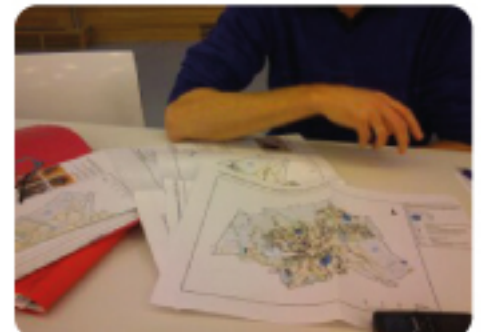


Becoming-bat

Bat-lovers' values, practices and their role in bat conservation at the city of Groningen

Master thesis by Angelica Caiza, s2384418

Univeristy of Groningen, April 2015



**Becoming-bat: Bat-lovers' values, practices and their role in bat
conservation at the city of Groningen**

Master Thesis

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Research Master in Regional Studies
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April 2013

What is it like to be a bat?
Nagel (1974)

Like a bat out of Hell
I'll be gone when the morning comes
Oh, when the night is over
Like a bat out of Hell
I'll be gone, gone, gone
Like a bat out of Hell
I'll be gone when the morning comes
But when the day is done
And the sun goes down
And the moonlight's shinin' through

"Bat Out Of Hell"
Meat Loaf 1977

Acknowledgement

This thesis would not have been possible without the support of many people who have been part of this journey. First of all, I would like to show my gratitude to my parents (Nelly and Luis) for the incredible support during my studies. Likewise I want to thank my brother Andres and his girlfriend Liza for their care since the day that I moved to Groningen. In addition I will extend my thanks also to my little brother David, because during the time of my studies here in the Netherlands he has been looking after my parents in Ecuador.

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This process has been the largest learning experience of my life. During the past two years and few months I have been thinking about the choices that I made when I decided to come here. Despite, all the complications and difficult times, I do not regret any moment of my life here in the Netherlands. Started a new life here in Groningen has been the best decision of my life.

Angelica Caiza

Groningen, 2015

Abstract

“I wonder whether mankind we ever are able to understand what bats in real are like”.
Klarissa, Groningen, 2014

Scientific research on bats is carried out mostly in the areas of ecology, biology, evolution and genetics. Little research has been done in the field of the experiences and practices of people who like bats. Moreover, bat-lovers are citizens who are dedicated to encounter bats learn about bats and work on bat conservation. A postmodern and feminist approach taken in this thesis attempts to understand the embodied knowledge of bat-lovers and their continued experiences through specific practices.

The human-animal relationships approach allows the reinterpretations of wild animals in urban areas within a new urban theory “Zoopolis a transspecies urban theory”. This theory serves as a platform where the “Biophilia” is explored through the “human values of nature” and the practices and encounters of “ Becoming-animal (bat)” converge in the overlapping of time, space, place and devises between human and bats, where feelings of empathy and proximity transgress the human borders to experience the live of a bat.

This research was carried out with 8 participants through qualitative approach by in-depth interviews and narrative analysis. This thesis explored how bats are seen as influential actors in the city and the way that bats shape individual identities and also how bats make place in the urban context in the city of Groningen.

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1. Introduction

1.1 Human-Bat relationships in an urban context

One of the most critical issues that wildlife conservation area faces nowadays is the way human value animals and the implications of these attitudes on the conservation of wildlife. Different scholars have contributed to the issue of how human beings value nature (animal and plants) and also of how human behavior influences the conservation of specific animal species (Kellert, 1993; Wilson, 1993; Woods, 2000; Krester et al., 2009; Spinka, 2012). Stephen Kellert in his studies (Kellert, 1980; Kellert, 1993; Kellert, 1981) leads us to understand how human beings tend to categorize and perceive animals according to physical characteristics and the implications that this has on the wild animal conservation and protection.

Bats have been constructed both in a scientific and a social dimension and in many cases this mammal has been misunderstood. Bats were categorized as strange birds in the first animal classifications by naturalists; bats were also granted magical powers associated with witchcraft (Voute et al., 1991; Lunney, 2011). All these factors have inspired myths and legends around the identity of bats, which in turn have influenced human perceptions causing the negative attitudes towards them (Fenton, 1997). Hence, the fewer human characteristics an animal has, the less empathy is felt towards it. Humans have been seeing bats as non-charismatic animals because bats have characteristics, which make them seem as aliens and harmful animals (Bjerke & Ost Dahl, 2004; Prokop, 2008; Knight, 2008). This added to their reputation of being the carriers of rabies virus and made their conservation more difficult to accomplish (Fenton, 1997).

Human-animal relationships are increasingly a subject of inquiry nowadays and they are framed in the subfield of animal geography. During the last 15 years scholars such as Jennifer Wolch, Jody Emel, Donna Haraway and Chris Philo have insisted on the importance of discussing the social construction of non-human animals and how the non-human animal agency differs across place, culture and time. Furthermore, animal geographies are exploring the connection between space and place, which is being re-structured and modified by animals because they are crossing pre-established societal constructed borders (Buller, 2013).

It should be noted at this point that human-animal borders have been defined since the time humans domesticated animals; this activity allowed the flourishing of human societies through the use and domination of animals (DeMello, 2012).

Nevertheless, human and animal differences are not just based in ecological, biological or behavioral differences. According to Elder et al. (1998) the borders between human and non-human animals, which is called by the authors the “human-animal divide”, matches with the process of racialization of the other non-human animals by a Post Colonialist approach. Elder et al. (1998) examines the social construction of the human-animal divide and agrees that it differs across culture, place and time. However, one of the highlights of their paper is the discussion of the assumption that humans are superior to non-human animals, which has been established through a historical process by Christian theology and which posits that human beings are the only entities that own souls. Later in the Enlightenment Age, Descartes considered animals to be automata i.e. conscienceless organisms incapable of reasoning. Finally, there is Darwin’s Theory of Evolution, which established the division between lower and highest organisms and where a human (white man) was considered as the top of the evolutionary line (Elder et al., 1998).

Therefore, this historical discourse has created a dichotomy about human and non-human animals, which is also reflected in urban theory (Wolch, 2002). Hence, cities are created for humans by humans, and nature is set aside, pushed away by the urban encroachment. And as a consequence, in most cases animals are ignored and made to live in restricted spaces in the “wild” which understates their agency and subjectivities (Wolch, 2002).

Thus, most of the animal geographies studies are framed in the modern feminist theories which address the issues such as human rights, the criticism of the Western-oriented cultures, distinguishing “us” from the “others” and different forms of oppression or abuse (Wolch & Emel, 1998; Birke, 2002). Furthermore, animal geographies studies are pointing out animal subjectivities as an integral part of the landscape, (Wolch & Emel, 1998; Philo & Wilbert, 2000; Urbanik, 2012). As Wolch and Emel (p. xvi) mention, “We think the time has come to let animals out of the box, to add body and other forms of presence”. Natural science keeps animals in boxes in a literal way, while the society keeps animals in boxes in a figurative

meaning: in human mind animals are separated and kept away by imaginary and physical boundaries.

Urban areas nowadays are experiencing the presence of wild animals. For example in USA the presence of snakes and coyotes are very common in the cities located in the middle west, in Germany cases of bears and raccoons foraging in the city parks or house gardens have been documented, and in India it is common to see groups of monkeys inhabiting temples in several cities (Donovan, 2015). Regarding bats, especially from temperate zones,¹ they inhabit rural areas as well as the urban areas (Kunz & Lumsden, 2005). Several bat species such as the Common Pipistrello (*Pipistrello pipistrello*) inhabit manmade structures and use the city as their habitat (Larenstein Van Hall, 2012).

Bats play an important role in the ecosystems as insect controllers, as for example Austin's bat population (the largest urban bat colony located in USA) eats between 10,000 and 20,000 pounds of insects every night (NATGEO WILD, 2014). Groningen has 11 species of bats, all of them insectivores, which are highly protected by the European and the local legislation. However, their populations are still threatened because of the several factors such as loss of habitat, use of pesticides, intensive farming practices and human infrastructure changes. (Kunz & Lumsden, 2005; Larenstein Van Hall, 2012). Furthermore, regional and local organizations such as EUROBATS and the Batgroup Groningen are joining efforts to improve the survival of these animals (Beeker et al., 2013).

Thus, the large-scale urbanization is affecting the animal behavior pattern as well as social discourses on urban nature conservation. On this account, Jennifer Wolch (1998) introduced "Zoopolis, a transspecies urban theory" that seeks to reestablish the important role of animals, shaping the urban space through the integration of social theory and urban wildlife ecology. However, this theory represents a challenge to geographers, urban planners and ecologist because their intellectual influences, angle of inquiry and priorities are diverse. Consequently, this theory calls to review human and non-human animal relationships through a multidisciplinary approach. The integration of social theory and wildlife ecology in urban areas represent a way to reduce the gap between society and urban animal wildlife in order to create a city that allows humans and animals to co-exist (Wolch, 2002).

¹ Temperate zones: Geographic places located between the tropic of Cancer and the Arctic Circle.

Animals as well as people need a place in the city. Although areas such as parks and patches of forest in urban areas are optimal for sheltering urban wildlife, animals also inhabit manmade structures such as house roofs, buildings, gardens, bridges, and bunkers among others. Some animals are welcome, such as birds in the gardens or butterflies, while others are not, such as snakes, foxes, and bats to name but a few. Thereby, this way the traditional human-animal boundaries become destabilized (Wolch, 2002).

On those grounds, animal geographies also calls for a reviewing of the human-non-human animal interactions in the urban context and of how the urban practices are shaped tracing human attitudes towards non-human animals and finding patterns in the urban context (Wolch & Emel, 1998).

The lack of studies that focus on a deep understanding of how humans relate to non-human animals create the need to explore the specific interactions between animal species and people. That is why this research attempted to explore people better. Instead of experiencing fear or dislike towards bats, bat-lovers show passion and deep interest in them. Scholars such as Donna Haraway (2008), Christopher Bear (2010; 2011), Jamie Lorimer (2010) Jennifer Wolch (2002), Mark Bonta (2010) and Astrid Neimanis (2007) agree on the importance of exploring these encounters between humans and non-human animals, and how these practices between species are overlapping and generating emotional bonds between human and animals.

Hence, framed in the “Zoopolis a transspecie urban theory” (Wolch, 2002), this thesis aims to explore two important factors that arise in the relations between human and non-human animals. First of all, the motives why humans get related to bats and start to value them, which is framed in the “Biophilia hypothesis” based on the biological basis for human values of nature (Kellert & Wilson, 1993). Secondly, this thesis explores the urban practices and experiences between bat-lovers and bats. These collections of experiences between humans and bats are frame in the studies of “Becoming-animal” by Deleuze & Guattari (1987) and Donna Haraway (2008). These two main theories are resulting in the transgression of species borders and the development of effective relationships between humans and animals (Bear, 2010; Haraway, 2008), which has implication into wildlife conservation and protection.

Clearly, bats are regarded as non-charismatic animals; they are largely misunderstood as explained above. However, there are no previous studies on how bats are shaping the identity of people who like bats and also on how bats influence urban practices. Moreover, this

qualitative research is an attempt to acquire a deeper understanding of the experiences and practices of bat-lovers and how these practices influence bat conservation issues in the city of Groningen. This information could be a crucial tool for the development of bat conservation projects in the city.

1.2 Objective and research questions

This research will be focused on the specific cases where humans and bats are blurring the borders between each other. These particular cases will lead to a deeper understanding in four areas. First, the value that the participant attaches to bats. Second, becoming-bat practices performed. Third, how urban theory is complemented by urban wildlife ecology and, finally, how bat conservation and policy-making is influenced by citizen practices.

Research Objective

The main objective of this research is to draw attention to human-bat relations by the exploration of practices and experiences and how these influence the bat conservation in the city of Groningen. To achieve this, the research is framed in the contemporary studies of animal geographies, which encourage us to understand the relationships between humans, animals (bats), spaces and places. Deep understanding is provided into how people who like bats produce particular practices and multiple understanding of bats. Bat-lovers' identities and their aims to protect and conserve bats could play an important role in the conservation and protection of this particular mammal.

Research Questions

How do bat-lovers make sense of and get involved with bats and how do bat-lover practices contribute to bat conservation in the city of Groningen?

Sub questions:

1. What motivates people to get to get involved with bats?
2. What kind of human-bat practices (i.e. activities, knowledge, learning, expressions) and technologies brings humans and bats closer?
3. How are these human-bats relationships placed in the city in temporality, place and space?
4. How do bat-lovers contribute to bat conservation in Groningen?

The first three research sub-questions are meant to explore how the practices and experiences between humans and bats bring humans closer to bats.

The fourth question is related to the contribution of these bat-lover practices to bat conservation in the city of Groningen.

1.3 Research Context

The city of Groningen provides a good case to explore the human-bat relationships in the Netherlands because there is a high bat population that is using manmade infrastructures (houses, churches, city parks, buildings) in the city (Larenstein Van Hall, 2012). With a population of almost 200,000 inhabitants, Groningen is the biggest city in the North of the Netherlands; characterized as a university city, this area is a mix of long-term residents and students. The city of Groningen is a densely populated area, which lies below the sea level. With regard to the city architecture, there is a combination of buildings made of bricks and modern houses built with alternative materials such as concrete, fiberglass foam, and steel framing among others.

Gardens, parks and green areas are found throughout the city. Trees and bushes surround canals and streets in several parts of the city by way of tree lines. Moreover, the municipality of Groningen promotes the development of green corridors, blue corridors and fauna passages. Groningen has promoted the idea of an environmentally friendly city since 1994. As one of the main guidelines, the municipality has already developed the Green Network² in the city of Groningen (Gemeente Groningen, 2003). Bats as well as other wild animals have high conservation status, but according to Larenstein Van Hall (2013), bats are protected by the national and local regulations best of all.

The following map illustrates the main green areas in the city of Groningen and also a possible model to develop green corridors for flying species such as bats, birds and bees. SOURCE: BBB (Bats, Birds and Bees) Ecological Network in the city of Groningen by Angelica Caiza and Erik Deenen (2014). Legend definitions: Buildings: every manmade infrastructure; Forest areas; these areas are patch of forest in a very small scale; these areas have not leisure activities or infrastructure. Water bodies: all of the areas covered by water, canals, lagoons, and water reservoirs. Green areas: are defined as city parks. Density of trees: is the amount of vegetable coverage. Ecological routes: these routes were designed taking into account ecological info about bats, birds and bees. Using the GIS tool we develop a model for the city of Groningen.

² Green corridors: This term is taken from conservation biology field. As an effort to maintain healthy wildlife populations, conservation efforts in wild areas create corridors to link areas, which are isolated. These green corridors or tree lines are design using plants and trees that animals can use as a food resource or shelter when they are migrating to another place. This tool helps to maintain a health animal population. In the same way the concept has been applied in the urban area. Connections between green areas in the cities benefit the urban wildlife populations to move into the urban area (Jongman, et al., 2004).

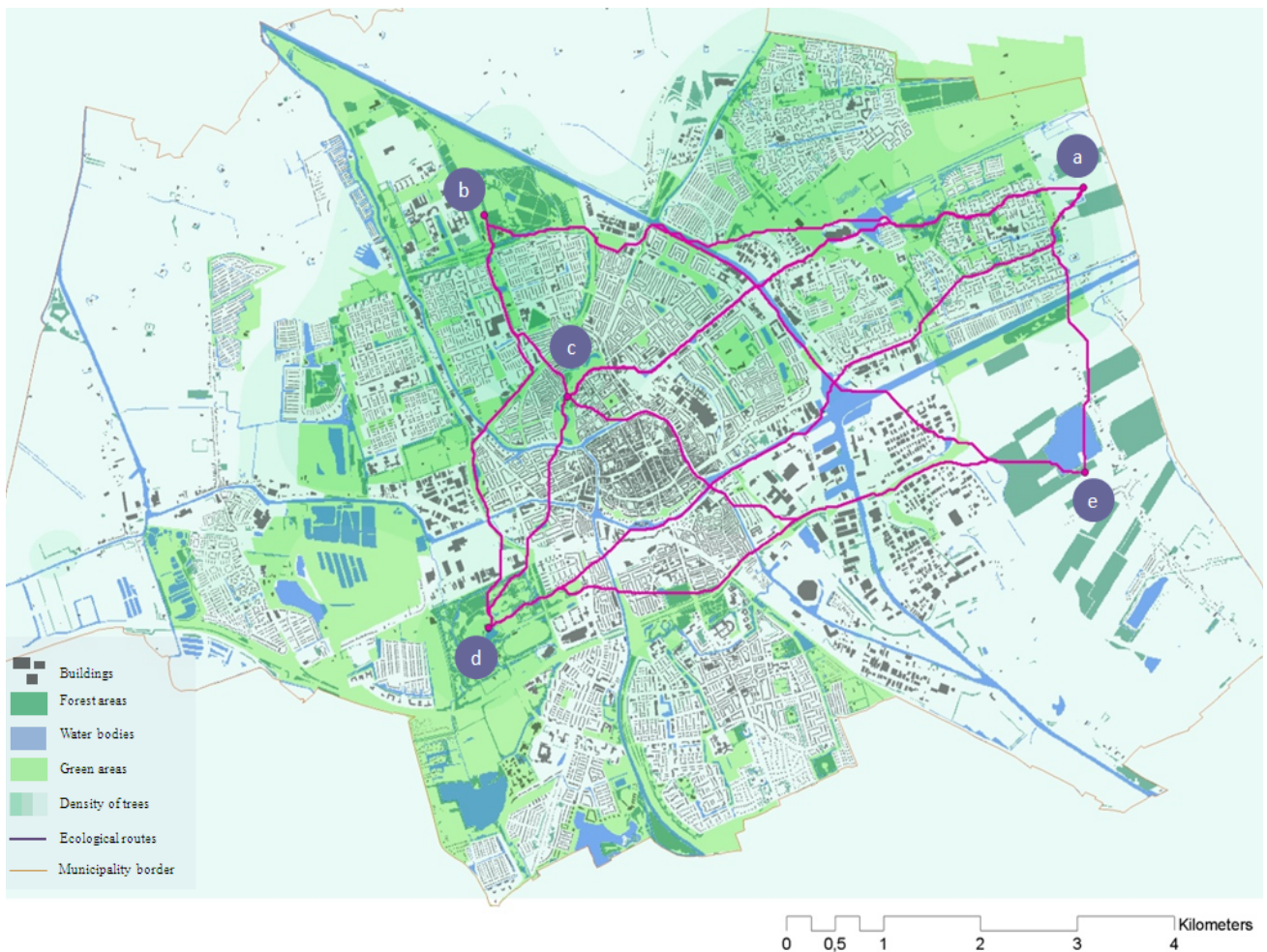


Figure 1: The Research Context -the city of Groningen

1.4 Thesis Outline

This thesis consists of seven chapters. Chapter 2 is an introduction into the social construction of bats by natural science and the societal perceptions. In addition, this chapter includes an explanation about the status quo of bats in the city of Groningen. Chapter 3 introduced the theoretical framework by an animal geographies approach. This chapter contains the main theories used in this thesis. First of all, “Zoopolis the transspecie urban theory” which encompasses two main theories, which involve the motives of humans to get related to bats and value them. Secondly, it contains the “Biophilia hypothesis based on the biological basis for human values of nature” by Kellert & Wilson (1993). It also contains the description of the specific activities, which bat-lovers performed to get close to bats. Additionally, it explains

the concept of “Becoming-animal” by Deleuze & Guattari (1987) and Donna Haraway (2008).

Chapter 4 outlines and describes the research approach and methods. This chapter explains the importance of qualitative methods in human-animal relations studies; in addition, this chapter addresses the issues related to confidentiality, positionality and ethics.

Chapter 5 illustrates the results of the narrative analysis from the eight interviews with the participants; this chapter is divided into two parts according to the research questions and according to the theories proposed in the theoretical framework.

Chapter 6 concludes the main findings of this research and is organized in order with the three major theories.

Finally, we have Chapter 7 that briefly suggests the directions for the new research in order to extend some of the findings from this thesis.

2. Background

“ Relationships between animals are the object not only of science but also dreams, symbols
art and poetry, practice and practical use”
(Deleuze & Guattari, 1987)

This section has two objectives. The first one is to explore the constructions of bats in the natural science and in the societal context. In addition, this part also includes a brief description of the *status quo* of bats in the geographical context of the research i.e. the city of Groningen. The second objective in this section is to explore how academics approach their studies about the relationships between humans and animals.

2.1 Bats and Science

2.1.1 Bats in natural science

The ability of bats to fly is unique among mammals. This has confused natural scientists for many centuries. The strange combination of the flying ability, which is something typical for birds, and mammal morphology led humans to misunderstand these animals. From biblical times bats have been classified as abominations because some of their aspects and their behavior could not be conceived together (Atwood, 1993). In 350 BC, Aristotle even mentioned in a description of bats that they are classified as an “it”: neither bird nor mammal. Later, Plinius Secundus published a Natural History Encyclopedia in 77 AD, in which he gave the first description of a bat, considering it a species belonging to the group of nocturnal birds. Thus, according to the first descriptions of Greek and Roman times, bats were seen as birds. This did not change until the end of the Middle Ages (Voute et al., 1991).

