# Understanding Perceptions of Sentience from Human- and Animal-Being Interactions

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**Abstract**
This work sought to uncover the ways in which profound interactions with non-human species affect perception of various sentient life such as companion animals/pets, liminal animals/pests, and animals that are often dubbed “wild.” Through an online community, there existed a creation of space where others can be educated about animal being sentience, encouraged to understand that other species are capable of emotional reasoning, and challenged to not only prevent the suffering of other species, but to proactively support a system where humans and wildlife can not only coexist but thrive. Through the use of a platform on which people can share images and text regarding their meaningful interactions with sentient wildlife, desires to educate members of the BC community about animal sentience and encourage them to pursue and deepen their connections through more of these interactions have been instilled. Through a unique combination of qualitative and quantitative data, key findings such as proximity and location, as rooted in principles of coexistence, help to illustrate perceptions of animal sentience in manners that affect each grouping--of our socially-constructed classification groups deployed including: companion animals/pets, liminal animals/pests, and animals often dubbed "wild"--differently.

**Keywords**
sentience; coexistence; proximity; multi-species; interactions

## Introduction

Before delving into the contents of the literature review, one that is often cold with mere recitation of scientific fact and discovery, we seek to first create a substantive area of warmth and compassion. Such is being done to evoke the mood surrounding our research and introduce our topic to better understand sentience. If so permitting, we ask that the reader take a few minutes to engage in meaningful reflection on their individual experiences with sentience and other sentient beings within the past few days or months. We just want to take the opportunity to engage in deep and meaningful reflection as we have asked ourselves and peers/ human participants to engage in as well. This is in our ultimate attempt, to evoke a reflective and compassionate mindset to celebrate and remember our connectedness.

## Themes & Findings in the Existing Literature

### *Childhood Experiences on Perception of Wildlife*

A primary trend present in previous studies (Baeza and colleagues, 2019; Broekhuis and colleagues, 2018; Hosaka and colleagues, 2019; Thornton & Quinn, 2009) is that childhood interactions with wildlife and nature as a whole influenced how many individuals perceived animal beings in adulthood. According to Hosaka and colleagues (2019), adults who were exposed to many different animal beings during their childhood tended to have much more positive experiences and behaviors/attitudinal ways of knowing towards wildlife than those who did not. Moreover, Hosaka and colleagues indicate how even problem-causing animal beings were positively accepted by residents: “Childhood experience was the strongest predictor of wildlife attitude, which varied with age, gender, education level and type of wildlife. Attitude towards wildlife was the strongest predictor of tolerance in all scenarios, while tolerance

decreased with increasing severity of damage." (Hosaka and colleagues, 2019, pp. 151). This highlights the importance of exposure to nature among residents at an early age, as it fostered a more inclusive setting for older residents to remain connected to local wildlife, even when animal beings were creating issues.

Likewise, those who lived in more urbanized areas growing up tended to be more disconnected from nature and animal beings when they were older, which tended to cause more negative perceptions of wildlife (Thornton & Quinn, 2009). Thornton and Quinn (2009) found that older Calgary residents were much more accepting of cougars than those who were from an urban area (pp. 290). As a result, those from an urban background were less familiar with wildlife and therefore had a "heightened fear of cougars" (Thornton & Quinn, 2009; pp. 290). Thus, more interactions with non-human animal beings dubbed "predatory" or "wild" can foster a more positive perception of cougars, and lead to a decreased sense of fear. Misconceptions, in addition to physical and emotional distance, separate individuals from acknowledging the sentience of non-human beings.

Social influence was another strong factor in shaping human perception of animal beings and, in this case, livestock in a study conducted by researchers from the University of Michigan, Arizona State University, University of Alabama, and the School for Environment and Sustainability (Baeza and colleagues, 2019). Baeza and colleagues (2019) explain how, when farmers were aware of the risk factors of certain animal beings on their livestock and communicated with farmers around them, they were more likely to "behave the same way" (Baeza and colleagues, 2019, pp. 908). If certain wildlife was not accepted by some farmers, this increased the chance that other farmers would exclude this animal from their property (Baeza and colleagues, 2019, pp. 903). This points to the prominent ties between farmers who have

grown up doing this work, which emphasizes how influential childhood experience with sentient animal beings is on adult perception now (Baeza and colleagues, 2019). This way of knowing between farmers and their animal beings is similar to our research because it highlights the dynamic relationship of sentient interaction. This relationship is always changing and adapting. Many farmers become much closer to each other as a result of their close relationship with their animal beings. They desire to do what is best for the animal beings because it ensures the best possible outcome for themselves as well (Baeza and colleagues, 2019). Under this notion, it is apparent interactions between farmers and their animal beings is far-reaching, with these interactions impacting other local farmers and communities in the area, allowing them all to work as one. As a result, behavior is largely influenced by other people's perceptions of wildlife too, whether negative or positive, and many even work to restructure and redefine pre existing perceptions of wildlife into something that is more genuine, fluid, and profound (Baeza and colleagues, 2019).

*Species-Dependent Human Interactions*

While different childhood experiences may lead to different individual perceptions of sentience, different species of non-human animal beings also conjure up different perceptions of sentience. Several studies that research human interactions with large, predatory, and carnivorous animal beings show that associated risk and fear play a large role in shaping perceptions of wildlife (Thornton & Quinn, 2009; Jackman & Rutberg, 2015). For example, the aforementioned study from Calgary, Canada concluded that the majority of residents not only perceived cougars as an "acceptable threat" but also enjoyed the cougar presence. The residents that were most fearful of the cougars had recently moved into the area, had fewer experiences with the cougars,

and lived closer to the city (Thornton & Quinn, 2009). Again, profound interactions are shown to decrease the sense of fear and add to the emotional connection to animal beings previously conceived as predatory. Similarly, a study looking at Cape Cod residents' perception of coyotes found that over time, residents' acceptance of coyotes increased while their fear levels decreased (Jackman & Rutberg, 2015). In Reno-Sparks, NV, residents' positive perception of hawks correlated with the number of encounters. In addition, their positive experiences with hawks also brought benefits of happiness, curiosity, and enthusiasm to the residents (White and colleagues, 2018). Predatory animal beings may inspire fear in humans, but with time, increased awareness, and more interactions with these wildlife, residents may come to accept and benefit from coexistence.

Oftentimes, experiences with species deemed similar to humans fosters a deeper emotional connection. For example, a series of interviews on dolphin interactions revealed that a feeling of reciprocity and sustained eye contact greatly influenced the feeling of connectedness (Yerbury & Boyd, 2018). Moreover, the cultural significance of dolphins and other non-human animal beings as spiritual beings often shapes our interactions with them (Bulbeck, 2005 as cited in Yerbury & Boyd, 2018). Dolphins and other cetaceans form complex social groups. This feature resembles the structure of human societies, which makes this group of species easier for people to empathize with (Gardella, 2020). Lastly, zoos are a common environment for researchers to survey the public's attitude toward a variety of species. One survey conducted at the Melbourne Zoo revealed that out of the 320 species at the zoo, the respondents most commonly had a meaningful interaction with the following nine categories of animal beings: bird, butterfly, great ape, large carnivore, large herbivore, primate, reptile, small carnivore, and small herbivore (Howell and colleagues, 2019). The respondents with the highest reported

emotional connection during their animal encounter were most often with great apes or primates. Research from zoos highlights the notion that the degree of emotional connection to an animal is a function of the species' human-like characteristics (Howell and colleagues, 2019).

