the examples of natural and cultural heritage are presented in one table and placed in random order. Therefore the valuations by respondents have little influence of the preconceptions of respondents about their own preference of either natural or cultural heritage.

The second part of the survey contains questions about the respondent, which allowed for the division of groups within the sample. The following details were asked for: gender, year of birth, postal code, born in Wadden Sea region or not, length of residence in Wadden Sea region, employment in agriculture/tourism/other, and preference for either natural or cultural heritage. At the bottom of the survey, a list of the municipalities that form the Wadden Sea region was provided. The full survey, which is in Dutch, can be found in the appendix (page 23).

The answers are likely to be influenced by the perception of the landscapes on the pictures by respondents. Although there is generally a universality in landscape preferences, these preferences can be influenced by cultural factors and experience leading to variations in landscape preferences between groups (Steg et al., 2013). According to Van den Berg & Koole (2006) the perception of landscapes is influenced by the degree of human influence on a landscape. This results in a tendency of local residents in rural areas to rate natural environments in their region less beautiful than others do.

Data collection

All data for the research was collected within the Wadden Sea region, to ensure respondents would be either residents of or visitors to the region. The data was collected in two provinces, Groningen and Friesland. In Groningen, the survey was held in three towns in the north of the province. These towns are Zoutkamp, Uithuizen and Roodeschool. In Friesland data was collected on the ferry service in both directions between Harlingen and Terschelling. All surveys were taken on weekend days. In the towns in Groningen there was a large amount of non-response, as people refused to participate because they were going about their daily business. On the ferry to and from Terschelling however, almost all people approached participated. The ferry was a suitable location because the passengers were waiting to arrive on the island, so they were keen to kill some of that time with the survey.

Data analysis

The data analysis was designed to be able to assess whether differences observed within the sample could be assumed to be differences within the population. Therefore use has been made of t-tests for paired samples. Tests for paired samples could be carried out because the grades given for natural and cultural heritage were given by the same respondents and therefore form paired observations. To be able to carry out the t-tests some conditions concerning sample size or normal distribution had to be reached. The assessment of these conditions will be discussed in the results section.

Before the data could be analysed, the data had to be made suitable for statistic processing. This included transforming some data, for example turning postal codes into the variable of either living inside or living outside the Wadden Sea region. For the valuation of natural and cultural heritage, an average grade of the seven grades for both forms of heritage had to be calculated. Once these average grades were calculated, an average difference between the two could be calculated for each respondent.

The dependent variables, being the grades for natural and cultural heritage and the gap between the two, were analysed within different groups. These groups were created by four grouping variables. These included gender, place of residence, age (groups) and the stated preference of the respondents (for either natural or cultural heritage). Means of both forms of heritage as well as the difference between the two were calculated for each group to illustrate the results. Following this an analysis was performed using the t-tests for paired samples, to assess whether observed differences within the sample hold for the specific populations.

Ethical considerations

The survey used for this research is anonymous, in order to protect the privacy of the respondents. To increase the privacy, respondents were only asked for the four numbers of their postal code (leaving out the two letters). Respondents were also asked to provide their year of birth rather than their age, as this can be a slightly confronting question which might lead to unreliable responses. Also, respondents were asked to fill in the survey themselves rather than the questions being asked by the researcher, to minimize bias. This way the respondent would not be influenced by the researcher, which should have led to more independent answers.

Quality of the data

The surveys were generally filled out quite sufficiently. However, there are several flaws to be noted when it comes to the data produced by the survey. The most important part of the survey however, the valuation of natural and cultural heritage, was filled out very well. Because an average grade was made up from up to seven examples of either natural or cultural heritage, there was no missing data in the average grades. Furthermore there was little missing data throughout the survey. A few respondents forgot to fill in the second page of the survey, and questions were skipped occasionally. But in general the amount of missing data was marginal.