Even as late as in the 16th and 17th centuries bats were largely classified as birds, although some naturalists already ascribed to them the characteristics common for mammals, such as breast feeding and reproduction without egg-laying.

In the 18th century, after Carl Linnaeus offered his systematic classification of nature in 1758, bats were ultimately classified as mammals and included into the sub-group of primates. In the years between 1775 and 1779 Johann Friedrich Blumenbach finally made a distinction between bats and primates. In his essay *De aangeboren verscheidenheid van het menselijk geslacht* (The innate diversity of the human race), Blumenbach introduced the Greek term

Chiroptera, meaning “hand in the wind,” as a separate order for all bats; this term is used until today (Voute et al., 1991).

Despite the new scientific information, during the 18th century bats were still viewed as mysterious animals; in some scientific illustrations bats were depicted with fanciful features coming from legends and myths. It was not until the early 19th century that naturalists produced more accurate descriptions of animal species, including bats. The knowledge about the animal systematics was growing rapidly and the museum, zoo, and academic natural history collections were growing in countries such as Britain, France, and The Netherlands (Frankenhuis, 2009).

By the 20th century animal research and scientific publications included hundreds of new species throughout the world. Namely the bats received a lot of attention, having been described in many series of books about nature and having featured in a variety of scientific illustrations, which showed the vast diversity of bats species. In addition, animal identification guides were printed and distributed among the general population. The public interest in this new kind of information about wild animals was growing (Voute et al., 1991).

In recent years the study of bats has spread to more fields (Kuntz & Fenton, 2005). New scientific research on bats appeared in ecology, physiology, morphology, genetics, evolution, conservation and other areas. Bats are unique among mammals; they can fly and fill a variety of ecological niches³. Most of the bat species in temperate zones are insectivores; Bats play an important role in the ecosystems as insect controllers as for example Austin’ s bat population (the largest urban bat colony located in USA) eats between 10.000 and 20.000 pounds of insects every night (NATGEO WILD, 2014). In tropical regions nectar-feeding bats are essential in the process of plants pollination such as agave (tequila plant), mangoes, bananas, guavas, and passion fruits among others. Moreover, there is a group of bats that play a key role in the tropical forest maintenance; fruit eating bats disperse seeds and promote the plant regeneration (Kunz & Fenton, 2005). Bat research constitutes to of the most important tools in the bat conservation field. However, while the objectification of bats is part of a scientific

³ Ecological niche: Term used to define place or function of species (bats) or species population according to ecological and behavior characteristics (Kunz & Fenton, 2005).

method, it also contributes to the separation of nature and human domains creating a dualism in the discourse on human-animal co-existence (Wolch & Emel, 1998).

Cities are the most densely inhabited areas - currently, 54% of the human population lives in urban districts and some studies indicate that in the future this number might increase to about 65% (United Nations, 2014). Human activities have resulted in a reduction of numbers of species in the last century. Since 1970 the animal population around the world has declined by 30% (World Wildlife Foundation, 2014). Bats are not an exception. According to recent data from IUCN (2014), 33 species of bats have been declared as endangered species worldwide as a result of human activities.

During the last century, especially in Europe, the effects of the industrial revolution on biodiversity have been evident. Landscape transformation led to changes in plants and animals diversity. As a consequence, animal populations including bats have changed and adapted their living patterns to human presence. But not all bat species can adapt to human presence; in some severe cases the entire bat colonies would disappear resulting in local extinctions⁴ because of the lack of roots, food or place disturbances, which cause the entire bat colony mobilization or disappeared from a particular area (Stebbing, 1986).

Natural shelters used by bats for resting, eating and/or hibernating are often modified or occupied by human infrastructure. In such cases bats are forced to seek alternative shelters to replace the lost ones and thereby ensure their survival. Some species of bats are more sensitive to anthropogenic changes such as the migratory bat Common noctule (*Nyctalus noctula*), which prefers forest areas. Whereas other bats are tolerant to it and can even create an association with human structures occupying ceilings or spaces between the walls. Namely structures used by bats, as maternities⁵ should be taken into account as a priority because this structures are important to keep the bat population growth. First, female bats return every year to the same site to have their offspring there. Second, any intervention in the infrastructure of the maternity when mothers have offspring would result in the abandonment of the young pups (Larenstein Van Hall, 2012).

⁴ Local extinctions: Local extinctions refer to when a species ceases to exist in a given geographical area.

⁵ Bat maternities: Special places, where female bats give birth to their offspring and care until they can fly and feed themselves. These places are areas with suitable conditions (temperature, humidity, security) where single mothers and pups live (Stebbing, 1986).

Some species of bats can be considered synanthrope⁶; they benefit from human association such as shelter with optimal conditions allowing them to live. For example, the Common Pipistrelles bat (*Pipistrellus pipistrellus*) is healthier in inhabited areas because the ability of adapt at diverse habitats. In The Netherlands this species is often found in houses and buildings. On the contrary, species such as the Common Noctula (*Nyctalus noctalus*) who like mature trees as roosts have been struggling in the city of Groningen because many of these trees are gone. For this reason, this species is using bat houses as a replacement for the shelters that they cannot find in the city (Larenstein Van Hall, 2012).

According to the literature (Stebbing, 1986), nowadays bats have developed a high level of dependence on human infrastructure to survive. This phenomenon is particularly present in countries with moderate climate and it results in a reinforced interaction between humans and bats in urban areas.

For which reason, the European Union found it necessary to develop strategies to ensure the survival of bats. During the last decades, the European Union has been making efforts to restore the bat populations nearly eliminated in the 1960s and 1970s because the use of pesticides, habitat degradation and disturbance of roosting (UNEP/EUROBATS, 1991). In Europe, 52 species of bats have been registered and have been given an important conservation status (UNEP/EUROBATS, 2014). Since 1991, 35 countries including the Netherlands (added in 1992) have pledged to the Agreement on the Conservation of Populations of European Bats (UNEP/EUROBATS, 1991). In addition, the European Habitat Directive by the Nature Protection Law (1998) declares all bat species on the EU territory to be protected (European Commission, 2014). In the Netherlands the Flora-en faunawet 2002 (Flora and Fauna act) regulates the protection of plants and animals in the Dutch territory (Rijdsdienst voor Ondernemed Nederland, 2002).

In The Netherlands, a total of 21 species of bats has been registered, out of which seven species are frequently observed and nine species are considered rare. Furthermore, there are nine species on the Dutch “red list”, i.e. in danger of extinction. In this country, bats are protected by the Bat Agreement, which was applied in the European region in 1991.

⁶ Synanthrope. Wild animals and plants of various kinds that live near, and benefit from, an association with humans and the somewhat artificial habitats that humans create around them (Swart, 2011).

In the city of Groningen 11 species of bats have been registered (Larenstein Van Hall, 2012). All of them are insectivorous; their distribution and locations are stated in the Atlas of Mammals (Zoogdieratlas⁷). The following table (Table 1) lists the bats species and some of the characteristics of each species population.

Table 1 List of the bats identified in the city of Groningen, adapted from Larenstein Van Hall (2012) and IUCN Red List (2015)

<i>Latin name</i>	Common name	Observations
<i>Myotis mystacinus</i>	Whiskered bat	Uses the city to survive the winter
<i>Myotis daubentonii</i>	Daubenton's bat	Uses churches in the city to survive the winter
<i>Eptesicus serotinus</i>	Serotine bat	Uses churches in the city to survive the winter
<i>Myotis dasycneme</i>	Pond bat	Forages in the area of Groningen
<i>Pipisterello pipistrello</i>	Common pipistrello	The most common bat species in The Netherlands as well as in the Province of Groningen
<i>Pipistrello nathusi</i>	Nathusius' pipistrelle bat	Forages in the area of Groningen
<i>Pipistrellus pigmaeus</i>	Pygmy or soprano pipistrelle bat	Very rare in Groningen. It was only seen here once.
<i>Nyctalus noctula</i>	Noctule bat	Covers long distance, a migratory bat, it looks for shelter in the parks
<i>Vespertilo murinus</i>	Parti-colored bat	Considered very rare, it was seen only once foraging in the area of Groningen
<i>Plecotus auritus</i>	Brown long-eared bat	Considered not common in the area of Groningen

The municipality of Groningen has implemented a bat conservation policy. It focuses on the conservation of bat population taking into account four primary areas located in four districts of the city: North, South, West and center. There is a different target species in each one of those.⁸ In addition, the municipality of Groningen pays specific attention to bat population's localities such as bat maternities (buildings and houses) and hibernacula⁹ (churches and bunkers). For this reason, every project that involves intervention in the urban infrastructure or landscape requires ecological assessment studies to avoid disturbance on bat colonies roots.

⁷ <http://www.zoogdierveniging.nl/zoogdieratlas>

⁸ Target species: Are the species used as indicators, they are being monitored in order to know more about their populations and behavior.

⁹ Hibernacula: hibernation place for bats (Kunz & Fenton, 2005).

Furthermore, the municipality of Groningen has placed 250 bat boxes¹⁰ in several green areas within the city, which are monitored twice a year in spring and winter by local bat-lover volunteer and the municipality. One of the most important aspects of the conservation policies in Groningen is the creation and management of winter hibernation quarters in the area of the city of Groningen adapting some old structures such as bunkers so that the bats use. According to Larenstein Van Hall (2012) this activity requires a relatively small effort but allows monitoring bats effectively.

2.2. Animals and human imagination

The Chauvet cave in the South of France is a good example of the role that animals play in our world perception. Here one can see some of the most important animal representations of the late Paleolithic period¹¹ - drawings of horses, bears and rhinoceroses, which early humans observed and painted in great detail. These paintings are considered as one of the most incredible pieces of the Rupestrian Art (Herzog, 2010).

In this regard, the Bradshaw's Cave in Australia is a valuable sight as well. On its walls there are representations of kangaroos and marsupial lions¹² (Akerman, 2009). Most importantly, bats appear here too. Both the Chauvet cave and the Bradshaw's cave prove the important role that animals has played in the way humans understand the environment and themselves.

Human understanding of animals has been modified according to temporal and social changes. Our views of animals are complex; they differ according to the particular species and their geographical place. Furthermore, animals are important symbols that reflect social and individual characteristics shaping our attitudes toward them. Symbols are things which humans give meanings to. These meanings depend on the cultural context and in turn influence the way in which humans think about the tangible and intangible objects. That is why animal symbols are the representation of human characteristics that can be projected onto ourselves and onto others. Like DeMello (2012) mentioned, "*animals are mirrors for human identities*" (p. 296): animals are the representation of what humans would and would not like to be.

¹⁰ Bat box: Are small box designed to provide shelter to bats. This boxes are made but different materials and they are attached to houses or trees

¹¹ Paleolithic: Also known as the Stone Age, the last part of the Paleolithic period was called Upper Paleolithic and data from 50.000 to 10.000 years ago (Shipman, 2010).

¹² Marsupial lion (*Thylacoleo carnifex*): Carnivorous marsupial extinct 46.0000 years ago in the last part of the Pleistocene

For example, bees are deemed to be good workers within an organized system where the hierarchy maintains order and the honey production benefits the entire group. Instead, pigs may be seen as dirty, fat, ugly animals, which like to be in mud. In both cases the society reflects itself in these animals as symbols. The image of a pig is used to describe policemen, seedy people, people who are overweight, whereas bees are associated with the sweetness of honey and are portrayed as the example of hard work (Atwood, 1993).

2.2.2 Bats and Culture

The Bible, namely the books of Leviticus and Deuteronomy, describes bats as “*unclean animals*”. Those were subject to rejection due to their external anomalies and imperfect features (Atwood, 1993). In another example based on a biblical text, Atwood (1993) mentions that bats were confined to dark caves, together with sinners and idolaters.

In the European context bats are mentioned in classic myths e.g., “Mynyades”, a Greek myth by Ovid written between 43 BC and 17 AD. This is a myth about three sisters, whom Dionysus cursed with madness and transformed into bats as a punishment for their misdeeds (Buxton, 2004). Similarly, in the 8th century “The Odyssey” by Homer described bats as creatures that inhabit dark places associated with evil spirits in the underworld.

In his moralistic stories Aesop (600 AD) used animals as characters, in this way he referred to human characteristics. In some of his stories a bat is a very clever animal. The first story “The Birds, the Beast and the Bat” explained why bats were condemned to live in the dark. In this story Aesop depicted the bat as a very intelligent animal, but also ambitious and profit seeking. For this reason the bat lost its privilege to enjoy the daylight. In a second story called “The Bat and the Weasel”, Aesop illustrates the duality of bats between a bird and a mouse, in this story a bat astutely used this duality to escape being eaten by weasels (Giloith, 2005).

During the Middle Ages bats were considered to be a kind of a bird. In 1250 a Roman Catholic priest, Thomas de Cantimpre, wrote a series of volumes on Natural History. He drafted the first bat description in a form of a poem including some mammal features. Immediately, a Flemish poet Jacob van Maerlan, who translated the work of Thomas de Cantimpre about Natural History, included the same features in the descriptions of bats. However, he added new information on these animals including their use in medical potions.

He mentioned that the blood of bats could be used against snakebites and helps with fertility issues (Voute et al., 1991).

Christian art uses animals in the representation of the features of good and evil. It is clear that angels have bird wings while devilish characters carry bat wings. In the 13th century bats and owls were also considered symbols of jealousy because they do not like to see the good behavior of other creatures shining in the daylight. Likewise in 1520 a popular belief mentioned that seeing a bat flying near your house was a premonition of a disaster, and such bats were, again, the representation of evil spirits. In descriptions of witch hunts in the 15th, 16th and 17th century in Europe bats and some other animals were associated with witches or people who had a pact with evil spirits (Voute et al., 1991).

Bats have been inspiring artists from the 16th century and until today in different ways. Leonardo da Vinci was interested in their ability to fly and developed a prototype model for a flying machine with wings suggestive of the shape of a batwing. In one of his paintings Francisco Goya (1799) depicts his nightmare with bats and owls representations. In one of his works Vincent van Gogh painted a flying fox with open wings based on a bat he had seen in a museum. Novels such as *Dracula* (1897) by Bram Stoker are famous for introducing the character of Dracula. This character represents the duality of a being that feeds on human blood and can transform into a bat. *Dracula* has been an inspiration for other writers and popular media to the present day.

The Dutch national railway company, which came into existence in 1900 approximately, chose four animals as symbols of their work schedules: one of those was a bat which represented the night time part of the company's work. Until today an image of a bat can be seen on the main clock of the Amsterdam train station, along with other three animals. The bat is the representation of the night work of the company (Voute et al., 1991).

Batman (1939) emerges as a super hero in comic magazines: a man hiding his identity under a bat representation showing a double life; one in the daytime as a normal citizen and another at night as a ruthless fighter (Person, 1991). This is an example of a bat in popular culture.

Nowadays bats are still seen as mysterious animals. Stories of bats getting entangled in human hair are very common in several countries (Prokop, 1999; Atwood, 1993). In Nage folklore bats have the ability to mutate in shapes and sizes (Forth, 2009). In the same way the

Mayan god of death named Camazotz is depicted as a vicious zooantropomorphic figure, half-human and half bat; he is associated with blood rituals in Central American pre-Columbian cultures. In other countries in South America, for example Ecuador, in some rural areas there is a popular idea that aging mice grow wings and transform into bats (Albuja, 1999).

Since ancient times bats have been represented as a symbol of craziness and diseases. Bats are seen as bloodsucking creatures belonging to the night. Thus, humans often see bats as unnatural and dangerous figures. Bats have been part of myths and legends that evoke negative perceptions in the general public (Atwood, 1999).

However, the human perceptions about bats can shift according to a combination of factors such as cultural, geographical, economical ecological, ethical and political. After all, the attributes humans granted to bats are directly related to personal knowledge and experiences. Popular knowledge about bats influences human perception about them and consequently has a direct impact on bat conservation strategies (Fenton, 1997).

2.2.3 Bat-lovers

Thus far there is no standardized name to refer to people who are fond of bats. Several studies that involve non-scientist people in bat conservation projects refer to them as citizen science (Beeker et al., 2013) In other situations they are named as bat conservationist or bat handlers in the case of patients for medical study cases (Fooks et al., 2003; Pounder, 2003). Moreover, bat-lover or bat lovers are terms used in conservationist groups' newsletters or studies with a sociological approach (Lunney & Moon, 2011). Bat-lover refers as a person who enjoys performing activities related to bats.

As is explained above the term bat-lover has not been conceptualized or standardized yet, but during the accomplishment of this thesis the term bat-lover refers to people who practice different activities in order to get closer to bats such as physical encounters, knowledge production, conservation issues, or symbolic representations. Moreover, this name due to the commitment that participant expressed their relation to their practices in relations with bats.

3. Framework: Bats-Human relationships approach

The aim of this section is to introduce the main concepts and theories, which formed a conceptual framework for this thesis. First comes a brief introduction of the Animal Geographies topic. Second, I will introduce “Zoopolis as trans-species urban theory” (Wolch, 2002). Next I will present the “Biophilia Hypothesis” and “the biological basis for human values of nature” by Wilson and Kellert (1993). And finally, I will elaborate on the concept of “becoming-animal” by Deluze and Guattari (1978) and Haraway (2008).

3.1 Animal geographies

Animals play an important role in society; human beings share a vast and complex living system with the smallest of insects and the largest of mammals. Nevertheless, human beings and animals have been consistently categorized into different realities. Animal Geographies involve two mayor areas of study, in one hand the study of living organism that are non-human and in the other hand the exploration of earth in a physical and societal context. These two main topics are the framework to study the human – non-human animal interactions.

Animal Geographies studies have had three major shifts. First it all, animals as objects: animals have been the subjects of systematic studies after the appearance of the evolution and natural selection theory by Darwin in 1859. These studies are restricted to classification, systematization and evaluation of animal species according to biological, ecological characteristics and spatial locations. Framed in this theory, Zoogeography was the first attempt where geography and zoology gathered to study the distribution of animal life. Second, the inclusion of human-animal relationships: in the second shift of the animal studies, Zoogeography studies expanded their scope and included human-animal relationships issues. Geographers as Carl Sauer and Charles Bennett emphasized the participation of animals as elements of the landscape. On the one hand, Sauer focus their work on human processes, and their influence in the landscape, which includes animals specially livestock. Meanwhile, Bennet highlights the importance of studying the interactions between humans and animals and how it impacts each other (Urbanik, 2012).

And finally the third shift on animals geographies it has occurred over the past 15 years researchers have emphasized the importance of the exploration of human-animal relationships. As a consequence, a sub-field of Human Geography denominated the “new”

animal geographies aims to explore the dimensions of spaces and places where animals interact with humans and how these relationships are built (Buller, 2013). According to Philo & Wilbert (p. 5) animal geographies are “the complex entangling of human-animal relations with space, place, location, environment and landscape”.

Nevertheless, Urbanik (2012) emphasizes that Animal Geographies is not only an issue of relations between space and place if not also an issue where deeper questions must be asked. Thus it is that she mentioned that Animal Geographies is “the study of where, when, why and how non-human animals interact within human societies” (p. 38). Thus, academics such as Jennifer Wolch and Jody Emel (1998), Jamie Lorimer (2010), Sarah Whatmore (2002), Chris Philo & Chris Wilbert (2000) and Julie Urbanik (2012) discussed the role of animals in a social context, the reasons why animals are where they are, what animals mean to people in different spaces and places and how animals play a role in the making of places and spaces.

However, human-animal relations date back to a time thousands years ago, they emerged with the birth of the humanity (Shipman, 2010). As a result, animals have become an important part of our daily life. We use them to make food and clothes, for experiments and as entertainment. Animals are doctors and a good company. All of this has implications on economic, politic, cultural and ethical issues. Furthermore each animal stimulates our imagination, shapes our emotions and lets us experience particular realities framed by our cultural and social world. How humans perceive them and how humans value them matter and represent a key role in animal conservation issues.

