

**Knowledge, attitudes and activities around wildlife and nature**  
**A case study of Richmond, BC**

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And of course to my family for keeping me fed and reminding me to have fun - you know I never would have made it without you!

# EXECUTIVE SUMMARY

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## INTRODUCTION

This report summarizes research conducted for the City of Richmond, a fast growing community situated on an island bordered by the Fraser River and the Georgia Strait. The City has a wealth of wildlife and possesses unique ecological characteristics. In recent years, Richmond has experienced a significant amount of social and cultural change. The objective of this research project was to better understand the attitudes that Richmond residents have towards wildlife and nature in the City, and to identify any differences in these attitudes between socio-demographic groups. The research considered what people know about wildlife and nature; the outdoor activities they participated in; and, the attitudes respondents held towards wildlife and nature.

This research may be used by the City of Richmond parks department to develop outreach and education, or inform policies and programs that are responsive to community needs.

## METHODS

A literature review was conducted to establish the current state of knowledge around attitudes towards wildlife and nature; demographic differences in attitudes; and, ways of measuring environmental attitudes.

An online survey was developed to obtain information about people's knowledge of local wildlife and natural places; their use of parks and other natural places; and their attitudes towards wildlife and nature. The survey was administered through the City of Richmond's Let's Talk Richmond community engagement tool. Survey results were analyzed to gain an understanding of residents' knowledge of and feelings towards wildlife and nature. Richmond residents over the age of 18 were eligible to participate in the survey.

Attitudes towards wildlife and nature were measured by way of questions modeled after the Kellert typology. This typology was developed to measure basic attitudes towards animals and nature. The survey included 40 statements, representing nine different attitude measures.

## FINDINGS

The Let's Talk Richmond community engagement tool generated 252 survey responses. Suspected duplicates were removed, as were responses from people who did not meet the eligibility criteria due to age or residence. One paper survey was received and was manually entered into the database. This resulted in 212 usable responses. For eight of these, respondents did not answer the questions about attitudes, and did not contribute to that portion of the research.

Overall, survey respondents were quite knowledgeable of the City's wildlife and natural places, and felt strongly about the need to protect the City's remaining natural places. Respondents also advocated for more ways for people to engage with nature and to help newcomers develop an appreciation for the City's unique natural history.

Survey respondents were not representative of the City's population, being predominantly female, English speaking, and either Canadian, or of European origin. There were few young respondents, and the City's large Asian population was underrepresented. The nature of the survey sample may be a result of the

recruitment methods used, or might reflect a lack of interest in the subject matter on the part of under-represented groups.

The survey sample was not sufficiently diverse to provide any reliable insights into demographic or cultural differences in attitudes towards nature. The results do however provide an intimate picture of the beliefs, values, opinions and attitudes of many long-time Richmond residents who were interested in the subject matter and willing to take the time to share their thoughts by participating in this research.

#### About the respondents

- 61% female
- 65% over the age of 50
- 3% under the age of 30
- 61% live in West Richmond
- Nearly 80% spoke English as their first and dominant language, with approximately 5% speaking either Mandarin or Cantonese at home
- More than half of the responses came in subsequent to the survey being featured in the local newspaper

#### What people know

- The animals most frequently seen in Richmond included: the crow, Canada goose, great blue heron, racoon, songbirds, and squirrels
- The least known animals were mink, muskrat and shorebirds
- Rabbits, rats and racoons were all frequently mentioned in the comments as problem animals
- The best known park was Minoru Park, which 100% of respondents knew
- The least known park was Paulik Park, which was unknown to 56% of respondents
- Parks thought to be very or somewhat natural include the West Dyke, Gary Point, Macdonald Beach Park, and Terra Nova Rural Park
- Parks considered the least natural were school fields, South Arm Park and Steveston Park
- The most used sources of information around wildlife and nature include the newspaper, signs in Richmond parks, brochures and friends or family

#### What people do

- The most common activities, evidenced by the number of people who reported engaging in these activities at least monthly, were: walking, gardening at home, riding a bicycle, and bird watching
- The least common activities, evidenced by the number of respondents reporting either never or only once or twice to have undertaken, were: hunting, picking wild mushrooms, and fishing
- Other activities identified by participants included boating (canoe, kayak, dragon-boat), in-line skating, and simply sitting quietly in the park enjoying nature

#### How people feel

- Three Kellert typologies expressed by the majority of respondents were ecologicistic, moralistic and, aesthetic<sup>1</sup>
- The least commonly expressed attitudes were those reflective of Kellert's negativistic<sup>2</sup> typology, and the low standard deviation for this measure suggests that few respondents identified with these attitudes

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<sup>1</sup> Ecologist attitudes reflect concern for the environment as a system and for the interrelationships between animals and natural habitats. Moralistic attitudes reflect concern for proper treatment of animals and nature. Aesthetic attitudes focus on the beauty and symbolic characteristics of animals and nature. (Baharuddin et al, 2013, pp. 31-32; Kellert, 1984, p. 213; Wolch & Zhang, p. 426)

<sup>2</sup> Negativistic attitudes reflect indifference, dislike or fear of animals and nature.

- The dominionistic<sup>3</sup> typology had a low average rating, but the highest overall standard deviation, suggesting that respondents differed the most on this attitude measure
- More than half of all respondents provided additional comments in response to the open-ended question, many of which evidenced a deep affection for the City’s natural history, tempered by a dislike of certain “problem” species and discomfort with ongoing changes to the physical and social landscape of the City

## **RECOMMENDATIONS**

### **Recommendation #1 – Engage the Community**

Young people and recent immigrants, were underrepresented in this research. While the reason for this is unknown, one possibility is that they are not aware of the City’s natural history or are not interested in the topic. Promoting nature and wildlife themed events widely, through various media and in a variety of languages, may reach more residents and build awareness of available outdoor recreation opportunities.

The City may also consider deepening engagement with members of underrepresented groups when these individuals participate in nature related programs or events. This may be done through short surveys offered to those who participate in City programs, or by interviewing attendees at nature themed public events.

Many respondents were knowledgeable and passionate about the City’s natural history. Such residents should be encouraged to share their knowledge and passion as a way of fostering appreciation for the City’s wildlife and natural places.

### **Recommendation #2 – Help Residents Understand and Experience Nature**

Promoting awareness of the City’s abundant natural history and providing a variety of ways for people to learn about and experience the City’s wildlife and natural places may help to foster greater community engagement and appreciation of the City’s resources and facilities. Attitudes towards wildlife and nature may also shift as people gain direct experience. The following actions may further this objective:

- Making information available when and where people want to access it, through well designed and judiciously placed signs
- Using technology to facilitate the dissemination of current information and enhance the nature experience
- Offering special events, roving park interpreters or a “Park of the Month” promotion
- Developing more access points and ways for people to get close to nature
- Building gateways between manicured parks and urban areas and more natural areas
- Encouraging non-traditional outdoor activities

### **Recommendation #3 – Acknowledge Change and Challenges**

Reminding people of the City’s history and evolution may help residents accept that change is inevitable. This may also draw awareness to the challenge of managing change and encourage people to develop creative ways of living with wildlife, and promoting nature in their own yards and gardens.

Acknowledging the changes experienced by long-time residents may help people to contextualize their experiences and encourage them to help shape the future of nature in Richmond.

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<sup>3</sup> Dominionistic attitudes reflect humanity’s mastery and control of animals and nature.

The City may consider building on existing community information and engagement activities, such as open house events, to highlight what has been done to understand and address the impact of change on wildlife and nature. This will not only increase awareness of the City's efforts to accommodate local wildlife, but may also encourage residents to consider making similar accommodations around their own homes or businesses. The interplay between wildlife, natural places and agriculture can also be recognized as a way of highlighting the sometimes conflicting needs.

#### **Recommendation #4 – Raise Awareness of Park & Wildlife Management**

One of the more challenging issues identified by respondents was anti-social behaviour, including littering and abandoning pets in public parks. Residents who are new to Canada may not be aware of services such as humane societies where they may take unwanted pets. Communicating in print media may discourage this type of behaviour.

Some respondents perceived health and safety risks associated with certain wildlife, while others were unhappy with property damage caused by wildlife. Rats, raccoons, coyotes, skunks and snow geese topped the list of unpopular creatures, though the plight of feral rabbits solicited the most emotional responses. The City may wish to raise awareness of these creatures, their needs and habits, along with any existing and recommended control measures.

The City should consider communicating animal control openly, and should strive for transparency around the process, emphasizing property damage and safety hazard where appropriate.

#### **Future Research**

Further research into preferred activities and motivations among Richmond's various demographic groups may help the City to better understand community needs and develop responsive outdoor recreation programming. This in turn would allow more residents to gain direct experience with the City's natural areas, which may help to shape their attitudes towards nature. Young people who have immigrated to Canada, or who are the children of immigrants may provide unique insights into the needs and interests of immigrant groups.

## **CONCLUSION**

This research identified what Richmond residents know, what they do and how they feel about wildlife and nature in the City, and provided recommendations for disseminating information and making programs and outreach more responsive to its diverse constituency. The low participation of certain segments of the population made it difficult to identify differences in attitudes towards wildlife and nature that may exist between various sub-groups of Richmond residents.

The fact that the survey sample was not representative of the City's demographic composition should give pause, as it raises questions around interest in wildlife and nature among underrepresented segments of the population, along with the possibility that existing forms of community engagement may not be reaching all residents equally.

Overall, respondents were knowledgeable and passionate about Richmond's wildlife and natural places. Respondents generally supported preservation of existing wildlife habitat and natural places, as well as initiatives that will raise awareness of Richmond's natural history and allow people the opportunity to connect with nature. The City of Richmond parks department may wish to take this into consideration

when developing policies, programs or public education initiatives that are responsive to community needs and interests.

# TABLE OF CONTENTS

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Acknowledgements.....	1-i
Executive Summary.....	1-ii
Introduction.....	1-ii
Methods.....	1-ii
Findings.....	1-ii
Recommendations.....	1-iv
Conclusion.....	1-v
Table of Contents.....	1-vii
List of Figures.....	1-ix
List of Tables.....	1-ix
1 Introduction and Background.....	1
1.1 Introduction.....	1
1.2 Background and Problem Definition.....	1
1.3 Organization of Report.....	3
2 Methodology.....	4
2.1 Theoretical Perspective.....	4
2.2 Literature Review.....	4
2.3 Data Collection - Surveys.....	5
2.3.1 Recruitment.....	6
2.3.2 Cleaning the Data.....	7
2.3.3 Measuring Knowledge, Activities and Attitudes.....	8
2.3.4 Measuring Acculturation.....	9
2.3.5 Open-ended Questions.....	10
2.4 Limitations and Delimitations.....	10
2.4.1 Technical Limitations.....	11
2.4.2 Representativeness of the Sample.....	12
3 Literature review.....	13
3.1 The City of Richmond.....	13
3.2 Environmental Attitudes.....	13
3.3 Culture, Socio-demographic Factors, and Environmental Attitudes.....	14
3.4 Urbanization and Disconnection from the Natural World.....	15
3.5 Measuring Attitudes – the Kellert Typology.....	15

4	Conceptual Framework.....	18
5	Results.....	19
5.1	What People Know .....	19
5.1.1	Wildlife .....	19
5.1.2	Parks and Natural Places.....	20
5.1.3	Where do Richmond Residents go to Learn More? .....	22
5.2	What People Do .....	23
5.2.1	Passive Recreation, Active Recreation and Consumptive Activities.....	23
5.2.2	Addressing Concerns .....	24
5.3	How People Feel.....	25
5.3.1	Attitude Differences.....	26
5.3.2	In Their Own Words... ..	30
5.4	Demographic Characteristics .....	35
5.5	Summary of Results.....	37
6	Discussion and Analysis .....	39
6.1	A Note About the Media.....	39
6.2	Attitudes Towards Wildlife and Nature .....	39
6.3	Engaging All Members of the Community.....	41
6.4	Activity Preferences.....	41
7	Recommendations.....	43
	Recommendation #1 – Engage the Community .....	43
	Recommendation #2 – Help Residents Understand and Experience Nature .....	43
	Recommendation #3 – Acknowledge Change and Challenges.....	44
	Recommendation #4 – Raise Awareness of Park & Wildlife Management .....	44
	Future Research .....	45
8	Conclusion .....	46
9	References.....	47
	Appendix A – Survey Questions.....	52
	Appendix B – Promotional Material.....	58
	Appendix C – Richmond News article .....	64
	Appendix D – Attitudes Towards Wildlife and Nature .....	66

## LIST OF FIGURES

---

Figure 1 – Likely recruitment method and participant age (count of responses).....	7
Figure 2 – Kellert typology.....	16
Figure 3 – Conceptual framework .....	18
Figure 4 – Familiarity with local wildlife .....	20
Figure 5 – Park naturalness ratings.....	21
Figure 6 – Other natural places.....	22
Figure 7 – Sources for information about wildlife and natural places.....	23
Figure 8 – Activities.....	24
Figure 9 – Mean of most common attitude measures by age.....	28
Figure 10 – Mean of least common attitude measures by age .....	28
Figure 11 – Mean of most common attitude measures by acculturation .....	30
Figure 12 – Mean of least common attitude measures by acculturation.....	30
Figure 13 – Age and gender - City of Richmond.....	35
Figure 14 – Age and gender - Survey participants.....	35

## LIST OF TABLES

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Table 1 – Recruitment events.....	6
Table 2 – Activity categories .....	8
Table 3 – Acculturation measures.....	10
Table 4 – How respondents would address concerns.....	24
Table 5 – Descriptive statistics of attitude measures .....	25
Table 6 – Attitude measures by sex .....	26
Table 7 – Attitude measures by age category .....	27
Table 8 – Attitude measures by degree of acculturation.....	29
Table 9 – Richmond's languages.....	36
Table 10 – Highest level of education completed.....	36
Table 11 – Personal annual income .....	36
Table 12 – Survey response vs. population by neighbourhood .....	37

# 1 INTRODUCTION AND BACKGROUND

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## 1.1 INTRODUCTION

The City of Richmond is an island community located in British Columbia's lower mainland, between the Fraser River and the Strait of Georgia. The City is home to a wealth of wildlife and possesses unique ecological characteristics. Richmond has also experienced a significant amount of social and cultural change in recent years. Ensuring that parks and open spaces respond to changes and community needs, while also meeting the needs and expectations of all residents is important to the City (City of Richmond, 2011, pp. 6 & 21).

The research summarized in this report was conducted for Marie Fenwick, Manager, Parks Programs, for the City of Richmond. Its purpose was to better understand the attitudes that Richmond residents have towards wildlife and nature in the City. The research considered what people know about wildlife and nature; the outdoor activities they participated in; and, how they felt about a variety of local wildlife and natural history issues. The specific objectives of this research were to:

- Identify what people know about local wildlife and natural places; the outdoor activities people participate in; and, the dominant attitudes towards wildlife and nature
- Identify any significant differences in attitudes towards wildlife and nature between various sub-groups of Richmond residents
- Provide guidance to the City on how to inform Richmond residents about local wildlife and natural places, and provide recommendations on how to make the City's outreach and educational programs in natural history more responsive and relevant to a diverse constituency.

## 1.2 BACKGROUND AND PROBLEM DEFINITION

Richmond is the fourth largest city in British Columbia, with an estimated 2014 population of 205,262 (Government of BC, 2015a, p. 5). The City has recently experienced significant growth, with population growing from 179,297 in 2004, an increase of approximately 14% over ten years (City of Richmond, 2014P, p. 1). The addition of the Richmond Olympic Oval, a SkyTrain link to Vancouver, and the redevelopment of industrial land and older single family residences into multi-family developments has brought in new residents and transformed neighbourhoods.

Richmond is a multi-ethnic community with residents reporting over 140 different ethnic origins (City of Richmond, 2014a, p. 1). Over 70% of the City's population is classified as a visible minority (City of Richmond, 2014a, p. 2), and many of these residents are recent immigrants to Canada (City of Richmond, 2014b, p. 1). Approximately half of the City's residents are ethnically Chinese, while other common ethnicities include English, Indian and Filipino (2014a, p. 1).

Richmond boasts considerable natural history and is home to a wide variety of furbearing animals including coyote, beaver, skunk and raccoon. The City, along with its adjacent waterways and wetlands, forms a significant part of the migratory routes for several species of waterfowl, notably lesser snow geese, and fish such as salmon. Interactions between wildlife and humans have resulted in several management challenges for the City, including resident complaints, damage to parkland, and the desire to preserve and protect natural habitats in the face of urban growth (City of Richmond, 2013b, p. 3). The

City has developed an Urban Wildlife Management Framework as a means of addressing these challenges (City of Richmond, 2013b, pp. 3-4).

The City's Official Community Plan (the "OCP"), last updated in 2012, acknowledges the City's multicultural audience and the "diverse cultural approaches to environmental stewardship" that will be required to encourage all residents to develop a deeper awareness and appreciation for Richmond's natural environment (City of Richmond, 2014e, pp. 9-8 & 9-9). The City recognizes the psychological and physical benefits that contact with nature can have for residents, and has developed a Parks and Open Space Strategy (POSS) that establishes a desired outcome of reflecting the diverse interests of the community in the range of park spaces and programs offered (City of Richmond, 2013a, p. 16).

The City's Parks Department manages over 1,500 acres of parks and open spaces and coordinates programs and special events in the parks (City of Richmond, 2014g, para. 1-2). Earlier research into the needs of Richmond residents for parks, recreation and cultural programs and services identified clear differences in frequency of use among various ethnic and cultural communities (City of Richmond, 2009, p. 9).

The City acknowledges that nature and natural areas are "fundamental building blocks of a liveable and healthy city" (City of Richmond, 2013a, p. 62) and has identified tangible economic benefits of parks and open spaces including increased property values and tourism opportunities (City of Richmond, 2011, p. 17). Residents experiencing nature in the City may also benefit from outdoor recreation opportunities, and improved physical and mental wellbeing. Collectively, all residents benefit from ecosystem services such as flood control and improved air quality. As well, conservation of common resources, such as migrating fish and waterfowl, serves the broader public good by preserving these assets for future generations.

The challenge of accommodating the attitudes, behaviours and needs of Richmond citizens, while also promoting and maintaining the City's environmental well-being, has prompted this research. This research explored residents' knowledge and attitudes towards wildlife and the City's natural environment. A better understanding of how residents view natural spaces and where they learn about nature may help the City to develop policies, procedures and outreach programs that will better meet the needs of humans and wildlife. This in turn can help the City to fulfill its legal mandate of "fostering the economic, social and environmental well-being of its community" (Community Charter, 2003, s. 7).

Citizens' attitudes towards wildlife and nature should be of interest to all levels of government because attitudes influence behaviour, and determine how receptive residents are to government policies and initiatives around wildlife management and conservation. By better understanding the audience, government can find the right emotional match to connect with citizens (Conger, 1998, p. 86). Heberlein (2012a) suggests that policy makers should seek to understand attitudes towards environmental issues in order to develop appropriate alternatives, but should be aware that a variety of other social and economic factors may result in apparently contradictory behaviour (pp. 584-585).

In the fall of 2014, the City initiated community engagement on the topic of environmental stewardship as part of the City's Ecological Network Management Strategy, by conducting an environmental stewardship survey (City of Richmond, 2014b, para. 1). The City's Ecological Network Management Strategy survey sought community input on natural areas and environmental stewardship, in order to develop a strategy to manage and enhance the natural and built environments. This research into environmental attitudes can be distinguished from the Ecological Network Management Strategy survey

as it seeks to learn more about attitudes towards Richmond's wildlife and natural places in order to understand community needs and develop responsive public education and programs.

### **1.3 ORGANIZATION OF REPORT**

This report is divided into 8 sections, from introduction to appendices. Section 2 follows this introduction and details the methodology and methods used in selecting participants and administering the survey. A review of the literature on the ways in which social, cultural and demographic factors may influence attitudes and behaviour towards wildlife and nature is provided in Section 3. Section 4 then sets out the conceptual framework underlying this research. Section 5 presents the survey findings and Section 6 discusses the implications of these findings for the City of Richmond. Recommendations on how these findings may be applied are provided in Section 7. Section 8 contains the conclusion.

## 2 METHODOLOGY

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This research sought to understand what Richmond residents know about local wildlife and natural places; the outdoor activities they participate in; and, the dominant attitudes people have towards wildlife and nature in the City. The research sought also to identify any significant differences in attitudes towards wildlife and nature between various sub-groups of Richmond residents. The unit of analysis for this research was individuals over the age of 18 who live in Richmond, British Columbia.

There are four sub-sections that describe the methodology used in this research. First, the theoretical perspective is discussed, explaining the theory and philosophy underlying the selected research approach. Secondly, the method by which the literature was reviewed is explained. Thirdly, the specific method is discussed, including decisions around how data would be analyzed. Lastly, the limitations of this research are described.

### 2.1 THEORETICAL PERSPECTIVE

The theoretical perspective refers to the underlying philosophical approach adopted by a researcher. The way in which the researcher sees the research problem may shape the choice of research methods, design and methodology (Crotty, 2003, p. 11; McCutcheon, 2009, p. 173). This research sought to understand how people's attitudes towards wildlife and nature may be influenced by social and cultural factors, including age, gender and degree of acculturation. This approach of considering how people's thoughts and feelings develop within a social context is known as constructionism (Crotty, 1998, p. 42; Patton, 2002, p. 97). Constructionism is a popular approach to qualitative research (Crotty, 1998, pp. 9 & 16) that has been previously used to study knowledge of nature (Patrick & Tunnicliffe, 2011, p. 631).