Another positive aspect of the survey was that only a few respondents struggled filling in the survey. Almost all respondents were able to fill in the survey without assistance. A few respondents had questions about how to fill in the survey but after clarification they were able to complete the survey. This means the survey was easy to follow, resulting in little misinterpretation of the questions. However there were some problems regarding the interpretation of the questions which will be noted below.

The most important flaw in the survey concerns the definition of the Wadden Sea region. Some respondents provided no answer to the amount of time they had lived in the region, while their postal code showed they were inhabitants of the Wadden Sea region. Others did fill in how long they had been living in the region, while their postal code showed they did not live in the region. Therefore it is plausible that a number of respondents was unaware of the definition of the Wadden Sea region, despite the fact it was provided in the list of municipalities at the bottom of the survey. As a result, the data from the questions whether the respondent was born in the region and how long the respondent had lived in the region had to be ignored because it was unreliable.

The survey question regarding the profession of the respondents also had to be ignored. Many respondents had reached retirement age meaning they generally filled in that they were not occupied in either agriculture or tourism. Besides this, the definition of the agriculture or tourism sectors were not clear to all respondents. Therefore the results of this variable were also unreliable.

Another flaw concerned the question whether the respondent had a preference for either natural or cultural heritage in the Wadden Sea region. This question had three possible answers: natural heritage, cultural heritage, no preference. However, respondents who wanted to express an equal valuation of both types of heritage had to answer they had no preference. This could have led to misinterpretation by respondents who felt they did not have no preference but rather an appreciation for both. Therefore these respondents could have been forced to answer either natural or cultural heritage.

A final flaw concerns the data collection. All surveys were held on weekend days, resulting in the majority of responses coming from visitors to the region. Consequently, the number of residents from the Wadden Sea region who participated in the research was only 30 out of a total of 125 respondents.

Results

The sample

The results of the research will be discussed in three sections. This first section, 'the sample', will discuss the characteristics of the people who participated in the survey. In the second section, 'valuation of natural and cultural heritage', the distribution of valuations and the average valuation per group will be discussed. The final section, 'analysis', will feature a statistical analysis of the results.

The tables and figures below show the characteristics of the sample used in this research. The tables show the distribution of gender, place of residence, age and preference (for either natural or cultural heritage). These variables all distinguish two or more groups, which will be used to assess whether there is a difference in the valuation of natural and cultural heritage for the sections of the population that form the groups. In order to explain the distribution, the valid percentages are used, leaving out the respondents who did not answer that specific question in the survey.

gender	frequency	percentage	valid percentage
male	54	43.2	43.9
female	69	55.2	56.1
missing	2	1.6	
total	125	100.0	

Table 1

place of residence	frequency	percentage	valid percentage
inside Wadden Sea region	30	24.0	25.2
outside Wadden Sea region	89	71.2	74.8
missing	6	4.8	
total	125	100.0	

Table 2

The gender distribution is fairly equal, 43.9% of respondents are male and 56.1% are female (table 1). Within the Netherlands, 49.6% of the population is male and 50.4% is female. So the distribution of gender within the sample is similar to the Dutch average. The distribution of the place of residence of the respondents, is shown in table 2. Only 25.2% lives in the Wadden Sea region, whereas 74.8% comes from outside the region.