For example, the panda (*Ailuropoda melanoleuca*) is one of the best-known worldwide animal because international conservation programs. However, this bear species is native to China and it has a very small distribution area in the South Central of China at the Sichuan Province. In order to protect this bear species international and regional efforts had been performed in order to save pandas. Thus, in 2006 the UNESCO declared the Sichuan Giant Panda Sanctuaries – Wolong, Mt. Siguaniang and Jiajin mountains as a Natural Heritage Place. These sanctuaries are considered a “National Treasure” in China and pandas are seen as a flagship for global wildlife conservation efforts. Nevertheless the panda movement had constituted the making places and spaces in physical, ecological, societal, political and economical venues at different organization levels (UNESCO, 2015)

The second example illustrates how bats can influence the identity and dynamics of a city. The largest bat colony of Mexican free-tailed bat (*Tadarida brasiliensis*) is located in Austin, Texas. In this city bats have enormous popularity. This is how in 1995, the bat was named the state's official flying animal and later on 2010 the city of Austin adopted the bat as its emblematic animal. The bat programs in the city and the state include education about bat behavior and their benefits in the ecosystem, the assistances in the agriculture area as insect controls and the increasing tourism to watch bats. Thus, the Texas Wildlife Department has increased the number of bat sighting sites in the whole state. Furthermore, these spaces such as the Congress Avenue Bridge have created a tourist movement related to bats that such economic benefits to the city of Austin. It is estimated that around 100.000 people visit that place in the summer to see the bats (Sood, 2012). The perceptions of bats on these spaces are highly influencing the positive relationships between humans and bats through bat watching, economic benefits and political good will.

Animal Geographies is also scoping the human-animal relationships from a power relational approach. Thus, Sarah Whatmore (2002) analyzed some cases about human-animal relations to see how people perceive animals in different places and times and how these relationships are influence by power. Whatmore describes how wildlife and wilderness are configured by society and the impact of these placements for certain animal species in terms of conservation. She explores the refiguring of wilderness through two examples, which illustrate the application of the power of ordering by a human societal system over animal species. The first example refers to the leopard (*leopardus*) in the Roman game¹³ context and the second example illustrates the broadnosed crocodile (*Caiman latirostris*) listed as an endangered species by the Convention on the International Trade in Endangered Species¹⁴ (CITES). In both cases, Whatmore discussed how sites, bodies and places build broader networks. Moreover, both examples illustrate how certain power organization can bring together wildlife in order to achieve a purpose. The leopard evidences a network, which, in order to entertain the public in the Roman Amphitheatre Arena, this species was captured, transported and trained. Instead, the broadnosed crocodile status depends of the managed

¹³ Roman games: Public spectacle played in the Roman Empire, people and animals were used to fight against each other. The use of animals in combats against humans is denominated *venationes*, which means hunting. During the inauguration of the large Coliseum in Roma it is estimated that about 9000 animals were killed in combat (Whatmore, 2002).

¹⁴ CITES: International voluntary agreement between the governments of 80 countries as a resolution taken by the International Union for Conservation of Nature (UICN) in 1963. The objective of this agreement is control and supervises market, production and exportation of wildlife without placing the wildlife species in risk. Nowadays features 180 countries (CITES, 2015).

network by the CITES board and their decision based on the species biological value as a resource by monitoring, listings and management. These wildlife networks represent a complex interaction of places, power, people, instruments and documents.

Moreover, animal geographies also focus in one to one relationships. Power (2008) explained in her studies about dogs and families how the recognition of a dog as part of a family shape families through close interaction, cohabitation and engagement with another, which drew families and dogs into affective relationships. However, this study also reveals how the game of power (dominance and submission) are reflected in hierarchical configurations within the family's structure.

Moreover, there are also researchers who emphasize the need to diversify the studies in the field of animal geographies suggesting that previous studies just focus on warm-blooded animals such as pets. Bear (2010; 2011) explores animals with very specific characteristics. These animals inhabit other spaces (water bodies) and they are having strange appearances in comparison with humans (fish and octopus). He calls them "alien" animals that do not share the same space as human neither do they have the same physical characteristics. Although bats are warm-blooded animals they can be seen as "alien" as well. Bats live in the night, their physical characteristics are very different from those of humans and they inhabit the airspace. Bear and Eden (2011) emphasizes that the image we have of and how we relate to animals have a strong impact on social practices.

Bats they are our important allies in the agriculture sector. Whether as a pollinators or pest controllers they are part of food production cycles. Bats pollinate more than five hundred species of plants. Several of those plants are important economic plants as it is mentioned before.

Nowadays, bats face many threats as the result of human activities. Actions and decision-making practices that exist to protect them differ depending of the region. In case of the European Union, the region has established a strong regulation basis for the protection of bats in 1991. Furthermore, this regulation is part of the Nature 2000 policy, which is the official guideline for nature and biodiversity policy in the European Union in the pursuit of sustainable development in the region. All these aspects converge to rebuild links between nature and culture (Whatmore, 2002).

3.2 Zoopolis

The word Zoopolis is composed from two Greek words – zoo (animal) and polis (city), thus creating an “animal city.” The idea of a city designed for animals is still largely confined to children books or science fiction movies perhaps, because in the contemporary urban theory animals are not taken into account. Hence, cities are created for humans by humans, and nature is set aside pushed way by the urban encroachment. Furthermore, the urban borderlines between humans (civilized) and animals (wild) have had a strong impact on the ecosystem equilibrium such as loss of biodiversity, land fragmentation and pollution. And as a consequence in most cases animals are ignored and made to live in restricted spaces in the “wild” which is understating their agency and subjectivities (Wolch, 1998).

Nowadays, large-scale urbanization is affecting animal behavior pattern as well as social discourses on urban nature conservation. On this account, Jennifer Wolch (1998) introduced “Zoopolis a transspecies urban theory” that seeks to reestablish the important role of animals, shaping the urban space through the integration of social theory and urban wildlife ecology.

According to Wolch (2002) animals have to be seen as “strange persons,” they are the “others” who have been excluded and forgotten from urban theories. Nevertheless, animals are not just organisms living in the urban ecosystem away from society. They also play an important role in the making of places and landscapes.

However, animals have managed to manifest themselves in the human space transgressing the borders. As a result of it, cities are replete with animals such as birds, insects, bats, mice, worms, foxes, etc. The spaces where humans and animals encounter each other every day are creating complex relationships and consequently animals are shaping human identities and places identities also. As an example, Wolch (2002) mentioned the case of the salmon in the city of Seattle. In response to a dramatic salmon decline population in the area, a project to improve their conditions was launched. As a result a significant number of citizens identified themselves as the protectors of the salmon and hence the ecosystem too. This project not only fostered an environmental identity but also settled an economic model based on the attitudes of the citizens towards the salmon.

Furthermore, Wolch (2002) proposes four goals to be addressed by studies in urban human-wildlife relationships, which I will mention below.

- *To understand urbanization from the perspective of its meaning for animal life.* This premise refers to the need to study the processes of urbanization and the way they affect behavior patterns and populations of urban animal species. There is also a need to study how the human-animal patterns of relationships change. Regarding bats, it would be important to determine how the populations of bats in cities change and also which attitudes of the population are the results of these changes.
- *To trace how and why attitudes and practices toward animals and patterns of urban human –animal interactions change over the time and space:* This item refers specifically to attitudes and practices toward animals and how they shape the urban identity through conflict analysis and urban actors networks.
- *To explore how urban animal ecology is produced by science, social discourse and political economic forces.* This goes straight to the point that the presence of animals in cities is due to the power discourse. In a conflict of power, productive enterprises decide who can or cannot live in the city.
- *To grasp how human-animal relations as an urban practice are shaped by managerial plans grassroots activism and the agency of the animals.* This point refers to administrative urban plans, fundamental activism and animal power, and how these factors are shaping up the city.

Urbanik (2013) extended Wolch's discourse on morals in the ethical/political geographies of the human-wildlife relationships. Urbanik concludes that it is important to explore four fundamental subjects. The first deals with the criticism of the concept of wildlife and biodiversity, the social construction of these terms. It has implications on political levels in the area of nature conservation.

Second, the moral landscape that refers to the compression of wildlife species and cultural processes. Particular places were deemed good or bad according to the meaning they have for the conservation of animal species. Third, conflicts between wildlife and human focused on negative effects of what the transgression of the edges due to humans and animals and their

political repercussions. And finally, the political obligations towards wildlife are referring to a new understanding of animal agency and therefore new political practices.

Nevertheless, conservationists claim the importance of biodiversity conservation in urban areas for several reasons. First, they do it for ecological reasons such as the preservation of local biodiversity, environmental restoration and improvement of living conditions in urban areas. Second, for socio-economic reasons such as reconnect people with nature, improvement of living conditions and environmental services (Dearborn and Kark, 2009). And on the other hand, social theorists call for the inclusion of animals into the urban development by increasing the animal agency and creating new models of urban development using ecological sciences but from an animal perspective (Wolch, 2002; Urbanik, 2013). However both cases highlight the urgency to create a common language between these two areas in order to improve the nature-culture relationships.

The legislation concerning bats comprises a whole system of regulations and standards. It ranges from regional levels such as the EU guidelines for nature conservation in “Natura 2000” to local agendas such as the case of the municipality of Groningen and the bat box program. All of this engages us in a discourse on political goodwill and ethical considerations in the area of nature conservation. As Urbanik (2013) said “*Much of the politics around geographies of human-wildlife relations have to do with who gets to use, protect, or otherwise control wildlife for preservation, conservation or use as a resource*” (p. 167).

3.3 The Biophilia hypothesis and Kellert's values for nature

Biophilia, if it exists, and I believe it exist, is the innately emotional affiliation of human beings to other living organism. O. Wilson, The Biophilia Hypothesis, 1993. p. 31

Different scholars have contributed to the issue of how humans value nature (Kellert, 1993; Woods, 2000; Wilson, 1993). One of the most influential academics in this area is the ecologist O. E. Wilson, who in 1984 introduced his provocative hypothesis “Biophilia”. This topic addresses the theory about how humans relate with nature. “The Biophilia Hypothesis” suggests that human tendency to relate with nature might be the result of biological pressures in response of human needs during the evolutionary process. Moreover, the biophilia hypothesis explores how human dependence of nature goes beyond material and physical needs; biophilia also explores the aesthetic, intellectual, cognitive and spiritual needs. Thus, the biophilia hypothesis explores the human emotional responses toward nature and how these emotions lead to creation of symbols, which are inherited from one individual to another, and, from individuals to collectives. Finally this complex process is expressed into the culture what Wilson (1993) named as a biocultural evolution. In order to illustrate the biocultural evolution Wilson (1993) addresses a study about human-snakes relationships performed by Balaji Mundkur. In this study Wilson drew several elements to highlight the role of nature in human and mental development such as the snake venom, which is highly lethal in humans and primates worldwide. Furthermore, old world monkeys and apes shown a combination of aversion and fascination for snakes. Likewise humans display aversion toward snakes (fears or phobias) but also fascination, which is reflected in stories, myths, and religious symbols. Moreover, the occurrence of snake’s figures, images, symbols in dreams can be found in a majority of cultures. Thus, according to Wilson (1993) this example illustrates how the constant interaction between humans and snakes has derived in an ongoing evolution was culture and biology is interweaved.

Likewise, Stephen Kellert, a social ecologist who is a dedicated researcher of human perceptions of nature and especially animals, framed his work in the Biophilia hypothesis. Thus, Wilson and Kellert (1993) formed a broader perspective based on the Biophilia hypothesis and the values human display towards nature. As a result, Kellert (1993) comes up with “the nine basic values of nature: utilitarian, naturalistic, ecologicistic, scientific, aesthetic,

symbolic, humanistic, moralistic, dominionistic and negativistic”. These values illustrate the hypothesis of the human tendency to value nature according to adaptive evolutionary benefits (see Table 2).

Table 2: Kellert's values for nature explore the types of relationships between humans and nature taking into account evolutionary pressures and social learning.

(Kellert and Wilson, 1993)	Definition	Adaptive Benefit
Aesthetic	Physical appeal, attractiveness beauty.	Inspiration, harmony and security
Dominionistic	Mastery and physical control, dominance of nature	Physical expertise, self confidence, mastery skills
Humanistic	Emotional attachment to aspects of nature, strong emotional affection, “love for nature”	Bonding, cooperation, companionship
Moralistic	Spiritual reverence and ethical concern for the right and grown treatment of nature	Order, meaning, kinship
Naturalistic	Direct experience and exploration curiosity and satisfaction derived from direct contact with nature. Sense of fascination, wonder	Curiosity, discovery
Negativistic	Fear and aversion, indifference, dislike	Security, protection, awe
Scientific-Ecologicistic	Both perspectives reflect the motivational urge for precise study and systematic inquiry of the natural world and the related belief that nature can be understood through empirical study.	Knowledge, understanding, critical thinking skills
Symbolic	Nature in language and expressive thought	Communication mental develop
Utilitarian	Practical value of nature and material exploitation	Physical sustenance and security

Source: Kellert 1993, The Human values for Nature

Additionally, Kellert’ studies (Kellert, 1980; Kellert, 1993; Kellert, 1981) lead us to understand how human beings tend to categorize and understand animals. And also how human behavior influences the conservation of particular animal species. For example, in the analysis made by Keller (1993) based on his research about values and attitudes towards invertebrates, he suggested five main motives for humans to dislike invertebrates. (i) ecological characteristics of this animal group (adaptation, survival, and resistance), (ii) high rates of offspring, (iii) bizarre body shapes, (iv) absence of feelings and (v) not subject to human control. Kellert’s Human Values for Nature have been used in studies about attitudes of humans toward nature (plants and animals). In most studies these values are well analyzed through extensive surveys, where the use of scales for rating values have a qualitative character (Prokop & Tunnicliffe, 2008). In addition, human characteristics such as age,

education, gender, and cultural context are also factors that influence the way that humans value animals.

Thereby, Jacobs (2009) studies on human emotions towards wildlife suggest that human attitudes towards wildlife are a combination of three main factors which are necessary to take into account for the study of relationships between humans emotions and wildlife: biological responses, cultural constructions and individual experiences.

Additionally, over the last decades several studies have explored the factors that influence humans to like or dislike the animals, finding some patterns of physical characteristics those humans seek in them (Kellert, 1980; Woods, 2000; Barney et al, 2005). One of these characteristics is aesthetics, which is the way humans interpret beauty in animals. For example Ferldhamer et al. (2002) mentioned that large mammal carnivores are the favorite symbols used in marketing strategies to evoke empathy in customers. In the same way some studies on the degree of animal attractiveness reveal that this factor has a direct effect on decision-making on conservation on governmental and public levels (Knegtering et al., 2002). Nevertheless, there is a common denominator in the way that humans value animals. Humans have the tendency to value animals according to anthropomorphic scales. Hence, animals that are considered human-oriented (e.g. dogs, big cats, dolphins) are more appreciated than those that are considered non-human (e.g. snake, spider, insects, toad) (Woods, 2000). Similarly, animals that are considered non-charismatic, bats included, show non-human characteristics (Woods, 2002; Knight, 2008; Prokop, 2009).

As I mentioned before, humans has been seeing bats as non-charismatic animals because bats have characteristics, which are seen as harmful. Bats they are nocturnal animals difficult to see at night. Their physical aspects look different from the human anatomy. Additionally, bats in most cases are pictured by the media as evil creatures associated with vampires and monsters, which trigger various imagines, experiences, phrases and emotions in humans. For these reasons bats are understood by humans as non-charismatic and dangerous animals (Graham et al., 1998; Prokop, 2009). However, Prokop et al. (2009) mentioned in their study that despite the biological tendency to feel negatively towards bats, education and public awareness might result in more positive attitudes. They also mention that as knowledge about bats increases, more positive attitudes are observed.

The lack of studies that focus on a deep understanding about our values towards animals creates the need to explore the specific interactions between animal species and people. Mallory (2015) mentions that one of the biggest problems associated with nature and animals is the fact of "speciesism". This constant separation of man and nature excludes animals and other organisms in the human moral circle. Therefore, Biophilia as a virtue could be considered as powerful tool for nature conservation processes.

Therefore, how humans place animals in a social context matters because humans have the capacity to choose priorities in conservation according to animal values. The topic of animal geographies associated with urban wild animals has enormous significance because it calls for the discussion of how humans can co-exist with animals in one of the most complex social and economic landscapes.

However, the attitudes and beliefs play an important role in the way that people can change their categorization of animals. Although the public generally still regards bats as non-charismatic animals, we have been increasingly exposed to bats during the last 25 years. International organizations such as Bat Conservation International and Bat Lube Conservancy are the main promoters of educational campaigns about bats; they carry them out by improving the reputation of bats, attracting people to learn more about this species. Popular media is presenting an alternative view on bats through documentaries such as "The Batman of Mexico"¹⁵ or animation movies like "Hotel Transylvania."¹⁶

Another similar case have been studied in relation to animal groups and people engagement such as for example among the bird-watchers. Most of the studies about the human perceptions of animals, including bats, are based on surveys, which show general trends in how people understand bats (Knight, 2008; Prokop, 2009). However, there are a few studies that explore the relationships between people and bats. Some of them have an ethologic approach, as for example the study of the folk taxonomy i.e. the animal classification for its

¹⁵ Mexico's Real Batman (2014) is a documentary about a Mexican bat researcher who is one of the most influents bat biologist in Latin America and who was the first promoter in Mexico on bat conservation issues. This case illustrates how the reuse of the Batman term in a case of bat conservation.

<https://www.youtube.com/watch?v=3-TaEyO09ss>

¹⁶ Hotel Transylvania (2013) is a movie from Columbia pictures where the main characters Dracula and his daughter are depicted as the victims of humanity persecution. This movie includes the shift between human bodies and bat figures, which the bat figures are, represent a friendly way.

<https://www.youtube.com/watch?v=FYgzizpCTKU>

symbolism. Even though Naga people knew that bats have fur and do not lay eggs, they still classified them as nocturnal birds (Forth, 2009). Another study involves the analysis of cultural and practical significance among the people of Guam Island where bats are used as food. For this reason even though bats are on the list of the endangered species in the US, the indices of illegal hunting on bats are high on the island, which causes the downsize of populations of bats in this area (Sheeline, 1990)

Bats as well as other animals are facing conservation issues, which are fundamentally caused by humans. Long-term solutions for bat conservation require a deeper understanding of perceptions, attitudes and beliefs about bats. Therefore the exploration of those population groups, which have positive attitudes toward bats, can generate a better understanding of a human-bat relationship.

3.4 Becoming-animal

“Becoming-animal” is a concept that has been addressed by scholars in geography such as Sarah Whatmore in her work about “Hybrid geographies: nature, cultures, spaces” (2002) and Donna Haraway “When species meet” (2008). In both cases the scholars understand the human-animal relationships in a way of a relational co-habitation and the implications of these practices in the making of spaces and places in the human world. Becoming-animal is a concept that was introduced by Deleuze and Guattari (1987) in their book “A Thousand Plateaus”, they introduce some ideas about what a concept of becoming-animal means. In a section titled “Becoming-intense, Becoming-animal, Becoming-imperceptible” Deleuze and Guattari (1987) explore the fact of “becoming”. They emphasize that becoming-animal is not a simple act of imitating an animal in shape or behavior. Becoming-animal in first place is an act of desire, which goes beyond the limits of species through encounters and processes of learning; becoming-animal is a matter of continuous relational contact that begins at the slightest level (the molecular¹⁷ level).

“Do not imitate a dog, but make your organism enter into composition with something else in such a way that the particles emitted from the aggregate thus composed will be canine as a function of the relation of movement and rest, or of molecular proximity, into which they enter” Deleuze and Guattari, 1987 p. 274.

In order to illustrate the "molecular proximity" sense they mention the example of a barking dog and his human companion's response to it. The “molecular” connection is exemplified when both human and dog at the moment of barking emit particles that are interspersed between them in the manner of a virus. At this moment the intertwining of the human and dog molecules occur.

Nevertheless, becoming-animal is more than a molecular proximity; becoming animal is framed also in the skills of encountering animals in locations, affects and the role of emotions and ethics (Lorimer, 2008). Moreover, scholars such as Astrid Neimanis (2007), Donna Haraway (2008), Jamie Lorimer (2010), and Christopher Bear (2010; 2011) have discussed the concept of becoming-animal in recent studies. Their studies agree on the importance of exploring these encounters between humans and animals and how these practices between species are overlapping and generating emotional bonds between human and animals. Becoming-animal

¹⁷ Molecular: Molecules are the smaller particles of pure organic substances that still retain their composition and chemical properties.

is a collection of experiences in which humans and non-human entities choose to establish a relationship between them resulting in the transgression of species borders (Haraway, 2008).

Human-animal borders have been defined since the time humans domesticated animals; this activity allowed the flourishing of human societies through the use and control of animals. Likewise, borders between humans and animals were illustrated in the ancient Greece, where the superiority of a human being was established by their ability to speak. Humans were regarded as the only species with a reason and a soul, whereas animals have none of these qualities. Therefore, the boundary between human species and animal species was drawn by social constructions and as a result the division of culture from nature, and thereby a human from animals (DeMello, 2012).

Nowadays growing studies in animal behavior, in areas such as ethology and ecology, have found evidence that animals also have systems of organization, communication and learning. The groundbreaking primates ethological studies by Whiten & Goodall (1999) and Dian Fossey with “Gorillas in the mist” 1983 about primates’ behavior (chimpanzees and gorillas) contributed to a better understanding of how animal societies are built. Moreover, Whiten and Goodall (1993) highlight in their paper “Culture in Chimpanzees” how this primate group shows several behavioral repertoires (i.e. tool usage, grooming, courtship) that were identified as cultural development and which until that time were only found in human cultural groups. Consequently, these studies shattered the foundation of the divide between humans and animals and even questioning the non-human agency and the border between species and how and where humans relate to them.