### 2.2 LITERATURE REVIEW

The focus of the literature was on environmental attitudes, specifically attitudes towards nature and wildlife and cultural differences in attitudes. At the outset, literature searches were focused on environmental attitudes and urban wildlife management, though as the project evolved the search also incorporated cultural research and literature focused on parks, leisure and recreation management. The literature was also reviewed to determine popular methods and methodology for measuring attitudes and behaviours towards wildlife and nature.

The literature search was conducted using the University of Victoria library's advanced search function, and the Google search engine. The literature was drawn primarily from academic journals and published research. The main keywords used in the literature search included:

- Attitudes towards nature
- Cultural diversity
- Culture and environmental attitudes
- Demographic differences and attitudes towards nature
- Environmental attitudes survey questions wildlife
- Immigration and park management
- Local government and parks management
- Measuring environmental attitudes
- Urban wildlife
- Urbanization and nature

Key themes that were considered include environmental attitudes, social and cultural influences on attitudes, and measuring attitudes towards wildlife and nature.

## **2.3 DATA COLLECTION - SURVEYS**

A convenience sample of Richmond residents over the age of 18 was used for this research. Information on respondents' knowledge of local wildlife and natural places, the outdoor activities they participated in, and their attitudes around wildlife and nature, was obtained through their response to a survey. The survey was available online between March 5 and March 31, 2015, through the City of Richmond Let's Talk Richmond community engagement platform. Printed copies of the survey were available through the City of Richmond and during in-person recruitment events. A replica of the printed survey is provided in Appendix A – Survey Questions. The survey was reviewed by the client, but was not pilot tested, owing largely to time constraints and existing City protocols around surveys using the Let's Talk Richmond platform.

A principal advantage of a survey is that information can be gathered quickly and relatively inexpensively from a large number of people. Surveys are also seen as a suitable means of exploring comparisons between groups of people (Chawla, 1998, p. 379). The disadvantages include the possibility of low response rates and response bias (Zikmund, Babin, Carr, & Griffin, 2010, pp. 186-195).

The use of surveys generally, and online surveys specifically, may present some challenges in ensuring the sample of respondents is random and representative of the population (Smith, 2008, p. 6). This method was selected over other possible methods, including focus groups, mail and telephone surveys, principally for reasons of cost and timeliness. The representativeness of the sample was estimated by comparing demographic characteristics of respondents with those of Richmond residents, and is discussed in more detail in subsection 2.4.2 - Representativeness of the Sample.

Due to resource constraints, the survey was available in English only. Recruitment was conducted exclusively in English, with the sole exception of some face-to-face contact in which Richmond residents were addressed in Mandarin, Cantonese, or French.

The City provided three high school volunteers who accompanied the researcher during in-person recruitment at Minoru precinct. Volunteers were multi-lingual, speaking Mandarin and Cantonese. The volunteers spoke with potential participants in their native language where this improved communication. The exchanges were limited to explaining the nature of the research and did not extend to translation of the survey. It is estimated that fewer than a dozen potential participants were addressed in a language other than English. In light of Richmond's demographic composition, the limitation of available languages can be assumed to result in selection bias.

All survey questions were optional except for two screening questions – age and postal code. The survey consisted of three general parts, designed to assess the following:

1. knowledge and exposure to Richmond's wildlife and natural places;
2. attitudes towards Richmond's wildlife and natural places; and,
3. demographic characteristics.

Kellert's typology of attitudes toward animals and the environment provided the framework within which survey questions were developed (Kellert, 1984, p. 213). This typology is discussed in more detail in Section 3.

### 2.3.1 Recruitment

A variety of recruitment methods were used in an effort to reduce selection bias and to solicit input from as broad and representative a cross section of Richmond residents as possible. Survey participants were recruited through Facebook, an email sent to individuals registered with the City of Richmond Let’s Talk Richmond community engagement platform, a news release, flyers, posters and in person recruiting at public venues. Photographs and replicas of survey material are included as Appendix B – Promotional Material. These promotional materials differ slightly from those developed during the proposal stage, as they were produced and distributed by the client.

In person recruitment took place at the Richmond Nature Park, and at the Minoru precinct, a busy cultural and recreational hub consisting of sports fields, ice rinks, swimming pools, library, seniors’ centre and cultural centre. One unexpected development, which is believed to have generated a significant number of responses, was an unsolicited feature article in the local newspaper (Wood, 2015, p. A5). Copies of both the print and online editions of the article are included as Appendix C – Richmond News article.

The timing of these different promotion and recruitment methods can generally be established. Using the date that an online survey was received, it was possible to estimate the probable recruitment method and the relative effectiveness of each recruitment method. A comparison of recruitment events and the best estimate of the associated number of responses generated by this recruitment event are set out in Table 1.

It is not possible to know the exact recruitment method as this question was not asked, and the same web-address was used to access the survey. The response estimate is generally based on the number of responses received from the date of the recruitment event until the date of the next recruitment event. Where multiple recruitment events occurred at the same time, the approximate number of associated response is attributed to both. There is also a possibility of some overlap between recruitment methods, as some recruitment events may have more and longer lasting impact than others. For example a social media posting may be shared several times subsequent to the initial posting or a newspaper article may be read several days after it was published.

*Table 1 – Recruitment events*

Recruitment event	Date	Approximate number of responses
City of Richmond Facebook page	Thursday March 5, 2015	65
Email to Let’s Talk Richmond registered participants	Thursday March 5, 2015	
City of Richmond news release	Monday, March 9, 2015	18
Article in the Richmond News	Wednesday March 11, 2015	95 <sup>4</sup>
In person recruitment at the Richmond Nature Park	Saturday March 14, 2015	Unknown <sup>5</sup>
City page feature in the Richmond Review	Wednesday March 18, 2015	13
In person recruitment at Minoru complex	Wednesday March 18, 2015	
	Sunday March 22, 2015	
	Saturday March 28, 2015	5
Posters displayed in City facilities	Various	Unknown
<b>Total</b>		<b>211</b>

<sup>4</sup> The number of responses attributed to the article in the Richmond News includes all those received between March 11 and March 18, 2015.

<sup>5</sup> Given the large number of response received immediately following the article in the Richmond News, and the relatively low response attributed to the later in-person recruitment, it is believed that few responses were prompted by the recruitment at the Richmond Nature Park.

Based on these estimates, the most effective planned recruitment method was the combination of Facebook and an email to registered Let’s Talk participants. The largest number of responses coincide with the article in the Richmond News, while in-person recruitment is believed to have generated only a small number of responses.

One of the most surprising discoveries for this author was the power of social media. The initial proposal for this research had anticipated that social media might have resulted in a snowball effect as people who “Liked” the City of Richmond’s Facebook posting shared the information with their Facebook “friends”. This did in fact occur, and likely resulted in a large number of early responses.

Using the date that an online survey was received as an indicator of the most likely recruitment method, it is then possible to estimate the effectiveness of various methods for reaching different demographic groups. To provide a broader sample, recruitment methods were grouped as social media, newspaper and in person. Social media recruitment includes the posting on the City of Richmond’s Facebook page, email to registered users of Let’s Talk Richmond, and the City’s news release. Newspaper recruitment includes the City of Richmond news release and the article in the Richmond News. In person recruitment includes recruitment at the Richmond Nature Park and Minoru precinct.

The age distribution of respondents broken down by the most likely recruitment method is shown graphically in Figure 1. Social media is the most likely recruitment method for participants between the ages of 25 and 59. The majority of responses from people over the age of 60 were received subsequent to the newspaper recruitment. In person recruitment is associated with a small number of participants from most age categories.

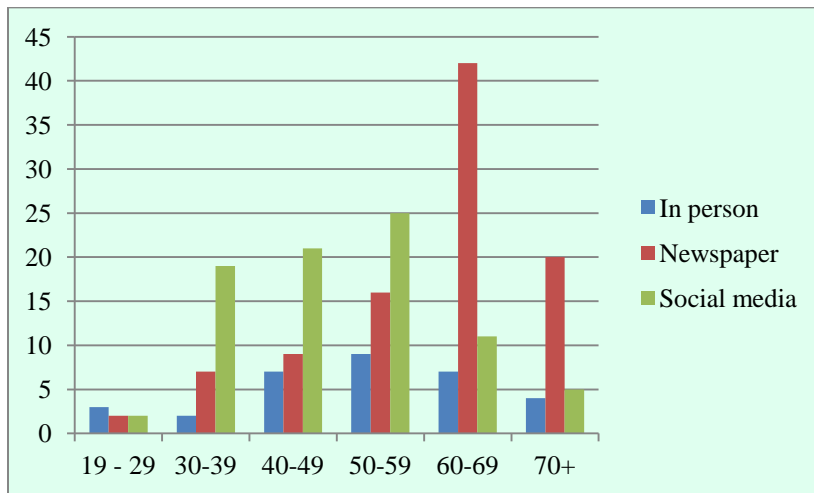


Figure 1 – Likely recruitment method and participant age (count of responses)

### 2.3.2 Cleaning the Data

The Let’s Talk Richmond community engagement tool generated 252 surveys. One paper survey was received and was manually entered into the Microsoft Excel database. Survey responses were reviewed to ensure respondents met the eligibility criteria and to eliminate duplicates. This resulted in 212 usable surveys.

One registered participant generated 36 electronic surveys, all but one of which were blank. Only the single, completed response was retained. Three responses were received from an anonymous respondent who identified a small BC town as their place of birth. As the second and third submissions skipped most

questions, and the few questions answered were identical to the first response, only the first response was included.

### 2.3.3 Measuring Knowledge, Activities and Attitudes

The survey was divided into three sections. Section one asked after the respondent’s knowledge of Richmond’s wildlife and natural areas, the activities they participated in, and their perceptions of various natural places in Richmond. The second section included questions designed to measure the respondent’s attitudes towards wildlife and nature. The third section collected basic demographic information, including age, gender and language spoken.

Knowledge questions were included as a way to measure the cognitive component of attitudes (Heberlein, 2012, p. 23). A non-exhaustive list of City parks was presented to gain information about respondent’s knowledge of the City’s natural places. All of the City’s ten signature parks were included, as were several popular outdoor parks. Due to a data entry error, one of the city’s best known natural places, the Richmond Nature Park, was omitted from the list on the online survey. A number of responses had been received by the time this error was detected, and the decision was made not to change the survey.

A list of activities was developed, which contemplated a variety of recreational and consumptive activities. Most activities were thought to be relatively common in Richmond. Geocaching, while a relatively new recreational pursuit, was added to the list as it is of particular interest to the City. Hunting and fishing were included as they are traditional consumptive activities, though it was recognized that their popularity may have declined in recent years.

Consistent with the conceptual framework, each activity was categorized as passive recreation, active recreation or a consumptive activity, as set out in Table 2 – Activity categories. The survey asked respondents whether they participated in a listed activity daily, a couple of times a week, weekly, a couple of times a month, once or twice, or never. For reporting and analysis purposes these responses were grouped into three categories: never or no response; occasionally (a couple of times a month, once or twice); and at least weekly (daily, a couple of times a week, weekly).

Table 2 – Activity categories

Passive recreation	Active recreation	Consumptive activities
<ul style="list-style-type: none"> <li>• Bird watching</li> <li>• Nature photography</li> <li>• Walking</li> </ul>	<ul style="list-style-type: none"> <li>• Flying a kite</li> <li>• Gardening at home</li> <li>• Geocaching</li> <li>• Outdoor group fitness activities</li> <li>• Outdoor team sports</li> <li>• Playing with children outside</li> <li>• Riding a bicycle</li> <li>• Running</li> <li>• Walking a dog</li> </ul>	<ul style="list-style-type: none"> <li>• Fishing - commercial</li> <li>• Fishing - recreational</li> <li>• Gardening at a community garden</li> <li>• Hunting</li> <li>• Picking wild berries</li> <li>• Picking wild mushrooms</li> </ul>

The second section of the survey presented 40 statements about people, wildlife and natural places to assess how people felt about and valued wildlife and nature. Statements were discussed with City of Richmond parks department management and staff, to ensure that they adequately measured the typology and were appropriate for Richmond’s social and cultural landscape. The statements were grouped into nine categories, with between four and five statements for each category. Attitude statements were modeled after Kellert’s typology, and included questions that were adapted to reflect local issues

(Baharuddin, Karuppannan & Sivam, 2013, p. 41; Wolch & Zhang, 2004, p. 426). These prior works influenced the selection and phrasing of questions for this research.

The use of multiple questions to measure an attitude serves to distinguish between opinions and attitudes (Heberlein, 2012a, p. 31). Some questions made use of words such as *beauty*, *dangerous*, *morally wrong*, and *happy* in order to measure affect, the emotional dimension of attitudes (Heberlein, p. 32). The full list of statements, grouped by Kellert typology, is included as Appendix D – Attitudes Towards Wildlife and Nature.

During the development phase, statements were listed in typology order. Once the statements were finalized, a random number was assigned to each statement in order to present the attitude statements reflective of the various typologies in random order.

The strength of an attitude was measured by calculating the average response to each statement within a particular typology. In order to preserve the integrity of the typology mean calculations, the eight respondents who did not complete any of the attitude questions were discarded from the sample. Provided an individual responded to some attitude questions, all were included in the calculation. Responses from respondents who skipped the attitude questions were retained for the balance of the research.

Attitudes were measured using a five point Likert scale, as shown below:

Strongly disagree	Disagree	No opinion	Agree	Strongly Agree
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The difference between the means of different groups was then calculated for each typology. The *t*-value was calculated for some sets of means to determine whether there was any statistically significant difference between the demographic groups.

### 2.3.4 Measuring Acculturation

Acculturation, or the degree to which an individual has integrated into the dominant society, can be measured through consideration of a variety of factors including immigration status, mother tongue and language spoken at home (Walker, Deng & Dieser, 2010, p. 367; Wolch & Zhang, 2004, p. 424). For the purpose of this research, four questions were used to measure the degree of acculturation: place of birth, length of time in Richmond, language spoken at home, and mother tongue.

Respondents were attributed one point for each indicator of acculturation, with half points for intermediate positions. A respondent who was born in British Columbia, lived their entire life in Richmond and spoke English as a first language and at home would receive four points and would be considered the most acculturated. Someone who was born outside of Canada, has been in Richmond less than five years and spoke a language other than English at home and as their mother tongue would receive no points. Individuals possessing a mixture of these characteristics would be expected to exhibit a moderate degree of acculturation. Table 3 – Acculturation measures, sets out how points were calculated for each of the four acculturation questions.

Respondents who received between zero and one point were considered to have a low degree of acculturation. Respondents with between one and a half and three points were attributed a moderate degree of acculturation. Respondents with three points or more were considered to have a high degree of acculturation.

Table 3 – Acculturation measures

	Degree of acculturation (points assigned)		
	1	.5	0
<b>Place of birth</b>	British Columbia	Canada (excluding B.C.)	Outside of Canada
<b>Length of time in Richmond</b>	Lifetime (born in Richmond)	Five or more years	Less than five years
<b>Language spoken at home</b>	English	-	Not English
<b>Mother tongue</b>	English	-	Not English

### 2.3.5 Open-ended Questions

In addition to having the opportunity to add items to the lists of animals, places and activities, respondents were asked two open-ended questions. The first asked after comments or concerns about wildlife in Richmond while the second asked after comments or concerns about the natural areas in the City. Like Parsons (2007), this research used open-ended questions sparingly, to simplify the survey for the respondents and to avoid the need to categorize and analyze an unwieldy amount of qualitative data (p. 26).

Responses to open-ended questions were first reviewed to identify key issues, concepts and themes (Ritchie & Spencer, 1994, p. 179). The initial assessment established that responses to both questions exhibited a significant degree of overlap. For this reason, a thematic analysis was undertaken for all responses together, rather than separately for each question.

## 2.4 LIMITATIONS AND DELIMITATIONS

Natural history and environmental issues are often viewed as scientific problems, and addressed from the perspective of biology or ecology; however, this author is not a biologist, but rather a policy analyst with a keen interest in natural history. The emphasis on public administration shaped the questions being asked and the way in which the data was analyzed.

Tewksbury et al. (2014) consider natural history to be inherently cross-disciplinary (p. 300) and this author believes that public policy offers powerful tools for managing natural resources, shaping public opinion and promoting environmental stewardship. A researcher’s perspective and the curiosity underlying the research can significantly influence the research design (Trede & Higgs, 2009, p. 13; Patton, 2002, p. 546). McCutcheon (2009) acknowledged that a qualitative researcher cannot easily abandon his or her own perspectives, and proposed journaling as a way to encourage reflection and increase awareness of one’s biases and ideologies (p. 173). This author retained a journal throughout the project, to document her experiences and thoughts on the process and the research as well as to record any comments from participants and others that were received outside the survey and which helped to shape the analysis.

The research for this project took place in March 2015. This timeframe was dictated largely by the requirements of the masters’ program and this researcher’s schedule. This research has provided a snapshot of attitudes and behaviour in Richmond, and may not be reflective of long term trends. The timing of the research may also introduce bias as Richmond residents may view nature more favourably in the springtime when the weather is improving after months of rain.

The chosen method, an on-line survey, provided a convenient, affordable and familiar means of collecting data. The City of Richmond has used the Let's Talk Richmond community engagement tool for other surveys, and the use of a survey tool that was established and familiar to Richmond residents was thought to provide further credibility to this research.

Several concerns have been identified with the use of online surveys including sample validity, non-response bias, stakeholder bias and the potential for unconfirmed respondents (Duda & Nobile, 2010, p. 55). Those who have an interest in the research topic are thought to be more likely to complete the survey, and may initiate multiple responses in order to influence the results (Duda & Nobile, 2010, pp. 57-58; Parsons, 2007, p. 17).

Given the large response received subsequent to the article in the Richmond News (Wood, 2015, p. A5), it is conceivable that the tone of the article appealed to people with a particular set of attitudes or beliefs. It is however considered unlikely that participants would "stuff the ballot box" in order to influence results as there was little perceived benefit of doing so. While some respondents clearly felt strongly about wildlife and nature issues in Richmond, the results of this research were not intended to inform major policy decisions. This was a small, local survey designed to inform park programming and planning, with limited anticipated impact on the broader community.

Access to computers may also be a limiting factor among marginalized and disadvantaged members of the community (Parsons, 2007, p. 19). To address this, paper forms were made available to potential participants during face to face recruitment. One participant recruited in person elected to complete a paper form.

Other methods that were considered include mail surveys, interviews and focus groups. These options were dismissed owing largely to resource constraints, including the time and cost of such research.

A significant limitation of this study is that the researcher is able to communicate only in French and English. The survey was available only in English and it is likely that data was obtained only from Richmond residents capable of reading English.

Richmond has a significant immigrant population and has experienced a large amount of development pressure in recent years, including the transformation of older neighbourhoods and loss of farmland. Richmond residents may have experienced changes to the cultural, built and natural landscape in excess of the amount of change experienced in other communities. Findings from this research may therefore not be generalized beyond the City of Richmond.

#### **2.4.1 Technical Limitations**

Two significant challenges with the Let's Talk Richmond survey software were encountered that may challenge data credibility. First, two cases were identified where the same respondent submitted multiple surveys. From a close review of the electronic survey documents these do not appear to be deliberate attempts to thwart the research but rather appear to be technical glitches resulting in partial surveys being repeatedly resubmitted within a very short period of time.

Secondly, when exported to Microsoft Excel, some entries resulted in responses that were not consistent with the response key. For example where a response key allowed a response from 1 to 5, the survey result was 6. A close review of each miscoded survey revealed that responses to a particular question were doubled or in one case tripled. Unfortunately this error was not consistent, so that answers may

have been coded correctly for one question but not for another. Also different questions were incorrectly coded for different respondents.

This problem was identified for four different respondents, and five different questions. The Microsoft Excel response spreadsheet was manually corrected to reflect the response shown on the original electronic survey. While efforts were made to locate any such miscoded responses, it is conceivable that some evaded detection. This risk is particularly likely where a respondent rated a question at the low end of the response key, as a duplication of the code would still appear reasonable.

#### **2.4.2 Representativeness of the Sample**

This research sought to explore attitudes and differences in attitudes between demographic groups. For this reason it is important to understand the extent to which the sample reflects the broader population of the City of Richmond.

The survey sample was not random, and overall, survey respondents were not representative of the City's population. Survey respondents were predominantly female, English speaking, and either Canadian or of European origin. There were few younger respondents, and the City's large Asian population was significantly underrepresented. It is not known to what extent non-respondents and under-represented groups may share the attitudes, behaviour or knowledge of the survey sample.

The nature of the survey sample may be a result of the recruitment methods used or may also reflect a lack of interest in the subject matter of the part of under-represented groups. One survey volunteer, who moved to Canada from China only two years ago, also suggested that some Chinese people may be reluctant to engage with a civic authority (personal communication, March 18, 2015). Earlier research conducted on behalf of the City recognized the potential for "cultural biases against perceived government intrusiveness" (City of Richmond 2009, p. 17) and sought to minimize this by not mentioning the City during the survey introduction. The lack of participation on the part of the City's Chinese residents is an interesting question, but beyond the scope of this research.