*Wildlife Interactions and Human Emotion*

As evidenced by the different interactions individuals have with various species, human emotions can vary significantly from interaction to interaction. In addition, the emotion an individual feels throughout the interaction is a vital factor that enhances the individual's perception of sentience. This is well characterized in several of our cited articles (Hicks & Stewart, 2018; Farber & Hall, 2007; Yerbury & Boyd, 2018; Soga & Gaston, 2016; Howell, McLeod, & Coleman, 2019; Finnigan, 2017; McIntosha & Wright, 2017). Emotion is particularly important in the 2018 article by Hicks and Stewart that details the components of wildlife-inspired awe. The three factors of awe that were identified from the online questionnaire were beauty, transcendence, and threat, key words which informed our own research. This idea is similarly reflected in surveyed hikers in Alaska, where scenery and wildlife evoke awe, excitement, and pleasure (Farber & Hall, 2007). Some sources narrow their focus to specific species, like dolphins, which have been shown to promote feelings of wellbeing among humans, bringing up interesting insights into emotionally developed mammals (Yerbury & Boyd, 2018). The opposite relationship is also well-studied, with lack of experience with wildlife associated with discouragement of positive emotions in humans and causing cyclical dissatisfaction with nature (Soga & Gaston, 2016).

Existing literature within the realm of Buddhist philosophy informs us about animal ethics and the role that spirituality plays in human-wildlife interactions. All animal species are

considered sentient in Buddhist teachings by virtue of their capacity to experience suffering, or *duhkha* (Fenton, 2019). The Buddha therefore exemplified a lifestyle that avoided harming animal beings and actively helped them where possible (Finnigan, 2017). This largely has to do with karmic law, which states that one's actions have either positive or negative ripple effects throughout the course of their many lifetimes, depending on the nature and intent of the original action (Fenton, 2019). Avoiding causing harm to animal beings is part of an effort to eliminate the many causes of suffering that plague the world (Fenton, 2019). Buddhist teaching also has implications for the use of animal beings in research studies. Since animal beings are often harmed in laboratory settings, Buddhism would definitely point toward completely ceasing the inclusion of animal beings in a lab research setting (Fenton, 2019). This paradigm provides guidance for our own research; our method allows us to observe interactions with wildlife without causing harm to those species.

The definition of "wildlife" itself has been tweaked in some studies, with one focusing on human interaction with zoo animal beings and its impact on conservation-minded behavior change. Common themes of connection in this study were identified as appreciation, attribution, inspires emotions, interaction, and proximity, more key topics that can inform our own exploration of animal sentience (Howell, McLeod, & Coleman, 2019). Perhaps the most related to our own research is one study that delves into the emotional processing of wildlife experience and how that contributes to meaningful connection, informing our own study on profound interaction (McIntosha & Wright, 2017). This theme is deeply explored by a vast variety of literature, indicating that it is a theme we should take into account in our own study. Common trends among these particular studies include interactive data collection methods like intimate interviews, surveys, or online questionnaires. The key component is getting to the people who

interact with wildlife themselves and gaining more detailed insight into their own emotional experience. This helpfully contributes to our own research methods and gives us a glimpse in the best way to collect information on profound wildlife interactions.

*Public Impression, Culture, and Wildlife Management*

Human emotion not only impacts an individual's perception of sentience, it also influences an individual's perception of wildlife management. Literature has revealed insights that illustrate the necessity of taking into account public perception and culture when it comes to establishing wildlife management. Thornton & Quinn's findings indicate that public perception of cougars proved rather favorable as the majority of respondents indicated a desire to protect and maintain the region's cougar population (2009). This positive public perception of cougars came after increased interactions with cougars decreased residents' fear (Thornton & Quinn, 2009). Such showcases the inherent power that coexistence has, as when these residents actually began to coexist and bear witness to the beauty of the large cat in nature, human perception actually showed high favorability rates for cougars by people in adjacent communities. Not only does human emotion influence perceptions of sentience, it also affects perceptions of necessary protection. There was also a desire by these residents to be more involved in the realm of wildlife management, admitting a lack of knowledge in this regard.

In an article discussing coexistence of animal beings and human beings, particular attention is oriented on differences that affect wildlife perception (Konig and colleagues, 2020). There are differences in perceptions on wildlife management due in large part to the type of setting one grew up/ lives in: urban, rural, suburban. For example, findings suggest that those in urban settings tend to support coexistence policies as they are more isolated from the realities of

human-wildlife conflict (Konig and colleagues, 2020). Building upon existing research, the study also suggests that an interdisciplinary approach with multilevel governance structures can facilitate the adoption of sustainable management endeavors most suited for the area (Konig and colleagues, 2020).

When turning to the case of Ingham County, Michigan, perceptions of wildlife are noted as transcending human-wildlife conflict (Kelly and colleagues, 2018). Utilizing methods such as observations, personal maps of meaning, and storytelling, themes of non-conflict emerge as well. Particularly important was the proven understanding of coexistence and the value of individual animal beings being acknowledged because wildlife perceptions were challenged (Kelly and colleagues, 2018). Through the lense of an additional case study focused on the residents of Maasai Mara, Kenya, attitudinal ways on knowing regarding predators were measured (Broekhuis and colleagues, 2020). With the utilization of interviews that generally followed a fixed set of questions, researchers found that a majority of interviewees possessed a positive perspective on predators, particularly from a lense of coexistence (Broekhuis and colleagues, 2020). With less than 11% of respondents expressing that they would kill a predator in retaliation for killing their livestock, it is clear that the attitude on coexistence is strong in light of strong conservation efforts in the area (Broekhuis and colleagues, 2020). This present trend of killing wildlife shapes our project and inspires our hypothesis to explore similar questions dealing with type of animal, as well as influencing our methods involving deliberate survey questions to explore opinions on multiple different types of species.

**Gaps in the Existing Literature and Future Directions**

The existing literature reveals a variety of emotional responses humans experience after and during interactions with wildlife (Hicks & Stewart, 2018; Farber & Hall, 2007; Yerbury & Boyd, 2018; Soga & Gaston, 2016; Howell, McLeod, & Coleman, 2019; Finnigan, 2017; McIntosha & Wright, 2017). Studies demonstrate the potential for humans to experience a deep connection with non-human animal beings, to the point where a feeling of reciprocity shows the occurrence of wildlife emotion (Thornton & Quinn, 2009). However, research in this field does not address how these interactions influence the individual's perception and definition of non-human sentience.

While many studies use online surveys or questionnaires for data collection, few if any use social media platforms to elicit written responses about non-human interactions. Given that in person interviews are not permissible in the COVID-19 context, we aim to fill this methodological gap by using a Facebook group to collect Facebook posts that highlight personal experiences from our community. Online platforms, especially in the context of a global pandemic, have the potential to serve as educational tools. We fostered an online community where people can share their viewpoints and experiences with wildlife, educate themselves on animal sentience, and encourage each other to seek out meaningful interactions with wildlife. We also interweaved our own vulnerability as researchers into the experience of our participants, doing so in the image of Randol Contreras' 2019 recommendations about modern ethnographic practices. Contreras points out an important gap that we hope to bridge in our research in that traditional ethnographers are often aloof and removed from their work, gatekeeping the inner workings and challenges of their research and making the process inaccessible and opaque. By increasing our own vulnerability as researchers and participants, we hoped to mend this "broken

ethnography" as described by Contreras and connect to our research in a more meaningful and effective way.

Most of the literature focuses on either a single species or an overly generalized definition of wildlife, so our research will bridge that gap by looking at the subsections of liminal animals/pests, companion animals/pets, and animals often dubbed "wild."