Nevertheless, human and non-human animal borders have been transgressing continually in the case of human-pets relationships where both animals and humans have developed high levels of empathy with their companions, establishing close relationships that involve special bonding and interspecies communications (DeMello, 2012). Thus, becoming-animal is also about to established emotional bonds through encounters and embodying knowledge between human and non-human animals. Lorimer (2010) frame this topic on what he calls “lively biographies” on the case of elephants and humans companionship where both species are sharing spaces, places and practices, and also how they develop mutual relationships through close encounters. Lorimer (2010) highlights that engaging with animals as companion species has implication on conservation and animal welfare. Moreover, Neimanis (2007) in her

analysis of becoming-grizzly discusses in depth the perspective of Deleuze and Guatari. She agrees that the molecular contact is a fact; molecular bodies (humans and animals) are constantly in change in all sorts of forms such as visceral, affective, perceptual, motor. Molecularity allows us to be different and based in that precedents of difference which make entities to transformed by encounters providing a connection between bodies. Moreover, Neimanis (2007) also discusses the “affective symbiosis” between animals and humans and its consequences for both species. “Becoming-grizzly”, refers to the documentary film “Grizzly Man”. It is a story of Timothy Treadwell, activist and bear lover who decided to move to Alaska and live in a Grizzly territory in order to raise awareness to protect grizzlies. Neimanis highlights in this paper that the process of becoming-grizzly had dramatic implications. In this case the transgression between the species boundaries after 13 summers in Alaska resulted in a tragic outcome causing the dead of both the human and the bear (Neimanis, 2007).

Moreover, becoming-animal also explores the borders between human and animals and how they overlap in time, spaces and places. Bonta (2010), illustrates how timing is a fundamental part of becoming-bird, early morning activities are necessities to achieve bird watching. Birders must attune their schedule activities during the day according to bird behavior. In other example, Bear and Eden (2011) concludes that becoming-fish is a matter of engagement with the fish rhythmicity and a group fish pattern behavior, through the behavior of a single individual or through group behavior patterns. Also, Bear (2010) explains the matter of place in becoming-octopus at the Kingston-upon-Hull aquarium in UK. Octopus unlike terrestrial animals inhabit in deep-water bodies “non-airy spaces” which are difficult to reach by humans. However places like aquariums allow humans to intertwine with the octopus. As a result this place has given rise to a series of interaction between the octopus, visitors and the staff that works at the octopus exhibition. Regarding to space, Wahtmore (2002) use the example of the African elephant (*Loxodonta africana*) to illustrates how becoming-elephant is associate to space. Becoming-elephant is located in different spaces as for example living spaces; zoo’s elephants are confined to concrete small enclosures where becoming-elephant is based in routines and closer encounter whereas, wild elephants mobilized in large areas on the Sabana and becoming-elephant is achieved trough a network between the elephant, elephant researchers, organizations (Earthwatch) volunteers, devices and technologies.

Becoming-animal is in fact a process, where both parts play a role and where constant learning is a key to establishing an affective relationship. From Deleuze and Guattari (1987) I would like to incorporate into my research the exploration of two main points. First is “becoming is a process of desire” (Deleuze and Guattari 1987 p. 272). This premise will be integrated in the first analysis of this thesis related with the engagement that people have to bats. The second point is “becoming-animal does not consist of playing an animal or imitating an animal” (Deleuze and Guattari 1987 p. 274). As is explained before becoming animal is a complex set of relationships between humans and bats. This research is looking to understand the embodied knowledge and the human practices that humans perform to create proximity to bats. So in that framework, this thesis is looking for a deeper understanding in the process of becoming-bat.

From Haraway (2008) the insight on becoming-animal is embedded in the encounters between human and animals and in the way humans are capable to experience the lives of animals through technology. Haraway in her book “When Species Meet”(2008) exemplifies the human-technology-animal relationship using a National Geographic program called “Critttercam”. This project has as an objective to explore the lives of different animal species using camera devices attached to their animal bodies. For the first time humans will experience the wildlife from a perspective of an animal. In order to blur boundaries between thus and the animals a connection on the technological level needs to be made. This would mean becoming-animal.

3.5 Conceptual model

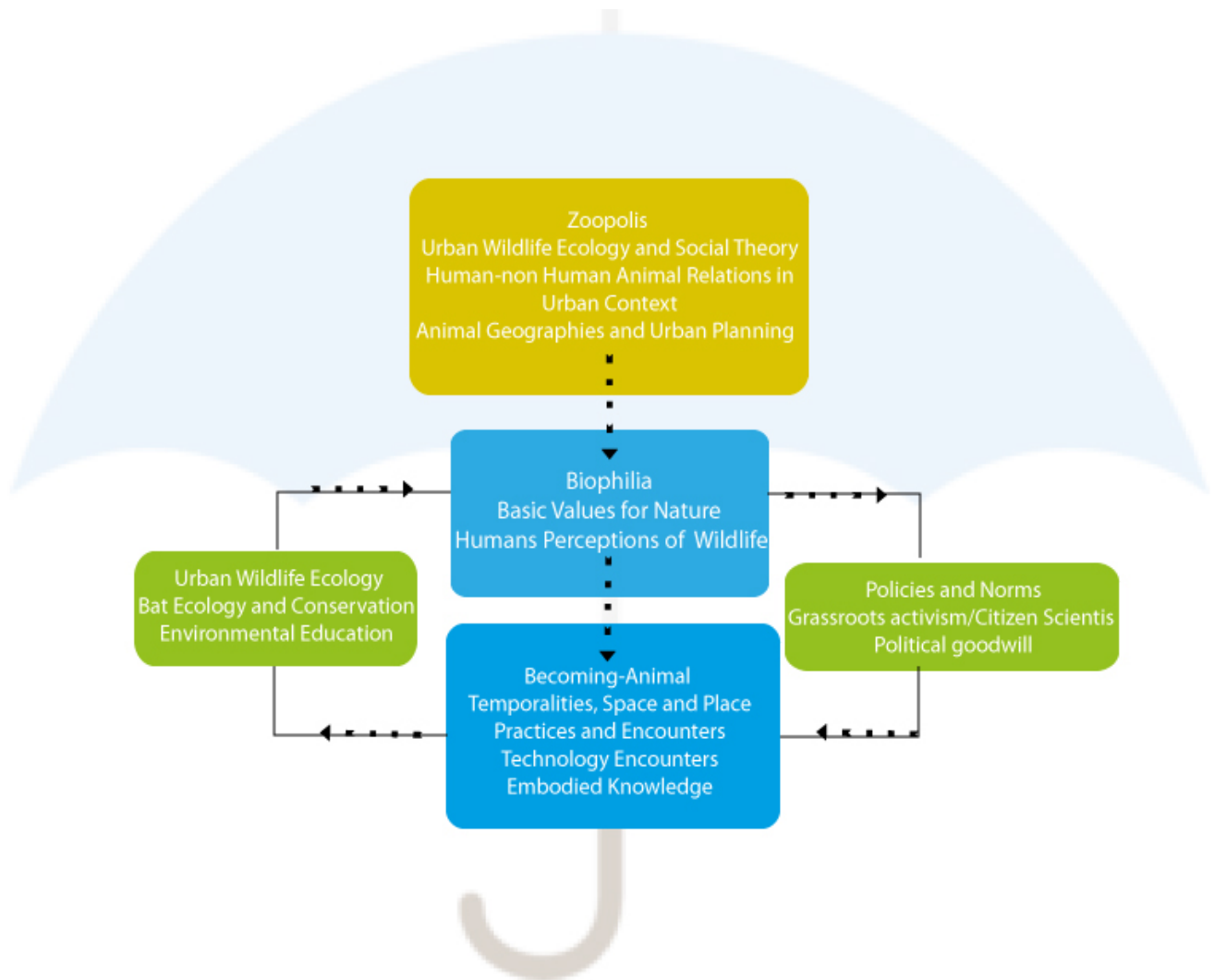


Figure 2: Conceptual model based on the main theories: Zoopolis as the umbrella where Biophilia hypothesis and Becoming-animal are frame. Regarding to conservation and policies must be seen as the results of the relations between the main theories.

This conceptual model illustrates a knowledge-gaining process. The literature review shows that the majority of the studies between humans and people are based on quantitative data suggesting an analysis from a positivist view. This method identifies the major trends, but it is failing to gain a thorough understanding of human perceptions, practices, and experiences with animals including bats. For this reason the conceptual framework of this thesis suggests a deeper analysis of human-bat relationships by “bat-lovers” as a positive personal and learning experience through a narrative analysis.

4. Methodology

A deeper understanding in human-animal studies can be achieved by the application of qualitative methods. The purpose of this exploratory research is to gain an insight into the individuality of “bat-lovers,” and in particular into their personal stories. For this reason I applied a qualitative method approach based on a narrative analysis of semi-structured in-depth interviews focusing on individual stories about human-bat practices and relationships.

This chapter contains an explanation of the research process and consists of two parts. The first one presents the aspects of recruiting and sampling the participants and selecting the methods of analysis. The second section pays attention to ethical considerations, namely the informed consent, confidentiality and anonymity of the interviewees, as well as their positionality.

4.1 Qualitative Approach

In this paper I applied a qualitative research approach in order to acquire a deeper understanding of the experiences and practices of bat –lovers. The empirical data was obtained through in-depth semi-structured interviews and narrative and content analysis.

Qualitative research methods focus on the question “*why*,” exploring human subjectivities i.e. the emotional and affective dimensions of the human being embodied into the social complexities (O’Leary, 2010). These methods require developing an alternative way to produce knowledge. For this reason, qualitative techniques are interpretative and meanings are centered in oral methods. Smaller amounts of data allow for a deeper knowledge, which is important for this research, in comparison to vast amounts of data, which result in a knowledge that is more superficial (Aitken and Valentine, 2011; O’Leary, 2010).

In the same way, human-animal studies look for a holistic meaning (Wolch & Emel, 1998) and that is why it is important to incorporate a deep understanding of individual experiences. In this research there are human and non-human characters, which are interacting in different venues and playing specific roles. These human-animal relationships are filled with memories emotions and experiences placed in particular realities (Flowerdew & Martin, 1997)

4.2 Semi-structured interviews

Interviews are “the art of asking and the art of listening”(O’Leary, 2010, p. 194). I conducted face-to-face semi-structured interviews with the participants. Semi-structured interviews were chosen because they are a suitable way of exploring the perceptions and opinions on complex

or sensitive subjects (Barriball & White, 1994). This characteristic specifically corresponds with my goal to gain an insight into the experiences, practices and perceptions that the participants developed about bats.

Apart from this, face-to-face interviews also have a number of recognized advantages – they result in higher response rates while allowing longer questionnaires and giving the researcher the flexibility and the control over the process. During these types of interviews, participants feel the freedom to express and generally enjoy a more relaxed atmosphere (Neuman, 2011; O’Lairry, 2010). Face-to-face interview also have disadvantages such as cost, quality of the data by interviewer, sample size and time (transcription of interviews).

After the interviewees agreed to take part in the research, the conversations were scheduled according to their time and location preferences (Appendix 1). One of the participants was underage and thus attended the interview with his parents who also acted as interpreters. The participants told me what they knew about bats, how they perceived them and which values they attached to them.

Questions were structured to elicit narratives from the bat-lovers, through which the participants represent themselves. This information allowed getting a deeper understanding of the way the participants perceive and value bats.

The interview was conducted with a question guide (Appendix 4) the questions were designed to facilitate a fluent conversation. First, each participant was asked about his/her demographic data such as age, gender, occupation and education. Next, the participants answered the open questions grouped in three sections:

1. Experiences, engagement with and perceptions of bats.
2. Knowledge about bats in general, e.g., their habitats and places where they can be seen in Groningen.
3. The evaluation of bats and the importance of conserving them

Importantly, as part of the first section I asked the participants whether they owned memorable objects connected with bats, e.g. photos or figures.

The last two questions concerned personal stories and any extra information that participants wished to share.

4.3 Recruitment and Sampling

Qualitative methods in social science research involve the participation of the general public. This is how we understand particular social phenomena better. This part describes the

recruitment and the sampling process of this research. First of all, I will broadly explain the criteria, which were applied to select the participants, and then I will describe the process of a “snowball”, and finally present a table that includes a brief description of the participants (see Fig. 3).

The status of bat-lovers was not connected to any particular organization, neither was it related to one particular demographic group. Instead, I applied 3 criteria for selecting the participants:

- The person lives in Groningen or its surroundings
- The person has been engaged in the activities related to bats in Groningen

The sample was based on cases study approach, which illustrates specific social phenomena and provide a deeper understanding of the topic. To get a primary source of information, I met two key informants who became the basic connections to expand my sample. First, I met with the secretary-coordinator of the Bat Group of Groningen and later with the person in charge of the environmental issues at the municipality of Groningen. These interviews provided an overview of the different actors that are interacting with bats in different venues. The secretary-coordinator of the Bat Group provided me with three names of possible participants. Likewise, the municipality representative provided me with another five. This is how the snowball technique worked – one respondent led to another and so on until I had an access to a whole network of people involved with bats.

Once I had the complete list of the participants I contacted them via e-mail and social networks. In my initial message I indicated some of my basic personal information, explained my research project and asked the person to take part in it. I followed this with my contact information (Fig. 3). Six participants responded positively.

Later on after the participants react to the first contact, they were given more information about what was required from them, e.g. how much time would they need to contribute and other details of the project itself (Appendix 1, B). During this stage the responders suggested three more candidates, and I repeated the same process to contact them. Two of them agreed. Thus, in total eight participants were interviewed during this study.

A combination of the snowball technique and the target sampling allowed obtaining a diverse group of participants. Diversity is necessary when we are attempting to understand the variety of experiences that people have with bats.

Out of eight participants three were retirees, one was the expert from the municipality, and another one owned an environmental consult company. Two of them were students, and yet

another one was a salesperson. Gender-wise, there were three women and five men. Four participants came from Groningen, two from Assen, one from Adorp and one from Leeuwarden (Appendix 3). However, all of them were involved with the bats in Groningen.

Snowball and Targeting Sampling

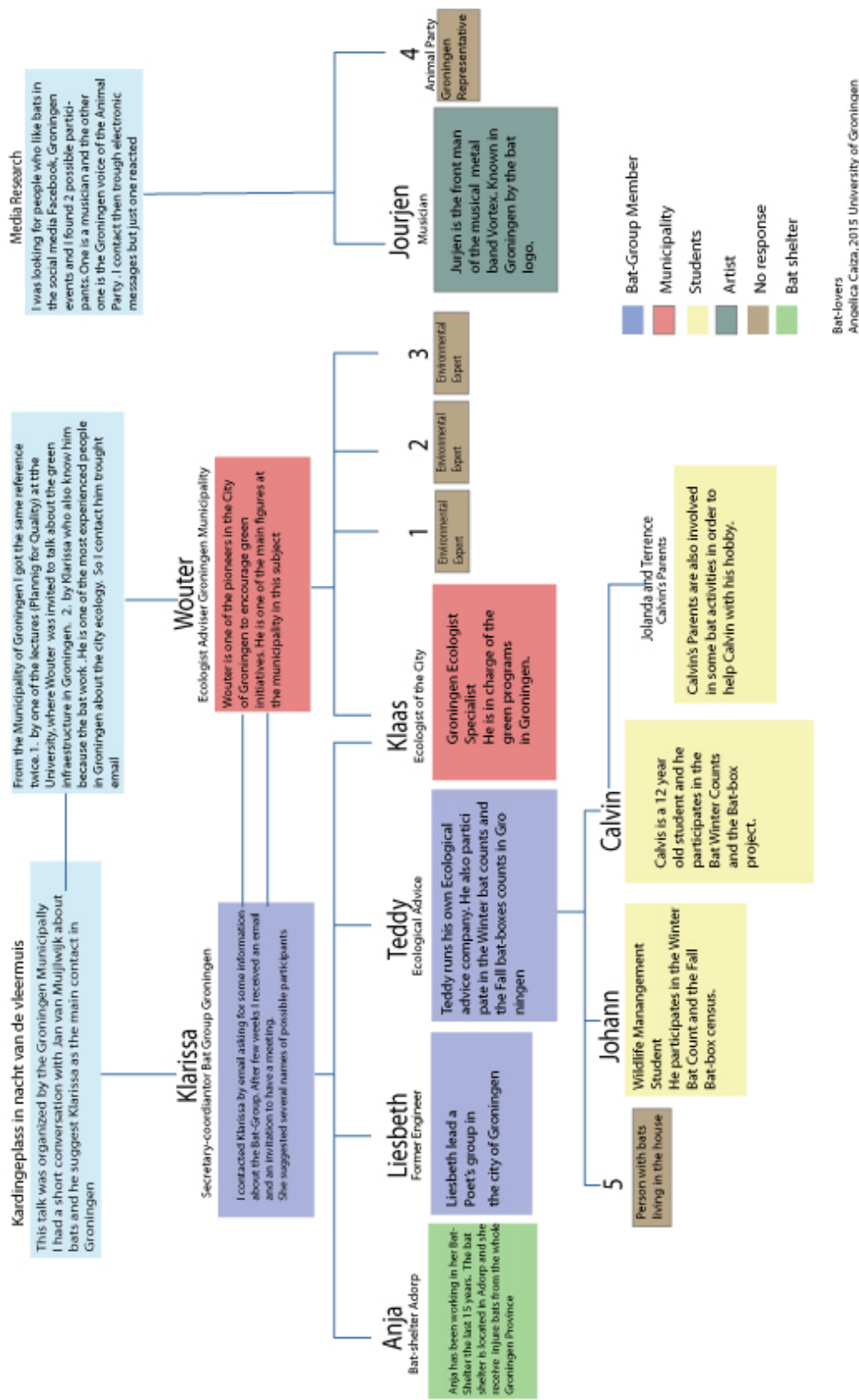


Figure 3: Snowball and Targeting Sampling

4.4 Ethical Considerations

Social research explores personal knowledge, perceptions and practices. It is critical to integrate this research into a solid ethical framework to preserve the mental and physical integrity of the participants (O’Leary, 2010). In addition, studies on human practices and behavior require a high degree of responsibility and ethics on part of the researcher. According to O’Leary ethics refer to the “principles of rules and behavior based on moral obligations” (p.40). This thesis follows the formal ethical considerations suggested for social studies.

4.4.1 Formal Procedural Ethics

This research took into the account the principal ethic guidelines of “De Nederlandse Gedragscode Wetenschapsbeoefening” (“Dutch code of conduct for science practitioners”)(2004) published by the Association of universities in the Netherlands, which includes the code of ethics that offers guidelines on social science research for the Dutch students. This document includes a legal and ethical overview of what is required from the researchers when conducting studies in “human subjects”. The principal aim of these guidelines includes the physical and mental welfare of the participants and the transfer of knowledge to the academic community.

In the proposal for this research I described the research objective and methods and mentioned the importance of ethics for this study. Here are the main ethical points considered during this research.

4.4.2 Informed Consent

It is necessary to obtain informed consent from the participants before any data is collected.

Informed consent consists of two elements. It includes the communication about the project and ensuring that the participant understands the research, combined with the participant’s good will. During my first contact with the participants I provided them with information about the research and explicitly asked for their agreement to it (Appendix 1). Thus, before any interview was scheduled, every participant expressed his/her consent to it. Later all of them signed the consent form, which contained details about the researcher responsibilities and the implications of being a research participant. Namely, it covered the aspects of information, confidentiality and anonymity (Appendix 2). Obtaining consent from the underage participants involved a parental permission as well as his approval. All participants took part in the research voluntarily and could leave the project if and when they wished.

4.4.3 Confidentiality and Anonymity

Confidentiality is a researcher's obligation (O'Leary 2010, p. 41). Together with anonymity it protects the identity and the information of the participants. At the same time, qualitative research deals with the study of personal experiences and practices. Managing this information successfully is only possible through good negotiation of the terms on which the information will be processed for further analysis. It was challenging to keep full anonymity in this research, because all participants knew each other. In addition, their positions and activities gave away their identity easily. Every participant could choose whether to disclose his or her real name or not. After consultations, all of them preferred to do go by their real names. Therefore their real name will be used for the results in this thesis, and possible presentations or publications implying that their identities be known publicly disclosed by their own authorization.

4.4.4 Positionality

“Positionality” is an important component in the process of qualitative data collection because it involves a physical and emotional involvement from the researcher. Therefore positionality reflects how people view the world from different embodied locations (Aitken & Valentine, 2006).

Furthermore, positionality and the situatedness of knowledge shape our research and have a direct influence on the way participants and researchers build relationships during the research process (Aitken and Valentine, 2006). Alongside the positionality issue, feminist scholars suggest that it is important for the researchers to practice the concept of “reflexibility”.