### **3 LITERATURE REVIEW**

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Academic journals, research papers and internet sources were reviewed to establish the state of knowledge around attitudes towards wildlife and nature; demographic differences in environmental attitudes and outdoor recreation choices; and, methods used by other researchers when contemplating attitudes towards wildlife and nature. City of Richmond publications, including prior research into community needs around parks and recreational services, were also reviewed.

The literature review uncovered several key topics relevant to this research including social and cultural influences on attitudes, urbanization, and reduced exposure to nature. Each of these is discussed, followed by a review of methods and methodology used by other researchers when considering similar questions.

#### **3.1 THE CITY OF RICHMOND**

Situated as it is between the Fraser River and the Strait of Georgia, Richmond has a wealth of natural history. Four areas in the City have been identified as Important Ecological Network areas: Richmond Nature Park; Iona Beach Regional Park; Sturgeon Bank Wildlife Management Area; and, Sea Island Conservation Area (City of Richmond, 2012, p. 1). Sturgeon Banks and the foreshore marshes on the western edge of the City are two of the few truly natural places in Richmond, having experienced little human interference (City of Richmond, p. 15). Intertidal zones, the area within 30 meters of the high water mark, have also been recognized as having significant ecological value and are managed as environmentally sensitive areas (City of Richmond, p. 30).

Several years ago, the City conducted a community needs assessment, focusing on parks, recreation and cultural services (“PRCS”). This assessment included an extensive consultation process, incorporating surveys and focus group interviews with specific demographic groups (City of Richmond, 2009, p. 2). Differences in frequency of use and awareness of public facilities were found to exist between ethnic and cultural communities (City of Richmond, p. 9). The assessment determined that “residents with a Chinese background are generally significantly less likely than Caucasian and South Asian residents to frequently or occasionally undertake activities in Richmond’s public outdoor areas” (City of Richmond, p. 52). Possible explanations for these differences include lack of awareness, language barriers, and the need to become familiar with how public outdoor areas are used in Canada as compared to China (City of Richmond, pp. 52 & 58).

Demographic changes and trends in recreation were also the focus of the City’s Parks and Open Spaces Strategy (City of Richmond, 2013a, p. PRCS-9). The Strategy estimates future community needs, and has prioritized passive recreation, including walking, running and cycling, due primarily to changing demographics and urban densification (City of Richmond, p. PRSC-10)

#### **3.2 ENVIRONMENTAL ATTITUDES**

Environmental attitudes typically refer to what a person believes, how they feel and how they behave with respect to the natural environment, and generally incorporate a positive or negative perspective (Untaru, Epuran, & Ispas, 2014, p. 86). Heberlein (2012a) observed that attitudes are not easily understood as a scientific concept (p. 5), and that they differ from behaviour in that an attitude must be inferred rather than directly observed (p. 32). Attitudes generally incorporate a belief, which may or may not be accurate, and are often driven by emotion (Heberlein, p. 16). Three key principles that can help in understanding attitudes are consistency, direct experience and identity (Heberlein, p. 24). An attitude

which is consistent with one's overall beliefs and values; is based on direct experience; and, which is tied to a person's identity, tends to be stable and difficult to change (Heberlein, p. 24).

Ignatow (2006) suggests that environmental attitudes stem from broader views on the relationship between people and nature (p. 443) and proposes that some people adopt a spiritual view, in which nature is sacred, while others adopt a scientific or ecological view, which acknowledges the interconnectedness of people and nature (pp. 443-444). Anthropocentric attitudes, the belief that humans are superior to all other life forms, are prevalent in some cultures and encourage people to feel entitled to take whatever they need from nature (Erten, 2008, pp. 150-151).

Mukherji (2005) suggests that differences in environmental attitudes between members of an ethnic group may result from cultural assimilation and should be considered by policy makers when exploring attitudes and behaviors and designing effective environmental strategies (p. 419). Familiarity with dominant attitudes can permit policy makers to identify alternatives and means of encouraging social change (Heberlein, 2012b, p. 584). Understanding environmental attitudes can also aid in the development of policies and programs that better accommodate the diversity of environmental concern, thereby facilitating their acceptance by a multicultural population (Ignatow, 2006, p. 457; McAvoy, McDonald & Carlson, 2003, p. 101).

Environmental attitudes are largely shaped by culture and a person's experience with and exposure to nature; however they are not always consistent with how people behave (Heberlein, 2012b, p. 583). People may also choose specific problems or issues to focus on rather than adopt holistic attitudes towards environmental issues (Ignatow, 2006, p. 443).

### **3.3 CULTURE, SOCIO-DEMOGRAPHIC FACTORS, AND ENVIRONMENTAL ATTITUDES**

Richmond is an ethnically and culturally diverse city, located in an ecologically rich environment. The City is home to many recent and long-standing immigrants, and roughly 50% of the City's population is ethnically Chinese (City of Richmond, 2014a, p. 1). Age, immigrant status, social class, education and rural or urban origin have all been found to influence attitudes towards nature, outdoor recreation choices, and environmental concern (Ignatow, 2006, p. 447; Mukherji, 2005, pp. 418-419; Wolch & Zhang, 2004, p. 437).

Acculturation, the degree to which immigrants have become assimilated into their new culture, has also been found to influence attitudes and behaviour around nature and wildlife (Mukherji, 2005, pp. 418-419; Walker, Deng & Dieser, 2010, p. 277; Wolch & Zhang, 2004, p. 431), as well as outdoor recreation choices (Walker et al, p. 275). In addition to ethnicity and acculturation, Walker, Deng and Dieser (2010) also found self-construal – how a person sees themselves in relation to others – to be important in understanding Chinese and Chinese-Canadian people's motivations for participating in outdoor recreational activities (pp. 277-278).

Walker and Deng (2014) have suggested that "...Chinese immigrants are likely to do what they are familiar with, or what they did previously, as long as the conditions in their adopted countries permit" (p. 103). Chinese immigrants are thought to place less value on leisure than other Canadians (Walker & Deng, p. 101), and to prefer passive leisure activities (Walker & Deng, p. 103). Hung (2003) explored barriers preventing Chinese people in Vancouver from participating in wilderness recreation activities and

found that lack of awareness and fear of the wilderness, coupled with cultural factors, inhibited use of wilderness recreation areas (p. iii).

Social, cultural and economic factors may all influence beliefs about nature and conservation, and can significantly impact how people behave and use natural areas (Heinen, 2010, p.152; Wolch & Zhang, 2004, p. 415). Concern for the environment is influenced by culture and social conditions (McCleave, Espiner, & Booth, 2006, p. 548; Mukherji, 2005, p. 419; Ignatow, 2006, pp. 448 & 456) and the relationship people have with nature may be shaped by the way in which they see the world.

Acknowledging and investigating cultural differences may be uncomfortable for those worried about causing offence; however “developing effective strategies for managing diversity” has been found to be an effective business practice (Nobel, 2012, para. 21).

### **3.4 URBANIZATION AND DISCONNECTION FROM THE NATURAL WORLD**

Increased urbanization has resulted in many people having little exposure to nature and feeling disconnected from the natural world (Balmford, Beresford, Green, Naidoo, Walpole & Manica, 2009, p. 1; Balmford, Clegg, Coulson, Taylor, 2002, p. 2367; Kareiva, 2008, p. 2757; Louv, 2008, p. 2; Tewksbury et al, 2014, p. 305). As well, the deterioration or loss of natural areas close to where people live can result in people who have little knowledge of the environment or nature around them (Pyle, 2003, p. 209; Noss, 1996, p. 3). It is not well known the extent to which urban nature can provide adequate exposure and experiences to foster positive sentiment towards the natural world (Kareiva, 2008, p. 2758).

People who have lost their affinity with nature and who are ill-informed on environmental issues are unlikely to care about the local environment (Dixon, Birchenough, Evans, & Quigley, 2005, pp. 130-131) or to become engaged in solving environmental management problems (Evans, Gebbels, & Stockill, 2008, p. 3). This is unfortunate as citizen involvement can improve decision making and motivate long-term commitment to environmental stewardship (Evans, Gebbels, & Stockill, p. 6; Foxwell-Norton, 2013, p. 276). It has been suggested that “people care about what they know” (Balmford, Clegg, Coulson & Taylor, 2002, p. 2367) and that society must perceive value in nature in order for conservation efforts to succeed (Green & Losos, 1998, p. 460; McCleave, Espiner & Booth, 2006, p. 548).

Many people care about nature and are concerned for the environment, but that concern can assume a variety of forms (Foxwell-Norton, 2013, p. 276; Ignatow, 2006, p. 456). Opportunities exist for policy makers to encourage people to become engaged in environmental stewardship (Foxwell-Norton, 2013, p. 276) and, as Tewksbury et al. (2014) have suggested, their “shared concern can spur social action” (p. 303).

### **3.5 MEASURING ATTITUDES – THE KELLERT TYPOLOGY**

The Kellert typology is a popular way of measuring attitudes towards wildlife and nature. This typology is considered a suitable means of measuring attitudes in part because it has demonstrated a high degree of validity (Baharuddin et al, 2013, p. 28). This typology was developed to measure basic attitudes towards animals and nature, and has been modified to study animal and human relationships (Baharuddin et al, p. 31) as well as attitudes towards marine animals and habitats (Wolch & Zhang, p. 425).

Kellert’s (1984) typology was initially conceived as a means of measuring animal-related attitudes in the United States (p. 209). The original typology incorporated nine categories of attitudes people might have about animals and the natural environment (Kellert, p. 212). Kellert measured attitudes through responses to sixty-nine attitude questions, between five and 13 questions for each typology (p. 212). Kellert’s

typology helps to measure the human dimension, the interaction between people and the natural world, (Baharuddin et al, 2013, p. 28).

Baharuddin, Karuppanan, and Sivam (2013) developed three statements for each of the nine Kellert typologies, which were administered using a questionnaire to survey neighbourhood residents and stakeholders on animal and human relationships (p. 29). Wolch and Zhang (2004) revised the Kellert typology to measure anthropocentric and biocentric attitudes toward marine wildlife and environments, and developed 35 attitude statements to measure ten attitude dimensions (pp. 425-426). Both of these research projects used a five point Likert scale to measure responses to attitude items (Baharuddin et al, p. 29; Wolch & Zhang, p. 425).

The use of multiple questions to measure an attitude serves to measure the strength of an attitude. A single question may be used to obtain an opinion on a particular topic; however, a number of questions are required in order to understand an attitude (Heberlein, 2012, p. 31).

An interpretation of the Kellert typology and underlying concepts are set out in Figure 2.

<b>Kellert typology</b>	<b>Concept behind this attitude measure</b>
Ecologistic	Concern for the environment as a system and for interrelationships between animals and natural habitats
Moralistic	Concern for proper treatment of animals and opposition to exploitation of nature or cruelty toward animals
Aesthetic	Focus on the beauty and symbolic characteristics of animals and nature
Naturalistic	Interest in, affection for, and satisfaction from experience with nature
Scientific	Interest in the physical attributes and biological functioning of animals and nature
Humanistic	Interest and affection for individual animals, principally pets; emotional and anthropomorphic view of animals and nature
Utilitarian	Interest in the practical and material value of animals or nature
Dominionistic	Interest in humanity's mastery and control of animals and nature, particularly in sporting situations
Negativistic	Prefers to avoid animals and nature due to indifference, dislike or fear

*Figure 2 – Kellert typology (Baharuddin et al, 2013, p.p. 31-32; Kellert, 1984, p. 213; Wolch & Zhang, p. 426)*

Several other methods and tools have been developed to measure general environmental attitudes. Environmental values, situational variables, and psychological variables have all been considered as a means of predicting recycling behaviour (Barr, Gilg & Ford, 2001, p. 2226; Barr & Gilg, 2007, p. 363). Mukherji (2005) sought to analyze intra-cultural differences in environmental attitudes (p. 416) and measured the level of environmental concern using a nine point Likert-scale modeled after Ellen's (1994) measures of environmental knowledge and concern (Ellen, pp. 45-46; Mukherji, p. 417).

Erten (2008) administered a survey modeled after Thompson and Barton (1994) as a means of identifying eco-centric, anthropocentric and antipathetic attitudes towards environmental protection (p. 143). Eco-centric attitudes afford the natural world the same value as humanity, whereas anthropocentric attitudes value the natural world only so far as it benefits humanity (Erten, p. 143). Antipathetic attitudes arise in those who view environmental protection negatively (Erten, p. 143).

These various models provide insight into the complexity of environmental attitudes and demonstrate alternate approaches to measuring attitudes. The Kellert typology was selected for this research as it was believed to provide the greatest degree of insight into attitudes towards nature and wildlife.

## 4 CONCEPTUAL FRAMEWORK

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This research used surveys to ask Richmond residents what they know and how they feel about local wildlife and nature in general, and about the outdoor activities they participate in. The research also investigated the extent to which knowledge, attitudes and activities varied across demographic groups. The intention is for this information to benefit the City by informing the development of culturally sensitive public education and outreach programs.

The literature reviewed led to the belief that attitudes towards wildlife and natural places differ across demographic groups, and between residents with varying levels of knowledge and experience. A better understanding of dominant attitudes, knowledge and preferred outdoor activities, as well as information about how these may differ across demographic groups, may be used to develop culturally sensitive outreach and educational programs that more effectively inform and engage residents around the City's abundant natural history.

The conceptual framework was adapted from Wolch and Zhang (2004, p. 420) and is displayed graphically in Figure 1. Kellert's typology of attitudes toward animals and the environment was integrated into this framework, and provided a means of measuring and categorizing attitudes.

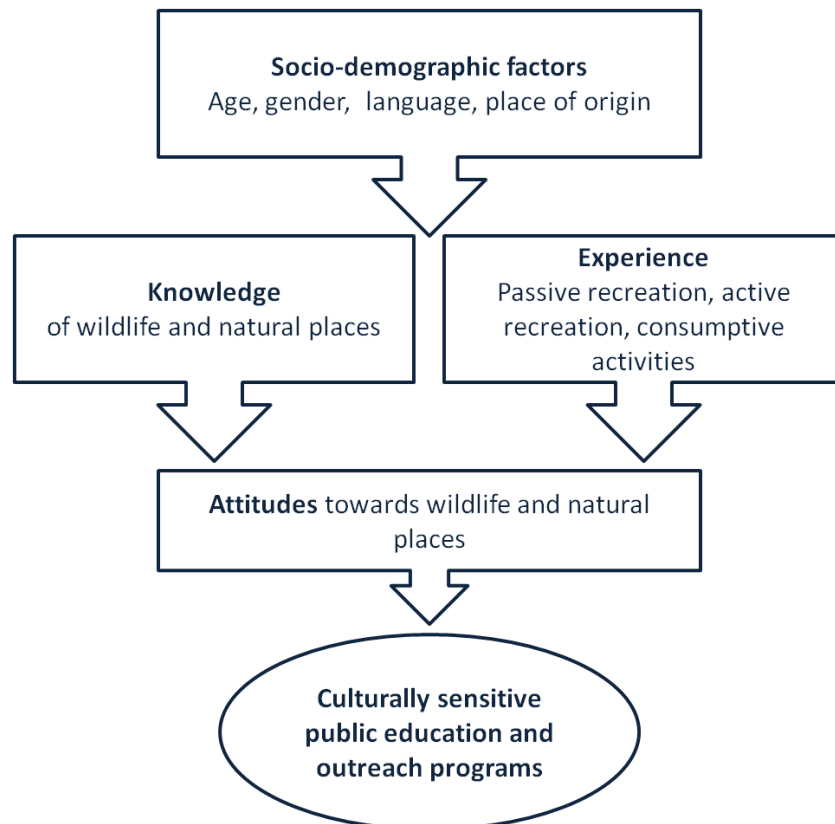


Figure 3 – Conceptual framework

## 5 RESULTS

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This section presents the results of the survey. In order to describe the extent to which respondents are familiar with local wildlife and natural places, the outdoor activities they participate in, and the attitudes they hold, results have been grouped into three broad categories:

1. What people know (knowledge)
2. What people do (activities)
3. How people feel (attitudes)

The interaction between knowledge, activities and actions are then considered, along with differences across sub-groups of respondents. Socio-demographic characteristics of respondents are also discussed.

### 5.1 WHAT PEOPLE KNOW

Respondents were generally knowledgeable about the City's major parks and the animals that live there. This suggests that most respondents spend some time outside and are aware of the local wildlife and natural environment.

#### 5.1.1 Wildlife

Respondent's familiarity with local wildlife is displayed graphically in Figure 4. On average, respondents reported having seen 14 of the 19 animals listed, in Richmond during the past 12 months. Over 90% of respondents<sup>6</sup> reported having seen the following animals in Richmond:

- Crow (96%)
- Squirrels (96%)
- Canada goose (93%)
- Songbirds (92%)
- Great blue heron (91%)
- Raccoon (91%)

All of these animals are abundant in Richmond and can be found throughout the City year round.

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<sup>6</sup> All respondents were included in this calculation, even those who did not respond to the specific question. This was done because the animals that received the highest number of "I do not know this animal" responses also received the highest number of non-responses, suggesting that rather than admit their lack of familiarity with the animal respondents may have simply skipped the question.

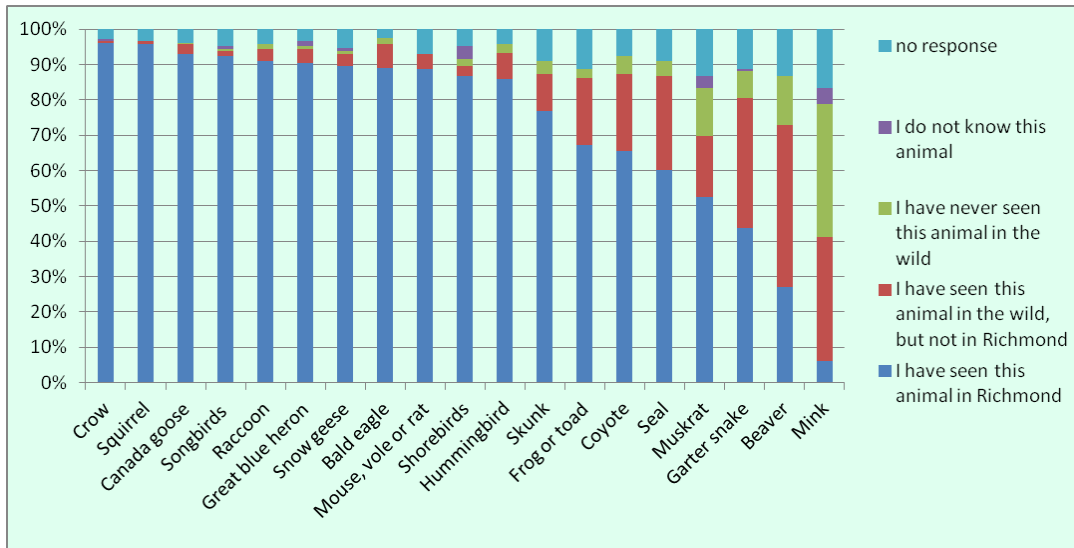


Figure 4 – Familiarity with local wildlife

The least well known animal was the muskrat. This may be due to the limited habitat of this water loving rodent, which is generally found living in Richmond’s ditches, or it may be due to this animal’s similarity to other rodents, including Norway rats. Other infrequently observed animals include the beaver, mink, garter snake and seal. Perhaps not surprisingly, respondents who reported having seen few animals in the past year also tended to be unfamiliar with a number of animals.

One interesting finding was that shorebirds had been seen by 87% of respondents, but were unknown to 4% (eight respondents). It is not known whether this is due to people seeing but not recognizing these birds, which frequent the west dyke in large numbers during migration, or whether some respondents simply do not notice these little creatures in the distance.

Seventy respondents listed additional wildlife species seen in Richmond including ducks, rabbits, sea lions, otters, raptors, bats and a variety of birds and insects. Three respondents reported having seen deer, though it is unknown how long ago. Three respondents listed wildlife that is unlikely to have been seen in Richmond, including giraffe, rhino, orcas, moose and bear. Several respondents demonstrated expert knowledge of the local fauna, identifying generally unfamiliar species including several birds such as American bittern, osprey, night hawks, turkey vultures and two varieties of freshwater fish - sticklebacks and pumpkinseeds.

### 5.1.2 Parks and Natural Places

The majority of Richmond’s land mass is urban, with less than 15% of the city officially characterized as natural, mainly natural or semi-natural (City of Richmond, 2012, p. 15). Areas that are officially classified as natural have experienced limited recent human interference, and are comprised mostly of native vegetation (City of Richmond, p. vii). Landscaped areas, farms, and other planted areas may be considered altered or cultural vegetation, and are generally not considered particularly natural (City of Richmond, p. vii). Richmond’s public parks, including school fields, make up close to 5% of the City’s land mass and generally include limited amounts of natural ecosystems (City of Richmond, 2012, p. 21). The degree to which respondents found parks and natural places to be natural areas is displayed graphically in Figure 5.

Richmond has a diverse selection of parks and open spaces, including ten signature parks, so designated on account of their views, gardens and natural beauty (City of Richmond, 2013c, Signature Parks). Three of these signature parks - Minoru Park, Gary Park and the West dyke - were known to nearly all respondents.