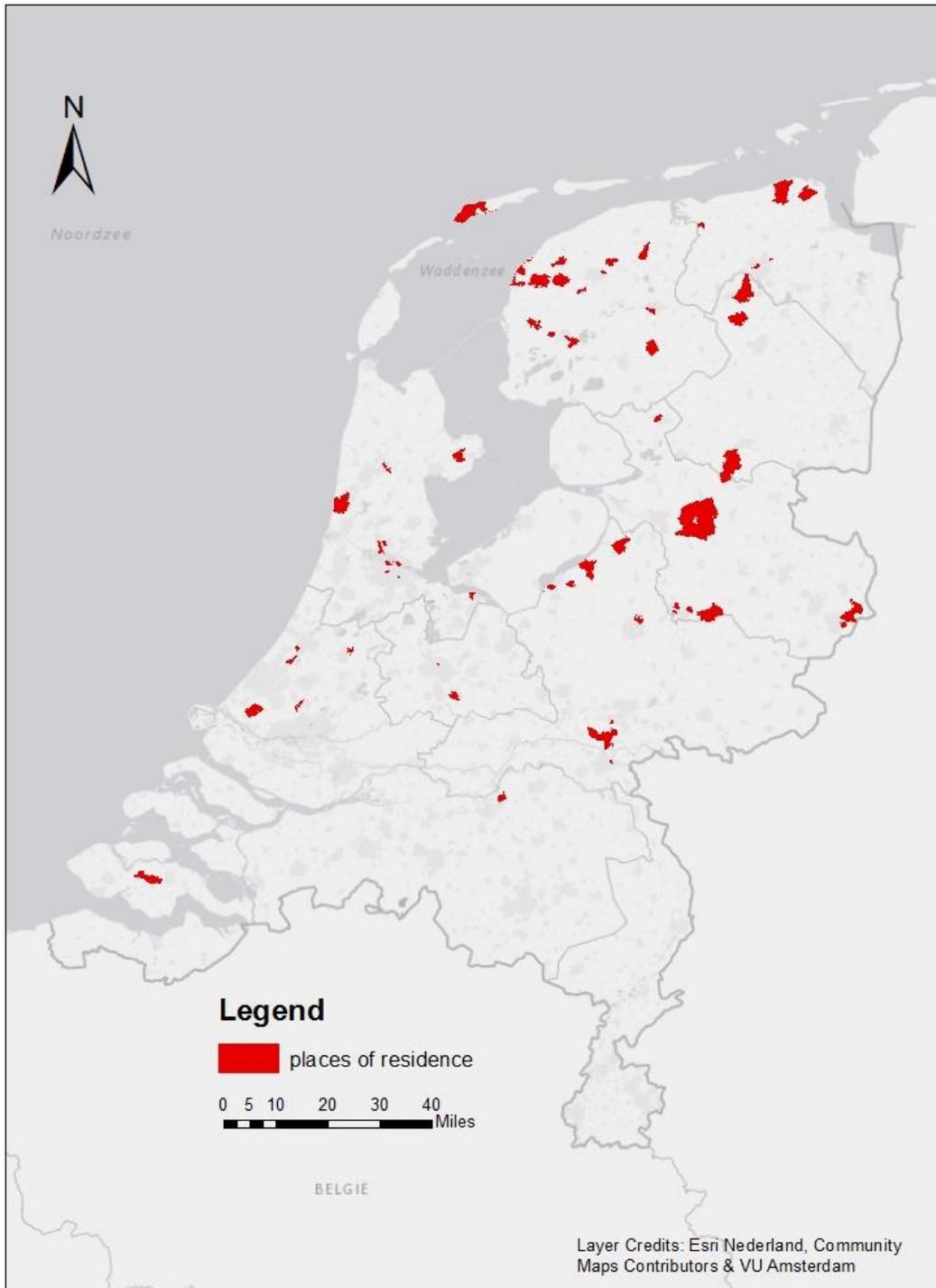


Figure 2

The map in figure 2 shows the places of residence of the survey respondents. The areas in red are the postal codes within the Netherlands where at least one of the respondents lives. The three respondents who do not live in the Netherlands are not shown on the map, one of them is from Germany and the other two are from Switzerland.

The map shows a relatively widespread distribution. However, there is a slight concentration in the north of the Netherlands. This is not unexpected as all surveys were taken in the northern part of the country. Furthermore there is a distribution of respondents over the west and the east of the country, whereas the south is clearly underrepresented.