**Research Purpose**

It is in light of the aforementioned research and the gaps observed that this research has oriented itself on profound interactions with wildlife and how that affects the perception of various types of sentient life and the definition of sentience itself. Particular attention has been placed on three predetermined subsets of sentient life including companion animals/pets, which also include what many call farm animals, liminal animals/pests, and animals often dubbed "wild." Having an online community helps to create a space where others can be educated about animal sentience, encouraged to understand that other species are capable of suffering, and challenged to not only prevent the suffering of other species, but to proactively support a system where humans and wildlife can not only coexist but thrive.

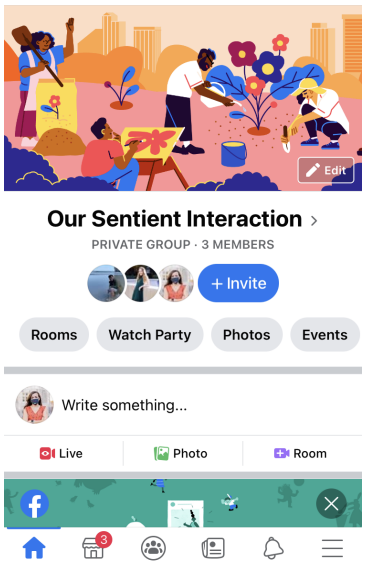
**Research Question**

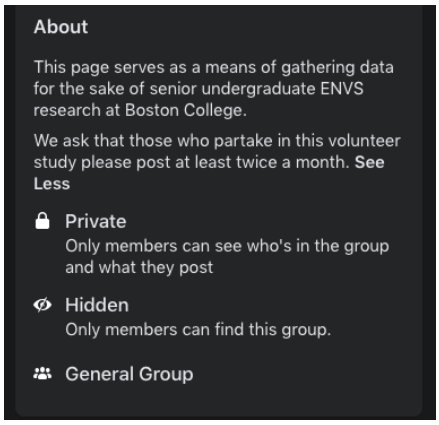
How do profound interactions with wildlife affect perceptions of various sentient life such as companion animals/pets, liminal animals/pests, and animals often dubbed "wild"?

**Platform: Facebook Group entitled *Our Sentient Interactions***

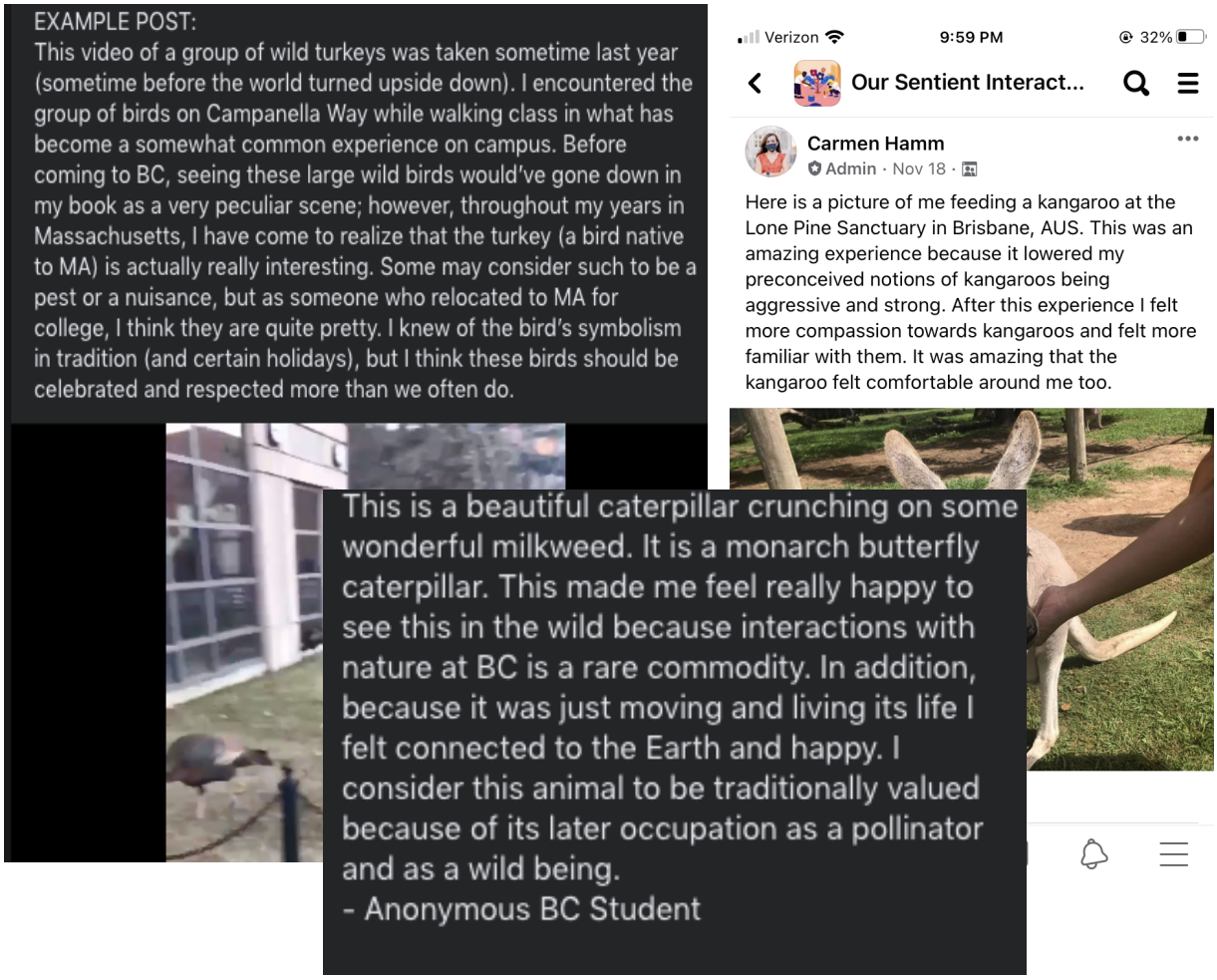
The image below on the left shows what our Facebook Group looks like to users when they first join the group. The image on the right displays the privacy settings associated with our Facebook group, which highlights our commitment to protecting the privacy and vulnerability of our members. Such privacy measures are important for keeping the integrity of the group. Also it serves as a place to foster newly forged, meaningful relationships. We wanted to create a place where growth and togetherness is possible. We created a space where sentience in all its aspects can be celebrated.

We selected this interactive, social platform as part of our inspiration from Laurel Richardson's 2001 journal publication on storytelling in qualitative research. Richardson advocates for the insertion of the personal into one's own research, arguing that it makes for more reflective and powerful data. She points out that we frame other parts of our lives through storytelling, and research should be no different. By using this Facebook platform, we are empowering our human participants to take charge of and document their own stories, hopefully giving them an introspective and self-educating perspective. We also partake in the Facebook group, not only as guiding moderators but as participants, allowing us to incorporate our own personal stories and experiences the way Richardson suggests to enrich our research using this platform.



The three images below demonstrate example posts that include photos of non-human sentient being interactions in addition to a written response describing the emotions felt during the interaction. We as researchers were among the participants given the very nature of our participatory research. The following are examples written by us with a format of making a story of our interactions, which we encouraged the human participants to emulate. Such served to share the sentience between each other.