Several other signature parks were not as well known. Paulik park, a small, six acre, city centre signature park which features a beautiful flower garden as well as a community vegetable garden and children’s playground (City of Richmond, 2013c, Paulik Neighbourhood Park, para. 1), was the least well known park, with 56% of respondents (118 people) indicating that they were not familiar with this park. The Middle Arm Waterfront Park is a relatively new, urban waterfront park that includes the Richmond Olympic oval. This park was unknown to 46% of respondents. Both of these parks are located near the city centre, and the lack of familiarity with these parks may be reflective of the low response from residents of the city centre neighbourhoods, which is discussed later in this section.

Respondents varied markedly on what they considered a natural area, with some rating even well developed urban parks such as Garden City Park and Minoru Park as very natural. McDonald Beach and the West Dyke, both of which border on waterways and are some of the City’s most natural areas, were rated as very natural by close to 50% of respondents.

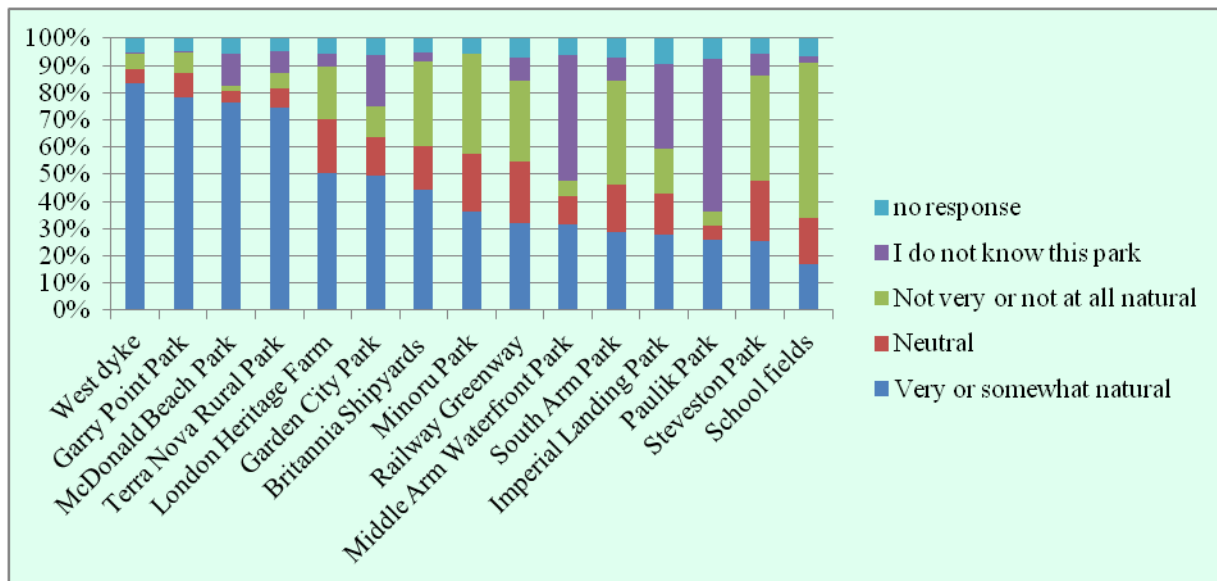


Figure 5 – Park naturalness ratings

One of the city’s best known natural places, the Richmond Nature Park, was inadvertently omitted from the list of natural places in the online survey. A number of responses had been received by the time this error was detected, and rather than change the survey it was decided to leave the survey as it was. The Richmond Nature Park was the most frequently mentioned location given in response to the question “I also think of these other places in Richmond as natural places...”

Iona Beach Regional Park is managed by Metro Vancouver Parks, and so was not included in the survey. This park was listed by 14 respondents as a natural place. Sturgeon Banks is managed by the provincial government as a provincial wildlife management area, and is relatively inaccessible. For this reason it was not listed in the survey; however it was identified as a natural place by one respondent. Other frequently mentioned natural places identified by respondents are set out in Figure 6.

<b>Park or natural place</b>	<b>Count</b>
Richmond Nature Park	43
Shell Road trail	20
Iona Regional Park	14
Garden City Lands	10
South dyke	10
Finn slough trail	9
Farms and agricultural areas	7
North East (Hamilton) bog forest	7
Bath slough trail	4
Horseshoe trail	4
Bridgeport trail	3
DND lands	3
King George park	2
Shady Island	2
No. 3 Road dog park	2
Dover park	1
Sturgeon banks	1

*Figure 6 – Other natural places*

### **5.1.3 Where do Richmond Residents go to Learn More?**

Respondent's use of listed specified sources of information on wildlife and natural places are displayed graphically in Figure 7. Respondents reported learning about the City's wildlife and natural places primarily from park signs and the newspaper.

As nearly half of respondents are thought to have learnt about this research through an article in the newspaper, results were compared by date to see if the reported use of newspapers differed between those who responded before the March 11, 2015 article and those who responded after. There was no significant difference found, with over 40% of all respondents reporting newspapers as a source of information. Family and friends were also identified as a source of information for both wildlife and natural places. The least common sources for information were City programs and school, which may be reflective of the older demographic of respondents.

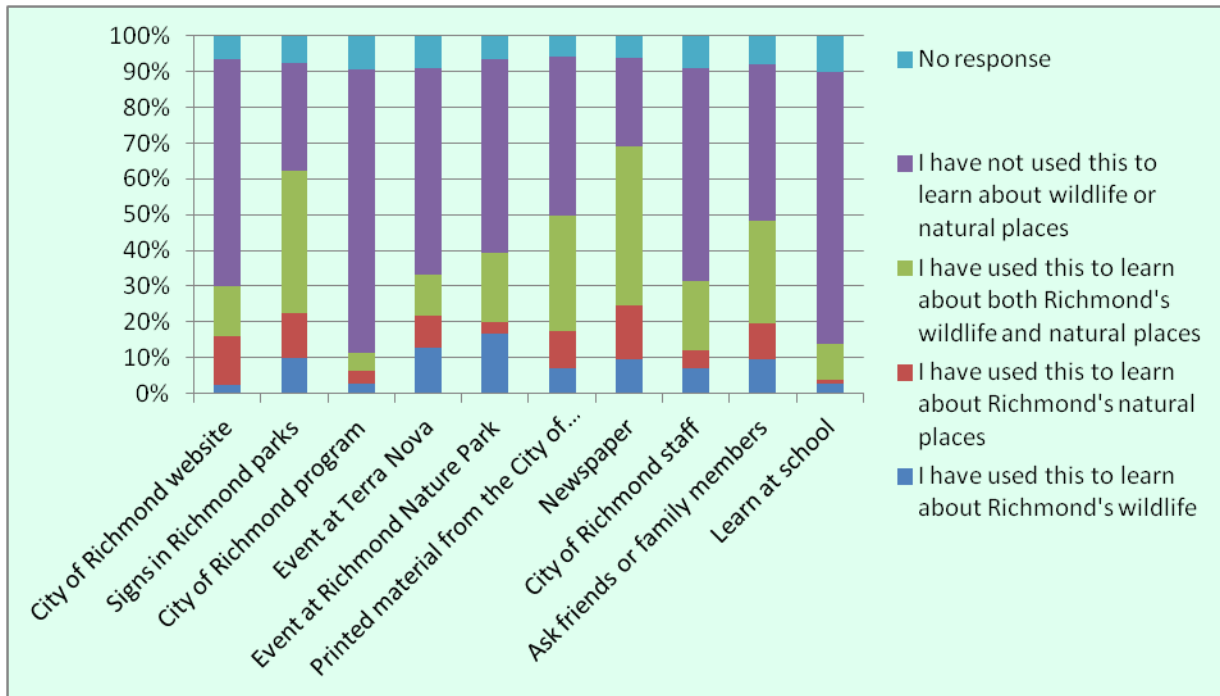


Figure 7 – Sources for information about wildlife and natural places

Other sources of information identified by respondents include other websites and specialty groups such as the Richmond Walkers and Nature Vancouver Club. Twelve respondents described personal experience as a source of additional information, with two describing themselves as local experts.

## 5.2 WHAT PEOPLE DO

### 5.2.1 Passive Recreation, Active Recreation and Consumptive Activities

Respondents' participation in listed activities is set out in Figure 8. Generally, respondents reported more passive recreation than active recreation or consumptive activities. Two notable exceptions were gardening at home, a form of active recreation which 80% of respondents reported participating in at least occasionally, and berry picking, the most frequently reported consumptive activity, enjoyed by three quarters of respondents at least occasionally. Other activities identified by participants include boating (canoe, kayak, dragon-boat), in-line skating, and sitting quietly in the park enjoying nature.

The least frequently reported activities were all consumptive activities - commercial fishing, hunting and mushroom picking. Few respondents reported participating in geocaching, though of those, a few reported participating weekly or daily. Ingress, a multi-player online game, was mentioned by one respondent as an activity akin to geocaching.

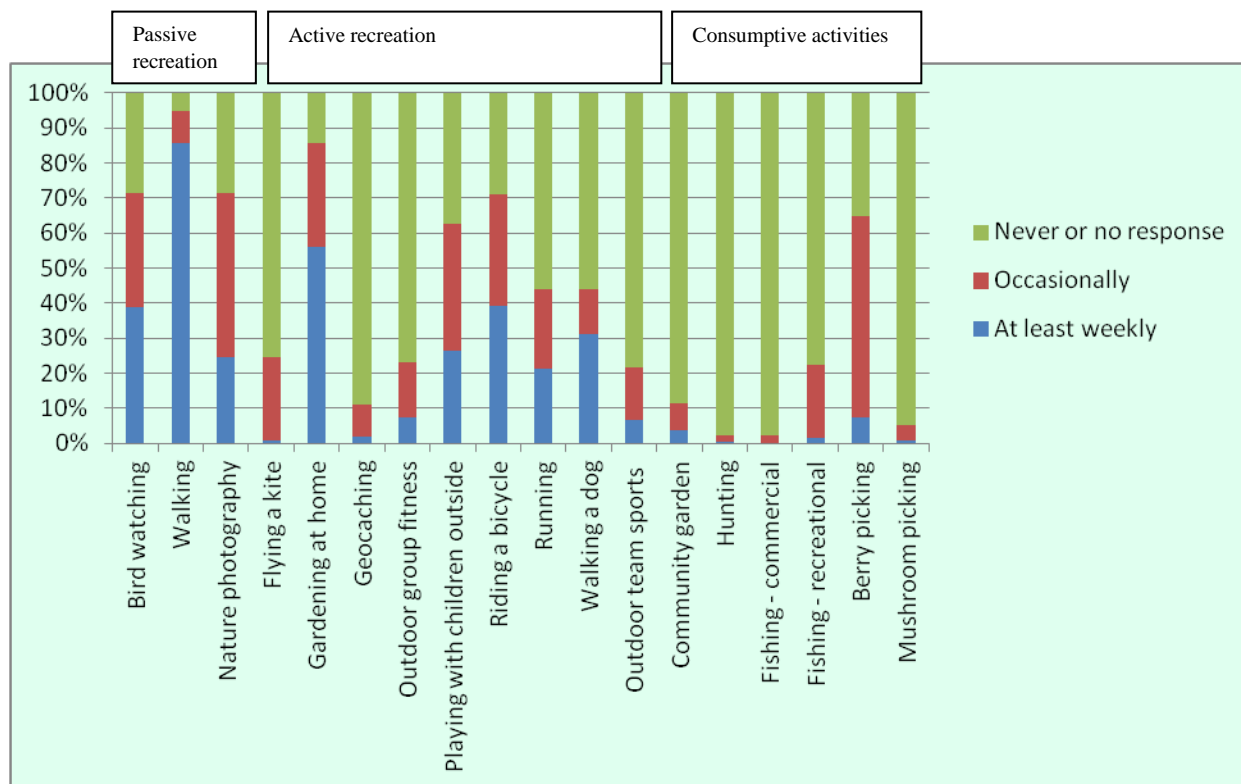


Figure 8 – Activities

### 5.2.2 Addressing Concerns

Respondents were asked “If you were concerned about something in a public park, for instance concerns around wildlife, maintenance issues or changes to the park, how likely are you to take the following actions?” This question was included as there was anecdotal evidence that some demographic groups were reluctant to report concerns or complain to a public agency. The percentage of respondents indicating that it was very or somewhat likely they would take a particular action is set out in Table 4.

Table 4 – How respondents would address concerns

	Think there was nothing I could do	Talk to my neighbours about the issue	Send an email message to the City	Phone the City	Encourage others to work with me to address the issue
Very or somewhat likely	33%	64%	72%	66%	50%

One third of respondents indicated that it was very or somewhat likely that they would think there was nothing they could do. The most popular means of addressing a concern in a public park was by way of an email to the City. Two respondents used the open-ended questions to express confusion over how to report concerns in parks. One suggested that City of Richmond contact information be provided at each park, along with information on what sorts of concerns should be reported.

### 5.3 HOW PEOPLE FEEL

One of the primary objectives of this research was to learn about the attitudes of Richmond residents towards wildlife and nature, and to identify any differences in attitudes between demographic groups. Attitudes were measured by how respondents scored a list of statements developed to measure each of the nine Kellert typologies. Respondents who did not score any of the attitude statements were eliminated from the calculation, resulting in 204 usable cases ( $n=204$ ). Mean scores for all attitude measures are set out in Table 5.

Table 5 – Descriptive statistics of attitude measures

	Mean	Median	Mode	Standard Deviation	Range	Min.	Max.
<b>Ecologistic</b>	4.49	4.75	5	0.570	4	1	5
<b>Moralistic</b>	4.42	4.6	5	0.608	3.2	1.8	5
<b>Aesthetic</b>	4.40	4.5	5	0.747	5	0	5
<b>Naturalistic</b>	4.36	4.5	5	0.644	3.25	1.75	5
<b>Scientific</b>	4.24	4.25	5	0.756	5	0	5
<b>Humanistic</b>	2.77	2.8	2.4	0.555	4.6	0	4.6
<b>Utilitarian</b>	2.48	2.6	2.4	0.629	3.4	0.8	4.2
<b>Dominionistic</b>	2.09	2	2.25	0.753	3.25	1	4.25
<b>Negativistic</b>	1.74	1.8	1.2	0.574	3.8	0.6	4.4

The majority of respondents expressed strong ecologistic, moralistic and aesthetic attitudes, as measured by the mean value score across all questions for each particular value. Ecologistic attitudes had the highest mean score, and also had the lowest standard deviation, suggesting that most respondents agreed with ecologistic values. This attitude measure reflects concern for the environment as a system, and for the interrelationships between wildlife and natural habitats (Kellert, 1984, p. 213).

Utilitarian, dominionistic and negativistic attitude measures had the lowest mean scores. The dominionistic value had the highest standard deviation of all attitude measures, suggesting that respondents differed most on this measure. Dominionistic attitudes favour humanity’s mastery and control of animals and nature, particularly in sporting situations. The negativistic value had one of the lowest standard deviations, suggesting that respondents were generally consistent in not identifying with negativistic values. People who express negativistic attitudes prefer to avoid animals and nature due to indifference, dislike or fear.

Attitude statements for each measure were developed as a means of distinguishing attitudes from opinions, and were not intended to be considered independently. There were however some questions which elicited responses at odds with others in the attitude group.

Scores for utilitarian attitudes were relatively low overall; however, 56% of respondents agreed or strongly agreed with the statement “People should be allowed to pick berries that grow in public parks.” This finding is consistent with results on activities, which showed berry picking to be the most popular of the consumptive activities.

Negativistic attitudes scored the lowest of all attitudes, though 20% of respondents agreed or strongly agreed with the statement “Snow geese should be controlled because they are a nuisance.” The annual arrival of the snow geese in Richmond is a unique phenomenon, and the challenges of coexisting with these birds in an urban environment were also mentioned in several of the written comments.

### 5.3.1 Attitude Differences

The sex of respondents was compared with attitude scores, and these results are set out in Table 6. The sample included 124 women, 65 men, and 15 respondents who did not indicate their sex.

Statistically significant differences between the two sexes were found for seven of the nine attitude measures. This means that the null hypothesis that males and females have the same attitudes can be rejected. This finding should be interpreted with caution however as the survey sample is not representative of the population of the City of Richmond<sup>7</sup> and this difference may be limited to Richmond residents who are sufficiently interested in the survey topic.

Table 6 – Attitude measures by sex

	Sex	Mean	Standard deviation	t-value female (mean1) male (mean 2)	Statistically significant at 95% level
<b>Ecologistic</b>	Unknown	4.22	1.089		
	Female	4.57	0.435	1.886	No
	Male	4.41	0.607		
	All	4.49	0.570		
<b>Moralistic</b>	Unknown	4.20	0.862		
	Female	4.57	0.460	4.185	Yes
	Male	4.17	0.695		
	All	4.42	0.608		
<b>Aesthetic</b>	Unknown	3.90	1.342		
	Female	4.61	0.503	4.426	Yes
	Male	4.12	0.815		
	All	4.40	0.747		
<b>Naturalistic</b>	Unknown	3.98	0.735		
	Female	4.56	0.490	4.819	Yes
	Male	4.07	0.739		
	All	4.36	0.644		
<b>Scientific</b>	Unknown	3.72	1.257		
	Female	4.43	0.575	3.93	Yes
	Male	3.99	0.799		
	All	4.24	0.756		
<b>Humanistic</b>	Unknown	2.47	0.830		
	Female	2.88	0.489	3.081	Yes
	Male	2.63	0.550		
	All	2.77	0.555		
<b>Utilitarian</b>	Unknown	2.31	0.755		
	Female	2.44	0.619	-1.49	No
	Male	2.58	0.611		
	All	2.48	0.629		

<sup>7</sup> The demographic characteristics of the survey sample are discussed in more detail in subsection 5.4 - Demographic Characteristics

	Sex	Mean	Standard deviation	t-value female (mean1) male (mean 2)	Statistically significant at 95% level
<b>Dominionistic</b>	Unknown	1.93	0.608	<b>-3.181</b>	<b>Yes</b>
	Female	1.97	0.702		
	Male	2.35	0.818		
	All	2.09	0.753		
<b>Negativistic</b>	Unknown	1.68	0.433	<b>-2.765</b>	<b>Yes</b>
	Female	1.65	0.525		
	Male	1.91	0.656		
	All	1.74	0.574		

The age of respondents was considered as a possible influence on attitudes. There were fewer than 35 respondents in each age category, making it challenging to establish statistical credibility. Mean scores for each attitude measure, grouped by age category, are provided in Table 7.

Table 7 – Attitude measures by age category

	n	Utilitarian	Aesthetic	Ecologicistic	Scientific	Dominionistic	Negativistic	Naturalistic	Moralistic	Humanistic
<b>19 to 29</b>	5	2.04	4.90	4.40	4.55	1.95	2.16	4.45	4.76	3.20
<b>30 to 34</b>	11	2.73	4.48	4.57	4.14	2.43	1.91	4.34	4.27	2.64
<b>35 to 39</b>	17	2.71	4.32	4.51	4.22	2.37	1.80	4.25	4.02	2.46
<b>40 to 44</b>	15	2.61	4.10	4.32	3.88	2.35	2.01	4.07	4.43	2.84
<b>45 to 49</b>	19	2.58	4.41	4.43	4.18	2.14	1.72	4.17	4.44	2.78
<b>50 to 54</b>	21	2.42	4.56	4.58	4.32	2.07	1.59	4.42	4.53	2.68
<b>55 to 59</b>	29	2.54	4.45	4.58	4.33	1.91	1.65	4.53	4.48	2.91
<b>60 to 64</b>	34	2.55	4.47	4.46	4.33	2.19	1.80	4.41	4.49	2.85
<b>65 to 69</b>	25	2.28	4.24	4.42	4.18	1.97	1.70	4.34	4.33	2.71
<b>70 and older</b>	28	2.26	4.36	4.54	4.22	1.81	1.59	4.45	4.48	2.78
<b>All</b>	<b>204</b>	<b>2.48</b>	<b>4.40</b>	<b>4.49</b>	<b>4.24</b>	<b>2.09</b>	<b>1.74</b>	<b>4.36</b>	<b>4.42</b>	<b>2.77</b>

Inter-age differences in attitudes are displayed graphically in Figure 9 and Figure 10.