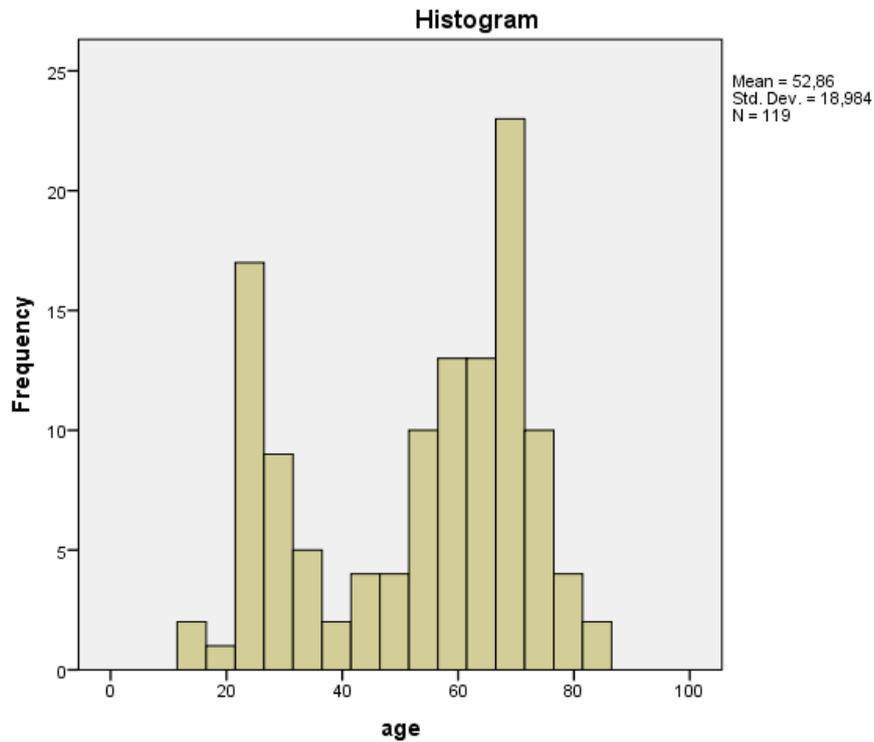


Figure 3

age groups	frequency	percentage	valid percentage
15-35	33	26.4	27.7
36-65	43	34.4	36.1
66-100	43	34.4	36.1
missing	6	4.8	
total	125	100.0	

Table 3

preference: natural or cultural heritage	frequency	percentage	valid percentage
preference for natural heritage	90	72.0	74.4
preference for cultural heritage	11	8.8	9.1
no preference	20	16.0	16.5
missing	4	3.2	
total	125	100.0	

Table 4

The age distribution is shown in the histogram (figure 3). There is a clear overrepresentation of young adults and people around retirement age. At the same time, a lack of adults in parenting age can be observed. For the purpose of the analysis, three age groups were designed (table 3). The three groups (15-35, 36-65 and 66-100) were designed to have a similar number of respondents as well as a similar age span. Regarding the preference for either natural or cultural heritage (table 4), there is a clear majority of 74.4% with a stated preference for natural heritage. Cultural heritage is preferred by 9.1%, and 16.5% has no preference.

The valuation of natural and cultural heritage

This section will show the distribution of the valuation of both natural and cultural heritage, as well as the distribution of the difference in valuation between the two forms of heritage. Following this, the average valuations of natural and cultural heritage will be shown for all distinguished groups. The diagrams below show these distributions within the total sample. Natural heritage is valued with an average grade of 8.2 and is normally distributed (figure 4). Cultural heritage is valued with a grade of 7.5 on average and also shows a normal distribution (figure 5). Looking at the gap between the valuations of both forms of heritage, note that positive values resemble a higher valuation of natural heritage (figure 6). This means there is a clear majority of respondents who value natural heritage higher than cultural heritage. The average gap in the grades for natural and cultural heritage is 0.63.