## Problem and Purpose Statement

### *Problem*

In an increasingly anthropocentric world, humans are often far removed from nature and non-human animal beings. When it comes to defining non-human sentience, the average individual probably struggles to determine what characterizes a sentient being. The average person may not have frequent conversations about non-human sentience, and if they do, it most likely relates to their pets/companion animals. In addition, many people view non-human animal beings such as insects and rodents, as nuisances and pests (Fowler and colleagues, 1989). Similarly, society often portrays large, predatory animals or "wild" animals as species we should avoid or be afraid of. Currently, people may also feel very disengaged from other species; this common attitude is very anthropocentric, and people are not likely to view all other species as sentient. The issue with weak or non-inclusive definitions of sentient species is the lack of support for protection and conservation of important non-human species. The question remains, how do we as a community engage in conversations about non-human animal beings in a way that celebrates the sentience of all beings?

### *Purpose Statement*

In light of the aforementioned problems, we strived to address concerns through our research. Environmentalists wonder how profound interactions with wild animals, liminal species, and companion animals/pets impact an individual's perception of sentience. Our text seeks to explore relationships between human and animal interactions and analyze how a broader view of sentience informs increased investment in the different perceptions of certain animals, as well as how individuals respond emotionally toward certain animal beings. Through the use of a

platform on which people can share images and text regarding their meaningful interactions with sentient wildlife, we aimed to educate members of the BC community about animal sentience and encouraged them to pursue and deepen their connections through more of these interactions.

## Methods

### *Participants and Instrumentation*

We created a Facebook group that allowed for posts including text, audio, and images from group members and invited members to said group with Boston College students from the official Boston College graduation year groups (Official Boston College Class of 2021, 2022, 2023, and 2024). We pooled together 60 Boston College undergraduates, 30 males and 30 females. Boston College students particularly served as a optimal subject pool given their exposure to the Jesuit mission, which reveres and emphasizes the importance of reflection and discernment practices. We hoped that this research project would provide an opportunity for students to dive deeper into a more authentic version of themselves that was aware of any and all biases they may hold towards sentient creatures. In addition, we hoped that human participants felt a larger space in their heart for compassion towards all sentient beings.

With regards to recruitment of human participants, we largely relied on pre-existing Official Boston College sanctioned, undergraduate Facebook pages for the Class of 2021, 2022, 2023, and 2024. In such Facebook pages, we made a post in which we briefly summarized our research purpose on a strictly volunteer basis by which they could choose to opt out of at any time. We were also reliant on the word of mouth to accumulate further participants. Refer to Appendix C.

We conducted a pre- and post-survey to gauge changing attitudinal ways of knowing on animal sentience and biodiversity from the start to the end of the data collection period. This also served as a way to provide a deeper qualitative understanding of individuals' standing on this topic. Both the pre- and post- surveys asked the exact same questions to see if there were any changes observed. We were also active in posting about our own experiences in order to encourage more participation. We hoped to lead by example and show how reflection can be beneficial in creating a story around sentient interactions. In addition, we hoped that our stories about our most memorable sentient interactions would showcase just how transformative these experiences can really be on our perception of sentience. These stories, in addition to the more mundane experiences, would help inform both us and our participants as to the factors that influence the quality of our sentient interactions.

*Informed Consent Procedures and Confidentiality*

Consent and confidentiality was acquired and maintained through the use of a pre-survey sign on for consent to collect data from individual human participants, and we used Qualtrics to ensure that data remained private. We identified major trends in the pre- and post-survey in order to gauge how perceptions of sentience changed over the course of data collection. The online survey data was stored electronically as Excel files and the Facebook posts as screenshots/transcripts that excluded the name of the participant. The Facebook page was deleted after the data collection and analysis period.

In regards to confidentiality, the following question was posted on each survey, and each respondent must have checked Yes to continue. Refer to Appendix B.

Furthermore, we respected that any participant who chose to withdraw from this study had the right to do so at any given moment, and we adhered to such.

*Sample*

We employed convenience sampling, which is a sampling method where non-random participants are recruited for this study. Our sample size is 169, including 60 undergraduates (30 male, 30 female) and 109 non-human individuals. Human participants in our study are Boston College students with Facebook accounts. Non-human participants were composed of the following 37 species: squirrel, turtle, cat, whale, dog, camel, great blue heron, Canada goose, sea lion, pigeon, red-spotted newt, horse, chicken, lizard, ferret, snail, butterfly, beetle, bison, spider, deer, earthworm, rabbit, centipede, monkey, goat, ladybug, cockatiel, banana slug, frog, monarch caterpillar, swan, wallaby, spotted crake, Icelandic pony, stink bug, and brown shrike.

It is of interest to note that our non-random sampling method for human participants does have limitations, such as that these responses are largely from social groups who are involved with many students from the Environmental Studies Department, thus our human participants may not be representative of the interactions experienced by the greater Boston College community. However, we want to emphasize that our sample has been deliberate in that it reflects our Jesuit university's focus on discernment and self-exploration. We hope these qualities are detectable in our community of participants, which we've selected based on the research implications of Paleco and colleagues' (2021) article regarding inclusivity in citizen-science. Although it's unlikely that our sample is effectively representative of the communities that Paleco and colleagues (2021) specifically advocates for, our hope is that we make those strides within our own small community by empowering individuals via our Facebook platform.

*Data Collection*

This group will require an intro survey for entry. As the individual requests permission to the private Facebook group, they were sent the link privately to the Qualtrics pre-survey. Only after the pre-survey is completed were the human participants admitted into the Facebook group.The introduction survey seeks to gauge where each individual stands in their interpretations of sentience and perceptions on different subsets of wildlife that we have categorized: wild, liminal, and companion animals. To complement such, we also called for a few or more posts including at least a textual description of some interaction with animal beings, but imagery, video, and/or audio clips encouraged as well. We also took the role of participatory action researchers, meaning we posted our own Facebook posts that demonstrate our own self reflections on the meaning of sentience. We posed questions to the Facebook group, similar to the way Bonish-Brednich posed questions to workshop participants. At the secession of data collection, a post-survey was posted and required for each data point used in our analysis. A post was made at the end of the research period in mid-March with a link to the post-survey (which contains the same questions as the pre-survey). This qualitative data collection included reflection on both personal understanding of animal sentience and personal engagement with biodiversity as a planetary threat. For exact questions utilized in the surveys, refer to the Appendix section.

Additionally, Howell and colleagues (2019) found common themes in their qualitative analysis of human participants' interactions with zoo wildlife, including the factors that most heavily influenced their connection. Among which, the five common themes in the meaning of connection were determined to be: Appreciation, Attribution, Inspires Emotions, Interaction, and Proximity. Knowing such, we asked human participants to capture interactions with fellow

sentient beings in their proximity with which they have established a connection to/with one another. Given the close proximity, analysis of body language, among other nonverbal cues, can be made which also allowed connections to be made rather than being characterized by other emotions such as fear. Proximity to the animal implies the presence of trust between the two parties. This can be a powerful avenue for people to witness firsthand the sentience of non-human species.

*Timeline*

Pre-surveys were conducted in late January, with post-surveys administered in March of 2021. Each survey took around 10 minutes to complete. Many human participants recorded their interactions with wild, liminal/pests, and companion animals/pets throughout January-March 2021, but others made only a few entries about their various interactions and how this related to their perceptions of these animal beings and to their understanding of and their involvement with biodiversity.

*Data Analysis*

Qualitative data analysis included grouping of key ideas and sentiments among posts and following changes in tone, length, engagement frequency, and other indicators of increased or decreased engagement with either topic. We also analyzed the relationship between one's background and their perspectives on animal sentience. For example, someone who is already heavily invested in conservation efforts will probably be more likely to have strong feelings about the nature of animal sentience as opposed to someone who is not. Data collected from the

posts and surveys were used to make assertions about the potential relationship between perception of animal sentience and degree of concern for biodiversity loss.