Aitken and Valentine (2006, p. 289) mentioned that reflexivity means the self-consciousness of the researcher's auto-analysis. This means a close examination of the influence of power within the research relationships. Participants can read the researcher as an outsider or as a part of the group, as a stranger or as an acquaintance. On the other hand, a researcher can understand the knowledge of participants under the influence of personal intellectual history or life experiences. For this reason the way we relate to and interpret the participants' information is matters because it is embedded in the social research.

Reflecting upon my own positionality in this human-animal relation research, I can say that as a researcher my status during the whole fieldwork (face-to-face interviews) enriched my prior knowledge about bat biology and social implications of human-bat relationships by the

participant's knowledge. Understanding how bonds are developed between people and bats, outside of the strict scientific context made me realize how deep and intense human-animal relationships can be.

The participants' knowledge about bats is not limited to what is acquired through scientific books or nature manuals. Instead, there seems to exist a deeper aim to build a relation between bats and people. Being part of this research made me experience this. I was part of the group who shared my passion for bats. Below is a critical reflection on how this affected my positionality, the pros and cons I had as a researcher and a participant at the same time.

During the research process I considered some issues. First, being a biologist and having worked with bats in my country of origin gives me an advantage. The ability to understand the ecological concepts and the bat biology (bat frequencies, bat behavior) helps me understand how participants relate to bats from an urban wildlife perspective. Second, the knowledge gained in the Research Master program has allowed me to get more involved in areas, which include social theory and qualitative data analysis i.e. understanding people and develop relationships with my participants.

Therefore, my original "positivist positionality" as a biologist based on a quantitative research where animals are just a source of data has been influenced by Postmodern and Feminist theories. This phenomenon denies animals their voice. This thesis aims to take a mediatory position.

As a biologist I still believe that studies that provide information about ecology and natural history of animals are fundamental to extend our knowledge about the animal lives. However, the interpretation and use of this information needs to be conducted from a different perspective that would allow a better understanding of both society and nature

As a researcher I transformed from an "outsider" into an "insider." I spent 33 years of my life in Ecuador where I was part of a Latin Andean society. I was then immersed in the Dutch society being an international student, a moderately Western-oriented Latino woman. Furthermore, not speaking Dutch and belonging to a lower economic position are part of my background as a citizen of Groningen.

How did the transition from an "outsider" to an "insider" happened? From the moment I decided to pursue this research topic I started looking for connections. Being a university

student gave me the possibility to have access easily to participants perhaps because belonging to an academic organization creates confidence with the participants at the moment of the interactions.

During the whole research process I never felt separated from the participants because of my cultural origin. Instead, participants were very friendly, curious and open to talk and in most cases they invited me to their homes and sometimes even introduced me to their families.

I believe that sharing the same interest for bats allowed me to establish a harmonious and friendly contact between the investigator and participants. There is no doubt this fact influenced how positively the participants reacted to being part of this research.

More than just an investigation of a subject, this research was a process of sharing information and learning, where participants felt comfortable and showed a lot of willingness to work. I did not feel as an isolated researcher, I was part of the process and in several cases participants shared intimate information in connection with the topic.

After all of this process I can point that positionality is a complex status, it is not static and as a researcher is important to realize how to manage this during the research process. The way I was looking for information and how I communicated with the participants was an important factor in this research.

4.5 Data Analysis

4.5.1 Narrative analysis

Narrative analysis is used “to interpret the stories of individuals” (O’Leary, 2010), these individual narratives are the material that can be examined to understand how participants build their identities and place themselves in the events around them. Narratives are how people organize their everyday life (practices and subjective understanding). This method analyzes the sequences of events, which can have multiple meanings and is a logical form of explanation, which is merged with theory description about a particular event (Neuman, 2011). This technique aims at identifying patterns across multiple stories with different actors. Bat-lovers share a common aim (protecting the bats), but they work towards it using different methods and in different contexts. Their experiences are reflected in the interview transcripts. Narrative can be understood as a type of qualitative data, a form of research and data collection, a form to discuss and present data, a data analysis technique or a type of theoretical explanation (Neuman, 2011). Besides these several applications of narrative, Neuman (2011 p, 474) highlights the patterns in the use of this method, he mentioned six points that are present in narrative analysis: (i) Storytelling format, (ii) sense of movement or process, (iii) interrelations or connection within the context, (iv) individual or collective actions or choices (v) coherence throughout the story line and (vi) timeline sequence. Furthermore, Neuman (2011 p. 474) described the narratives as “a quality of lived experience and a form by which people construct their identities and located themselves in what is happening around at the micro and macro levels”.

Narrative analysis also focuses on the time line of the story. The order and sequence of the events are basic fundamentals in this type of an analysis. This mode of presentation blends description and empathetic understanding between the participant and the researcher. Moreover, this method seeks to reduce the gap between the participants and the researchers (Neuman, 2011).

However, it can also present some disadvantages, for example when events mentioned in the interview do not have any significance for the research or delay the process. Consequently, the narrative analysis explores how people structure events as a story, which has a beginning and an end. A narrative analysis also allows to successfully obtaining information about how people, places and events are connected. Furthermore this approach allowed understanding how people make sense of things, and also helped to understand the roles of the actors

presented in each story and what are the reasons behind the events in those. (Flowerdew & Martin, 2005).

Moreover, during the narrative analysis a researcher should consider the following points:

- Data collection and interpretation is often iterative
- Metaphors are important
- Such studies involve personal stories
- The sample is relatively small

The interview transcripts were first analyzed with the Atlas.ti (version 7.5), a computer tool for text analysis, turning it into a single data unit. Once the data was placed in the computer program, the codes were based on 2 parameters. First, the codes were based on the text itself (Code by data-defined) and then – on the text from the researcher (Code by Pre-defined data). The following table indicates the codes used.

Table 3: Codes drawn from the theory used to analyze the narratives of the participants.

Theories /concepts	Code	Description
Biophilia and the basic values for nature Wilson and Keller (1993)	Aesthetic	Physical appeal, attractiveness beauty.
	Dominioistic	Mastery and physical control
	Ecologistic-Scientific	Emotional attachment to aspects of nature, strong emotional affection
	Humanistic	Spiritual reverence and ethical concern for the right and grown treatment of nature
	Moralistic	Direct experience and exploration curiosity
	Naturalistic	Fear and aversion, indifference, dislike
	Negativistic	Systematic and empirical study
	Symbolic	Nature in language and expressive thought
Utilitarian Becoming-animal/bat Deleuze and Guattari (1997) Haraway (2008)	Utilitarian	Practical value of nature and material exploitation
	Temporality	Day and night: bat activities schedule
		Seasons: Season activities
	Space	Landscape: Bats are part of the urban landscape (flying in the air, sleeping in buildings)
		Environment: Bat ecology information (bat nurseries, bat's roots, bat foraging areas)
	Place	Air space
		Specific Locations: Bunkers, houses, churches, parks in the city
	Practices	Activities: bat encounter/ bat-watching/bat-counting/ bat- detector
Technologies: bat detector/ other devices		

5. Results

The purpose of this chapter is to (a) explore in depth the motivations and practices of people in relation to bats. Understanding the human-animal relationships, in this case with bats, implied several steps. In order to achieve an understanding of human-bat relationships I used two main theories and concepts. Three parts will compose this section. The first part briefly describes the demographics of the people who participated in the interviews. The second part is framed in “The Biophilia hypothesis” and the “Basic Values of Nature” of Wilson and Kellert (1993). In this section we explore the motives of the bat-lovers to engage with bats. The third part is dedicated to the exploration of the process of becoming-animal inspired by Deleuze and Guattari (1987) and Donna Haraway (2008). This section is exploring the practices that the bat-lovers performed to synchronize their rhythms of life with that of the bats. There is also an analysis of how these practices interconnected temporality, space and rhythms of life of the participants and the bats. Moreover, becoming-bat finds its place in different areas, e.g., economic, cultural, ethical, ecological and political, because each bat-lover in their becoming-bat are influenced by different societal sectors. This has been explained in the results and framed into the concept of Zoopolis (Wolch, 2002). The sections also explore the way participants view bats in urban areas, the social relations between people and bats. In addition, this part analyses how this information is incorporated into social movements and into the bat conservation practices in the city of Groningen.

5.1 Participants Demographic Data

Following is a brief introduction of the participants involved in the realization of this thesis. As explained in section 4.4 about ethical considerations, the totality of participants (8) agrees to participate voluntarily during the thesis data collection process. Moreover, all of the participants also agree to use their real names in the process making and the publication of

this thesis. As for the demographics we can mention that the group of participants was diverse, the participants' age ranged between 67 and 12 years old. Seven of the eight participants are living in the province of Groningen. The participants have different backgrounds and they perform different activities that are illustrated in Table 4. There were more male participants (5) than female (3) and just 3 of the participants belong to the Bat Group of Groningen. The table below gives more information about them. It should be emphasized at this point that all of the participants are Western oriented.

Table 4: Demographic information Bat-lovers

Name	Age	Gender	City	Occupation	Education	Extra Activities
Liesbeth	56	F	Groningen	Self-employed	Engineering safety industry	Poem Group Coordinator/ Bat Group Groningen
Klarissa	67	F	Groningen	Retired	Master Degree in Chemistry	Secretary-Coordinator Bat Group Groningen
Calvin	12	M	Assen	Student	Basic School	Bat volunteer
Jurjen	50	M	Groningen	Retired	Psychology	Musician
Johann	28	M	Steenwijk	University Student	HBO Wildlife management	Assistant of Ecology Advice Services
Anja	44	F	Adorp	Saleswoman	Service industry	Bat shelter Adorp
Teddy	39	M	Nijeholtwolde	Private Ecologist Advice	Wildlife management	Bat group Groningen
Klaas	52	M	Groningen	Ecologist at the Municipality of Groningen	Ecology	

5.2 Biophilia and the Human Values for Nature: “That is why I like them”

“They are very sweet animals. That is why I like them”

Anja

Biophilia or love for nature is an approach introduced by Wilson in 1984, who described it as “the innately emotional affiliation of human beings to other living organisms” (Wilson, 1993 p. 32). In this section I focus on what I called the “spark” i.e. the motivations of human beings to love non-human life I called the spark because is the beginning of a human-non-human relationships; the moment in their lives when the feeling of nature appreciation was first triggered, when they were driven to explore the wildlife and remain in contact with it. Next this section explores in depth the reasons why the research participants like bats, what are the reasons behind their appreciation of bats, which circumstances led them to encounter bats and remain in contact with them. Then, the analysis of the “spark” will be made using the nine values of nature proposed by Kellert (1993). As explained in chapter three Kellert’s values for nature have nine categories. In this section the most representative values for nature are incorporated in order of recurrence. Thereby, the Naturalistic and Ecological-Scientific values were the most representatives in the quotes followed by the Humanistic value and finally Symbolic and Utilitarian. Not all of the categories were found among participants. Moreover, the participants did not express Dominiostic and Negativistic values during the interviews.

Naturalistic

According to Kellert (1993) this value is associated to the sense of fascination as the result of intimate experience of nature. This mental and physical experience involves intense curiosity and the need to explore and to earn knowledge. The following examples illustrate the naturalistic value expressed by the bat-lovers as their motives to get involve with bats.

In the next example, Liesbeth former engineer (56 years old, self-employed, poet and a member of the Bat group of Groningen) talks about her personal motivations and she developed bonds with animals. Her father, who was a biologist and a researcher, occurred in her narratives and thus played an important role.

“Well, my father was a biologist and retired and he did research so I was brought up with animals. I was always interested in bats and I became even more interested in them because they have in fact a very technical way of orientation, even engineers are interested in how they find their way and I was looking for other people who were interested in the same [bats]” Liesbeth.

Liesbeth’s quote illustrates two main reasons for which she identifies herself with bats. First, she highlights her father background as a scientist and how this fact allowed Liesbeth being in

contact with animals during growth. Secondly, she shows a personal interest and curiosity in the biological mechanism of the bat navigation, which resonates with her knowledge as an engineer. In both cases she is given insight into to a *naturalistic* value of nature. The feels curiosity, the desire of exploration and a sense of wonder, when she is talking about the way that bats fly. According to Kellert (1993) the naturalistic value involves high levels of curiosity and the need to explore the natural world. Another important aspect that Liesbeth mentioned surrounds the fact of having been brought up by animals. According to Wells and Wells and Lekies (2006), an early contact with nature impacts human beings and fosters the development of positive values towards nature. Thus, Liesbeth decides to participate in a group of people, who share the same interests, in this case they are people who like bats. Moreover, during the interview Liesbeth showed to me a book called “Lindbergh: The Tale of a flying mouse by Torben Kuhlmann”. This story is about how a mouse got inspired by a bat and decided to build his own wings in order to scape from cats and other issues that rats face everyday. Liesbeth as a former engineer was fascinated by the way like this child’s book address subjects as invention, engineering, and animals.



Figure 4: Liesbeth's book "Lindbergh: The Tale of a flying mouse" by Torben Kuhlmann

The following quote belongs to the youngest participant, Calvin (12 years old, student at a primary school). Calvin became interested in bats at the age of five. He has been involved in bat activities since he was six years old, under the supervision of his parents Jolanda and Terrence.

“Let's think. I Forgot. I saw them flying one time and thought... that's nice. I wanted to know more about it. Back then my favorite animal was the elephant but I wanted to know more about them [bats] and I looked it up in books at the library and that's how it went.” Calvin.

Calvin's narrative brings us back to the act of flying and how his curiosity led him to look for answers in specialized literature. His inquisitive nature and desire to know more about bats made the whole family get involved in this activity. In this case I will also incorporate here a story from his father because as a 5- year-old Calvin was completely dependent on his parents to pursue his interests in bats.

“Then his fascination about bats got greater and greater. Then we asked the bat group here in Drenthe if he could join them, so they told us that he was too young and they did not want it. You needed to be 12 years old to join the group, and Calvin was five years old more or less, so that was impossible. So Jolanda (Calvin's mother) called and e-mailed Teddy Dolstra. Teddy said, “Come here.” Since then in the winter we were going on excursions with Teddy to count the bats, so that is how he got the virus” Terrence.

According to Kellert (1993), Calvin's experiences can be seen with a *naturalistic* and *ecological-scientific* value. His close contact with bat activities and the scientific information have developed in him a passion for learning about bats. According to Seamon (1984), direct experiences in nature are crucial components in the relationships between humans and non-humans. Furthermore, a study about childhood nature experiences and adult environmentalists revealed that early childhood participation with nature might set the basis for an adult environmentalist behavior (Wells & Lekies, 2006). Calvin's experiences of nature have been developing since early ages and his father called it “a virus,” because Calvin's curiosity has been growing over time. His understanding of bats has been acquired through the intellectual and practical activities. This has been impacting his everyday life and this experience led him to develop positive values of bats.



Figure 5: Calvin during the interview showing me his bat-detector as one of his favorite items.

Moralistic

The following fragment explains why Klarissa former chemist (67-year-old retired and secretary-coordinator of the Bat Group of Groningen) is interested in bats. Klarissa is one of the specialists on bats in the city of Groningen.

“I had been involved in a lot of activities for 20 years against major developments that I don’t like, as nuclear energy in certain points. Part because the nuclear energy debate comes after Chernobyl. I thought I prefer to do something in favor of something else instead of endless fighting against something. And purely by accident I came cross the announcement of the yearly meeting of the bat group of the province of Groningen. So I went there because I was a bit curious to find out about it. When I was very young my mother had a small book about bats on the shelf, written by one of the first Dutch who started to educate about bats. So it was a very interesting subject, sort of an inspiration. When I met the bat group for the first time I thought bats were fun, an attractive animal to protect. I had a feeling that I could play a good role in the social networking, in the organization there was a need to do something about the protection of and education about bats” Klarissa.

Klarissa’s narrative gives an insight into two values of nature – a moralistic and a naturalistic one (Kellert, 1993). These two values explain her attraction to bats. The first one is related to her activist causes as she mentioned in her narrative she was part of anti nuclear campaigns taking as precedent one of the major chemical tragedies in Europe. After being part of these for a long time Klarissa decided to switch her activism work to a pro-active wildlife conservation goal. Thus, Klarissa become to explore the bat conservation field. Such behavior

is altruistic, based in ethical concerns for the natural world and cooperative work. Klarissa foundation of main core ethics resounds in the moralistic value, which according to Kellert (1993) is associated to strong feelings of affinity, ethical responsibility and respect for nature. This value is associated to the strong desire to protect and conserve nature. Moreover, according to Kellert (1993) this moralistic value frame in a collective context can be express behaviors such as “feelings of kinship, affiliation, loyalty leading to cooperative, altruistic and helping behavior” (p. 55). Furthermore, moralistic value led Klarissa to do kinds actions such as protect, respect, and fight for the animals. Thus, from Klarissa’s perspective she could play a role in raising public awareness about bats and participating as a group coordinator in order to address bat conservation issues at the local level.

The second highlight of Klarissa’s story is her memory from her childhood. She felt curious about bats that would continue to be her source of inspiration until adulthood. The naturalistic value provides enormous rewards and a personal satisfaction on the intellectual and emotional level, and for Klarissa bats represent a personal challenge to gain more knowledge (Kellert, 1993). Furthermore, according to Perkins (2010) environmentalist behavior is linked to two main influences. First, the emotional factor which encourages human beings to build emotional connections with nature through experiences. Second, developing of attachment of human beings to nature through knowledge. In both cases these activities require to take a range of individual actions in defense of conservation issues, which can be seen in the Klarissa’s narrative.



Figure 6: During the interview Klarissa showing me her stuffed toy (bat).

Ecologist-Scientific

According to Kellert this value “reflect the motivational urge for precise study and systematic inquiry of the natural world and the related belief that nature can be understood through empirical study” (p. 47). Empirical study of nature is focus on articulation and recognition of the organisms. Studies base in systematic i.e. animal classification and categorization, ecology i.e. the complex relationships between organisms in particular habitats and organism behavior i.e. movement patterns, reproduction cycles. These activities require special equipment, skills and participation.

The following example, Teddy (39 years old, graduated from the school of Wildlife management, owner of an ecological consult company, member of the Bat group in Groningen and Leeuwarden) in his narrative Teddy talks about how he became involved with bats for the first time. He refers to his initiation into the bat world as a discovery.

“It began in 1996. I found a brown long ear bat at my parents’ house and a few weeks later I saw some big bats flying around the house. After that I discovered that we had ourselves a colony of bats and that made me interested in what species it was. At that time there was an article in the newspaper from the “Zoogdiervereniging” (“Mammal

Society”), a community that collects information about bats all over the Netherlands. So I wrote them a letter telling them that we had a bat colony living near our house. Then at that time it went very quickly because the coordinator from Friesland contacted me and it was so quick. I bought a bat detector and started a course to learn more about bats and I also bought an “Atlas of the Dutch Bats.” Teddy.

Teddy’s narrative reflects how he first encountered bats long time ago while he still lived with his parents. The first encounter was a discovery. Teddy’s curiosity led him to focus on how to identify, learn and research the bats. Teddy very rapidly joined the network of people related to bats at Friesland at that moment. As we mentioned above, the *ecologicistic-scientific* value (Kellert, 1993) is focused on the analysis through the systematic inquiry and investigation. The understanding of bats by empirical studies of their community structure and complex behavior involves the deep knowledge and practices. People who enjoy facts as a result of ecological studies developed this kind of value (Kellert, 1993). Teddy explains his curiosity and desire to learn through self-education, courses about bats, technology devices and participation in a network of people involve in bat studies.

Humanistic

Humanistic value reflects strong feelings of deep attachment to elements of the nature environment. This value is also related to the aesthetics features, the perception of beauty on nature. According to Kellert (1993) sentiments of empathy specially reflected in big mammals. Moreover, the humanistic feelings can be extended to natural landscapes, trees, or geological forms. Furthermore, this value expresses as “love” for nature is very often seen in domestic animal companions and sometimes animals are humanized in order to create the emotional bonds.

Anja (44, years old, part time job at a store and owner of the bat shelter in Adorp) has been working as a volunteer to take care of injured bats for the past 15 years. Without any academic preparation Anja has developed her own system of bat care through her own experience and has recovered more than 400 bats.

“The first time a neighbor found a little bat she, took the bat to a shelter; but the shelter does not have experience with the little ones. My son was very little so I thought I could try, if I can raise a little child I can raise a little bat and I tried. I knew what they needed, I tried and it was so nice and the little one drank hot milk from the bottle. He was so nice, he came into my hand and he cuddled and he ate and he went to my shoulder and he talked to me (laughs)- tititititi, it was so nice. Then the woman

from the bat shelter took a bat back to get it on fast food and let him fly. I looked back and it was so nice. They are really nice animals, really sweet. A lot of people think about diseases when they think about bats, but is not true. They are very sweet animals. That is why I like them” Anja.