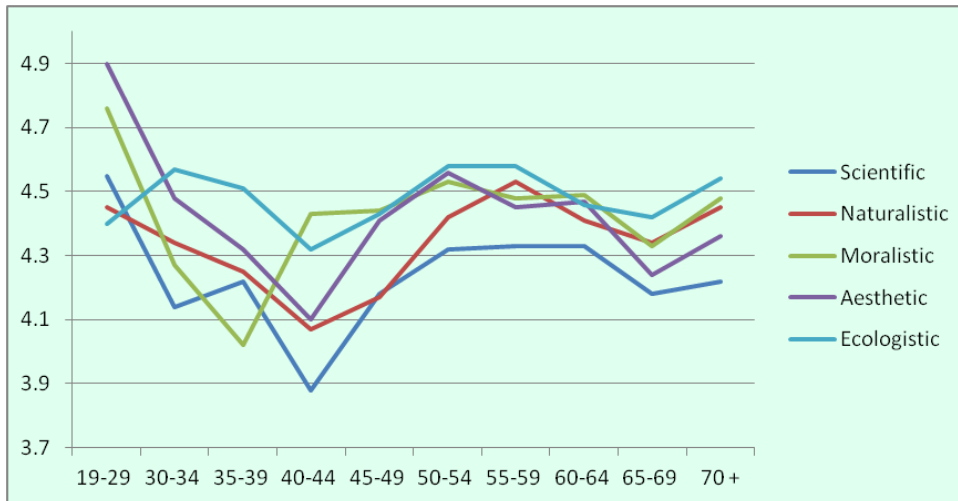


Figure 9 – Mean of most common attitude measures by age

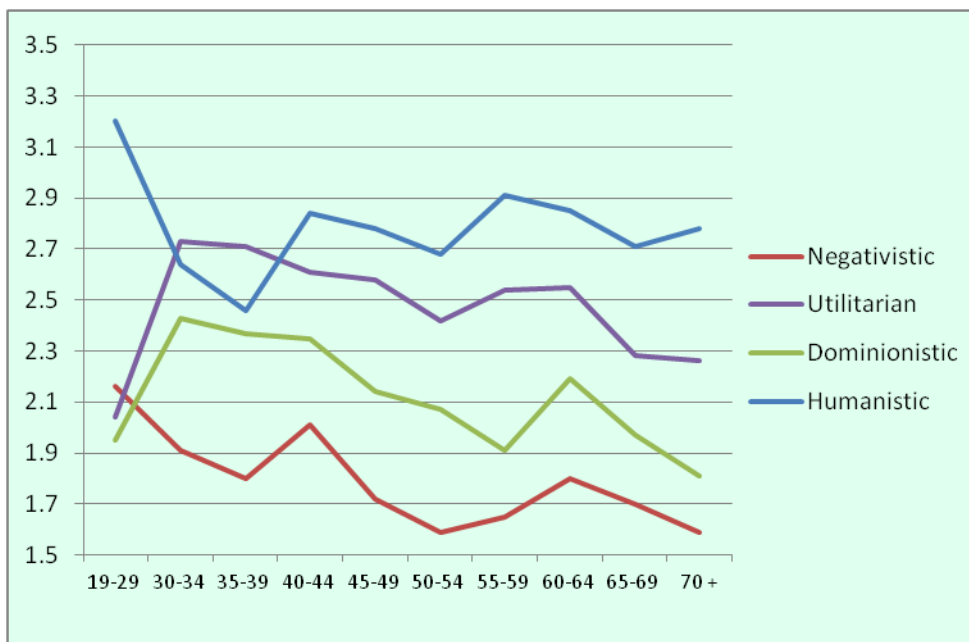


Figure 10 – Mean of least common attitude measures by age

Acculturation, the degree to which an individual has integrated into the dominant society, was measured by considering respondents' place of birth, length of time in Richmond, mother tongue and language spoken at home. A respondent who was born in British Columbia, lived their entire life in Canada and spoke English as a first language and at home was considered to have the highest degree of acculturation. A respondent who was born outside of Canada, had been a resident of Richmond for less than five years and spoke a language other than English at home and as their mother tongue was considered minimally acculturated. A respondent possessing a mixture of these characteristics was attributed a moderate degree of acculturation.

Respondents were attributed one point for each indicator of acculturation, with half points for intermediate positions. Respondents who received between zero and one point were considered to have a low degree of acculturation. Respondents with between one and a half and three points were attributed a moderate degree of acculturation. Respondents with three points or more were considered to have a high degree of acculturation

The majority of respondents (67%, or 137 out of 204) were considered to have a high degree of acculturation. Nearly a third (59 respondents) were attributed a moderate degree of acculturation. Less than 4% (eight respondents) were considered to have a low degree of acculturation. Of those assigned a low degree of acculturation, two were from Asia, two were from Europe, one was from South America and three did not specify a place of birth.

Table 8 sets out the average attitude scores and standard deviations for respondents exhibiting either a high or low degree of acculturation. Respondents with a low degree of acculturation scored lower than those with a high degree of acculturation on both moralistic<sup>8</sup> and humanistic<sup>9</sup> attitude measures to a statistically significant degree. As with differences in attitudes between the sexes, this finding should be interpreted cautiously as the survey sample is not representative of the population.

Table 8 – Attitude measures by degree of acculturation

Attitude measure	Degree of acculturation	Mean	Standard deviation	n	t-value
<b>Ecologistic</b>	Low	4.156	0.876	8	-0.984
	High	4.465	0.605	137	
<b>Moralistic</b>	Low	3.850	0.819	8	<b>-2.035</b>
	High	4.448	0.589	137	
<b>Aesthetic</b>	Low	4.281	0.818	8	-0.32
	High	4.376	0.785	137	
<b>Naturalistic</b>	Low	4.125	0.926	8	-0.771
	High	4.381	0.646	137	
<b>Scientific</b>	Low	3.969	1.064	8	-0.673
	High	4.226	0.775	137	
<b>Humanistic</b>	Low	2.400	0.454	8	<b>-2.325</b>
	High	2.790	0.569	137	
<b>Utilitarian</b>	Low	2.775	0.824	8	0.828
	High	2.530	0.611	137	
<b>Dominionistic</b>	Low	2.594	0.916	8	1.446
	High	2.117	0.739	137	
<b>Negativistic</b>	Low	2.200	1.031	8	1.339
	High	1.708	0.534	137	

<sup>8</sup> Moralistic attitudes reflect concern for proper treatment of animals and nature.

<sup>9</sup> Humanistic attitudes reflect an interest in and affection for individual animals, principally pets, and generally represent an anthropomorphic view of animals and nature.

The relationship between acculturation and mean attitude scores is displayed graphically in Figure 11 and Figure 12. Average scores for all attitude measures were higher for respondents with a high degree of acculturation than those with a low degree of acculturation, while responses from those with a low degree of acculturation exhibited a higher standard deviation on all but one attitude measure.

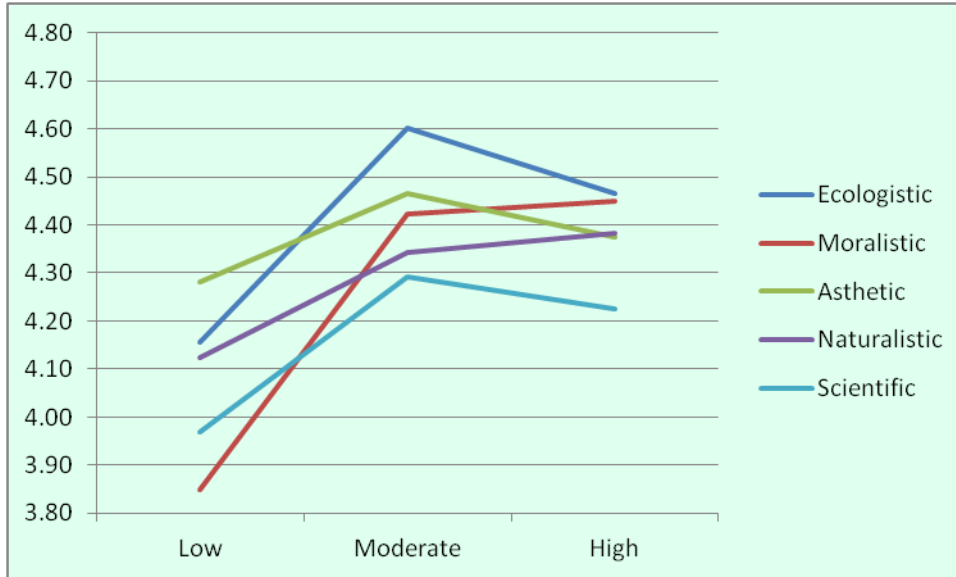


Figure 11 – Mean of most common attitude measures by acculturation

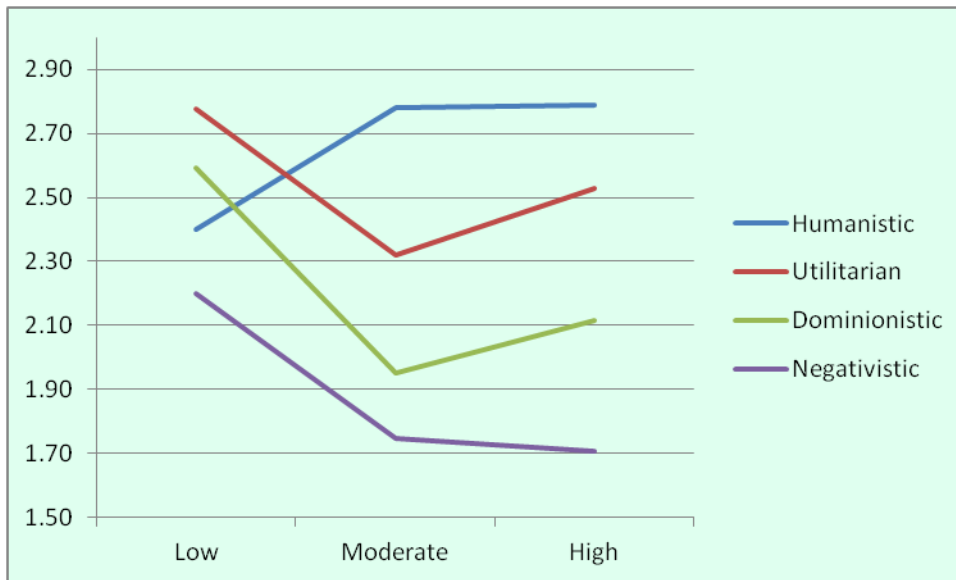


Figure 12 – Mean of least common attitude measures by acculturation

### 5.3.2 In Their Own Words...

Two open-ended questions were used to ask respondents for their thoughts about wildlife and natural places in Richmond. More than half of the respondents provided answers to these open-ended questions:

1. Do you have any other comments or concerns about wildlife in Richmond?
2. Do you have any other comments or concerns about the natural areas in Richmond?

The thematic analysis combined the responses to the two questions due to significant overlap in themes and the tendency of many respondents to address issues relating to both wildlife and natural places together in a single response.

Several very lengthy and passionate comments were received, the longest of which contemplated feral rabbits in City parks and extended onto a page and a half. Many respondents used emotion laden words such as *love*, *beauty*, *danger* and *over-run* to express strong positive or negative views on the presence and management of wildlife and natural places.

Recurring themes are described below, along with representative quotes demonstrating the theme. Some of the quotes capture more than one theme, but are included in their entirety in order to convey the full sentiment of the respondent. Some responses have been edited for brevity and clarity – edits are marked with ellipses or square brackets.

1. **Feelings of joy and appreciation** – Several respondents expressed feelings of happiness or gratitude for the natural beauty and abundance found in Richmond. Some however tempered these positive thoughts with concern for the future.

“I am fortunate because I live in Steveston off the dyke and have many opportunities to enjoy nature and wildlife. Our wildlife and natural areas are a gift and should not be destroyed or removed.”

*Respondent #164*

“We feel thrilled and privileged to be so close to the natural world. Nature is healing, restorative, and spiritual.”

*Respondent #178*

“I do love the wide open spaces you can still find in Richmond - my heart rate always goes down around them. I am very concerned of the loss of these, but I do think other uses can cohabitate in an area (i.e. community gardens near a natural area as happens in Terra Nova) I [*sic*] doesn't have to be all one or the other.  
I get great joy with all the birds that visit my garden and the produce I grow - I would be very sad if I couldn't connect with nature in some way.”

*Respondent #233*

2. **Animals as problems** – Over 40 respondents identified both wild animals (including rats, raccoons and coyotes) and domestic animals (such as cats and dogs) as problems. Several respondents wrote passionately and at length about the plight of feral rabbits in Richmond. Some animals, such as raccoons and snow geese, elicited both positive and negative comments, with some residents enjoying these animals and others seeking their control or elimination.

I wish the city would recognize that rabbits are dumped domestic pets and shouldn't be designated wildlife. They should be afforded the respect that they deserve. They make wonderful pets and the city can help educate the public about their care...

*Respondent #31*

Raccoons are a special problem because they can cause a lot of damage and they're dangerous to pets. I'm all for urban wildlife wandering through my yard, but not when it stops to do thousands of dollars of damage. Then it's war!

*Respondent #124*

“The most common wildlife in Rmd are rats.  
Not that I hunt, but bring back hunting in Richmond.  
Start fining people dumping their rabbits, cats and other animals at the automall, and at the side of the road etc..”

*Respondent #154*

3. **Threats to wildlife and natural places** – Urban development, including the demolition of older single family homes and increased traffic in natural areas, such as the playground in Terra Nova, were mentioned by close to 40 respondents. Loss of habitat, loss of trees, and litter were also cited as threats to wildlife and natural places

“Please slow down the development! Giant condos where there used to be gloriously grassy land. Two houses crammed onto a lot where there used to be one. The development suffocates me, and I can imagine the wildlife is not crazy about it either.”

*Respondent #59*

“Terra Nova playground. The City of Richmond has depleted this natural migratory bird path with the playground, no longer do we see fowl in this area due to the children ... Birds like the Killdeer are not seen around the park and the Humming birds [*sic*] have dwindled away. Cutting of bushes also chase the birds away as this is their hiding places and nesting as well... Garbage is in the pond area after week-ends of partying, things such as beer cans, wine bottles, cigarette butts,... I find it hard to head down to this area anymore as the wildlife is disappearing quickly in this once beautiful area.”

*Respondent #152*

“Once I marvelled at the sound of croaking frogs emanating from ditches in Richmond. A magical sound in the warm May evenings. Alas, no longer. Now May evenings are spent listening to the sound of ditches being filled in, car horns blaring, and pile drivers destroying animal habitat...”

*Respondent #189*

4. **Desire to find balance** – The challenge of balancing the needs of people and wildlife were recognized by several respondents. Agricultural lands in particular were mentioned as both needing protection and as a means of providing natural spaces and habitat for wildlife.

“I enjoy wildlife and hope to find a place for them to live naturally, however, [I] don't enjoy wildlife rummaging around the homes or be possible danger to children (animals may feel threaten by unknown action of the children or people around them). I guess it's just finding that balance.”

*Respondent #23*

“agriculture can provide some wildlife habitat (for ex. Cover crops can provide winter food for migrating birds, and hedgerows can maintain shelter for various animals). Agriculture is such an important part of Richmond culture and could provide manmade space for wildlife”

*Respondent #40*

“We should preserve wild places like Sturgeon Banks and Richmond Nature Park, but there is nothing wrong with residential and industrial zoning. Humans have a right to live too.”

*Respondent #160*

5. **Feelings of loss or concern** – Many respondents expressed a deep sense of loss with respect to wildlife and natural places, largely attributed to changes to the social and physical landscape. The depth of emotion was expressed strongly, through the use of words such as *sad*, *worried* and *unfortunate*.

“I am concerned about habitat, particularly for migrating birds and for salmon. I strongly enjoy wildlife in our cities; Richmond is in a unique and rare location at the mouth of the Fraser, and it is our responsibility to ensure this unique ecosystem is shared responsibly with the species that depend on it... I am concerned about habitat loss particularly for migrating birds, and for salmon, herring and sturgeon. I'm also concerned about the health of our waterways. Due to our location at the mouth of the Fraser, Richmond has a unique responsibility to uphold the ecological functions of this area...”

*Respondent #63*

“While development is somewhat needed, I strongly believe that we should respect our environment when doing so. What's the point in building mega mansions, when so very few of us can afford to buy them? ...we see no point in all those mega mansions that are creeping into our neighbourhood destroying all the beautiful old trees and green areas that once lived there. My children call them "sad houses". They are not homes (according to them) because nobody lives in them. It really saddens me to see the direction that Richmond is going. There's less of a community feeling than when I was growing up and the city is not really making any effort to protect the environment around us!”

*Respondent #132*

“I dread the way that Richmond is developing - the natural places are already being destroyed. The old single family dwellings that had gardens and trees lived in harmony with the other creations that share our world - the new "clone palaces" with their concrete drives, are killing this city - along with the high-rises, that also have no room for sharing. Every time an old residence goes down, it is also destroying the home of many other species, even if they are not easily apparent.

Richmond used to call itself a "garden city" - it sure isn't anymore :(

It's looking like a concrete bunker - with no soul...

I recently heard of someone in our neighbourhood, putting antifreeze out to kill the skunks and raccoons - which breaks my heart - I'd rather have the skunks, raccoons and coyotes for neighbours any day !”

*Respondent #172*

6. **Identity** – Several respondents identified themselves as long-time residents, while others made statements distinguishing themselves from *newcomers* and *immigrants*.

“... Many new immigrants have to learn and accept that nature is NOT there just for their consumption & selfish use...”

*Respondent #94*

“[*Wildlife*] are losing their habitat very rapidly, with all the townhouse [and] apartment buildings, smartin [*sic*] up council, I've lived here all my life 61 yrs, and whata [*sic*] mess. I am glad I am not a wild animal”

*Respondent #101*

“Don't make policy to appease superstition and ignorance from immigrant groups and uneducated citizens of Richmond. Education is necessary, but not expensive programs. Keep Richmond Green and an Island, by nature.. [*sic*] If they are not comfortable living with nature, there are established city areas. Stop caving in to ignorance. Lets [*sic*] not make Richmond like overpopulated cities overseas.”

*Respondent #242*

7. **Suggestions for improvement** – Nearly 30 respondents wrote of the need to preserve remaining natural spaces, while several more suggested educating residents about the City's natural history, and creating more opportunities for people to interact with the natural world.

We need some natural areas that are protected for wildlife but also some where people can interact with the nature. where [*sic*] children can build forts, pick flowers, eat berries, catch frogs, dam creeks.

Natural areas should be staffed with heritage interpreters who can educate and facilitate people's experiences with nature.

*Respondent #44*

“Additional opportunities to enjoy nature would be welcome - add launch sites to middle and north arm of Fraser river for kayaks/canoes and better maintainance [*sic*] the launch at the south end of No. 2 road”

*Respondent #48*

“Make more trails for people to enjoy and get closer to nature.”

*Respondent #103*

“It's important that we keep [*natural areas*] & educate our youth the importance of nature. I feel this is something that is lacking in our society, but appreciate what I have read the effort certain groups have made to educate our children where food comes from & what can be found in nature with animals & plants.”

*Respondent #188*

## 5.4 DEMOGRAPHIC CHARACTERISTICS

The survey sample was not representative of the population of Richmond. The comparison of age and gender for both the City of Richmond and survey respondents is displayed graphically in Figure 13 and Figure 14 below.

Women were overrepresented in the sample, comprising 61% of respondents, as compared to just over 51% of Richmond residents<sup>10</sup>. This gender difference is consistent with research into online survey response rates, which have found women generally are more likely to participate than men (Sax, Gilmartinb, Leec, & Hagedornd, 2008, p. 719; Smith, 2008, p. 12).

Younger people, those under 30 years of age were underrepresented, likely due in part to the requirement that participants be over the age of majority. Individuals over the age of 50 are overrepresented in this sample. Approximately 65% of survey respondents were over the age of 50, as compared to just under 40% of the City's population.

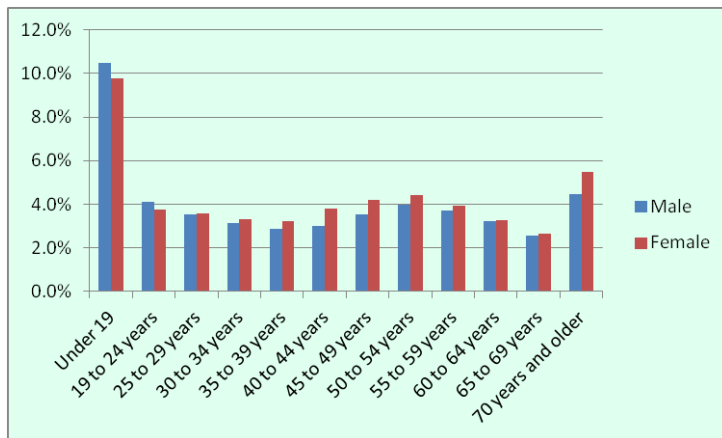


Figure 13 – Age and gender - City of Richmond

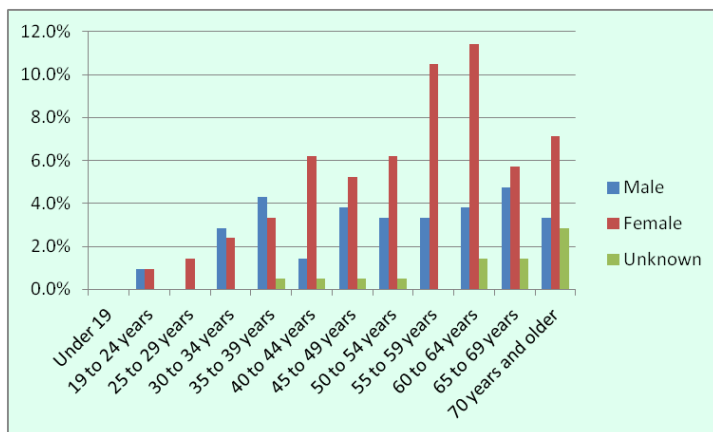


Figure 14 – Age and gender - Survey participants

The comparison of language spoken and mother tongue for both the City of Richmond and survey respondents is displayed graphically in Table 9. People who spoke English, French and other European

<sup>10</sup> All population estimates for the age and gender of Richmond residents are based on the Richmond local health area for the year 2014 (Government of British Columbia, 2015)

languages were overrepresented, while those who spoke Cantonese, Mandarin and other Asian languages were underrepresented. This may be due in part to the fact that the survey was promoted and administered only in English.