We took inspiration from Bönisch-Brednich, who calls on ethnographers to be co-creators alongside their participants. In this sense, we used our human participants' reflections in addition to the exchange of ideas through the comments on the Facebook posts to create a dialogue that flushes out our narrative analysis. Although we utilized the quantitative data from our surveys, we also incorporated the stories that emerge from our communication with participants and the journey that we, as participatory researchers, have undergone over the data collection period. In this way, we are not merely using the Facebook posts as "raw data" but as pieces of the puzzle that fit into a larger narrative analysis. In addition, O.F. Borda demonstrates that both researchers and participants are real "thinking-feeling persons" whose unique perspectives and experiences should both be under consideration (2006). Thus, we incorporated both our participant's Facebook posts and our own posts in our narrative analysis. We believe that including both quantitative measures in addition to ethnographic descriptions will only serve to increase the rigour and validity of our work. For example, one narrative we looked for is whether or not our participants view non-human sentient beings as capable of observing them, the participant. Helmreich and Kirskey (2010) introduce the idea that animal beings themselves are capable of being anthropologists too, which adds to the meaning of *multispecies ethnography.* Within the lens of multispecies ethnography, we also analyzed the Facebook posts in the way that they demonstrate the "contact zones" where the lines between nature and anthropogenic dominance are blurred.

*Research Intentions*

Our area of research focused on profound wildlife interactions and how they contribute to human understanding of animal sentience. Sentience is a complex subject, encompassing the various emotions that become heightened when interacting with and reflecting on other nonhuman animal beings. Such a field of animal sentience has been ever growing in the field, as in accordance with Treves (2019) and Wallach and colleagues (2018), and we seek to better understand perceptions of sentience in non-human species. We wanted to observe this reflective aspect further in order to see if it served as a medium to elicit a more holistic understanding of animal sentience. Our goal was to explore the connective power between humans and other sentient animal beings on an emotional level, and for that connection to inform and empower positive social change and understanding on a multi-species level. We sought to encourage our human participants toward their own enlightenment surrounding perception of sentience, as well as to increase our own understanding through their profound stories and experiences.

As seniors at Boston College, we have extensive, deeply-compassionate social networks on campus that have allowed us to tap into a wide variety of student perceptions on sentience. Using social media as our research medium, we were able to create a sense of community on campus where we could foster a dialogue about how we define and interact with other sentient beings and elicit a community identity where each member is welcome to be vulnerable. We also wanted to incorporate Buddhist ideas into our educational model in a way that is accessible to others. The Boston College community is filled with intelligent, curious and open individuals who would welcome the opportunity to expand their consciousness in new ways. This is a valuable benefit of our research, as the global pandemic has made it hard to connect with peers and have meaningful conversations. Following Borda's (2006) imperative emergent tasks, we see

our focus on the BC community as a way of deconstructing global uniformizations and focusing on the specific culture of the BC community. However, we also hope that this project (especially our use of Facebook groups as a tool to increase community dialogue) serves as a generalizable format that other communities can adopt for future research.

With this research, we hoped that it can be used to bring forth positive social change on behalf of animal beings. We are a part of the generation that will ultimately make the influential choices that affect the protection of non-human life. Being Environmental Studies majors, we are strongly driven by and passionate about a vast array of environmental issues such as the preservation of sentient interaction and it's grounding abilities in today's vastly changing world. Not only do these interactions help deepen our awareness and help improve our appreciation of the stillness of nature, but it helps us to appreciate animal beings and value them just as equally as we do with other humans.

The future of these sentient interactions, therefore, we hope will create an opportunity for individuals to connect with animal beings where, in the past, perceptions of them have been negative. It is possible more frequent interactions could reshape individuals' emotions in a way that they will have a more deeply compassionate, prominent, and grounding experience with animals many now consider to be liminal animals/pests. We hope that encouraging our community to pursue these empathic connections with animal beings will foster a mindset that aligns with the one laid out by Wallach and colleagues (2018). Ethical dimensions should rest at the heart of conservation efforts, and in not such a way that only emphasizes ethical orientations that solely favor humans and feed into anthropocentrism as described in Treves (2019). Preserving ecosystems as a collective has historically come at the expense of individual species: for example, the killing of over 1,000 wolves in Canada in an effort to preserve the caribou

population in 2014 (Wallach and colleagues, 2017). We believe that a greater understanding of the sentience of all species will perhaps motivate people to advocate for conservation policies that do not cause harm to individual animal beings, but rather employ creative solutions that are informed by ecological research. Upon recognition of sentience, we hope our work serves as a foundation to understanding the feasibility of recognizing non-human species in the domain of ethics. Of which, systems of multispecies justice can be established and perhaps lead to the creation of systems of adjudication that are in line with such a framework, in line with the discussion set forth by Treves (2019).

Beyond this, our work sought to nurture a shift from the current, anthropocentric paradigm to that of "One Nature," as proposed by Özdemir (2020). Nature is not only meaningful insofar as it serves the needs of humans. Traditional dichotomies that pit "humans" against "wildlife" are detrimental to conservation work because this paradigm does not acknowledge the intrinsic value of non-human species. Recognizing the shared sentience between ourselves and other animal beings will help to deconstruct these binaries and understand that all beings exist under the same, fundamental conditions. Ultimately, we hope our research leads not only to increased academic exploration into the topic of sentience, but also results in tangible emotional development within our human participants and ourselves. We followed Borda's (2006) example by writing our findings in a way that the general public can engage with, so as to not exclude the average person from encountering and understanding the significance of our research. Also, the unique characteristic of the Facebook groups is that human participants are able to receive a greater appreciation for animal sentience before the research is even published merely by reading through other community member's posts. Not only is connecting with sentient life valuable to human emotional well-being, but it encourages a lifelong

relationship with other life, one that has the right to constantly change, evolve, and adapt as perceptions change and grow with the frequency of interactions. These connections would cause a ripple effect in the BC community and in the greater human consciousness to increase empathetic ties to all life, not just for animal beings, but for the wilderness and nature. When individuals feel the connection with another animal in such a profound way by recognizing we are all connected, this will encourage them to appreciate natural landscapes as well.

## Results

Upon completion of our data collection period, through the 64 Facebook group posts, which included 21 examples of liminal species, 27 pets, and 16 posts of other wildlife, we received 14 videos and 65 images. As a reminder, we, as researchers, took a proactive role in this collection process, in which traditional participant-researcher dichotomies were disrupted with the intentions of fostering community and creating an area of community on the basis of coexistence and understandings of sentience, as inspired by the workings of multispecies ethnography posited in Kirksey and Helmrich (2010). In analyzing these posts and shared multimedia further in tandem with the 48 pre-surveys and 42 post surveys, we present the following results to advance the literature of human perception on the agency of organisms whose lives are entangled with humans**.**

### *Definition of Animal Sentience*

One of the key goals of our research was to analyze the change in human participants' perception of sentience over the course of the pre survey, Facebook posts, and the post survey. Both our pre and post survey include a short answer question with the following prompt: "Please describe your understanding of animal sentience. (perhaps provide a definition of sentience)."

While the rules of our Facebook group asked human participants to talk about their perception of sentience within the context of their interaction, nearly half of the human participants did not include this. Nevertheless, six main categories were reflected in the definitions given: similarity to humans, proximity to the animal, awareness of other beings, ability to sense emotion, multiple of these answers in one definition, and miscellaneous definitions. We formulated these categories based off of the common answers from the human participants themselves in the surveys and Facebook posts as opposed to from existing literature, however our categorization is heavily influenced by prior research mentioned in the paragraphs above.