Anja’s narrative gives a glimpse into a maternal attitude; her first encounter with a young bat was the link to her own child nurturing experience. In her desire to assist a newborn bat she applied the experience gained as a mother.¹⁸ Her experiences created a strong bond between her and the bats. Humanistic values are associated with the strong affection experiences. According to Kellert (1993), Anja’s narrative related to a sentiment usually directed at domesticated animals. Although Anja does not consider bats as pets, the way that she treats them tends to establish some type of humanization process. In her narrative she told us about bats cuddling and talking to her. The physical experiences with bats that Anja describes in her narrative imply an awareness of emotions and feelings, with strong tendencies to care about the bats.

Anja’s narrative also includes a particular aesthetic observation, “they are nice animals” and “they are very sweet animals.” According to some scholars (Kellert, 1993; Woods, 2000) this kind of an observation is related to the charismatic fauna, which in general consists of larger vertebrates such as dolphins, bears, cats, horses, etc. Anja encountered bats every day due to her volunteer activities. Furthermore, her constant physical manipulations of bats led her to see the characteristics of big vertebrates in bats, such as a furry body, charismatic faces and smooth skin. *Aesthetic* values are related to physical aspects (Kellert, 1993). However, Anja’s narrative is not just about the physical body of a bat, it is about a whole experience of enjoyment and appreciation of beauty from a close perspective.

¹⁸ Newborns or very young bats are smaller. They are ranging in size from 5 to 6 cm long (Kunz & Fenton, 2005).



Figure 7: This photography illustrates how Anja handled bats very closely. This Common pipistrelle (*Pipistrello pipistrello*) is injured and at the moment of the interview this bat was hibernating.

In the following fragment Johann (28 years old, Wildlife Management student, bat-volunteer) narrates about his bat experiences and combines his childhood memories with an innate passion for nature.

“Well it started when I was a little boy. I always had a great passion for nature and everybody in my surroundings knew that. And one day we had some physical training, we were at school and it was a big building and there it was a little Common Pipistrello¹⁹ flying around. But it does not belong there, and the teacher knew that I have a passion for nature so she gave me the assignment to catch it and release it outside. I went after it. I took the bat in my t-shirt and I let it fly outside. Since then I was sold.” Johann.

His narrative contains several important components such as “great passion for nature”, “to catch a bat” and “since then I was sold.” These three components represent a *humanistic* value, which expresses the attachment to the natural environment. By expressing a passion for nature, Johann gives an insight into a deep emotional attachment that he has to the natural world. A second element in Johann’s narrative is bat he moment of catching a bat, a close encounter of a bat in his childhood. This experience predefined his attitudes toward bats in his

¹⁹ Common Pipistrelle: *Pipistrellus pipistrellus* one of the most common and smallest species of bats in Europe is very common to find them in human structures (Larenstein Van Hall, 2012).

adulthood as well. Physical encounters with animals create a feeling of proximity and bonding (Paterson, 2007). Johann's first experience with a bat shaped his position towards these animals. According to Kellert (1993), the *humanistic* value leads to a formation of strong tendencies to care and nurture nature.

Symbolic

Nature has been a source of imagination and meaning throughout the evolution of languages and communication. The symbolic value reflects the human use of nature in the contemporary thought.

The next narrative belongs to Jurjen. Bats inspire him to compose lyrics for his music and also to develop the image of his band. In the next extract Jurjen (50 years old, retired and musician) refers to his first memories about bats.

"I gave it many thoughts, but it was mostly like an intuitive thought- let's do something with bats. The only thing having to do something with bats from my youth was Batman; he was one of the superheroes that I liked the most. I have always had something with bats. Also when I was small I thought it would be nice to fly and people said "no, only birds can fly." Later I discovered a mammal that could fly and it was called a bat. So it's always been a totem for me. If I could have been an animal, I would have been a bat." Jurjen.

Jurjen's narrative mentions several elements from his childhood memories that can be seen as symbols. First, he mentions a fiction superhero Batman; this icon first appeared in 1940. He has a secret identity, but his superpower is not like the one of any other superhero. Instead, Batman shows an association with bats and the night, which creates an atmosphere of mystery around his character (Zehar, 2008).

Additionally, Jurjen expressed in his narrative his desire to fly as a child. However, at that time he was told that just birds can fly. This air space, which originally belonged to animals such as birds, represents another realm that humans cannot achieve using their physical bodies only. Hence, the idea of flying is just granted to animals. However, as Jurjen mentioned after some time he found that is other animal inhabitant the air space, which is a bat.

Third, Jurjen mentions the word "totem" in his story. This word, has a strong element associated with his deep feelings, it denotes a spiritual connection. Totems are natural figures that are used as symbols of complex and abstract ideas. According to DeMello (2012) animals used as totems are those that fascinated us and in which human beings find a personal or

spiritual connection. Perhaps these connections triggered Jurjen's next phrase, "If I could have been an animal, I would have been a bat". These associations of ideas suggest the *symbolic* value that Kellert (1993) describes as the use of nature as symbols. We have to consider that animals have been important instruments through the humankind history; they have given rise to ideas, imagination, and languages (Shipman 2010). Through the symbol of a bat Jurjen reaches a reflexive idea of his spiritual bonding with an animal that represents the freedom to fly in the mystery of the night.

Utilitarian

The utilitarian value is associated to the use of nature as material value (Kellert, 1993). Thus, all of the benefits and profits that human can get from nature organisms i.e. food, clothes, medicine, tools, raw material for construction and currently environmental services i.e. insect control, pollination, seed dispersion, carbon cycles among others.

The next quote by Klass (57 years old, ecologist specialist at the Municipality of Groningen) illustrates how he perceives and value bats in the city of Groningen. His approach is frame in the utilitarian value.

"Oh they are nice animals" and they are very helpful for the city environment, because they eat a lot of flies, so they are very helpful in the ecological system of the city, so we need them as well as the birds and butterflies" Klaas.

This quote illustrates how bats are perceived by Klaas as a valuable resource for the city. The city of Groningen posses several water bodies and water channels through the urban area. In spring season invertebrates as mosquitos, flies, moths, butterflies appeared in large amounts. These are a good resource of food for birds and bats. Moreover, the bat species in the city of Groningen are insectivores, they provide according to Klaas's comment a very helpful service in the ecological system of the city; the insect control service, which is crucial for the maintenance of the ecological balance in the area not just in the ecosystem in not also to the city population. Klaas quote is an example of how the environmental services are very high valuable and even bats are categorized as "nice animals" because they play an important role in the ecological urban system.

Conclusions

This part of the results showed that bat-lovers in Groningen have several emotional forms of affiliation toward bats. The special “spark” becomes a reason for people to engage with the bats from the beginning. Bat-lovers in general perceive bats as very important and interesting animals. The motivations of this group of bat-lovers are associated with memories, meanings, knowledge and places. Bat-lovers are volunteers who devote their time to perform activities related to the bats. Each bat-lover showed a specific combination of values such as naturalistic and ecological-scientific, which are the most representative in the group of participants followed by humanistic, utilitarian and symbolic in fewer cases.

The meanings that the bat-lovers attached to the bats were connected either to particular places e.g. a parents’ house, a school, a neighborhood or experiences e.g. a mother’s book, a father’s occupation, a close bat encounter, a bat specialist and also media pop comics. Bat-lovers have been influence under different circumstances. But nevertheless, in the analysis of the bat-lovers group there is a common factor—bats are seen as interesting and fascinating animals, and this fact is framed in the naturalistic value which involves curiosity, exploration of nature, wonder, and fascination. This tendency generates a mental and a physical satisfaction, which is a result of the personal experience with nature (Kellert, 1993). Likewise, the ecological-scientific value is observed in several participants. This value is one of the most often present, especially among the participants who carry out bat activities as part of their studies, their job or because of the ecological governmental office. Thus, a bat-lover’s background also influences the way that he or she perceives the animals.

On the other hand, the humanistic value is represented by the intense and strong emotions of “love” to nature (Kellert, 1993). This value is the one that tends to humanize the natural world, animals, and plants and even landscapes i.e. the passion for nature. Furthermore, a close encounter with bats seem to be the trigger to awaken emotions of empathy or bonding; finding human characteristics in bats e.g. beauty and sweetness make it more easy to develop strong emotional feelings, which are reflected in tendencies to take care of and the bats and nurture them.

The moralistic value is linked to strong ethical concerns. This value is related to improving the bat conditions in the city as one of the most important motivations. Among the bat-lovers in Groningen this value has resulted in a deep concern about the possible steps necessary to protect the bats.

The symbolic value is represented by the use of bats as metaphorical expressions, the links that connect the bats with expressive thoughts. One of the bat-lovers expresses what a bat

represents for him and his symbolic emotional connection to this animal in his song lyrics. Finally, the utilitarian value was exemplified by the environmental service that bats perform in the city—insect control. Nowadays, the environmental services have filled a gap in the nature's processes and this can be perceived as commodities and services that benefit the society. Bats in Groningen play an important role, thus the appreciation marks a new strategy to visualize bats in the city.

5.3 Becoming-bat

“Bats live at night, and people live during the day”

Klaas, 2015

According to Deleuze & Guattari (1987) and Donna Haraway, becoming-animal or becoming-bat does not lie in the imitation or copying this animal. On the contrary, becoming-bat is about experiencing the way of life of the “other.” It is about experiencing the life of the bat. It is a subtle way to blur borders between species, becoming-bat concerns our entire daily lives. This section is focused on how humans are approaching bats. Here I explore practices, spaces, places and temporalities when humans and bats meet each other, in order to create proximity between two beings—a human and a bat.

Temporalities, places, spaces and practices

Becoming-bat implies a shift in our regular daily life. If we want to encounter bats, we need to change our perceptions of time and space. However, becoming-bat makes humans mobilize themselves and act in different ways and in times, which originally belonged to bats. However, humans have physical limitations, which prohibit them from these encounters, because human bodies are physically and mentally designed to be active in the mornings and to rest at night. On the contrary, bats are nocturnal creatures. They sleep during the day and at night they are most active. At the first glance, this feature can limit the encounters between humans and bats. Consequently, special devices like bat detectors²⁰ are required in order to increase the human abilities and expand their senses.

It is also necessary to recognize the seasonal timing in the bat lives. During the year bats perform diverse activities, but the most notorious change in their life rhythm is the hibernation time. During the winter bats fall into a deep sleep and as a consequence they disappear temporarily from the landscape for several months. As for the rest of the year, bats are flying around at night, between places such as houses, parks and water bodies. The following narratives show how temporality, spaces and devices are combined in order to bring together humans and bats. These activities are blurring the boundaries between a human and a bat.

²⁰ Bat detector: This device located bats by their echolocation ultrasound signals. Bat signals are emitted at high frequency (15kHz-90kHz) that the human (20 Hz – 20kHz) ear cannot hear easily. Each bat species has a different frequency and bat detector provide the alternative to record sounds.

Although, temporalities, places, spaces and practices are constantly overlap in becoming-bat, this part of the result will be organized by three main topics: temporalities (day and night /seasons), place and space and practices (technologies and bat-activities).

Temporalities

As it is mentioned above, temporality is associated with schedules and daily and seasonal rhythms. Bat-lovers have to adapt their selves to different conditions at nocturnal schedules. In general bat activities are perform at night, it is necessary to use especial equipment as flashlights, bat detectors and cars to follow the rhythm of the bats. Moreover, seasons are also important to address; winter is the season when bat-lovers can look for bats in the day and spot them directly resting into structures and it implies other kind of practices. This part of becoming-bat is addressing these factors to understand how bat-lovers use their time on activities in order to get closer to bats.

Anja's narrative gives an insight into her activities at the bat shelter. How she handled young bats required a lot of attention and special care in the first weeks of the bat's life. Furthermore, Anja has a bat shelter close to her house. Anja mentioned two things about temporality. First, the schedule that she applied to feed the injured bats. And second the reaction of a bat to her care.

“From Winsum I had a couple of little ones, one was really burned so I put the cream on the wings, and she liked it. She knew at the time that I put the cream so she laid down with her wings open. This one was very little. When I released her she was full of hair, which mean that she was healthy again and it was so nice. When I have little bats I put them close to my body. I feed them 4 or 5 times per day, last time at 12:30 a.m. and the first time at 5 am in the morning” Anja.

The feeding schedule that Anja applied for those young bats involved a time late at night and early in the morning. A bat in the wild has the established hours to eat: the beginning of the evening, the middle of the night, and some species - early in the morning, just before the dawn. Anja has chosen appropriate feeding schedules of young bats; thereby she is simulating meal schedules of bats in the wild. As a result, Anja is adapting herself to the bat's schedule she is sleeping late at night and waking up early in the morning to accomplish these activities. Becoming-bat for Anja is associated with a nurturing role to feed and care and this schedule is an extra work over her regular daily life. Moreover, Anja also mentions the experience of a bat that was being treated for burns. According to Anja, this bat recognized the schedule in

which she applied the medicine. The bat opened the wings voluntarily to facilitate the cream application.

In both cases the time schedules of both Anja and the bat were synchronized in order to achieve a complete recuperation. Anja's experiences influence the bat's behavior and the behavior of the bat influences the time schedule of Anja. This narrative is framed in the idea that Christopher Bear (2010) discussed in his paper "*Becoming Angelica? Exploring individual animal geographies*". He argued that effective relations between humans and animals tend to blur the boundaries between species through co-relational practices and experiences. In Anja's narrative the idea of becoming-bat illustrates a high level of an affective relation in each physical encounter that she had with the bats from her shelter. Additionally, Anja's narrative corresponds with the concepts of Deleuze and Guattari (1987) who said that becoming-animal a matter of contact at the slightest levels of each organism as they mentioned "Starting from the forms one has, the subject one is, the organs one has, or the functions one fulfills, becoming is to extract particles between which one establish the relations of movement and rest, speed and slowness that are closest to what is becoming and through which one becomes"(Deleuze & Guattari, 1987, p. 272). Becoming-bat in Anja is based in physical daily contact and through nurturance practices i.e. feeding bats, making and preparing shelter for bats, touch and care bats and heal them. This set of individual interactions is unique among the group of bat-lovers. Anja's engaged with individual bats increases her interest for them. Nevertheless, in this point Bear (2010) mentioned that individual human-non-human animal interaction tends to anthropomorphically animals, but these studies conducted by an appropriate approach might help humans to understand deeply about the individual animals. Anja based in her experience-embodied knowledge, which make her to interact and become-bat.



Figure 8: Anja during the interview showing me one of the injured bats that she keeps inside of her house.

In the following quote, Teddy illustrates how his job is related to bats. He is an ecologist and has a lot of experience and expertise in dealing with bat issues in urban areas. Nevertheless, his job and bat activities are closely related. Becoming-bat in Teddy's case also has to do with his work schedule.

“So I have a lot of work in the summer months and at the moment it is winter so the fieldwork is almost zero” Teddy.

Teddy's productive months are in the summer, in the months of highest activity for bats. On the contrary, winter means less work because bats are hibernating. Consequently, Teddy's job depends on how bat activities are integrated into the city or the areas that he supervises. Being-bat for Teddy not only involves time-space relationships but also has implications on his income. Teddy's narratives reflect the conclusions of Bear (2011) about the adaptability of humans to the patterns of movement of a group of animals. Becoming-bat for Teddy, is to

follow the *rhythmicities* of them (Bear, 2011). Consequently Teddy has created an employment activity based on bats.

The following narrative by Klarissa illustrates how Winter season have implication in a huge network of bat-lovers in the Netherlands. Winter bat counts are one of the most important activates in the bat conservation area performed by bat-lovers.

“Let start with winter, as a group we try to make inventories of where bats are hibernating. In the province of Groningen, we have a few relatively small amounts of hibernation spots and we go there and counted. This is part of a very large enterprise in Holland in which all bat groups count bats which are hibernating and that helps the statistics of how many bats there are and where are they developed in a positive way”
Klarissa.

By explaining the winter bat count activity, Klarissa gave an insight into how this activity produces ecological information about bats. First, she explained the importance of the few hibernation places in Groningen. Moreover, Klarissa emphasized that this activity is of utmost importance and involves all bat-groups across the country. In this case, Klarissa’s narrative explained that the production of ecological data comes from the self-organized and diverse community base groups (with no governmental association). Furthermore, they provided substantial information to develop plans for conservation of bats throughout the country. This statement, illustrates the idea of citizen science. Citizen science is an effective method of monitoring wildlife in urban landscapes; this activity is based on volunteer work and the outcomes of these practices are a good source of ecology information (Matteson et al., 2011). Moreover, becoming-bat in Klarissa narratives illustrates how bat-lovers endeavor to become-bat make them to mobilized groups of bat-lovers to hibernacula locations in winter not just in Groningen, but also at the country level. Thus, for bat-lover winter have a special meaning; winter implies to go to encounter a bat in specific time of the year. Becoming-bat for Klarissa during the winter count is a practice that resounds in Haraway’s (2008) ideas of becoming-animal where trough species encounters the becoming start.

Place and space

According to Urbanik (2012) space can be explain as two things. First it all space can be addresses from a spatial analysis perspective, where and when some social phenomenon, but the same term also denote locations in the abstract or the general where human and non-human animas interact. While, place is describe as a specific location. Urbanik (2012) mentioned an example to clarify these concepts. She mentioned the zoos as spaces where

animal are confined and interactions between humans and non-human animals are settled. While, the Paris Zoo is a place, which is unique and specific with individual human-non-human animal interactions. We addressed space and place of becoming-bat in both ways in the following narratives.

The following example narrated by Klaas (Ecologist at the Municipality of Groningen) illustrates the complexity of the behavior and ecology of bats in the city. In this part of the interview Klaas used a map of the city of Groningen to explain the spaces and places that bats used at the same time that he was narrating the following.

“So this is a special investigation to find out what kind of bats there really are and how many there are, so is a very specialized work... and then we have the information. So these are the bats you see they have a winter place, they have a mating place in spring, a birthplace for the young this the birthplace, and then mating place in autumn, and then you have the fly zones. Specialize fly zones always the same fly zone, you also can say the feed places so is a network... so one species can find their food here in the woods and then fly a pick up a building here to live... so then in winter you can fly and go here to a huge bunker system below the ground, going to the winter period... so one to fly zone two fly zone three is spot to birth the young and then you fly to the winter place... So you have four critical elements in the whole city.

So on all this actions in the city before we do changes such as taking down trees or buildings, first you have to look if there are bats. And if they take a lot of green areas or trees down you also have to look if the bats need that environment to find food. So quite a lot of investigation around all kinds of especial design or changes like move from an area in the city which is trough down and make new so we first have to look all kinds of bat life there and how do we solve the problems of the bats” Klaas.

As mentioned above, bats in Groningen have high levels of dependence on human structures for their survival in the city. Klaas, in his narrative, explained two basic points in order to conserve bats in the city. First, he mentioned that it is necessary to conduct a special investigation in order to know where the bats are and what they do. Most of the time bat research is based on the quantitative methods to study the dynamics of bat populations²¹. This kind of research follows the guidelines of the ecology research basing its analysis on scientific data during long periods.

Klaas also explains in his narrative that there are at least four critical areas for bats that must be taken into account by the city planner team i.e. foraging areas, hibernacula, maternities and roosts. Furthermore, the bat mobility and behavior are very difficult to track in the city; bats

²¹ Animal population dynamics is a research method to measure the animal population size, animal locations, density and in some cases sampling of animals to follow a group or groups in time.

practically use the whole city to forage, rest, and mate, have new offspring and hibernate. Klaas' narrative described the whole city of Groningen from the perspective of bats, which leads to a different perspective of the city and how bats make sense of the city engaged in one of the points from the “ transspecies urban theory” proposed by Wolch (2002).

Nevertheless, according to Klaas' narrative the efforts by the volunteering bat groups and the municipality converge in special maps that illustrate the bat behavior and mobility which are of utmost importance in the case of any intervention in the mapped area. This set of maps are the result of a bat census, bat detector, Geographical Information System (GIS) and knowledge transfer between the ecological department and the planner area in the municipality of Groningen. Becoming-bat for class it is approach from a network perspective frame in Whatmore (2002) ideas of becoming-animal. Becoming-animal is a social fabric of spaces, thus the relational interactions in Klaas narrative illustrates how spaces, places and bodies have been established different configurations in the city bringing bats to be actors in the governmental decision-making levels. Becoming-bat in Klaas narratives had social implications over space and places across the city.



Figure 9: During Klaas' interview at the Municipality of Groningen, he showed me several maps of the city and the bat locations to explain the localities and habitats of bats in the city.

In the following narrative, Klarissa explained me that 10 years ago the bat group of Groningen saw the need to take other measures for more effective intervention in the case of the protection of bats in the city of Groningen. She said:

“Well the reason we made a group (Groningen bat group) a foundation about 10 years ago, was actually only one reason: as a group we will be able to fight legal battle in case that it was necessary for the protection of bats. There was one very big hibernation building basically one of the best objects of the province of Groningen which was in the process to be broken down and we knew that it would happen one day, and unfortunately this year it started to happen. I had been involved in this legal battle (against the landowner) for a year with in average of 3 to 4 days per week. Organizing business [referring to legal processes in the municipality and legal advise] also means that I communicate with people who can advise me in this legal matter” Klarissa.