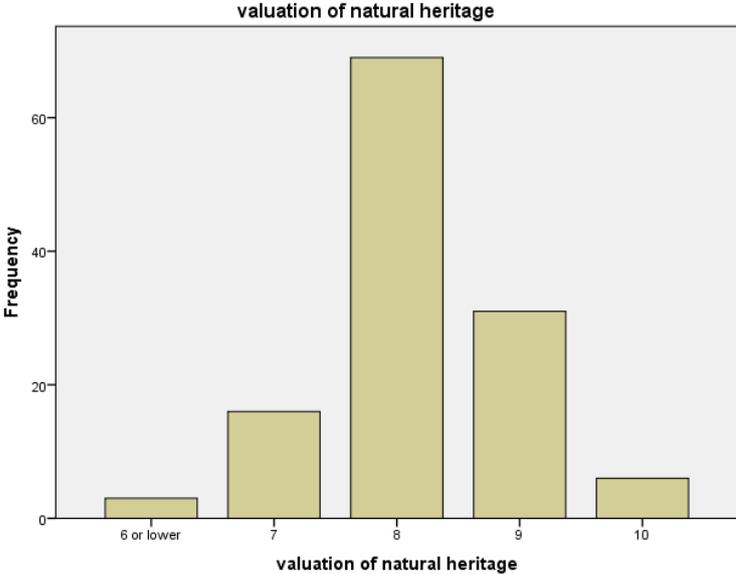


Figure 4

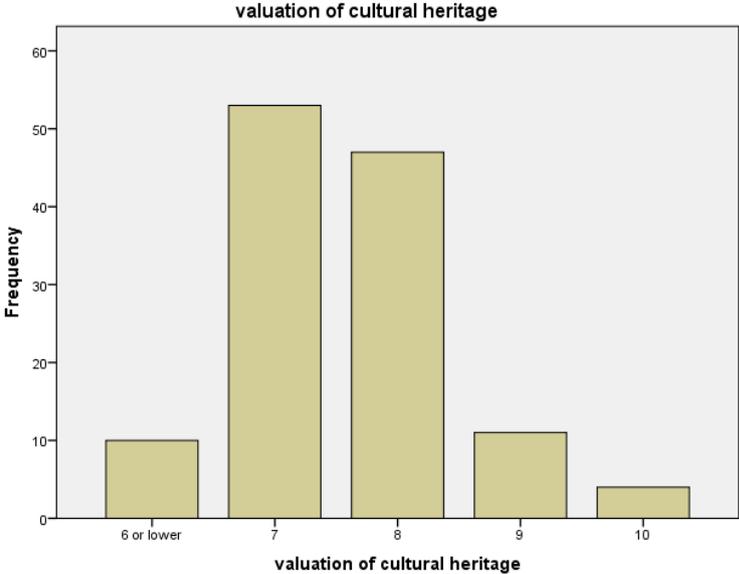


Figure 5

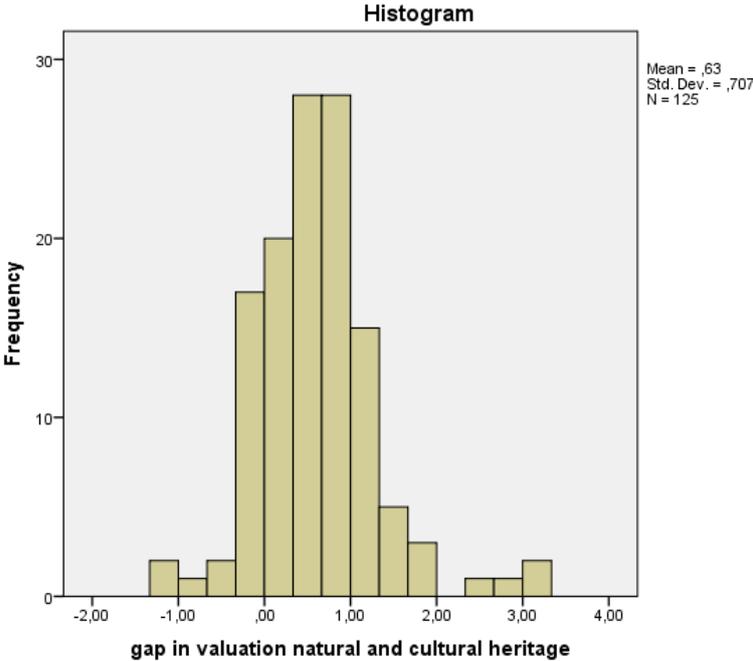


Figure 6

Looking at the valuations of both natural and cultural heritage within the distinguished groups, sometimes differences can be observed similar to that of the total and sometimes differences that distinguish themselves from the overall picture. For both men and women, the valuations are very similar to the overall distribution (table 5). The first striking difference to the total distribution concerns the residents of the Wadden Sea region (figure 6). This group clearly values natural heritage lower than those who live outside the region. Regarding cultural heritage these groups are similar to the overall distribution. This corresponds with the findings of Van den Berg & Koole (2006), who stated that local residents of rural areas tend to value the natural environments in their region lower than others do.

gender	frequency	natural heritage	cultural heritage	gap in valuation
male	54	8.2	7.5	0.7
female	69	8.2	7.6	0.6
total	123	8.2	7.5	0.6

Table 5

place of residence	frequency	natural heritage	cultural heritage	gap in valuation
inside Wadden Sea region	30	7.8	7.5	0.3
outside Wadden Sea region	89	8.3	7.5	0.8
total	119	8.2	7.5	0.7

Table 6

Within the age groups there is a clear difference in the height of the grades given (table 7). The youngest age group (15-35) values both natural and cultural heritage clearly lower than the average, whereas the middle age group (36-65) values both forms of heritage higher than average. The strongest deviation from the average seems to be found in the preference for either natural or cultural heritage (table 8). The group with a preference for natural heritage values both forms of heritage at a similar level to the total average. However, the group with a preference for cultural heritage values natural heritage lower than the average and values cultural heritage higher than the average.

age groups	frequency	natural heritage	cultural heritage	gap in valuation
15-35	33	7.7	6.8	0.9
36-65	43	8.6	7.9	0.7
66-100	43	8.1	7.7	0.4
total	119	8.2	7.5	0.6

Table 7

preference: natural or cultural heritage	frequency	natural heritage	cultural heritage	gap in valuation