*Table 1:* This table demonstrates our categorization of animal sentience definitions given by participants in the pre and post survey as well as in their Facebook posts.

| **Most Commonly Used Definitions For Animal Sentience** | **Example:** |
|---|---|
| Like Humans | "They are creative, smart, and loyal species"<br>*pre survey*<br><br>"Their brains are highly emotionally developed and intelligent and they've been shown to communicate with their own languages"<br>*Facebook post* |
| Proximity | "You can see in their eyes that they understand you to a certain extent, and deep down you understand them as well"<br>*post survey*<br><br>"I think it does have some degree of sentience due to the fact it looked directly at the camera/me for a few seconds, and comprehended that I was present and looking at it"<br>*Facebook post* |
| Awareness | "Sentience is an animal's ability to understand themselves and the world around them"<br>*post survey*<br><br>"When I think about it's sentience, it's interesting to wonder if the ladybug was aware of the difference between the table and my friend's hand"<br>*Facebook post* |
| Sensing Emotion | "Animal sentience is that animals can feel things"<br>*pre survey*<br><br>"He picks up on emotion and unspoken cues"<br>*Facebook post* |
| Multiple Answers in one Definition | "Animal sentience is the idea that animals have feelings too and can think and feel some of the same feelings that humans can feel"<br>*pre survey*<br><br>"He is scared by everything and often ends up in my lap [...] I definitely wonder if Ash understood the importance of his birthday as he was definitely spoiled to the max"<br>*Facebook post* |
| Miscellaneous | "Sentience are animals that are less than humans but more than plants"<br>*pre survey*<br><br>"This camel was definitely a sentient being. The camel was trained by its owner to act as a form of transportation for tourists"<br>*Facebook post* |
| No Definition | "I have not heard the term animal sentience before"<br>*pre survey*<br><br>"I think dogs are very sentient"<br>*Facebook post* |

Table 1 illustrates the rich diversity in participants' definitions of sentience. Throughout the data, there seems to be a great degree of variance in what individuals believe animal sentience means. Many of the common categories reflect similar themes to findings from previous literature. For example, the eye contact or proximity to the animal as a determining factor in an individual's perception of sentience parallels the findings from Yerbury & Boyd, 2018. Moreover, the definitions that included two or more of these common themes reveal that for many, perceptions of sentience are nuanced and intertwine many beliefs about other beings.

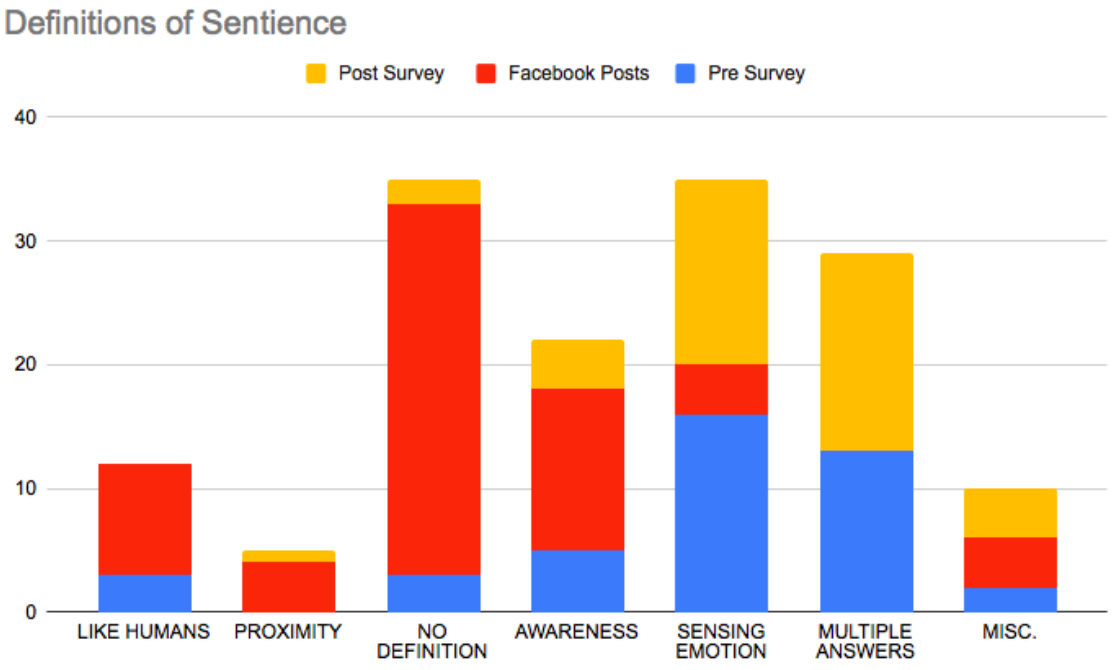



*Figure 1:* This graph shows the most commonly used concepts for participants' definition of animal sentience. The graph shows the varying frequencies of these concepts over the course of the pre survey, Facebook posts, and post survey.

Twelve definitions in total described animal sentience in terms of animal beings having characteristics similar to those of humans. One example is from a participant who wrote about the human-like characteristics that whales displayed: "their brains are highly emotionally

developed and intelligent, and they've been shown to communicate with their own languages. They're known to play games and have high problem solving abilities". Some definitions included characteristics such as loyalty, curiosity, and high levels of intelligence while others described human-like behaviors including having a language or organizing in social groups. Other definitions defined animal sentience as the level to which animal beings share similarities with humans, implying that there is a hierarchy of sentience between animal beings that are most like humans and animal beings that are least like humans. Many of these definitions also demonstrated that because of animal's similarity to humans, they deserve respect.

Five definitions in total described animal sentience as the connection made between human and animal during an interaction, or in other words, the proximity felt between both organisms. The majority of these definitions came from Facebook posts, as human participants wrote about how they recognized the sentience of the animal as they were able to make eye contact with the animal. One participant in particular very clearly linked proximity to animal sentience: "I think it does have some degree of sentience due to the fact that it looked directly at the camera/me for a few seconds, and comprehended that I was present and looking at it".

22 definitions described animal sentience as animal beings having a sense of awareness about their surroundings, other beings, and themselves. The majority of "awareness" definitions arose in the Facebook posts where human participants wrote about how the animal was either aware or not aware of the participant. In particular, several human participants wrote about their companion animals as "enjoying our presence". No "wild" animals were described as having this level of awareness. Some liminal animals such as insects were deemed as having awareness, whereas other liminal animals such as domesticated animals did have awareness of their surroundings and of the viewer.

The most popular definition (35) of animal sentience was the ability to sense and feel emotions. While few human participants used this definition in their Facebook posts, this was one of the most common responses in both the pre and post survey. Many human participants who used this as their definition also prefaced their response with doubt that they did not know the "right" definition of animal sentience. In addition, many human participants used this definition to explain why, in their mind, different animal beings have different levels of sentience. For example, several human participants described dogs as having a higher level of emotional intelligence, with more doubt being placed on whether or not insects have any. One participant in the pre-survey illustrates this: "I believe some animals, such as dogs, are sentient and capable of feeling emotion". However, another participant highlights this hierarchy of animal sentience based on emotional abilities: I think animals can feel things. Higher level animals seem to have emotions. This is different from bugs, which I don't think have feelings".