Klarissa's narrative presents a strong statement about how the Bat Group of Groningen transformed from a group of bat enthusiasts to a foundation. The foundation status gives the group the ability to intervene strongly in the legal processes in order to protect the bats in the city. Klarissa was (at the time of the interview) involved in a legal procedure. One of the most important bat hibernation structures near to the city of Groningen unfortunately was collapsing due to a conflict of interests with the landowner. As previously explained in the literature, these sites are important for the hibernation process, which lasts several months; in this period bats are very vulnerable and any intervention during their hibernation period in the worst scenario could be fatal. It is for this reason that this case required a great effort from Klarissa. This space where bat and humans converge in conflicts illustrate by the narrative of Klarissa resonates with one of the concepts about becoming-animal proposed by Whatmore (2002). Becoming-bat for Klarissa besides her activities as bat-lover i.e. counting bats or listen to them, involve Klarissa into a network by modern configurations of bats, spaces, and legal processes. Becoming-bat in Klarissa statement also is frame on one of the main points proposed by Wolch (2002) that grassroots activism causes a direct impact on local management policies.

In the following narrative, Johann (Wildlife Management student) describes some spaces, where he has been performing some activities associate to bats.

“I am learning a lot, the thing [monitoring] with the bat boxes we did winter counting in Groningen in the Akker (church) for instance, the bunkers. I did my thesis on bats in summer, so I know they get into churches, into the attics, where I was looking for colonies” Johann.

Johann acquires knowledge through practices. He tells about monitoring the bat boxes and counting the bats in the winter. To do this, participants go to specific places in a specific season. Johann mentioned two places – churches and bunkers. In summer he also visited the churches and the attics for the same reason Johann informed us about a combination of

activities adapted to specific times of the year. Becoming-bat in Johann's case is a connection with the sharing of space and time. This experience is a conscious practice that allows Johann to make sense of the bat places and spaces. Some aspects of Johann story illustrated how he engaged with bats by scientific-academic practices and embodied knowledge by a constant practical learning. Johann knows the places and spaces where bats inhabit; Johann moves to these sites to find bats and encounter them. His experiences and practices resound in Haraway (2008) ideas about becoming-animal, where practices and bat knowledge reduce the gap between humans and bats, thus difference between human and bats become close and familiar for Johann.



Figure 10: Johann showing some bat pictures to a random person in the park during the Autumn bat-box monitoring.

Practices

Bat-lovers practices are performed in order to engaged people with bats. These practices enforce the relation between human and bats closing the distance between these two entities. Practices are recurring activities that bat-lovers perform in order to encounter bats in several ways. Thus, the use of technology (bat detector) is essential in to interrelated humans and bats. The process of becoming-bat in the following narratives illustrates how practices and devises are interviewed.

The following narrative by Liesbeth, illustrates the importance of the bat-use detector, and how this practices lead Liesbeth to engage with bats and embodied knowledge in her becoming-bat.

“I have been a member of the bat group for the last two years, so we went to see and to listen to the area where they are. I got my detector so I could go around on my own. I love the fact that I got my bat detector. Then you get the information about where they are. Last year I organized an evening about bats in the church, with the help of the municipality. We went to an excursion on Noorderplantsoen and we found out that there was a Rosse bat, but we still don’t know where they live. We don’t know!”
Liesbeth.

Liesbeth’s story shows how much she is connected to her bat detector. For her, the experience of listening to the bats by using the bat detector is an activity that satisfies her, because it is a form of getting knowledge. She also mentioned that an excursion took place in one of the parks during one of the events she attended. It led to an encounter through a bat detector²² with a bat species called Rosse vleermuis²³.

Liesbeth also mentioned with a great admiration that this species of bat was flying close by the park, however the group could not locate where this bat took refuge.

Becoming-bat for Liesbeth, is a combination of temporality, place, space and devices, which altogether allow her to encounter a bat. Furthermore, through her sense of hearing (bat-detector) and knowing (specific bat-frequency) what kind of bat flies around Liesbeth bridges the gap between species.

²² In this case the use of the bat detector to find the Common noctula was not mentioned, but it is assumed that they used the bat detector to identify the bat species frequency.

²³ Rosse vleermuis is the Dutch name for the common noctula (*Nyctilio noctula*). This bat population has declined in recent years in Groningen so it is not very common to find this bat flying in the parks (Larenstein Van Hall, 2012).

In a second example, Teddy also used to adapt his activities in his searching for bats. His encounters happened at night, and he travelled by bike or a car. He was looking and exploring places where bats mobilize.

“I never bought the CDs with the sounds of the bats, I was reading the books and learned were the bats fly and hunt and how do they sound like, so I would go outside and listen and look for the right frequencies with the bat detector. That is the way that I feel, the bat detector was on a hobby level. I took the bike sometimes or took my parents car and then I drove all night around in the area to see where I could find bats” Teddy.

Teddy’s narrative covers a set of activities. First, he is talking about devices, which are related to bat sounds. However, he decided to avoid the CD gained knowledge about bats through experience instead. This practice placed him temporarily in the same time and place as bats. In the night he moved around in a car or by bike to get close to bats. Bats move very rapidly, in order to keep the same rhythm Teddy had to use a means of transportation that allowed him to keep the same pace with the bats. He also used a bat detector to find bats in the places that he previously knew from the literature and his own experience. Becoming-bat for Teddy, involves getting knowledge. He was moving at night, looking for places where bats were flying, and he used a bat detector to expand his hearing sense to encounter bats. The distance between Teddy and bats were diminished through knowledge, practice and devices. Teddy’s narrative echoes with Haraway’s (2008) ideas that we are bodies in technology and this technology takes us to experience other realms and live the live of the “other” in this case the bat.

As another example, becoming-bat is about understanding the way of life of the “other”, in this case the bat. Therefore, knowing that bats do not use the vision to move in space,²⁴ Liesbeth in her narrative explains that in order to understand how a bat perceives the space she decides to involve a blind person, to understand how a person without vision can understand the surrounding space by sounds. Space can be denoted in an abstract or the general perception (Urbanik, 2012).

“ Last June I had a project about something that philosopher Nagel says. It is something about being a bat, and he means that the experience is something you cannot reach from a research point of view because this knowledge comes from a first person. Experience comes just from you and so if you are a bat you have an experience as a bat and if you are a human being you have and experience as a

²⁴ Should be noted that bats are not blind animals. Bats have developed a system of echolocation as a sonar. Bats are guided by sounds and echos in order to move. This information creates a virtual map in their brains allowing them to have an admirable mobility (United States Environmental Protection Agency 2014).

human being. I investigated this a little bit. I invited someone who was blind to ask him about how he got about in the world with sounds, because he uses sound to orientate himself. Because, that is something from a human being perspective. Human body is still using sounds for orientation. So he can tell us something about orientation with sounds” Liesbeth.

Lisbeth’s narrative reflects a wider idea discussed by Nagel (1974) in his publication "What is it like to be a bat?" Lisbeth explains that experiencing *becoming-bat* is not possible for a human being because humans and bats are totally different. Lisbeth’s narrative illustrates the idea of space boundaries between species in Nagel text. Nevertheless, her curiosity leads her to find ways to understand how bats move in space. Lisbeth’s *becoming-bat* was through the experience of a blind person and the way that this person used the sounds in order to move in the space.

Lisbeth’s narratives reflect Wolch’s (2002) ideas about animals: that the latter should be understood as “strange persons.” Therefore, trying to understand bats requires creative ways to approach a bat life. In Lisbeth’s narrative the notions of space and mobility are explored, the notion of *becoming-bat* comes in the understanding of the sounds and how sound creates spaces in a realm of “others” where the sense of sight is not present.

The next narrative has a different projection of bat practices. Jurjen uses the image of this animal embedded in the heavy metal music sub-genre. During this interview, Jurjen showed me the different LPs that the band has released during his career. Clearly, the covers display illustrations that suggest bats figures that are part of the image of the band.

“I never have given so many thoughts about the bats, it was an intuitive thing I brought it in and built lot of the image of Vortex²⁵ around it I am more of the guy for the image and lyrics the others are for the music. But it is nice to have to talk about it and giving an extra though, this is special. We are an special band, I guess, but this is one special thing that we are connected with an animal that we hardly know [bat] it's a lot of misunderstanding I guess about bats but is a fascinating animal and I am a bit proud to the design and photographs. And the people reacted on Facebook saying that Vortex belongs to a bat image, we always belong to a bat. One of the songs said I am a monster I drink bat blood [during the concerts] they all sing along “drink bat blood” louder and louder we have a chorus, a bat chorus so people like to sing along so it is nice to see” Jurjen.

²⁵ Vortex: Dutch metal band from Groningen. This band has nearly 30 years of playing heavy metal and uses the image of a bat as a symbol of the band.

Jurjen's narrative shows a different bat understanding. His human self-conception through a bat allowed him to express his thoughts through artistic mediums such as music. The music band image and the lyrics of the songs tend to represent bats from an artistic context. Moreover, Jurjen's narratives highlight that bats are misunderstood and poorly known animals. Still, he connects his music with this fascinating animal. Consequently, the band followers reinforce the identity of musical band Vortex through social media with messages that referred to bats. Finally Jurjen's narrative includes a phrase of one of the band songs "*I am a monster I drink bat blood;*" heavy metal music gender is characterized by strong verbal expressions and this kind of music is embodied in a particular subculture (Weistein, 2000). This is another way to relate with bats in the urban context where the symbolic meaning such a drink bat blood can be understood in a metaphoric way of becoming-bat. Becoming according to Deleuze and Guattari (1987) happens to humans when they approached animals. However, Deleuze and Guattari (1987) make a mention about how birds and humans have approached through music. Birds have been an influential part of the music because the songbirds, and as composers such as Mozart have been intertwined with the nuances of the music created or birds; becoming-bird is the subtle for to merge the birdsongs and the human composition of music. Likewise, Jurjen is somehow resonating in this concept, he is becoming-bat through his lyrics and how bats symbolism is represented on it and the band image (see fig. 11)



Figure 11: Several Vortex LP's covers and a live concert DVD cover depicted bat images.

The following narrative by Teddy illustrates how his bat practices had an impact on the social context of the local communities. This factor can be framed in Haraway (2008) premise about becoming-animal through embodied knowledge and practices i.e. bat research the gap between species is shortened. Moreover, Wolch (2002) stresses that it is important to keep track of the attitudes and practices towards animals (bats) that are represented in social contexts and how these practices change over time.

“ There are not many people that do bat research or something like that in Friesland and Groningen. In Groningen a little bit more than Friesland so then it is pretty easy to get that name, the batman of Friesland. It was not my idea, but he [a reporter] was thinking that is a nice headline for the article. They made big pictures in the evening in the other side of the water. For another article they took pictures in the forest and it made different positions of me from like bird view position and because he did not really know what will be nice so another mouse view [photo perspective]. It is great I can tell people in something that is so widely read like a newspaper about bats. Most people don't like bats, but when you tell people more about bats then hopefully they will look in a different way more positively at them.

Angelica: So you are a kind of super hero for bats?

I don't really feel it like that but because there is not that many people like me here in the north so maybe I am!” Teddy.

Teddy recounted in his narrative about an interview in which he participated, and where his experience as a bat specialist was exposed in the written media in the area of Friesland.

Bats have influenced his identity. Because of his work, Teddy was named *batman of Friesland*. This event features a reconstruction of Teddy's identity based on his ongoing work with bats. The newspaper publication about Teddy converges on the use of a pop comic hero character “Batman” which in this case this name makes a reference to a man that works with bats and he plays a role as protector of bats instead of humans. Teddy through this newspaper communicated his knowledge and concerns about bats to the community. Although Teddy is not convinced of being a hero however his practices with regard to bat-conservation had a great influence at local level. Hence becoming-bat in Teddy's narrative is in a form of bat knowledge multiplier through the media. His expertise about bats and continuous learning granted him with a name which represents a blend of a man and a bat.



Figure 12: *In this photography Teddy was looking for bats in a bat-box (Autumn bat count). Gracefully the bat-box has the symbol of batman. This bat-box illustrates a combination of human perception (comic character) and bat conservation project (shelter for bats).*

The following narrative by Calvin is also an evidence of the activities during he was involved with bats. They took place during the summer and winter seasons in specific places. This quote illustrates how place, space, practices and devices are overlap in Calvin becoming-bat.

“In the summer I always sit in the back, because we have bats right here so I listen to them [bat detector] when they fly over in the back. And sometimes I walk through the neighborhood to listen. It’s also nice to be in the winter time in the churches to look for bats, it’s a nice work to do to help Teddy to count the bats and look in every little corner of the church to see if there is a bat there, and to look for butterflies and lady bugs and all kind of things that you can see in the church is good to do” Calvin.

First of all, Calvin’s narrative mentions that in summer he enjoys seeing the bats around his house, he can listen to them flying around the house, he also walks along with the bats following them to get closer. Summer season is the time when bats become more active. They fly around in order to eat, socialize, find a partner for reproduction, feed young bats, etc. Summer is not just a season for Calvin; it represents the highest opportunities to encounter bats, to see them and to learn about them using his bat detector. In the same way, winter according to Calvin’s narrative involves a new adaptation of becoming-bat. In the winter he looks for specific places, in this case hibernation places (churches, bunkers, underground tunnels). Thus, Calvin not only knows that bats are in a process of hibernation, he knows also how to track them (insect remains). Following certain hints he is able to find bats in specific human structures. Calvin’s experiences fulfillment comes through several ways to encounter bats. Place and space matter for Calvin’s experiences because it allows him to get in close contact with bats in specific locations; likewise temporality determines a specific activity that he performed and the devices that he need to use in order to encounter bats. Calvin’s narrative is framed on Haraway (2008) and Deleuze and Guattari (1987), becoming is the act of being with other species, to share their spaces and create proximity. Not imitating or copying instead sharing and learning.



Figure 13: Calvin looking for bats in a bat-box located in one of the green areas in Groningen. During the bat census in Autumn ²⁶.

Conclusions

As a conclusion here, we can highlight two main findings regarding the becoming-bat process. First of all, the bat-lovers synchronized their biological rhythms to those of the bats and this was directly reflected in their common practices. Figure 14 illustrates how people and bats synchronize their time during the year. People and bats let their places and time overlap in order to get close. The bat winter count is in the first months of the year, during this activity the bat-lovers visit churches and bunkers and they count the number of bat individuals that are hibernating there. During spring and summer, the activities take place in the green areas of the city, e.g., using bat-detectors to find the bat species. In autumn, the last bat counting takes place and also the last bat-box counting. Most of the participants in this research participate in one or several of these activities during the year. Most of the informants gathered in these activities are part of the Bat group of Groningen.

²⁶ This photography has Calvin's parents (Jolanda and Terence Kunenborg) consent to be shown.

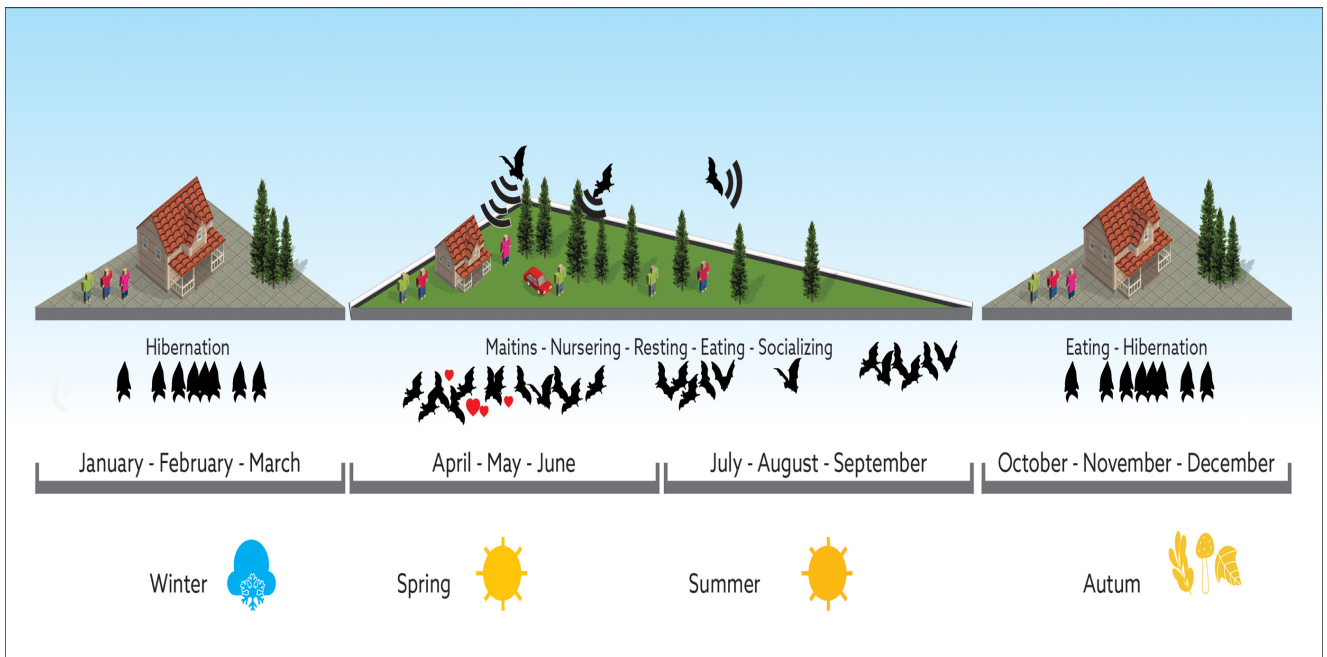


Figure 14: Human and Bat overlapping between times, place and space.

As a second finding here, we have to highlight the diversity of practices that the process of becoming-bat brings. Bat-lovers converge in the repetition of experiences i.e. encounters, learning, winter counting, listening to (using a bat detector) the bats, watching them, checking bat-boxes, caring them, working with bats, protecting them (legal battles), taking municipality actions (bat agency) and other actions. The diversity of becoming-bat experiences is broad and enriches the spectrum of human-bat relations in urban areas. These conclusions resonate with the literature about becoming-animal proposed by Haraway (2008) where animals and humans become close at the moment when humans cross the borders of species/ She said that when the species meet they continue learning about each other, and keeping contact with the animal can be transformative for the daily life of a bat-lover. Moreover, this becoming-animal also resonates with Deleuze and Guattari (1987) concepts of becoming, where bat-lovers do not imitate or copy the live of bats, and instead they approach and engage with each other through the encounters where differences between humans and bats are getting blurred.

What has been proposed, by Whatmore (2002) regarding the process of becoming-animal through networks it was also observed in this research. Bat-lovers are also part of a networking system, which involves the participation of different actors from different levels in order to visualize bats in the social context, thus a direct influence in the conservation status of bats.

6. Final Conclusions

This research aims to answer the question: “*How do bat-lovers make sense of and get involved with bats and also how do these practices contribute to bat conservation issues in the city of Groningen?*”

As mentioned previously in the framework of this research, the *transspecies urban theory Zoopolis* calls for a deeper understanding of the relationships between humans and wild animals in the urban areas. Bats have a high dependency on the human structures in the city of Groningen (Larenstein Van Hall, 2012) therefore this increases the possibility of the encounters between humans and bats within the city. This makes Groningen an interesting study case to explore from a viewpoint of the “transspecies urban theory”. This research outlines how bats are shaping the city of Groningen through bat-lovers and the local governmental practices. Moreover, the convergence of the urban wildlife ecology and the social theory framed by Wolch (2002) in the “transspecies urban theory” serves as a platform to encompass these theories to explore human-bat relationships in urban context.

This thesis sought to establish how the dimensions of human values for nature (Kellert, 1993) based on the “The Biophilia Hypothesis” (Wilson, 1993) are expressed in a group of bat-lovers. Likewise, this thesis explores the bat-lover practices framed into the concept of “Becoming-animal” (Deleuze & Guattari, 1987; Haraway, 2008; Whatmore, 2002). Both theories have been incorporated to explore the factors of emotional affiliation of humans to bats. Both theories mentioned above are framed into the big umbrella of the “transspecies urban theory” in which the human values for nature and becoming animal are interwoven. Therefore, these results should be understood as a process of knowledge and practices. Also, this research aimed to explore in depth the relationships between bat-lovers and bats and how their practices and experiences can enhance the development of mechanisms to engage people in bat conservation issues.

The role and the significance of bats in Groningen is formed by the urban wildlife ecology data which is provided by the different stakeholders and through practices of the social setting where people have shaped the possibilities for bat survival in the city of Groningen. Moreover, it is also evident that bats are shaping the urban landscape not just physically but also in a social context.

1. *Human values for bats*: What motivates people to get to get involved with bats?