Table 9 – Richmond's languages

	Language spoken at home		Mother tongue	
	City <sup>11</sup>	Survey <sup>12</sup>	City	Survey
<b>English</b>	49.4%	77.3%	36.6%	78.5%
<b>French</b>	0.2%	4.6%	0.6%	2.4%
<b>Cantonese</b>	14.0%	4.2%	15.9%	7.2%
<b>Persian (Farsi)</b>	0.4%	0.0%	0.6%	0.0%
<b>German</b>	0.1%	3.8%	0.8%	1.4%
<b>Japanese</b>	0.6%	0.4%	1.1%	0.0%
<b>Mandarin</b>	9.4%	1.2%	10.9%	0.5%
<b>Punjabi</b>	1.9%	0.8%	3.1%	0.0%
<b>Russian</b>	0.8%	0.0%	1.1%	0.0%
<b>Spanish</b>	0.5%	1.5%	1.0%	1.4%
<b>Tagalog</b>	1.7%	1.2%	3.9%	1.0%
<b>Other</b>	20.9%	5.0%	24.4%	7.7%

The comparison of education completed for both the population of the City of Richmond and survey respondents is displayed graphically in Table 10. Table 11 compares income of respondents with that of the general population. Survey respondents had completed higher levels of formal education than the general population of Richmond (City of Richmond, 2014c). Consistent with this finding, low income residents were underrepresented, while high income residents were overrepresented.

Table 10 – Highest level of education completed

	Survey respondents		City of Richmond	
	Count	%	Count	%
Less than secondary school diploma	3	1.4%	22,995	14%
Secondary (high) school diploma or equivalent	22	10.4%	45,185	28%
Apprenticeship, College, or other non-university certificate or diploma	59	28.0%	45,570	28%
University bachelor level or higher	116	55.0%	48,285	30%
Unknown	11	5.2%	-	-
	<b>211</b>	<b>100.0%</b>	<b>162,035</b>	<b>100%</b>

Table 11 – Personal annual income

Survey income categories	Survey respondents		City of Richmond	
	Count	%	Count	%
Less than \$30,000	31	14.7%	60,410	48%
\$30,000 to \$49,999	37	17.5%	29,475	24%
\$50,000 to \$74,999 <sup>13</sup>	44	20.9%	22,305	18%

<sup>11</sup> All population estimates for the languages spoken by Richmond residents are based on the 2011 census (City of Richmond, 2014L; Statistics Canada, 2011)

<sup>12</sup> Respondents could choose more than one language to speak at home.

Survey income categories	Survey respondents		City of Richmond	
	Count	%	Count	%
\$75,000 to \$99,999	33	15.6%	5,920	5%
\$100,000 or over	31	14.7%	6,855	5%
Unknown	35	16.6%	-	-
	<b>211</b>	<b>100.0%</b>	<b>124,965</b>	<b>100.0%</b>

Residents of the City’s western and southern neighbourhoods were overrepresented in the survey, while the central and northern neighbourhoods were underrepresented, as shown in Table 12. It is noteworthy that central Richmond is often known as the Golden Village, in reference to the large number of Asian businesses. Between 50 and 80 percent of residents of central Richmond neighbourhoods are ethnically Chinese (Todd, 2012, para. 8). This neighborhood bias is consistent with the language bias discussed earlier in this section.

Table 12 – Survey response vs. population by neighbourhood

Postal code neighbourhood	Survey %	Richmond % <sup>14</sup>	Richmond planning area
Richmond Northeast (V6V)	3.5%	2.7%	Hamilton
Richmond Southeast (V6W)	0.5%	1.8%	Fraser lands + East Richmond
Richmond North (V6X)	6.2%	11.7%	Bridgeport + East Cambie + West Cambie
Richmond Central (V6Y)	12.3%	37.5%	City Centre + Broadmoor
Richmond South (V7A)	15.2%	6.1%	Shellmont + Gilmore
Richmond (Sea Island/YVR) (V7B)	1.9%	0.4%	Sea Island
Richmond Northwest (V7C)	24.2%	17.9%	Thompson + Blundell
Richmond Southwest (V7E)	36.5%	21.9%	Seafair + Steveston
<b>Grand Count</b>	<b>100%</b>	<b>100%</b>	

## 5.5 SUMMARY OF RESULTS

Respondents were generally knowledgeable about the City’s wildlife and natural places, and supported conservation of remaining wildlife habitat and natural areas. Some species, while well known, were regarded as pests by many respondents, who advocated control measures.

Engagement in passive recreational activities was more common among respondents than participation in the listed active recreation or consumptive activities. Several respondents listed active water based recreational activities such as boating, and passive recreational activities, such as sitting quietly in a public park.

A majority of respondents exhibited attitudes that reflected concern for the environment as an integrated system, and for the ethical or moral treatment of nature and animals. Respondents also expressed appreciation for the beauty and symbolic characteristics of the natural world. While some respondents

<sup>13</sup> Statistics Canada grouped income from \$50,000 to \$59,999, \$60,000 to \$79,999 and \$80,000 to 99,999 while the survey grouped income as listed. This prevents an exact comparison, but data is considered adequate to demonstrate that survey respondents had a higher than average income.

<sup>14</sup> Richmond population estimate for the 2011 census year. Statistics Canada census data retrieved from City of Richmond. (2014). Population Hot Facts. Retrieved April 4, 2015 from [http://www.richmond.ca/\\_shared/assets/Population\\_Hot\\_Facts6248.pdf](http://www.richmond.ca/_shared/assets/Population_Hot_Facts6248.pdf)

had strong negative opinions about specific “problem” animals, few respondents expressed predominant feelings or attitudes of dislike or fear of animals and nature generally.

These findings should be interpreted with care as the survey sample was not random and was not representative of the City’s population. It is possible that residents who elected not to participate in this research may possess different knowledge, engage in different activities, and hold different attitudes than those who responded to the survey.

## 6 DISCUSSION AND ANALYSIS

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This research sought to better understand the attitudes that Richmond residents have towards wildlife and nature in the City, and to identify any differences in these attitudes between socio-demographic groups. The research considered what people know about wildlife and nature; the outdoor activities they participated in; and, how they felt about a variety of local wildlife and natural history issues. Findings were intended to provide insight into community needs and preferences, and to inform the development of outreach and educational programs.

Like Kellert's (1984) seminal study, this research asked about a variety of topics including knowledge of wildlife and natural places, outdoor activities and attitudes towards wildlife and nature (p. 210). The data collected lends itself to infinite analysis, but was by necessity focused on the primary research question of understanding attitudes towards wildlife and nature, as well as identifying any associated demographic differences.

### 6.1 A NOTE ABOUT THE MEDIA

Part way through the data gathering portion of this research project, the local media became aware of the research and featured the project in a newspaper article. Images of both the online and print edition of the article are provided in Appendix C – Richmond News article.

Both versions of the article featured an image of an angry raccoon, and the caption “Haters gonna hate? Are raccoons friend or foe?” (Wood, 2015, p. A5). The print version of the article was positioned next to an article about a \$1 million upgrade to a local park, which was required to “mitigate ‘foul smells’ as a result of duck excrement and algae” (Wood, p. A5). The on-line version of the article was positioned next to a survey that asked what the City of Richmond should do about signs at local businesses which were exclusively in Chinese. One option for this opinion poll was to “continue to ‘educate’ the Chinese business community” (Richmond News, 2015, Chinese sign POLL).

Heberlein (2012) observed that “the press sets agendas and frames discussions” (p.135), often by framing “the issues with new attitude objects linked to much stronger attitudes” (p. 40). In the case of this research, the media framed the issue as one of problem animals and cultural change. This newspaper article is believed to have prompted nearly half of the responses received. It is therefore quite likely that the way the media portrayed the survey attracted a certain type of respondent and tainted the responses.

Sometimes, a topic as seemingly benign as one's thoughts about nature, can be linked to other more emotionally laden topics such as City expenditures and social change. It is therefore useful to understand underlying attitudes in order to properly position City policies, programs, and even masters' research projects, in a way that will be well received.

### 6.2 ATTITUDES TOWARDS WILDLIFE AND NATURE

Attitudes towards wildlife and nature incorporate beliefs and experiences, and can be characterized as part of the human dimension of a public policy issue. Knowledge of both the environmental aspects and human dimensions involved can benefit park planners and others charged with managing urban parks (Baharuddin et al, 2013, p. 27). Better information about people's attitudes can help in developing park programming, promote social norms, and introduce residents to the natural wonders of the City.

Overall, respondents expressed positive sentiments towards wildlife and nature, identifying most strongly with Kellert's ecologicistic, moralistic and aesthetic values. These values reflect an appreciation for animals and nature, and concern for the environment as a system. Statistically significant differences between the two sexes were found for seven of the nine attitude measures. Differences in attitudes between respondents with a high degree of acculturation and those with a low degree of acculturation were statistically significant for both the moralistic and humanistic measures. These findings should be interpreted with caution however as the survey sample is not representative of the population of the City of Richmond. It may be that these differences exist only for those Richmond residents who are sufficiently interested in the survey topic.

In their responses to the open-ended questions, several respondents identified themselves as long-time residents, or as experts on the local area's natural history. Responses also tended to incorporate a significant amount of emotion, whether expressions of affection towards the area's natural beauty, or expressions of fear and concern for about "problem" animals, or the loss of habitat. For many respondents, the loss of natural places and changes in the local fauna appear tied to their experiences of broader social and cultural changes, including urban densification, development and immigration.

Heberlein (2012) suggests that "When an attitude is part of who you are - your identity - it has many beliefs, considerable stability, substantial horizontal structure and a strong emotional basis" (p. 27). Such attitudes have considerable strength, are resistant to change, and should be acknowledged by policy makers seeking to better serve the community.

As an island created by the flow of the Fraser River, Richmond has never been static. The City was shaped first by the river itself, then by people - First Nations, European farmers, Japanese fishermen and more recent immigrants. Some changes were deliberate, as people drained and dyked the land for agriculture and introduced crops, although other changes were unexpected as introduced plants and animals became established, and as grassland creatures expanded their range.

Many respondents appeared to struggle with changes they have witnessed, and the City may wish to remind residents of the City's history and evolution as a way of drawing awareness to the inevitability of change, and the associated management challenges. Acknowledging the changes experienced by long-time residents may help people to contextualize their experiences and encourage them to help shape the future of nature in Richmond.

Survey respondents generally expressed positive attitudes towards the City's wildlife and natural places, but it cannot be assumed that underrepresented groups share these attitudes. Indeed the few younger respondents and minimally acculturated respondents<sup>15</sup> who participated in the survey appear to differ from the majority of respondents on several attitude measures. Respondents under 30 years of age expressed weaker utilitarian and dominionistic attitudes than the overall average, and stronger aesthetic attitudes than any other age category. Statistically significant differences on both the moralistic and humanistic attitude measures were found between respondents with a low versus high degree of acculturation, with minimally acculturated respondents expressing these attitudes to a lesser degree.

Assuming for a moment that one accepts the attitudes expressed by the majority of respondents as indicative of the attitudes of engaged and highly acculturated Richmond residents, then a challenge for the City is determining whether these attitudes reflect desirable social norms. Social norms can serve as powerful drivers of behaviour, and may impose informal sanctions on those who violate the norms

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<sup>15</sup> Only five respondents were between the ages of 19 and 29, and eight respondents were found to have a low degree of acculturation.

(Heberlein, 2012, pp. 92-93). Richmond residents who took the time to participate in this research appear to represent a community of people who care deeply about wildlife and natural places. There may be opportunities to use these residents as a positive example to help others develop the same passion for the City's natural history.

### **6.3 ENGAGING ALL MEMBERS OF THE COMMUNITY**

Local government must often make decisions on park planning, conservation and programming, based on limited information and in the face of pressure from stakeholders. Community engagement tools such as Let's Talk Richmond can be convenient and affordable tools for soliciting public input on current topics; however, there is a risk of self-selection bias.

One of the primary objectives of this research was to consider differences in attitudes across demographic sub-groups. This objective was thwarted somewhat by the limited participation by certain segments of the population, notably young people, residents of the City Centre and recent immigrants.

The reasons for this lack of participation are not known, and beyond the scope of this paper, although it does raise interesting public policy questions. Richmond residents who are young or minimally acculturated may not have participated for a variety of reasons, including failures in the recruitment method, language barriers or reluctance to engage in this type of research. On the other hand it is possible that these residents did not engage because they lack interest in the topic of wildlife and nature, or perhaps they prefer not to engage with the local government. Lack of interest in this topic is a concern, because Richmond residents who lack interest in nature are unlikely to appreciate the benefits of a healthy local environment and may resist conservation efforts.

In earlier research into community needs, the City identified that "residents with a Chinese background are generally significantly less likely than Caucasian and South Asian residents to frequently or occasionally undertake activities in Richmond's public outdoor areas" (2009, p. 52). The City may wish to probe further into this issue in order to identify real and perceived barriers to park use and participation in outdoor activities. Parks are public assets, and lack of use among certain segments of the community raise issues of equality and satisfaction of community needs (Hung, 2003, p. 1).

Many respondents indicated that they learnt about wildlife and nature through park signs and the local newspaper. These traditional forms of education and engagement appear to be effective and should be maintained. Where possible, they may be expanded to target non-English speaking residents and visitors.

The City has also made use of more intensive or novel means of communication, including using focus groups to conduct a community needs assessment (City of Richmond, 2009, p. 2), and developing a mobile application to disseminate information about the City's community facilities (City of Richmond, 2013c, Richmond Mobile Apps, para. 2). Both of these means of communication allow the City to learn about people's interests and activities. They also allow the City to engage Richmond residents and encourage residents' interest in wildlife and nature.

### **6.4 ACTIVITY PREFERENCES**

A large number of respondents reported participating in passive recreational activities such as walking, bird watching and nature photography. These results support the direction of the City's Parks and Open Space Strategy, which, in response to urban densification and demographic changes, proposes park

development to accommodate more passive activities, such as walking (City of Richmond, 2013, p. PRCS-10).

The academic literature suggests that there may be cultural or ethnic differences in people's motivations for participating in outdoor recreational activities (Walker et al, 2010, pp. 277-278) and in the activities they partake in (Wolch & Zhang, 2004, p. 437). Johnson-Gaither (2014) suggested that immigrants who have had minimal exposure to "wild nature" may prefer to gain experience in urban areas (p.200), and acknowledged that "tree-adorned urban parks or commons ... may be as close to the Great Outdoors as some people may be able to or desire to come" (p. 200).

## 7 RECOMMENDATIONS

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The specific objectives of this research included identifying what people know, what they do and how they feel about wildlife and nature in the City. The intention was to provide guidance to the City on how to inform Richmond residents about local wildlife and natural places, and to make the City's outreach and educational programs in natural history more responsive and relevant. The following recommendations were developed within the context of this restricted mandate, and were intended to provide practical solutions.

The City of Richmond has already taken many steps to promote its parks and natural places, and to offer residents opportunities to experience the City's cultural, recreational and nature-related offerings. The following recommendations can be implemented individually, or in combination, to enhance existing City initiatives.

### **RECOMMENDATION #1 – ENGAGE THE COMMUNITY**

One challenge in developing recommendations was the low participation among young people and recent immigrants. While the reason for this is unknown, one possibility is that they are not aware of the City's natural history or are not interested in the topic.

Promoting nature and wildlife themed events widely, through various media and in a variety of languages, may reach more residents and build awareness of available outdoor recreation opportunities. The City may also consider looking for opportunities to deepen the engagement of those who were underrepresented in this research. This may include communicating with members of underrepresented groups, including young people and non-English speakers, when these individuals participate in nature related programs or events. This may be done through short surveys offered to those who participate in City programs, or by interviewing attendees at nature themed public events. Additional information may be gleaned through the City's 2015 community needs assessment, which took place in May and June of this year (City of Richmond, 2015, para. 4).

Opportunities may also exist to engage the knowledgeable and passionate residents who responded to this survey as a means of promoting the City's wildlife and natural places. Heberlein (2012) suggests that "it is not necessary to change the attitudes of every person involved, but rather that change can be engineered by "identifying actors who can change the situation's structure and influence individual behaviour" (p. 8).

### **RECOMMENDATION #2 – HELP RESIDENTS UNDERSTAND AND EXPERIENCE NATURE**

Encouraging residents' understanding of nature and promoting their ability to witness and experience the City's wildlife and natural places may help people to become more engaged with the City's natural history and shape their attitudes towards wildlife and nature.

Making information available when and where people want to access it may help to promote awareness. Well designed park signs can provide site specific information, though care should be taken that the information remain relevant and that signs do not overwhelm the landscape. The City may also consider including an internet address or QR code on signs and literature to direct people to more information online or on the mobile application. Linking to information online would also provide a way to include information in a number of languages without cluttering a printed sign.

In addition to highlighting the unique characteristics and natural history of parks through signage, special events, roving park interpreters or a “Park of the Month” promotion may provide a means of improving awareness of park features. Native plants and animals, as well as past and current human use of parks and open spaces can be presented to visitors, in order to advertise the parks and encourage residents to respect and use the natural places. Recognizing the City’s changing demographics, non-traditional nature activities should be explored to provide novel means for residents to engage with the City’s natural places.

Some new immigrants may be unfamiliar with the idea of outdoor recreation and may prefer to experience nature gradually and in familiar settings, such as manicured groomed parks or community gardens (Johnson-Gaither, 2014, p. 200). In recognition of this, the City may wish to develop more low-cost and accessible programs for new park users, similar to the existing Learn to Camp, Learn to Fish, and Environmental Sustainability programs (City of Richmond, 2015, pp. 17, 104, & 124). Programs may be offered in multiple languages, or interpreters may be provided to encourage recent immigrants to participate. Having more people active and engaged in parks may in turn reduce undesirable park activities, such as partying or littering.

Over the long-term, the City may consider developing more access points and ways for people to get close to nature. Examples might include boat launches, boardwalks or trails through natural areas. These would serve as gateways between urban and natural areas, and allow residents to gradually expand their comfort around wild nature.

### **RECOMMENDATION #3 – ACKNOWLEDGE CHANGE AND CHALLENGES**

Reminding people of the City’s history and evolution may help put change into perspective, and encourage residents view change is inevitable, with both positive and negative potential. This may also draw awareness to the challenge of managing change and encourage people to develop creative ways of living with wildlife and promoting nature in their own yards and gardens.

Where change may be contentious, the City can build on existing community information and engagement activities, such as open house events, to highlight what has been done to understand and address the impact of the change on wildlife and nature. Where efforts were made to enhance natural spaces or accommodate wildlife, for example through native plantings or artificial habitat such as bat houses or nesting platforms, these should be publicized and promoted. This will not only increase awareness of the City’s efforts to accommodate local wildlife, but may also encourage residents to consider making similar accommodations around their own homes or businesses.

Residents can be encouraged to observe the interplay between wildlife, natural places and agriculture, particularly where the borders between wild and cultivated spaces are permeable. Places such as Shell Road trail, Garden City Park, and Terra Nova Park offer opportunities to emphasize the City’s agricultural heritage, integration of human activities with natural areas, and preservation of wildlife habitat. This may be done through special events or park programming and could serve to promote balance between humanity and the natural world

### **RECOMMENDATION #4 – RAISE AWARENESS OF PARK & WILDLIFE MANAGEMENT**

One of the more challenging issues identified by respondents was anti-social behaviour, including littering and abandoning pets in public parks. Residents who are new to Canada may not be aware of services such as humane societies where they may take unwanted pets. Communications in print media,

including City publications, may build awareness of these services. This information must be presented in the City's dominant languages if it is to be effective.

Certain wildlife, including rats, raccoons, coyotes, skunks and snow geese can be unpopular creatures and present management challenges, as recognized by the City's Urban Wildlife Management Framework (City of Richmond, 2013b, pp. 3-4). The City may wish to raise awareness of the needs and habits of these creatures, along with any existing or recommended control measures, through signs in public parks, educational campaigns or collaboration with other agencies.

Communicating animal control decisions may be complicated by the fact that some residents view the animals as pests, while others view them as pets or wild creatures with a right to coexist. One means of delivering the message is to be transparent about the process, and emphasize the property damage and safety hazards of certain species, as was done in a recent article on the topic of a Canada goose cull in Victoria (Cleverley, 2015, p. A4). Open communication and transparency of the process was also used by the University of Victoria (University of Victoria, 2011, para. 2) and the Corporation of Delta (2012, p. 1) when communicating decisions around the control of feral rabbits.

Management of "problem" species can be further complicated by the fact that animals do not respect jurisdictional boundaries, and are subject to a variety of provincial, federal and international regulations. The burden of animal control should not rest solely on the municipality. To this end, the City should continue its collaborative efforts with other agencies and authorities and look for opportunities to expand these partnerships.

## **FUTURE RESEARCH**

Further research into preferred activities and motivations among Richmond's various demographic groups may help the City to better understand community needs and develop responsive outdoor recreation programming. This in turn would allow more residents to gain direct experience with the City's natural areas, which may help to shape their attitudes towards nature.

Young people, specifically those who have immigrated to Canada or who are the children of immigrants, may provide unique insights into the needs and interests of immigrant groups, as well as real or perceived barriers to participation in outdoor, nature based activities. The Richmond school district is supportive of environmental stewardship initiatives, including school based Green Teams (Richmond School District, 2011, p.2). The City may wish to explore opportunities to work with the school district to learn from the students and develop programs targeted at their interests.