preference for natural heritage	90	8.2	7.5	0.7
preference for cultural heritage	11	8.0	7.8	0.2
no preference	20	8.2	7.7	0.4
total	121	8.2	7.5	0.6

Table 8

Analysis

In order to assess whether the differences observed in the sample are also differences within the population statistical tests have been carried out. T-tests have been used because this research is looking for differences between averages. Because grades for natural and cultural heritage were given by the same respondents these are paired observations, which means t-tests for paired samples have been used. A test for the total of respondents has been carried out, as well as tests for each group within the grouping variables.

Before the tests could be carried out, it had to be assessed whether the conditions needed to carry out t-tests were met by all groups. According to Moore & McCabe (2005) there are no further conditions once sample size is over 40. For sample sizes between 15 and 40, the distribution is not allowed to show skewness or many outliers. For sample sizes under 15, the normality of the distribution has to be tested. Three of the distinguished groups have a sample size between 15 and 40 (local residents, age group 15-35, and no preference for natural or cultural heritage). All of these groups did not show skewness or many outliers, so the use of t-tests is allowed. For the group of respondents with a preference for cultural heritage, with a sample size of 11, the Shapiro-Wilk test for normality has been used. This test showed no significant outcome (significance of 0.869), meaning the normal distribution for this group could be assumed and the t-test could be carried out.

The null hypothesis that will be tested for all these groups is: *there is no difference in the valuation of natural and cultural heritage*. While the null hypothesis is the same, the population it will be tested in differs per group. So for the group of men, the null hypothesis will test whether there is indeed no difference between the two forms of heritage among men who either live in or visit the Wadden Sea region. Whereas for the group of age 15-35 the analysis will test whether there is no difference in the valuation of natural and cultural heritage for people aged 15-35 who live in or visit the region.