The pre and post surveys also provided 29 examples of definitions that combined two or more of the previously mentioned themes. A common pairing was the ability to feel emotion and the awareness of the environment. Another frequently used combination was the ability to feel emotion and the connection to human-like characteristics. For example, one participant in the pre-survey reflects "Animal sentience is the idea that animals have feelings too and can think and feel some of the same feelings that humans can feel". The miscellaneous category of animal sentience definitions included a variety of responses from human participants describing animal beings having instincts to being unsure about their perception of sentience.

Lastly, 35 times throughout both surveys and the posts, no mention or definition of sentience was given. In both the pre and post surveys, "no definition" meant that the participant either wrote something along the lines of "I don't know" or offered no definition. For the

Facebook posts, “no definition” meant they did not mention sentience at all. However, 10 people in the pre-survey definitions explicitly expressed doubt or confusion at the definition of sentience, but then ultimately offered a definition. In contrast, no participant in the post survey expressed doubt or hesitancy in their definition. This change from pre to post survey reflects the growing confidence of human participants in their understanding of animal sentience.

*Changes in Tone - Before and After Community Participation*

Another theme we analyzed in the data was the tone of human participants’ responses to the pre- and post-surveys as well as the Facebook posts. Tone includes the types of words used when describing pets, wild animals and liminal species. Positive, negative, and neutral tones in human participants’ written speech can be identified throughout the course of data collection. Positive tone is identified by the presence of diction that implies warm affect toward animals; this would include words that convey joyful, connected, appreciative emotions toward the species in question. Negative tone is the opposite: words that convey feelings of disgust, disconnection, a desire to put distance between the participant and the animal. Neutral tone consists of descriptions of the interaction that do not provide any information about the person’s affect toward animals; such descriptions simply delineate the nature of the interaction without including mention of any emotional component of it. A critical analysis of tone deepens our understanding of people’s attitudinal ways of knowing and affects toward different types of animal beings when explicit mention of sentience is absent.

| | Pre-survey | | | Post-survey | | |
|---|---|---|---|---|---|---|
| | **Positive** | **Negative** | **Neutral** | **Positive** | **Negative** | **Neutral** |
| **Pet** | 74% | 2% | 42% | 56% | 2% | 19% |
| **Liminal** | -- | 26% | 28% | 12% | 21% | 12% |
| **Wild** | 33% | 2% | 56% | 47% | 2% | 28% |

*Table 2*: Percentage of total responses in the pre- and post-surveys containing positive, negative, and neutral tone regarding the three categories of non-human species, as indicated by diction, punctuation, etc. in the respondent's language

We have compiled responses to prompts 1 (describe your current relationship with animals) and 3 (how often do you regularly interact with animals broadly speaking, and regarding pets, liminal and wild species) in the survey and coded respondents' tone as positive, negative, or neutral. In the pre-survey responses, the overwhelming majority focused on their interactions with pets, with 74% of the total responses mentioning positive interactions with pets such as dogs and cats. Among these responses, several people mentioned not being able to interact with their pets regularly due to being away from home while attending university. When they did interact with pets, the tone was loving, appreciative and excited. One person said, "[I interact] very regularly with pets when I am home!" Their tone indicates excitement to see their pets during the times of year when this was possible. Perhaps the most common word associated with pets, especially dogs, was "love." A common trend in the responses was that when the participant had a pet at home, that pet encouraged them to extend love and care to other "animals," broadly speaking. Any neutral mentions of pets were simply descriptions of the participant's degree of interaction with the animal. There was one participant who said that they found all animals, including pets, to be "scary."

Regarding liminal species in the pre-survey, there were no positive descriptions of this category of animal beings. Any mention of these species, including insects and rats, was either

negative or neutral. All of the negative responses included speech such as trying their best to "avoid" those species, seeing them as "scary," and saying that they "hate" bugs and rodents and do "not oppose killing" them. There was one response that mentioned making other people "dispose of" bugs, implying that one attitude towards liminal species could be that they are closer to objects than to beings that deserve respectful treatment. There were also several mentions of actively trying to put distance between the participant's own self and the liminal species, such as by throwing rocks to scare away the animal. Overall, the tone here was defensive, disgusted, and aggressive.

The pre-survey responses regarding wild animals were mostly neutral and positive. There were more neutral descriptions of wildlife than there were positive ones because it was more common for respondents to simply "notice" the presence of wild animals such as squirrels or birds while on campus or on a hike. The positive responses about wild animals included words like "appreciation" and "beauty." Bird watching was commonly associated with a positive tone because the activity is "peaceful."

In the post-survey responses, many people voiced gratitude for their experiences in the Facebook group and used a hopeful, inspired tone when mentioning how they would like to interact with animal beings moving into the future. Responses included "a deeper appreciation and understanding of wildlife," wishing for a "better relationship with animals," and "thinking about adopting a cat after graduating," and seeing the Facebook community as "life changing." This indicates that several of the human participants felt that their perception of animal sentience was enhanced after participating in the online community.

We see changes in tone from the pre- to post-survey in the form of positive mentions of liminal species that were not present before, a slight decrease in negative tone and a decrease in

neutrality regarding liminal species, an increase in positive tone and a decrease in neutral tone concerning wild species, and interestingly, a decrease in mentions of positive and neutral experiences with pets. There was no increase in negative attitudinal ways of knowing towards pets, and the reason for fewer positive descriptions was that the human participants seemed to be expanding their focus more to other types of species. There was more language surrounding liminal species about "respect" and removing it "without disturbing or harming it," compared to the previous responses that commonly included killing those species. Some indicated that they would "feel bad" if they harmed an insect so they avoid killing them at all costs now. One participant said that they were a "fan of mammals, birds, and bugs especially." Others also showed an increase in positive tone toward liminal species, such as being able to "appreciate their beauty" even if they still did not love the animal.

There were also more positive descriptions of interactions with wild species. Human participants mentioned "coexisting" with wild animals, which brings positive, harmonious affect into the reflection on sentient interactions that adds emotional depth to the pre-survey responses. The respondents also made notes about setting aside time to be in the presence of wild animals. According to one participant, "whenever I see [bunny rabbits] in the mods, I like to stop and watch them." There was greater appreciation and enjoyment associated with wild species, with more than one response indicating that it was "fun" to watch these animal beings run around and play in their natural habitat. There was also a participant who said that sighting animal beings that are more rarely seen, such as coyotes and great blue herons, have "become special memories." The tone surrounding wild species has therefore shifted from passive and appreciative to more intentional and inspiring.

*Level of Emotion Attached to Animal Beings*

A notable and unforeseen result of our research is the role of hierarchy in human participants' perceptions of animal beings as, for many human participants, it was stated that many animal beings were not seen as sentient due to their limited ability to think cognitively and hold an apparent personality. One human participant explains, "Animals are divided up into lower and higher order species, in which higher order species have greater sentience than lower ones. Sentience is defined by an animal's executive functioning and cognitive ability to critically think in certain situations and their emotional state." While this hierarchy was established by various human participants in both the pre- and post-survey, we found that having an emotional connection to the animal one may be interacting with is a meaningful component that is necessary for many human participants to *want* to care about animals' well-being. This points to the "level" of emotion participants attach to certain animal beings. For instance, many human participants expressed more intense emotion when describing the love they have for their pets, but many showed more neutral emotions when talking about, say, a squirrel they encountered recently.