The impact of urban development on wildlife and natural places was identified by several respondents. This issue was out of scope for this research, which focused on park planning and programming; however, the City may wish to explore this topic further in future research.

## 8 CONCLUSION

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The City of Richmond is a very interesting place, on account of its incredible natural history and its diverse residents. The City has, and continues to experience tremendous change, which is forcing people and wildlife to adjust and adapt.

This research achieved two of the stated objectives, namely identifying what Richmond residents know, what they do and how they feel about wildlife and nature in the City; and, making recommendations for disseminating information and making programs and outreach more responsive to its diverse constituency. The third objective, identifying differences in attitudes towards wildlife and nature between various sub-groups of Richmond residents was hindered somewhat by the low participation of certain segments of the population.

The survey sample was not representative of the City's demographic composition, with young people and Chinese people significantly under-represented. This should give pause, as it raises questions around interest in wildlife and nature among these segments of the population, along with the possibility that existing forms of community engagement may not be reaching all residents equally.

Overall, respondents were knowledgeable and passionate about Richmond's wildlife and natural places. Respondents generally supported preservation of existing wildlife habitat and natural places, as well as initiatives that will raise awareness of Richmond's natural history and allow people the opportunity to connect with nature. The City of Richmond parks department may wish to take this into consideration when developing policies, programs or public education initiatives that are responsive to community needs and interests.

This research did not succeed in exploring the research questions as thoroughly as planned, largely due to the relatively homogeneous survey sample. However, it did succeed in providing intimate insight into the beliefs, values, opinions and attitudes of long-time Richmond residents, nature lovers and other residents who took the time to participate in this project. My sincere gratitude goes out to all of them, and I hope that this information proves useful in helping to promote and preserve Richmond's natural history for generations to come.

## 9 REFERENCES

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- Baharuddin, Z., Karuppanan, S., & Sivam, A. (2013). Environmental Attitude: Values on Urban Wildlife, a case study of Kuala Lumpur urban parks. *Edinburgh Architectural Research Journal*, 33, 25-46. Retrieved from [sites.eca.ed.ac.uk/ear/files/2013/05/25-461.pdf](http://sites.eca.ed.ac.uk/ear/files/2013/05/25-461.pdf)
- Balmford A, Beresford J, Green J, Naidoo R, Walpole M, & Manica, A. (2009) A Global Perspective on Trends in Nature-Based Tourism. *PLoS Biology*. 7(6): e1000144. doi:10.1371/journal.pbio.1000144
- Balmford, A., Clegg, L., Coulson, T., & Taylor, J. (2002) Why conservationists should heed Pokemon. *Science*. 295, 2367.
- Barr, S. and Gilg, A. W. (2007). A Conceptual Framework for Understanding and Analyzing Attitudes towards Environmental Behaviour. *Geografiska Annaler. Series B, Human Geography*, 89(4), 361-379. Retrieved from <http://www.jstor.org.ezproxy.library.uvic.ca/>
- Barr, S., Gilg, A. W., and Ford, N. J. (2001), A conceptual framework for understanding and analysing attitudes towards household-waste management. *Environment and Planning A*, 33(11), 2025–2048. doi:10.1068/a33225
- Cain, P. (2013, March 19). Income by postal code: Mapping Canada's richest and poorest neighbourhoods. *Global News*. Retrieved from <http://globalnews.ca>
- Chawla, L. (1998). Significant life experiences revisited: a review of research on sources of environmental sensitivity. *Environ Educ Res*, 4, 369-382.
- City of Richmond. (2009). 2009 Community Needs Assessment. Available from <http://www.richmond.ca/parksrec/about/mandate/needsassessment.htm>
- City of Richmond. (2011). Parks and Open Space Strategy - Phase 1. Available from [http://www.richmond.ca/agendafiles/Open\\_PRCs\\_10-29-2013.pdf](http://www.richmond.ca/agendafiles/Open_PRCs_10-29-2013.pdf)
- City of Richmond. (2012). 2012 Environmentally Sensitive Area Management Strategy. Available from [http://www.richmond.ca/\\_\\_shared/assets/esamgmtstratbtr33976.pdf](http://www.richmond.ca/__shared/assets/esamgmtstratbtr33976.pdf)
- City of Richmond. (2013a). 2022 Parks and Open Space Strategy. Available from [http://www.richmond.ca/parks/about/planning/Parks\\_and\\_Open\\_Space\\_Strategy.htm](http://www.richmond.ca/parks/about/planning/Parks_and_Open_Space_Strategy.htm)
- City of Richmond. (2013b). Report to Committee re: Urban Wildlife Management Framework. Retrieved July 8, 2014 from [http://www.richmond.ca/\\_\\_shared/assets/\\_12\\_Urban\\_Wildlife\\_CNCL\\_02121334902.pdf](http://www.richmond.ca/__shared/assets/_12_Urban_Wildlife_CNCL_02121334902.pdf)
- City of Richmond website. (2013c, January 1). Retrieved April 4, 2015 from <http://www.richmond.ca/parks/parks/SigParks/signatureparks.htm?PageMode=HTML>
- City of Richmond. (2014a). Ethnicity Hot Facts. Retrieved from [http://www.richmond.ca/\\_\\_shared/assets/2006\\_Ethnicity20987.pdf](http://www.richmond.ca/__shared/assets/2006_Ethnicity20987.pdf)
- City of Richmond. (2014b). Ecological Network Management Strategy. Available from [http://letstalkrichmond.ca/econetwork?preview=true&tool=survey\\_tool&tool\\_id=econetworksurvey](http://letstalkrichmond.ca/econetwork?preview=true&tool=survey_tool&tool_id=econetworksurvey)

- City of Richmond. (2014c). Education Hot Facts. Retrieved April 13, 2015 from [http://www.richmond.ca/\\_\\_shared/assets/pp\\_hf\\_3022513.pdf](http://www.richmond.ca/__shared/assets/pp_hf_3022513.pdf)
- City of Richmond. (2014d). Income Hot Facts. Retrieved April 14, 2015 from [http://www.richmond.ca/\\_\\_shared/assets/Income\\_Hot\\_Facts6259.pdf](http://www.richmond.ca/__shared/assets/Income_Hot_Facts6259.pdf)
- City of Richmond. (2014e). Languages Hot Facts. Retrieved April 13, 2015 from [http://www.richmond.ca/\\_\\_shared/assets/Languages6251.pdf](http://www.richmond.ca/__shared/assets/Languages6251.pdf)
- City of Richmond. (2014e). Official Community Plan, Bylaw 9000 - 2041 Official Community Plan (OCP) Schedule 1. Retrieved August 10, 2014 from <http://www.richmond.ca/cityhall/bylaws/ocp/sched1.htm>
- City of Richmond. (2014f). Population Hot Facts. Retrieved April 4, 2015 from [http://www.richmond.ca/\\_\\_shared/assets/Population\\_Hot\\_Facts6248.pdf](http://www.richmond.ca/__shared/assets/Population_Hot_Facts6248.pdf)
- City of Richmond. (2014g). Community Services > Parks. Available from <http://www.richmond.ca/cityhall/departments/prcs/parks.htm>
- City of Richmond. (2014h). Paulik Neighbourhood Park. Retrieved April 4, 2015 from <http://www.richmond.ca/parks/parks/SigParks/parkinfo/park.aspx?ID=74>
- City of Richmond. (2015). Parks, Recreation and Culture Guide – Summer 2015. Available from <http://www.richmond.ca/parksrec/about/guide.htm>
- City of Richmond. (2015). 2015 Community Needs Assessment. Available from <http://www.letstalkrichmond.ca/needsassessment2015>
- Cleverley, B., June 19, 2015. Goose cull a first – but probably not the last. *Times Colonist*.
- Community Charter*, [SBC 2003]
- Conger, J. A. (1998). The necessary art of persuasion. *Harvard Business Review*, 76(3) 84-95.
- Crotty, M. (2003). *Foundations of Social Research*, Allen & Unwin: Sydney, Australia. Chapter 1
- Dixon, S.P., Birchenough, A.C., Evans, S.M., Quigley, M.P. (2005). Children's knowledge of birds: how can it be improved and can it be used to conserve wildlife? *Transactions of the Natural History Society of Northumberland and Durham*, 64, 121-134. Retrieved from <http://www.researchgate.net/>
- Duda, M.D., Nobile, J. (2010). The Fallacy of Online Surveys: No Data are Better Than Bad Data. *Human Dimensions of Wildlife: An International Journal*, 15:1, 55-64. doi:10.1080/10871200903244250
- Ellen, P. S. (1994). Do we know what we need to know? Objective and Subjective Knowledge Effects on Pro-Environmental Behaviours. *Journal of Business Research*, 30, 43-52. Retrieved from: <http://www.researchgate.net/>
- Erten, S. (2008). Insights to ecocentric, anthropocentric and antipathetic attitudes towards environment in diverse cultures. *Egitim Arastirmalari - Eurasian Journal of Educational Research*. 33, 141-156. Available from <http://www.academia.edu>

- Evans, S., Gebbels, S., & Stockill, J.M. (2008). 'Our shared responsibility': Participation in ecological projects as a means of empowering communities to contribute to coastal management processes. *Marine Pollution Bulletin*. 57(1–5), 3–7. doi: 10.1016/j.marpolbul.2008.04.014
- Foxwell-Norton, K. (2013) Communication, culture, community and country: the lost seas of environmental policy. *Continuum: Journal of Media & Cultural Studies*. 27(2), 267-282, doi:10.1080/10304312.2013.766307
- Government of British Columbia, BC Stats. (2015a). 2014 Sub-Provincial Population Estimates. Available from <http://www.bcstats.gov.bc.ca/Files/7b7c178e-da8e-468c-922b-0faae039c8db/2014Sub-ProvincialPopulationEstimates.pdf>
- Government of British Columbia, BC Stats. (2015b). Population by age and sex. Retrieved April 4, 2015 from <http://www.bcstats.gov.bc.ca/StatisticsBySubject/Demography/PopulationEstimates.aspx>
- Greene, H., and Losos, J. (1988). Systematics, Natural History, and Conservation: Field Biologists Must Fight a Public-Image Problem. *BioScience*. 38(7), 458-462. doi: 10.2307/1310949
- Heberlein, T. (2012a). *Navigating Environmental Attitudes*. New York, USA: Oxford University Press.
- Heberlein, T.A. (2012b). Navigating Environmental Attitudes. *Conservation Biology*, 26(4), 583–585. doi: 10.1111/j.1523-1739.2012.01892.x
- Heinen, J.T. (2010) The Importance of a Social Science Research Agenda in the Management of Protected Natural Areas, with Selected Examples. *The Botanical Review* 76:2, pages 140-164.
- Hung, K. (2003). Achieving Cultural Diversity in Wilderness Recreation: A Study of the Chinese in Vancouver (Unpublished master's Thesis). University of Waterloo, Waterloo, ON. Retrieved February 17, 2015 from <http://etd.uwaterloo.ca/etd/khung2003.pdf>
- Ignatow, G. (2006). Cultural Models of Nature and Society. *Environment and Behaviour*, 38(4), 441-461. doi:10.1177/0013916505280791
- Johnson-Gaither, C. (2014). Wilderness in the U.S. Immigrant Mind (chapter 12). In M. Stodolska, K. Shinew & M. Floyd (Eds.) *Race, Ethnicity, and Leisure: perspectives on research, theory, and practice* (pp. 193-201). Windsor, ON: Human Kinetics.
- Kareiva, P. (2008). Ominous trends in nature recreation. *Proceedings of the National Academy of Sciences of the US*. 105(8), 2757-2758. doi: 10.1073/pnas.0800474105
- Kellert, S.R. (1984). Urban American perceptions of animals and the natural environment. *Urban Ecology*. 8(3), 209–228. doi: 10.1016/0304-4009(84)90036-6
- Louv, R. (2008). *Last Child in the Woods*. New York, USA: Workman Publishing Company, Inc.
- McAvoy, L., McDonald, D., & Carlson, M. (2003). American Indian/First Nation Place Attachment to Park Lands: The Case of the Nuu-chah-nulth of British Columbia. *Journal Of Park & Recreation Administration*, 21(2), 84-104.
- McCutcheon, B. (2009). Whose Parks? A Qualitative Exploration of the Governance of BC Parks. Available from [http://libdspace.uwaterloo.ca/bitstream/10012/4635/1/McCutcheon\\_Bonnie.pdf](http://libdspace.uwaterloo.ca/bitstream/10012/4635/1/McCutcheon_Bonnie.pdf)

- McCleave, J., Espiner, S., & Booth, K. (2006). The New Zealand People–Park Relationship: An Exploratory Model. *Society & Natural Resources*, 19(6), 547-561. doi:10.1080/08941920600664001
- Mukherji, J. (2005). Is Cultural Assimilation Related to Environmental Attitudes and Behaviors. *Advances in Consumer Research*, 32, 415-421.
- Nobel, C. (2012). The Case Against Racial Colorblindness. Harvard Business School, Working Knowledge. Retrieved from <http://hbswk.hbs.edu/item/6919.html>
- Noss, R. F. (1996). Editorial: The Naturalists Are Dying Off. *Conservation Biology*, 10 (1), 1-3. Available from: <http://www.jstor.org/stable/2386935>
- Parsons, C. (2007). Web-Based Surveys: Best Practices Based on the Research Literature. *Visitor Studies*, 10(1), 13-33. doi:10.1080/10645570701263404
- Patrick, P. & Tunnicliffe, S.D. (2011). What plants and animals do early childhood and primary students name? Where do they see them? *Journal of Science Education and Technology*, 20, 630–642. doi 10.1007/s10956-011-9290-7
- Patton, M.Q. (2002). *Qualitative research and evaluation methods*. Thousand Oaks, USA. Sage Publishing Ltd.
- Pyle, R.M. (2003) Nature matrix: reconnecting people and nature. *Oryx*, 37, 206-214. Available from [journals.cambridge.org](http://journals.cambridge.org)
- Richmond School District. (2011). The Richmond School District’s Environmental Stewardship Policy 602.14.1. Available from <http://www2.sd38.bc.ca/sdweb/envstew/home%20page>
- Richmond website. (2015, March 11). Retrieved March 11, 2015 from <http://www.richmond-news.com/>
- Ritchie & Spencer. (1994). Qualitative data analysis for applied policy research. In Bryman, A. & Burgess, R. G. (Eds). *Analyzing Qualitative Data*. (p. 173-194).
- Sax, L., Gilmartinb, S., Leec, J. & Hagedornd, L. (2008). Using Web Surveys to Reach Community College Students: An Analysis of Response Rates and Response Bias. *Community College Journal of Research and Practice*, 32(9), 2-729. doi:10.1080/10668920802000423
- Smith, W. (2008). Does Gender Influence Online Survey Participation? A Record-linkage Analysis of University Faculty Online Survey Response Behaviour. Retrieved April 11, 2015 from <http://files.eric.ed.gov/fulltext/ED501717.pdf>
- Statistics Canada. (2011). Focus on Geography Series, 2011 Census, Census subdivision of Richmond. Available from <http://www12.statcan.gc.ca/census-recensement/2011/as-sa/fogs-spg/Facts-csd-eng.cfm?LANG=Eng&GK=CSD&GC=5915015>
- Statistics Canada. (2014). NHS Profile, Richmond, CY, British Columbia, 2011. Available from <http://www12.statcan.gc.ca/nhs-enm/2011/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CSD&Code1=5915015&Data=Count&SearchText=Richmond&SearchType=Begins&SearchPR=01&A1=All&B1=All&GeoLevel=PR&GeoCode=5915015&TABID=1>

- Tewksbury, J., Anderson, J., Bakker, J., Billo, T., Dunwiddie, P., Groom, M., Hampton, St., Herman, S., Levey, D., Machnicki, N., Martinex Del Rio, C., Power, M., Rowell, K., Salmon, A., Stacey, L., Trombulak, S. & Wheeler, T. (2014). Natural History's Place in Science and Society. *BioScience*. 64 (4): 300-310. doi: 10.1093/biosci/biu032
- Trede, F. & Higgs, J. (2009). Framing Research Questions and Writing Philosophically: The role of framing research questions. In J. Higgs, D. Horsfall & S. Grace (Eds.). *Writing Qualitative Research on Practice*. Boston: Sense Publishers
- The Corporation of Delta. 2012. Feral Rabbit Management Plan to Get Underway in Civic Precinct. Available from <http://www.delta.ca>
- Thompson, S. C. G., & Barton, M.A. (1994). Ecocentric and anthropocentric attitudes toward the environment. *Journal of Environmental Psychology*, 14, 149-157.
- Todd, D. (2012, May 2). Mapping our ethnicity Part 2: China comes to Richmond. *The Vancouver Sun*. Retrieved from: <http://www.vancouversun.com>
- University of Victoria. (2011). Rabbits @ Uvic. Retrieved July 3, 2015 from <http://communications.uvic.ca/rabbits/>
- Untaru, E. N., Epuran, Gh., Ispas, A. (2014). A Conceptual Framework of Consumers' Pro-Environmental Attitudes and Behaviours in the Tourism Context. *Bulletin of the Transilvania University of Braşov Series V: Economic Sciences*, 7 (56), 85-94. Available from <http://webbut.unitbv.ro>
- Walker, G.J. & Deng, J. (2014). Leisure Among Asian North Americans (chapter 6). In M. Stodolska, K. Shinew & M. Floyd (Eds.) *Race, Ethnicity, and Leisure: perspectives on research, theory, and practice*. Windsor, ON: Human Kinetics.
- Walker, G.J., Deng, J. & Dieser, R.B. (2010). Ethnicity, Acculturation, Self-Constual, and Motivations for Outdoor Recreation. *Leisure Sciences: An interdisciplinary Journal*. 23(4): 263-283. DOI:10.1080/01490400152809115
- Wikipedia. List of V postal codes of Canada. Retrieved April 4, 2015 from [http://en.wikipedia.org/wiki/List\\_of\\_V\\_postal\\_codes\\_of\\_Canada](http://en.wikipedia.org/wiki/List_of_V_postal_codes_of_Canada)
- Wolch, J. & Zhang, J. (2004). Beach Recreation, Cultural Diversity and Attitudes toward Nature. *Journal of Leisure Research*, 36(3), 414-443. Available from <http://js.sagamorepub.com>
- Wood, G. (2015, March 11). Survey explores 'cultural' perceptions of nature. *Richmond News*. Available from <http://www.richmond-news.com/>
- Zikmund, W., Babin, B., Carr, J., & Griffin, M. (2010). *Business Research Methods*, Eighth Edition. Mason, OH, South-Western Cengage Learning.

# APPENDIX A – SURVEY QUESTIONS

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## Screening questions

1. What is your postal code?
  
2. What is your age group:
  - Under 18
  - 18 to 19 years
  - 20 to 24 years
  - 25 to 29 years
  - 30 to 34 years
  - 35 to 44 years
  - 45 to 49 years
  - 50 to 54 years
  - 55 to 59 years
  - 60 to 64 years
  - 65 to 69 years
  - 70 years and older

## Part one

### Knowledge of local wildlife, experience with wild animals and nature, and participation in nature based activities

In the past 12 months, which of the following animals have you seen?

I have seen the following animals...	I have seen this animal in Richmond	I have seen this animal in the wild, but not in Richmond	I have never seen this animal in the wild	I do not know this animal
Bald eagle				
Beaver				
Great blue heron				
Canada geese				
Coyote				
Crow				
Frog or toad				
Garter snake				
Hummingbird				
Mink				
Mouse, vole or rat				
Muskrat				
Raccoon				
Seal				
Shorebirds				
Skunk				
Snow geese				
Songbirds (gold finch, sparrow, chickadee,...)				
Squirrel				

<b>I have seen the following animals...</b>	<b>I have seen this animal in Richmond</b>	<b>I have seen this animal in the wild, but not in Richmond</b>	<b>I have never seen this animal in the wild</b>	<b>I do not know this animal</b>
Other (please list)				

In the past 12 months, how often have you participated in the following activities?

<b>I have participated in the following activities...</b>	<b>Daily</b>	<b>A couple of times a week</b>	<b>Weekly</b>	<b>A couple of times a month</b>	<b>Once or twice</b>	<b>Never</b>
Bird watching						
Fishing - commercial						
Fishing - recreational						
Flying a kite						
Gardening at home						
Gardening at a community garden						
Geocaching						
Hunting						
Nature photography						
Outdoor group fitness activities (i.e.: tai chi, qui gong, yoga)						
Outdoor team sports (soccer, baseball,...)						
Picking wild berries						
Picking wild mushrooms						
Playing with children outside						
Riding a bicycle						
Running						
Walking						
Walking a dog						
Other (please describe)						

Please indicate which of the following Richmond parks you think of as natural places.

<b>I think of this park as being...</b>	<b>Very natural</b>	<b>Somewhat natural</b>	<b>Neutral</b>	<b>Not very natural</b>	<b>Not at all natural</b>	<b>I do not know this park</b>
Britannia Shipyards National Historic Site						
Garden City Park						
Garry Point Park						
Imperial Landing Park						
London Heritage Farm						
McDonald Beach Park						
Middle Arm Waterfront Park (middle arm of the Fraser River)						
Minoru Park						
Paulik Neighbourhood Park						
School fields						
South Arm Park						
Steveston Park						

<b>I think of this park as being...</b>	<b>Very natural</b>	<b>Somewhat natural</b>	<b>Neutral</b>	<b>Not very natural</b>	<b>Not at all natural</b>	<b>I do not know this park</b>
Terra Nova Rural Park						
The Railway Greenway						
The west dyke						

I also think of these other places in Richmond as natural places...