The results of the t-tests for paired samples are shown in table 9. Using a 95% confidence interval, all significance levels under 0.05 are considered a significant result. A significant result means the outcome differs significantly from the null hypothesis, therefore the null hypothesis can be rejected. This means within all but one group there is an observed difference between the valuation of natural heritage and cultural heritage. Given the average grades that were discussed for both forms of heritage, the statement can be made that natural heritage is valued higher than cultural heritage within most groups. The only exception, with a significance level of 0.348, is the group that has a stated preference for cultural heritage. Although this group had a slightly higher average grade for natural heritage, this difference proved not to be significant and is therefore not assumed to be a difference within the population.

group	frequency	t-test significance	null hypothesis accepted/rejected	difference in population
total	125	<0.0005	rejected	yes
men	54	<0.0005	rejected	yes
women	69	<0.0005	rejected	yes
local residents	30	0.022	rejected	yes
visitors	89	<0.0005	rejected	yes
age 15-35	33	<0.0005	rejected	yes
age 36-65	43	<0.0005	rejected	yes
age 66-100	43	<0.0005	rejected	yes
preference: natural heritage	90	<0.0005	rejected	yes
preference: cultural heritage	11	0.348	accepted	no
no preference	20	0.002	rejected	yes

Table 9

What can be concluded from these results is that natural heritage is valued higher than cultural heritage in the Wadden Sea region by both its residents and visitors. The same statement holds when distinguishing between men and women, or between local residents and visitors, or between the three different age groups. Natural heritage is also valued higher by those who have a stated preference for natural heritage, and by those who have no preference for either natural or cultural heritage. The only group for which it cannot be assumed that there is a difference in valuation of natural and cultural heritage is the group with a stated preference for cultural heritage.

Conclusions

The hypothesis of this research was that natural heritage is valued higher than cultural heritage in the Wadden Sea region. On the basis of the results from the survey, this hypothesis can be confirmed. With a higher average grade which proved to be significant, natural heritage seems to be the more popular form of heritage in the Wadden Sea region. This statement holds within almost all the distinguished groups, except for the group which stated a preference for cultural heritage.

This means the main research question, *how are natural and cultural heritage valued in the Wadden Sea region?* can be answered. Natural heritage is valued higher than cultural heritage within the Wadden Sea region. The same can be concluded for most of the secondary research questions that distinguished a variety of groups. For both men and women, both residents and visitors, and the three age groups the valuation of natural heritage is higher than that of cultural heritage. The stated preference of the respondents does not provide the same result. The stated preference for natural heritage does show a significantly higher valuation for natural heritage, but this does not hold for those who prefer cultural heritage.

However, the conclusion that natural heritage is valued higher does not mean that the cultural heritage of the Wadden Sea should not be preserved. Indeed, it can actually be argued this result emphasises the need for more attention to the cultural heritage of the region. In the case of K'gari, Brown et al. (2015) argue tourism can be used to make the interconnection between natural and cultural heritage more visible. In their view, tourism business at the World Heritage site would benefit from engaging with the Butchulla people by being able to provide a more authentic portrayal of the island. Within the context of the Wadden Sea region, Bazelmans et al. (2012) state the region's cultural heritage can be used to emphasize the past, present and future of the region.