First of all, attention was paid to the role of human values for nature (Kellert, 1993), based on their innate emotional affiliation to nature and “love for nature” as proposed by Wilson (1993), to explore the aims of participants who engaged with bats. However, as discussed in the theoretical framework, “The Biophilia Hypothesis” of Wilson and Kellert (1993) implies not only an innate human instinct—Biophilia is also complemented with rules and continuous learning. This study has identified two important ideas drawn from the narrative of the participants. First, we saw how diverse were the human values for bats based on each bat-lover’s individual experience. Second, we saw that the way people treat bats in their adult life is a direct consequence of their early-life experiences with bats.

Regarding the human values for bats based on Kellert’s dimensions (1993), the majority of the participants acknowledged the curiosity, the interest, the sense of wonder and the sense of mystery in relation to bats. This outcome is consistent with the *naturalistic* value described by Kellert (1993) as the satisfaction derived from a direct contact with bats combined with an inquisitive personality and the feelings of wonder towards nature. Furthermore, the *naturalistic* value encourages the participants to increase their knowledge and understanding of bats through practices that provide high levels of satisfaction.

A second most common value among the participants is the *ecologist-scientific*. This value is associated with people who perform activities associated with natural sciences. Almost half of the participants are related to the field of Natural Sciences in areas of ecology and zoology. The case of Calvin (the youngest participant) stands out because at his young age he is able to recognize different bats and bat-handling devices such as detectors and laser-detectors; he also has a vast knowledge about bats.

Anja and her bat shelter is another exceptional case. She has been training herself during the last 15 years and she has developed the techniques for taking care and handling the bats in captivity. Her advocacy of bats, which have been injured or disabled, is grounded in the *humanistic* value. According to Kellert (1993), this value enhances the capacity to develop bonding, altruism and a sharing character. Moreover, according to Kellert (1993) this value tends to humanize the natural world, animals and plants, and even landscapes. Furthermore, a close encounter of bats seems to be the trigger to awakening the emotions of empathy or bonding. As an example, Anja has multiple daily contacts with bats because of her bat shelter activities. In addition, she shares her home with them; when Anja has young bats she places

them indoors in special enclosures or close to her body to take care of them in a more effective way.

People that experienced a humanistic value towards bats tend to find human characteristics in these mammals e.g. beauty and sweetness, which makes it easier to develop strong emotional feelings towards them. This gets reflected in human tendencies to take care of and nurture the bats.

Another value present among the participants is the *moralistic* value. One of the participants expressed concern for the environmental problems that bats faced at a local level. This behavior indicates strong feelings of empathy and ethical responsibility. It is noteworthy that a set of human norms and perceptions about what is right and what is wrong is framed in the human morality spectrum. As mentioned by Mallory (2015), human values for nature based in the biophilia concept can be a virtue, which has the capacity to enhance human attitudes towards nature, in this case towards bats. However, one of the bat-lover in the city of Groningen showed a profound desire to protect and conserve bats, and these feelings were driving him to participate as a volunteer in several activities which involve bat conservation issues. Likewise, using the bat symbol for auto-identification represents the *symbolic* value proposed by Kellert (1993). In this value, bats are seen by one of the participants as a spiritual connection, a bat image appears repeatedly throughout the participant's life. Furthermore, this symbolism has created a strong bond, which is expressed in personal beliefs. According to DeMello (2012), animals used as totems are those that fascinated us and in which human beings find a personal or spiritual connection. Animals have been important instruments through the humankind history; they have given rise to ideas, imagination, and languages (Shipman 2010).

Finally, the utilitarian value was exemplified in the environmental service that bats perform in the city such as the insect control. This value is associated with the utilitarian dependence on nature for humans to survive. Today environmental services have become a way of valuing wildlife on the basis of the role that they perform in the ecosystem. Moreover, the benefits of bats in urban areas can be quantified and even valued in economical terms. Bats in Groningen play an important role, thus the appreciation marks a new strategy to visualize bats in the city.

Another important finding in this section is related to the childhood events and memories in which the participants first engaged with the bats. Five out of eight participants in this research highlight the positive childhood experiences that shaped their attitudes towards the bats. This phenomenon is reflected in Well and Lekies (2006) studies about the connection

between the childhood and the adulthood environmental attitudes. Furthermore, their study concluded that encouraging children in early ages (until 11 years old) to become engaged with nature is strongly reflected in the adulthood as positive environmental attitudes. Regarding the bat-lovers, it is important to highlight that they are strongly influenced by the experiences in their early life. Thus, their childhood memories of bats and various meanings they associated with the bats were connected to either particular places e.g. a parents' house, a school, a neighborhood or experiences e.g. a mother's book, a father occupation, a close bat encounter, a bat specialist and also media pop comics. Bat-lovers have been influenced by diverse circumstances in early ages. Thus, people become bat-lovers because of the combination of experiences and knowledge they gained through their bat encounters. Emotional triggers such as childhood memories are also an important factor to make people engage with bats later on. Recognizing the foundations of the human-bat relationships by identifying individual bat-lover experiences and values are of relevance for the environmental education.

Bats are also stimulating the development of social networks. People from different backgrounds join the bat-group of Groningen and they collaborate closely with each other as well as with the municipality. Moreover, bats are shaping bat-lovers' values and perceptions. This research established the role and the significance of bats for this group of bat-lovers through studying the physical and imaginary encounters between people and bats in Groningen.

2. *Becoming-bat*: What kind of human-bat practices (i.e. activities, knowledge, learning, expressions) and technologies brings humans and bats closer? And how are these human-bats relationships placed in the city in temporality, place and space?

One significant finding that emerged from this research is framed in a combination of ideas drawn from the theories of Deleuze and Guattari (1987) and Haraway (2008) about *becoming-animal*. Becoming-bat in this research negotiates the positions of each species, human and bat, and identifies how humans relate to bats. Furthermore, in a human attempt to get close to bats, historical borders of these species had to be questioned. This research highlights that for many of the participants becoming-bat happened in the experiential moments of proximity, where features such as temporality, space, place and devices converge at the same time.

However, as discussed in the theoretical framework, bats have a nocturnal behavior and inhabit airspaces; due to these two biological features bats are difficult to track. Therefore, in order to encounter bats, the participants performed three main activities. The first one is the

Winter Bat Count, which takes place in February: each year some of the participants attended the specific locations to count the number of bat individuals that were hibernating. In the city of Groningen some churches and bunkers are listed as bat hibernation places. This activity illustrates the convergence of the winter (temporality), the hibernation structures (space) and the churches and bunkers²⁷ (place). The second activity is the bat-boxes census conducted in the beginning of spring and in autumn (temporality) in green areas when the bat-boxes are located in several parks in Groningen (space). And thirdly, there are the spring-summer bat counts, which several of the participants attend. This activity occurs at night (temporality), in the city of Groningen and in other parts of the province (space), in each of the streets that cars can pass through (place). Furthermore, for this activity all volunteers use bat-detectors and they count every bat they encounter on their way, they recognize the species by the high-frequency shrieks and depending on the composition they can determine if bats are having social calls or foraging.

This research has shown some of the ways in which temporality, space, place, and devices are central to the ways that bat and people get closer to each other. Specifically the air space and the temporality (night time and seasons of the year) represent a challenge to bat-lovers, and that leads to different ways of becoming-bat. In most of the cases the process of becoming-bat relies on the expansion of the senses through devices in order to encounter bats. In other cases it lies in the physical and visual contact between the bats and the participants. These practices reinforce the bond between humans and bats and destabilize the border between the species. This result resonates with the results of some previous studies (Bonta, 2010; Bear, 2010, 2011; Lorimer, 2010) and with the concepts of Deleuze and Guattari (1987) and Haraway (2008) about proximity through knowledge practices, devices and encounters.

The practices carried out by the bat-lovers have highlighted the tendency, which was already outlined in the existing literature on the human-animal relationships. The arguments of Ginn et al. (2014) can be now extended by means of paying attention to the ways in which “is achieved when bat-lovers engage with an awkward creature that is totally opposed to human beings.

The focus on becoming-bat has emphasized the adaptability that humans have to the time, space, and places of bats. This fact is concurrent with the studies of Bear (2010; 2011) and

²⁷ In this case the participants suggested not to use the exactly names of the places in order to keep the hibernation places protected.

Bonta (2010) where the living areas of human and non-human animals are overlapping through common practices. Human daily routines are transformed in order to achieve this overlapping of time, space and places. Bear (2010; 2011) reflects about how animals that inhabit “no air spaces” are difficult to reach and connect to humans, but nevertheless humans adapt themselves through technologies and practices in order to achieve proximity. Moreover, Bonta (2010) described how a human can transform a daily routine to become-bird: by means of having long intense routines that started very early in the morning and lasted until late night when walking around could allow encountering different species of birds. These study cases argue that becoming is a process of learning in a flexible environment where humans and non-human animals are intertwined through embodied knowledge. Being in a constant contact with bats plays a key role to develop the bat-human relationships. In addressing the human-bat relationship, this research illustrates how bat-lovers have significantly reduced the gap between humans and bats in the process of becoming-bat. This study has demonstrated that bat-lovers recognize that there are several limitations to encounter bats, but despite those the bat-lovers practice attempt to blur borders and establish effective relationships. Bats are present in Groningen and they play an important role in the city. The increasing visibility of bats in the city through bat-lover practices will reinforce the agency of this mammal in the city.

3. How do bat-lovers contribute to bat conservation in Groningen?

It should be noted that bat-lovers, besides influencing their individual rhythmicity’s directly by becoming-bat, this fact also has implications on the urban human-wildlife relationships. Bats are influential species in the urban context, as explained in the framework about the bat status quo and the protection and conservation guidelines dictated by the European Union. Moreover, the Dutch government declares that bats, like all animal species in the region, require more efforts for protection. Bats, on account of their high protection status in the EU and the Netherlands, have encouraged to the Groningen government and planning experts to recognize their importance across the urban landscape. In the last 50 years there have been several measures applied by the EU in order to improve the populations of bats. This has been translated at local level in the form of practices such as governmental regulations (norms and projects), local conflicts (economic issues) and societal experiences bat-group of Groningen, bat-lovers). Furthermore, environmental services have been added to the list of qualities that current urban development programs have incorporated into their agendas. The city of Groningen, through the Ecological Department at the Municipality, in combination with the

efforts of bat-lovers have developed extensive bat monitoring reports (bat-counting). This information has been transformed into maps, which indicates the location of the different species of bats in the city. Furthermore, these maps and bat ecology knowledge will play a critical role in the city planning strategies at the local government in future interventions. As a consequence, bat-lovers play an important role in the city, which has implications on the conservation and the protection of bats. This thesis has explored in a general terms, how urban planning can be approach from an animal conservation perspective in order to improve the coexistence between humans and bats in the city. Regarding to urbanization process and changes in the urban landscape this thesis highlights the need to study the processes of human-wildlife relationships in urban context. Likewise, how the study of attitudes and practices toward bats can contribute to a better understanding of bats in societal context. Moreover, bat-lovers attitudes and practices are shaping individual identities and urban landscapes in the city of Groningen in several venues e.g. political, economical, cultural, ecological.

Finally, it is worth nothing that bat-lovers play an important role in the production of urban bat ecology information. The presences of bats in the city require to be embraced from diverse perspectives; thereby the participation of bat-lovers in the production of knowledge enriches the social context through practices and knowledge, which embrace the bat ecology data from a social perspective.

Thus, in this thesis the hypothesis of *biophilia*, *the values for nature* (Kellert & Wilson, 1993) and *becoming animal* (Deleuze and Guattari, 1987, Haraway, 2008) have been adequately integrated into the *transspecies urban theory* proposed by Wolch (2002). This integration offered an alternative approach to the human-non-human animal relationships in urban contexts, which can combine the urban wildlife ecology and social theory via human-bat relationships and the impact of these relationships in the bat conservation field in the city of Groningen. Moreover, the explorations of the human-animal wildlife relationships can be directly applied in urban processes, structures, education and local normative.

7. Future Research

Animal geographies are a field of study with a wide range of issues and it involves both humans and animals. However, the major findings of this research, such as human values toward bats and becoming-bat, give rise to new ideas. These ideas can be expanded in future research projects.

The bat-lovers network and citizen science

During my research I found that there is a considerable number of bat groups in different provinces in the Netherlands dedicated to the conservation and protection of bats. With regard to this, future research could seek a better understanding of (a) how bat practices link people from different backgrounds and how they drive them to get along with each other; (b) how this bat network and social participation are creating bonds between people and how these productions of science contribute to the subjects like conservation or ecology on a national level and on the level of provinces. Framed in the concept of citizen science and human-non-human animal relationships, bat-lovers motivations to participate in social groups have not been fully explored.

Bat-lovers and gender

There is scientific literature that agrees that women generally react negatively to the presence of a bat because of the biological and evolutionary pressures related to the woman's need to protect her offspring (Prokop, 2009; 2008; Neuberg, 2011; Matchett & Davey 1991). Nevertheless, there is a significant number of women doing research about bats, participating in volunteer bat groups or running rescue shelters for bats. It is worthy to explore the factors that encourage them to participate in these activities and experiences. It can clarify some concepts in relation to the Disease Avoidance Theory (Matchett & Davey 1991), which mentioned that animals like bats are seen as carriers of dangerous diseases such as rabies, thereby they are the subjects of rejection. Furthermore, these studies can also enhance the human-bat relationships in order to understand how women relate with bats and what are the mechanisms that women develop to establish bonds with bats.

Bat-lovers and Bat-detectors

In this research I briefly addressed the relation between the technology and the bats in an attempt to explain the becoming-bat process. Future research may therefore consider in more

depth the implications of the use of technology in the search for bats. This research can reinforce the views of Donna Haraway (2008) about technologies, animals, people and becoming-animal.

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Appendix

Appendix 1

Electronic communication

A) First email

To: Participants

Dec 12, 2014

Dear all

My name is Angelica Caiza and I am a student at the University of Groningen. Right now I am working on my thesis about animal-geographies. I want to explore the Bat-human relationships and I was wondering if you want to help me with an interview or a questionnaire. Let me know if you have time in the next weeks and I will send you more information about my research. Thanks for your time

Angelica Caiza

Van der Waalsstraat 7A 9727 HT

Groningen, The Netherlands

B) Second email:

To: Participants

Dec 12, 2014

Dear all

Firstly, thanks a lot for your kind participation. Secondly, I will introduce myself again.

My name is Angelica Caiza, I am from Ecuador and I am a Biologist with specializing in Ecology and Conservation. I did work in Ecuador in several projects related with animals, but my expertise is on tropical bats.

During my bat-biology carrier, I figure it out that one of the main issues about bat conservation is related to human perceptions. Thus, for this reason for my Master program I decide to explore the social sciences to understand how human-animal relationship have been impacting in conservation issues and decision-making in legal issues.

Right now, I am working in my Mater thesis at the University of Groningen at the faculty of Spatial Science. My topic is about Animal Geographies, which aims the study about

human-animal relationships. I am focusing in people and bats here in the city of Groningen. So I want to explore in deep several cases of human-bat relationships to understand how bats are perceived by “bat-lovers” in the city Groningen.

Later I will send precise information about my research proposal and the general topics that we will talk in the interviews. So far I can say that the interviews will be recorder (voice not video). I the next mail I will propose some dates that you will choose according with your time availability, so we can plan in order of your free time!

Again, thank you very much for your collaboration and we will meet soon!

My best

Angelica Caiza

Van der Waalsstraat 7A 9727 HT

Groningen, The Netherlands

C) Scheduling the interviews with the participants- Email communication send it on 17 December 2014.

To: Participants

Dec 17, 2014

Dear all

I Hope each of you are doing great. Following, I will enlist some days that you can choose and mentioned the hour for our meeting.

So from the following list, please choose a day, hour and a place (address) that you want to meet for the interview. The meeting can take place at your house or in a public place it depends how you feel comfortable about it.

The interview will last between 30 minutes to 45 minutes max. This is not a semi-structure interview; it means that I will ask you few open questions about the main subject (human-bat relations).

I will ask you also some basic personal information during the interview such as Personal info: name, age, religion, gender, activities, education

Here is the list of date that area available for me, please pick a day and include information such as hour, address and phone number.

19 December

20 December

21 December

22 December

23 December

28 December

29 December

30 December

If you don't have time on these dates please write down, which date and hour and place (address) that you will be available for an interview. And if you have some questions please don't hesitate to contact me.

Again, thank you very much for your collaboration

My best

Angelica Caiza

Appendix 2 CONSENT FORM

Inform Consent

Research by Angelica Caiza (Research Master)

Supervised by Associate Professor Bettina van Hoven

December 2014

Part 1. Information Sheet

Through this form I have been requested to permit the use of the information that I provide for this project as a participant. This research is part of Angelica Caiza's thesis in order to obtain a Master's degree and it is co-supervised by Dr. Bettina van Hoven from the Cultural Geography Department at the Faculty of Spatial Science at the University of Groningen.

After being contacted via email and having talked to Angelica I know **there are no mental or physical potential risks or side effects associated with this research, and that** the information I provide as a participant in this study will be used only for the purposes of my thesis and possible publications.

Also, through this document I declare that my participation is voluntary and at no time did I feel pressured or forced to cooperate with this investigation. I am also aware of the fact that I can withdraw my participation in this project at any moment I decide to.

As a participant my confidentiality and anonymity have also been taken into account so I decided that for purposes of this research, Angelica Caiza can use my original name: Or a pseudonym:

I know that my interviews will be recorded and transcribed for the purposes of this research. As pointed out in the beginning, the data I provide would be used in the thesis to obtain the degree of a Master, but there is also a possibility that the data might be used for the publication of scientific papers or academic presentations.

In case I need any other information about this research, I have the contact information of Angelica Caiza and the freedom to communicate with her. Her e-mail addresses are angelicacaiza@yahoo.com and m.a.caiza.villega@student.rug.nl. She can also be contacted through Facebook as Angelica Caiza and on her Dutch phone number: 0636129200.

Therefore through this form I am consenting to participate in the research and allow my information and pictures take during the research to be used.

Signed

Data

Appendix 3 PARTICIPANTS DATA

	Name	Age	Gender	Origin	City of residence	Occupation	Education	Meeting point	Interview time	Item	Extra Activities
1	Liesbeth E. Cave	56	Female	NL	Groningen	Self-employed	Engineering safety industry	Home	48	Yes	Poem Group Coordinator/ Bat Group Groningen
2	Klarissa Nienhuys	67	Female	NL	Groningen	Retired	Chemistry master	Home	58	Yes	Secretary-Coordinator Bat Group Groningen
3	Calvin Kunenborg	12	Male	NL	Assen	Student	Basic School	Home	30	Yes	
4	Jurjen Tichelair	54	Male	NL	Groningen	Retired	Psychology	Home	42	Yes	Musician
5	Johann Prescher	28	Male	NL	Steenwijk	University Student	Bachelor Forestry and Nature	Public space	23	no	assistant of Ecology Advice Services
6	Klaas van Nierop	52	Male	NL	Groningen	Ecologist at the Municipality of Groningen	Ecology	Municipality public place	47	Yes	
7	Anja Sjoerdsma	42	Female	NL	Adorp	Sales business	Accountant	Home	1:33	Yes	Bat shelter Adorp
8	Teddy Marco Dolstra	39	Male	NL	Nijeholtwilde	Private Ecologist Advice	Forestry and Nature	Home	57	no	Participant at the Bat group Groningen

Appendix 4 QUESTIONNAIRE GUIDE

Research Question	Subject	Help Questions
Opening of the interview	Demographic information: This information know the characteristics of the sample	Name, age, gender, occupation, origin, civil status, education, extra activities.
What motivates people to get to get involved with bats?	Biophilia and Values toward bats Natural values toward bats: Determine in a comparison with Keller's values for Nature what kind of values bat-lovers give to bats	Exploring the bat-lover trigger connection
		When do you related with them: Age? Experience?
		Why do you like or dislike from bats?
		What do bats represent for you?
		Do you have an especial memory about bats? Do you have a special object about bats?
How came the idea of working with bats/ or include them in your activities?		
What kind of human-bat practices (i.e. activities, knowledge, learning, expressions) and technologies brings humans and bats closer?	Becoming-bat	What kind of activities do you do in relation with bats
		Do you use some devises to encounter bats?
		Do you belong to a group, which is involved in bat- activities?
How are these human-bats relationships placed in the city in temporality, place and space?		Do you know where bats are living here in the city?
		If you want to encounter bats: when, where and how you can encounter them?
How do bat-lovers contribute to bat conservation in Groningen?	How our participants know about the biology of bats and conservation issues: Discover how much bat-lovers are also involve with scientific topics and legal subjects	Scientific and Regulation Knowledge
		Could you please tell me what do you know about bats?
		Do you know some about the bats in Groningen?
		Could you please tell me if you know something about bat conservation legislation policies or bat conservation
		Do you know something about bat conservation policies in Groningen

Do you think that your activities related with bats in somehow influence the conservation of them?

Any of the questions

Closing question

Extra questions

Do you want to mention some extra information about bats?