--

In the past 12 months, have you used any of the following sources to learn about Richmond's wildlife or natural places?

<b>I have used the following information sources...</b>	<b>I have used this to learn about Richmond's wildlife</b>	<b>I have used this to learn about Richmond's natural places</b>	<b>I have not used this to learn about wildlife or natural places</b>	<b>I have used this to learn about both Richmond's wildlife and natural places</b>
City of Richmond website				
Signs in Richmond parks				
City of Richmond workshop or program				
Event at Terra Nova (e.g. Raptor festival, Garlic festival,...)				
Event at the Richmond Nature Park (e.g. Slugfest, OWL show, Reptile Show, Mushroom Show,...)				
Brochures or other printed material from the City of Richmond				
Newspaper				
Nature park staff or City of Richmond staff				
Ask friends or family members				
Learn at school				
Other (please list)				

If you were concerned about something in a public park, for instance concerns around wildlife, maintenance issues or changes to the park, how likely are you to take the following actions?

<b>I would...</b>	<b>Very likely</b>	<b>Somewhat likely</b>	<b>Not very likely</b>	<b>Very unlikely</b>
Think there was nothing I could do				
Talk to my neighbours about the issue				
Send an email message to the City				
Phone the City				
Encourage others to work with me to address the issue				

## Part two

### Attitudes towards nature, wildlife and environmental conservation

Please indicate to what degree you agree or disagree with the following statements.

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Richmond is a better place to live because of its natural areas					
Natural areas make me uncomfortable					
Wild animals are beautiful					
People should try to understand more about what wild animals in Richmond need					
I visit Richmond's natural areas to enjoy the beauty of nature					
I enjoy spending time outside just watching and listening to nature					
Richmond's wildlife can be dangerous and is best avoided					
Building houses on sensitive wildlife habitat is morally wrong					
Seeing wild animals in Richmond gives me a feeling of wonder					
People should be allowed to pick berries that grow in public parks.					
Parks should be groomed because areas that are left natural look messy					
It is cruel to leave wild animals with no natural habitat in the city					
Snow geese should be controlled because they are a nuisance					
People, wildlife and nature are all connected					
People have a right to do what they want with nature					
Seeing large flocks of wild geese makes me happy					
Hunting for waterfowl should be reintroduced in Richmond					
It is interesting to learn about Richmond's wildlife					
Taking plants from parks and natural places is stealing					
The most important reason to protect fish in the Fraser River is so that people can eat them in the future					
Fishing in the Fraser River is fine, no matter whether or not you eat the fish					
Cities are for people, not for wildlife					
It is ok to release or abandon pets like rabbits and cats in Richmond parks					
I am glad I live in a City with so much wildlife					
Natural spaces should be maintained for ducks, fish and other animals that people can hunt and eat					
Knowing about animals and nature in my community is important to me					
I feel sad when I see a wild animal that has been					

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
killed by a car					
Natural areas are sacred places					
Giving dogs a place to run and play is more important than keeping natural areas for wildlife					
Richmond is a better place for people when there are natural areas where wildlife can live					
I try to understand the needs of wild animals so that I can make my garden more welcoming for them					
Most of the time I would rather be inside than outside					
It is ok when wild animals like coyotes or eagles eat other animals because that is nature's way					
Some wild animals, such as snakes, bring bad luck					
My pets are as important to me as other people					
I enjoy feeding the ducks and rabbits in Richmond city parks					
Farm land and community gardens are more important than natural areas because people need to eat.					
Wild animals have as much right to a safe home as people do					
It is important to leave natural areas so that migrating birds have a place to rest when they fly through Richmond					
I think love is an emotion felt by people, not by animals					

Do you have any other comments or concerns about wildlife in Richmond?

Do you have any other comments or concerns about the natural areas in Richmond?

### Part three

Have you lived all your life in Richmond, British Columbia?

- Yes
- No

*If no...* In what city and country were you born?

What year did you move to Richmond?

3. What language(s) do you speak at home (choose all that apply)?

- English
- French
- Cantonese
- Mandarin
- Punjabi
- Russian

- Persian (Farsi)
- German
- Japanese
- Other (please list) \_\_\_\_\_
- Spanish
- Tagalog

4. What is your mother tongue (the first language you could speak)?

- English
- French
- Cantonese
- Persian (Farsi)
- German
- Japanese
- Other (please list) \_\_\_\_\_
- Mandarin
- Punjabi
- Russian
- Spanish
- Tagalog

5. What is your gender?

- Female
- Male

6. What is the highest level of education you have completed:

- Less than secondary school diploma
- Secondary (high) school diploma or equivalent
- Apprenticeship, College, or other non-university certificate or diploma
- University bachelor level or higher


7. What is your personal annual income?

- Less than \$30,000
- \$30,000 to \$49,999
- \$50,000 to \$74,999
- \$75,000 to \$99,999
- \$100,000 or over

# APPENDIX B – PROMOTIONAL MATERIAL

A variety of recruitment material was used for this research, replicas of which are set out below.


## 1. March 5, 2015 City of Richmond Facebook posting



**City of Richmond - local government**  
March 5 · 🌐

What are your thoughts about nature and wildlife in Richmond? Residents of Richmond are now being invited to participate in an online survey to support a case study on the knowledge, attitudes and activities around wildlife and nature surrounding their homes.

Even if you have little knowledge about or interest in wildlife and nature, your input is important to us! Visit <http://ow.ly/JWxNJ> from now until March 31st to take the survey.



**Lets Talk Richmond | Let's Talk Wildlife and Nature**  
Help identify the attitudes Richmond residents have towards wildlife and natural places. Collected responses will help the City develop socially...

LETSTALKRICHMOND.CA

Like · Comment · Share

## 2. March 9, 2015 City of Richmond News Release



City of  
Richmond

### News Release

6911 No. 3 Road, Richmond, BC V6Y 2C1

March 9, 2015

For Immediate Release

## Richmond residents encouraged to complete wildlife and nature survey

**Richmond, BC** – Have you ever seen a bald eagle, raccoon or squirrel in Richmond? Have you gardened at home, gone for a walk or watched some birds in one of Richmond's parks? Residents are invited to participate in an online survey to help the City understand the public's knowledge, attitudes and activities around wildlife and nature in Richmond.

The survey and project related information can be found at [LetsTalkRichmond.ca](http://LetsTalkRichmond.ca) and is available to those 19 years and older. The survey closes on Tuesday, March 31, 2015.

In addition to providing helpful information to the City, the survey is a component of a case study administered by a University of Victoria master's student.

All residents that meet the age requirement are encouraged to participate in the survey – even those who may have minimal knowledge about or interest in wildlife and nature. Responses will help the City generate educational programs and policies that better reflect the diverse interests of the community.

Participation is completely voluntary and registration with LetsTalkRichmond.ca is not required to complete the survey.

For more information about this research project, please contact Linda Love at [lclove@uvic.ca](mailto:lclove@uvic.ca) or the City's Parks Department at [parks@richmond.ca](mailto:parks@richmond.ca).

- 30 -

#### Media Contact:

Ted Townsend  
Senior Manager, Corporate Communications  
Tel: 604-276-4399 Cell: 1-604-516-9585  
Email: [ttownsend@richmond.ca](mailto:ttownsend@richmond.ca)

Your email address has been recorded in our media contact database. In the future, you will receive news releases and media advisories. To unsubscribe at any point, please email us at [communications@richmond.ca](mailto:communications@richmond.ca) with "Unsubscribe to media list" in the subject line.

### 3. March 5, 2015 City of Richmond email to registered Let's Talk Richmond participants

**From:** Let's Talk Richmond Team [mailto:[news@engagementhq.com](mailto:news@engagementhq.com)]

**Sent:** Thursday, 05 March 2015 13:27

**To:** [REDACTED]

**Subject:** Let's Talk Wildlife and Nature

You're receiving this email because you participated in the online discussions or you have opted to receive updates for Lets Talk Richmond.



Hello,

Richmond residents are invited to **participate in a survey** to learn about the knowledge, attitudes and activities around wildlife and nature in Richmond.

The survey, and related information, can be found at [LetsTalkRichmond.ca](http://LetsTalkRichmond.ca) from now until midnight on **Tuesday, March 31, 2015**. The survey generally takes about 10 minutes to complete.

Data collected from the survey will be used to help the City generate educational programs and policies that better reflect the diverse interests of the community.

In addition to providing helpful information to the City, the survey is also part of a case study administered by a University of Victoria master's student and it will help fulfill her degree requirements.

Thank you and we look forward to hearing from you.

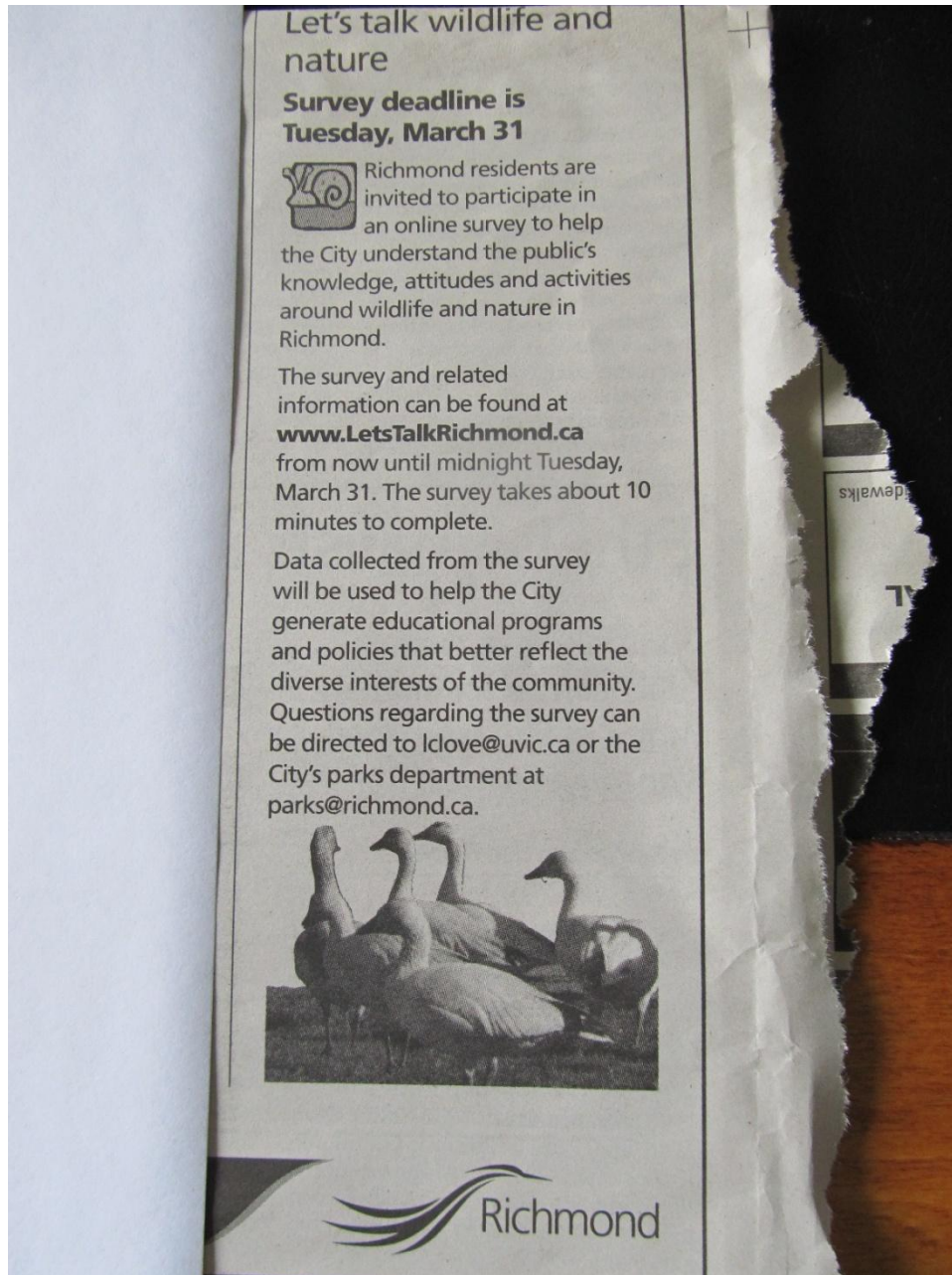
**City of Richmond Community Services Division**

Not interested anymore? click here to [unsubscribe instantly](#).

Powered by **EngagementHQ™**

#### 4. City Page

The City of Richmond promoted the survey by featuring it on the City Page of the Richmond Review (March 18, 2015, p. 4). A photograph of the relevant portion of the City Page is provided below.



## 5. Flyer

This leaflet was distributed to individuals who were approached in person to participate in the survey. Potential participants were told the purpose of the research, both as the requirement of a University of Victoria Masters' program and to help the City to develop programs and policies.



**Let's Talk  
Wildlife and Nature**

**If you live in Richmond and are 19 years or older, we want to hear from you!**

Richmond residents are invited to participate in a survey to learn about the knowledge, attitudes and activities around wildlife and nature in Richmond.

Data collected from the survey will be used to help the City generate educational programs and policies that better reflect the diverse interests of the community.

The survey takes approximately 10 minutes to complete and can be found online at LetsTalkRichmond.ca from now until March 31, 2015. Participation in this research project is completely voluntary. Questions about this research may be directed to Linda Love at [llove@uvic.ca](mailto:llove@uvic.ca) or the City's parks department at [parks@richmond.ca](mailto:parks@richmond.ca).

 31, 2015. Participation in this research project is completely voluntary. Questions about this research may be directed to Linda Love at [llove@uvic.ca](mailto:llove@uvic.ca) or the City's parks department at [parks@richmond.ca](mailto:parks@richmond.ca).

 **University of Victoria** 

Community Services  
[www.richmond.ca](http://www.richmond.ca)

## 6. Poster

The City distributed posters to all City operated facilities, including community centres, libraries and swimming pools. A copy of the poster is provided below.



**Let's Talk  
Wildlife and  
Nature**

Richmond residents are invited to **participate in a survey** to learn about the knowledge, attitudes and activities around wildlife and nature in Richmond.

Data collected from the survey will be used to help the City generate educational programs and policies that better reflect the diverse interests of the community.

The survey takes approximately 10 minutes to complete and can be found online at **LetsTalkRichmond.ca** from now until **March 31, 2015**. Participation in this survey is completely voluntary. Questions about the research may be directed to Linda Love at [lclove@uvic.ca](mailto:lclove@uvic.ca) or the City's parks department at [parks@richmond.ca](mailto:parks@richmond.ca).

Photo by Victor Jacinto

 University of Victoria



<http://letstalkrichmond.ca/wildlifeandnature>

 Richmond

## APPENDIX C – RICHMOND NEWS ARTICLE

An unsolicited article in the local newspaper is believed to have prompted a large number of survey responses. Replicas of both the print and online edition are provided below.

### March 11, 2015 Richmond News Article – print edition

This photograph shows the article as it appeared in the print edition of the Richmond News.



## March 11, 2015 Richmond News Article – online edition

The following screenshot was retrieved from the Richmond News on March 11, 2015, and shows the article as it was positioned in the online version of the newspaper. As at the time of this writing, the online article was still available at <http://www.richmond-news.com/>

The screenshot shows the Richmond News website interface. At the top, there is a search bar and the Richmond News logo. Below the logo is a navigation menu with categories like NEWS, CITY HALL, SPORTS, OPINION, ENTERTAINMENT, COMMUNITY, BUSINESS, LIVING, PHOTOS & VIDEOS, REAL ESTATE, and FLYERS. The main content area features a "Friday Feature" section with the article "Survey explores 'cultural' perceptions of nature". The article includes a sub-headline "Are snakes bad luck? Do you hate or love snow geese?", the author's name "GRAEME WOOD / RICHMOND NEWS", and the date "MARCH 11, 2015 11:58 AM". A large image of a raccoon is featured next to the article. Below the image is a caption: "Haters gonna hate? Are raccoons friend or foe? A survey is asking Richmondites for their attitudes on wildlife. File photo". The article text discusses a survey by park planners to identify residents' attitudes towards wildlife and natural spaces, mentioning controversial topics like hunting, snow geese, and pets in public spaces. It also notes that the survey is conducted in English and asks respondents to agree or disagree with statements about wild animals. The article mentions that Richmond resident Linda Love is conducting the survey, which can be taken online at LetsTalkRichmond.ca. A sidebar on the right contains a "Chinese sign POLL" with three options: "Create a bylaw demanding a minimum amount of English", "Continue to 'educate' the Chinese business community", and "Nothing; this is not an issue". There is a "VOTE" button and a link to "view results". Below the poll is a social media section for Richmond News, showing a Facebook "Like" button with 1,920 likes and a Twitter icon.

(Woods, March 11, 2015, p. A5)

## APPENDIX D – ATTITUDES TOWARDS WILDLIFE AND NATURE

Four to five questions were presented for each of the nine attitude measures. Questions were distributed randomly in the questionnaire.

Kellert value	Concept behind this value	Questions
Aesthetic	Focus on the beauty and symbolic characteristics of animals and nature	<ol style="list-style-type: none"> <li>1. Wild animals are beautiful</li> <li>2. I visit Richmond's natural areas to enjoy the beauty of nature</li> <li>3. Seeing wild animals in Richmond gives me a feeling of wonder</li> <li>4. Natural areas are sacred places</li> </ol>
Dominionistic	Interested in humanity's mastery and control of animals and nature, particularly in sporting situations	<ol style="list-style-type: none"> <li>1. Hunting for waterfowl should be reintroduced in Richmond</li> <li>2. Parks should be groomed because areas that are left natural look messy</li> <li>3. Fishing in the Fraser River is fine, no matter whether or not you eat the fish</li> <li>4. Natural spaces should be maintained for ducks, fish and other animals that people can hunt and eat</li> </ol>
Ecologistic	Concern for the environment as a system and for interrelationships between animals and natural habitats	<ol style="list-style-type: none"> <li>1. People, wildlife and nature are all connected</li> <li>2. Richmond is a better place for people when there are natural areas where wildlife can live</li> <li>3. It is ok when wild animals like coyotes or eagles eat other animals because that is nature's way</li> <li>4. It is important to leave natural areas so that migrating birds have a place to rest when they fly through Richmond</li> </ol>
Humanistic	Interest and affection for individual animals, principally pets; emotional and anthropomorphic view of animals and nature	<ol style="list-style-type: none"> <li>1. Giving dogs a place to run and play is more important than keeping natural areas for wildlife</li> <li>2. My pets are as important to me as other people</li> <li>3. I enjoy feeding the ducks and rabbits in Richmond city parks</li> <li>4. Wild animals have as much right to a safe home as people do</li> <li>5. I think love is an emotion felt by people, not by animals</li> </ol>
Moralistic	Concern for proper treatment of animals and opposition to exploitation of nature or cruelty toward animals	<ol style="list-style-type: none"> <li>1. Building houses on sensitive wildlife habitat is morally wrong</li> <li>2. It is cruel to leave wild animals with no natural habitat in the city</li> <li>3. Taking plants from parks and natural places is stealing</li> <li>4. It is ok to release or abandon pets like rabbits and cats in Richmond parks<sup>16</sup></li> <li>5. I feel sad when I see a wild animal that has been killed by a car</li> </ol>
Naturalistic	Interest in, affection for, and satisfaction from experience with nature	<ol style="list-style-type: none"> <li>1. Richmond is a better place to live because of its natural areas</li> <li>2. I enjoy spending time outside just watching and listening to nature</li> <li>3. Seeing large flocks of wild geese makes me happy</li> <li>4. I am glad I live in a City with so much wildlife</li> </ol>
Negativistic	Prefers to avoid animals and nature due to indifference, dislike or fear	<ol style="list-style-type: none"> <li>1. Richmond's wildlife can be dangerous and is best avoided</li> <li>2. Snow geese should be controlled because they are a nuisance</li> <li>3. Natural areas make me uncomfortable</li> <li>4. Most of the time I would rather be inside than outside</li> <li>5. Some wild animals, such as snakes, bring bad luck</li> </ol>
Scientific	Interested in the physical attributes and biological functioning of animals and nature	<ol style="list-style-type: none"> <li>1. It is interesting to learn about Richmond's wildlife</li> <li>2. People should try to understand more about what wild animals in Richmond need</li> <li>3. Knowing about animals and nature in my community is</li> </ol>

<sup>16</sup> The rating given in response to this positively framed question was reversed to represent the moralistic rating.

Kellert value	Concept behind this value	Questions
		<p>important to me</p> <p>4. I try to understand the needs of wild animals so that I can make my garden more welcoming for them</p>
Utilitarian	Interest in the practical and material value of animals or nature	<p>1. People should be allowed to pick berries that grow in public parks</p> <p>2. People have a right to do what they want with nature</p> <p>3. The most important reason to protect fish in the Fraser River is so that people can eat them in the future</p> <p>4. Cities are for people, not for wildlife</p> <p>5. Farmland and community gardens are more important than natural areas because people need to eat</p>