Considering the Wadden Sea region, much of its appeal is a result of the interchange between natural and cultural factors. Within the UNESCO World Heritage status only natural heritage is represented, leaving out the influence of humans. The focus on natural heritage rather than cultural heritage is reflected in the results of this research. However, this should not mean there is no need for preservation of the cultural heritage of the Wadden Sea region. UNESCO aims to improve recognition for 'cultural landscapes', which distinguish themselves in having a legacy of intricate relationships between nature and humans. Furthermore, the Wadden Sea seems to apply to at least one of the criteria for a cultural site upon the UNESCO World Heritage list. So it seems the cultural heritage of the Wadden Sea region could gain recognition by UNESCO, whether this will happen remains to be seen. A recommendation for further research would be to dive deeper into what is needed for a site to become a 'cultural landscape' or a mixed heritage site on the UNESCO World Heritage List. Another recommendation is to investigate popular support for such a status by asking residents and visitors directly what they would think of such a new status on the UNESCO World Heritage List.

Reflection

As noted before, there are some weaknesses to this research. Some concern the sample itself, others concern the answers provided in the survey. Firstly focussing on the sample, there is a very unequal distribution of ages. The sample has concentrations of young adults and people around retirement age, and a lack of adults in parenting age. Also there is a clear overrepresentation of visitors to the Wadden Sea region as opposed to residents of the region.

When looking at the answers provided in the survey, the answers to three questions had to be left out. These concerned the amount of time local residents had been living in the region, whether the respondent was born in the region, and whether the respondent was occupied in tourism or agriculture. The first two of these questions were misinterpreted by some because the boundary of the Wadden Sea region was not clear enough, despite a provided list of municipalities that constitute the region. The last question did not provide useful data because many respondents were retired, and the definitions of the sectors of occupation were misinterpreted by some.

A strength of the research is that there was a small amount of missing data, especially regarding the average grades for both natural and cultural heritage. Because these averages were made up out of up to seven variables, an average grade could be calculated for all respondents on both forms of heritage.

Another strength of the research is that respondents were not fully aware of whether they were grading natural or cultural heritage. The examples were presented to the respondents in a table which did not distinguish natural and cultural heritage. Therefore the answers were presumably minimally influenced by preconceptions of respondents on their own opinions about natural and cultural heritage.

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Appendix (in Dutch)



university of
 groningen

faculty of spatial sciences

Deze enquête gaat over de waardering van natuurlijk en cultuurhistorisch erfgoed in het waddengebied, dat sinds 2013 op de UNESCO werelderfgoedlijst staat. Als respondent wordt eerst uw waardering van de verschillende voorbeelden van erfgoed gevraagd, gevolgd door enkele vragen over uw persoonlijke situatie. De enquête duurt maximaal 5 minuten. De antwoorden worden volledig anoniem verwerkt.

Hoe waardeert u de volgende voorbeelden met betrekking tot de aantrekkelijkheid van het waddengebied?

geef de voorbeelden een cijfer van 1 tot 10, u mag voorbeelden overslaan

		cijfer	cijfer		
	getijdenwerking Waddenzee			Lauwersmeer	
	dijken			vuurtorens	
	zeehonden			Noord- Nederlandse boerderijen	
	akkerbouw hogeland			trekvogels	
	terpen en wierden			ervaren van de natuur	
	kwelders			Noord- Nederlandse kerken	
	polders			stranden en duinen	

Wat is uw geslacht?

man vrouw

Wat is uw geboortejaar?

Wat is uw postcode? (enkel de vier cijfers)

Bent u geboren in het waddengebied?

ja nee

Hoe lang woont u in het waddengebied? (in jaren)

Werkt u in de landbouw, in het toerisme, of in een andere sector?

landbouw toerisme anders

Wat waardeert u meer in het waddengebied, natuurlijk of cultureel erfgoed?

natuurlijk erfgoed cultureel erfgoed geen mening / geen van beide

Hartelijk dank voor het invullen van deze enquête!

Gemeenten die vallen onder het waddengebied:

eilanden: Texel, Vlieland, Terschelling, Ameland, Schiermonnikoog

Noord-Holland: Den Helder, Hollands Kroon

Friesland: voormalige gemeente Wonseradeel, Harlingen, Franekeradeel, Het Bildt, Ferwerderadeel, Dongeradeel

Groningen: De Marne, Eemsmond, Delfzijl, Oldambt