Many human participants noted their emotional connection to their pets/companion animals as they were around them more frequently than other pest/liminal species and animals often dubbed "wild": "I love observing and spending time with animals. I love petting animals if they are domesticated. I don't really like animals that are slimy or bug like." This points to the role of emotion, specifically when feeling emotions of comfort, peace, and safety. In fact, many human participants noted throughout the study that their pets/companion animals provided them with a sense of peace and comfort, but that most animal beings that were not domesticated made them feel "disgusted, indifferent, and/or scared." One participant elaborates on their indifference,

explaining that they experienced a traumatic interaction with an animal as a child and now finds it difficult to connect with them on a deeper level. Another participant discusses the profound impact their pet/companion animal had on them that they even wanted to pursue future interactions once leaving college: “I love animals and love the peace that spending time with them can bring to me. My family has a 12-year-old dog, and he has been the light of my life for ten years. I'm hoping that once I graduate, I can spend some of my time volunteering at an animal shelter when I'm not working.” This highlights the interconnectedness of hierarchies and emotion towards animals, as this participant expresses fondly the joy their dog brings them. This creates deeper connections with empathy, compassion, and, ultimately, respect for animals who seem to be higher up on many human participants’ hierarchies. Therefore, as many human participants’ perceptions of companion animals/pets is already high, furthering these interactions with these animal beings may prove to further deepen this hierarchy. While there is not yet enough evidence to know for certain, it is clear that emotional attachment to an animal one has spent many years with can create lasting and transformative bonds between human and non-human life, and can even become an integral part of human participants’ daily lives and extracurricular activities.

While most human participants had a relatively positive perception of animal beings overall, many human participants were largely indifferent. This finding is significant as, for mostly all participants who felt indifferent, they also always held a certain level of respect for animal beings as well. Therefore, while many human participants lacked the emotional cathexis sentient interaction provides, they were still able to recognize other animal beings as worthy of recognition. For many, this indifference is due to their proximity to animal beings throughout their lives. While many hold an appreciation and even curiosity about animal beings, they find

themselves not interacting with them, thus, they have no desire to change their relationship as it is what they have been exposed to for long periods of time. One participant explains, “I love most animals and think that all animals deserve to be treated with dignity and respect. I have not grown up around animals until recently, so I feel as though my relationship to animals has become even more intimate in the last few years.” This connects to Özdemir’s understanding of “One Nature” in that this individual understands the need to see nature as an “overlapping, interdependent, and co-constitutive continuum among life forms,” as he articulates (2020, pp. 645). If we treat animal beings with a certain level of respect, we must also extend this to nature and its environment because this is the life force that allows animal beings to thrive.

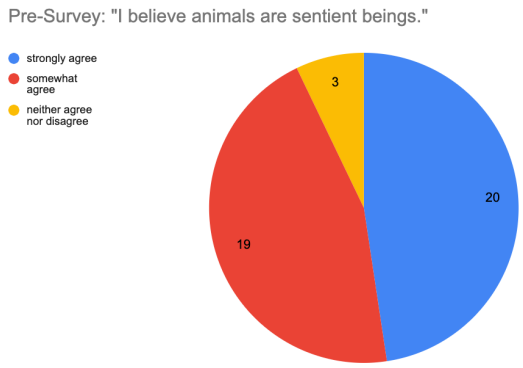
For human participants who are away from their pets/companion animals while at college, they have noted feeling emotions of curiosity and fascination when interacting with animals referred to as “wild.” This reiterates the impact of animal sentience on positive emotions as, even for participants who are away from their pets/companion animals, of which they have experienced more deep, long-lasting, and profound bonds with than, say, a squirrel they see on the Boston College campus, they all still appreciate and understand the value of all life: “I enjoy being around animals and grew up with pets. However, at college, I find I interact with animals less because there are fewer pets around. I do see a lot of squirrels, rabbits, chipmunks, and birds around campus that I enjoy.” This emotion is present in human participants who also hold respect for sentient life: “My current relationship with animals revolves around my domestic pets who I do not see while at school. Outside of that, I regularly interact with rabbits, birds, and squirrels. Overall, my relationship with animals hinges on respect.”

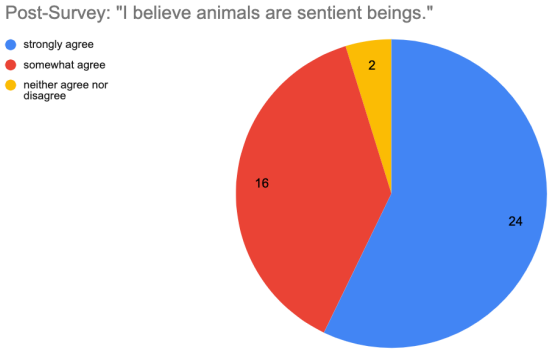
Shared sentience fosters feelings of empathy and care for the well-being of others and this was a distinct finding throughout our study. One participant notes even just the presence of

other life can be enough to leave a positive impression on someone: “I think having animals around is very good for empathy and well-being.” Empathy of this nature, it seems, is found when the individual is able to recognize the life force in themselves and extend that to another life form. Some human participants say that animal beings are the same as humans: “I believe animals to be an extension of the same souls that fill humans.” Moreover, “whenever I come across an animal in the wilderness, I give them the same respect as any human being and respect that I am in their home, not mine.” Emotion is a very strong indicator of overall perceptions of sentience. It is obvious those with stronger bonds to animal beings earlier in life seem to derive more “positive” and deeper experiences from these interactions, but that, in total, essentially all human participants are able to respect and understand that the life of another is worthy of protection and recognition.

*Changes in Trends - Before and After Community Participation*

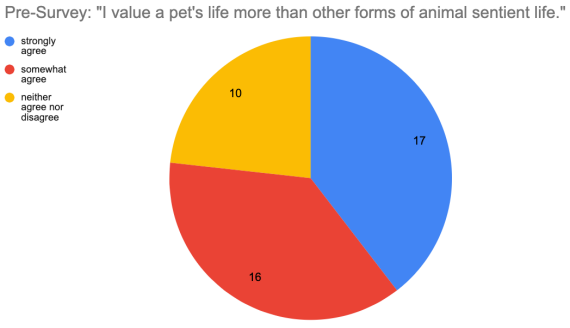
As an important analytical tool to gauge community attitude changes after our community-sourced data collection through our Facebook group, we included four multiple choice questions in our pre- and post-surveys. The figures below illustrate some of the shifts we have noted in categories like understanding of animal sentience, attitudinal ways of knowing toward different types of nonhuman animal beings (liminal, companion, and otherwise wild), and comparison to human sentience levels.

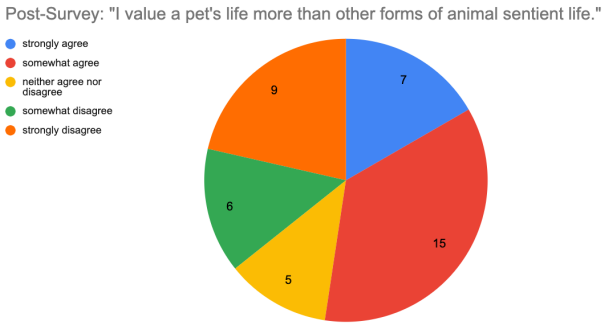



*Figures 2 & 3: Participant responses to the statement "I believe animals are sentient beings" in each survey*

As seen in the above figures, we observed a notable shift towards stronger agreement with the statement "I believe animals are sentient beings." This indicates that the animal interaction-focused Facebook group heightened participant awareness to the sentience of other nonhuman animal beings, influencing the group to trend more toward sentient belief. Although the trend shift for this survey question is not as strong as some of the other observed questions, it is worth noting that the group became overall more strongly opinionated in their belief in nonhuman animal sentience.

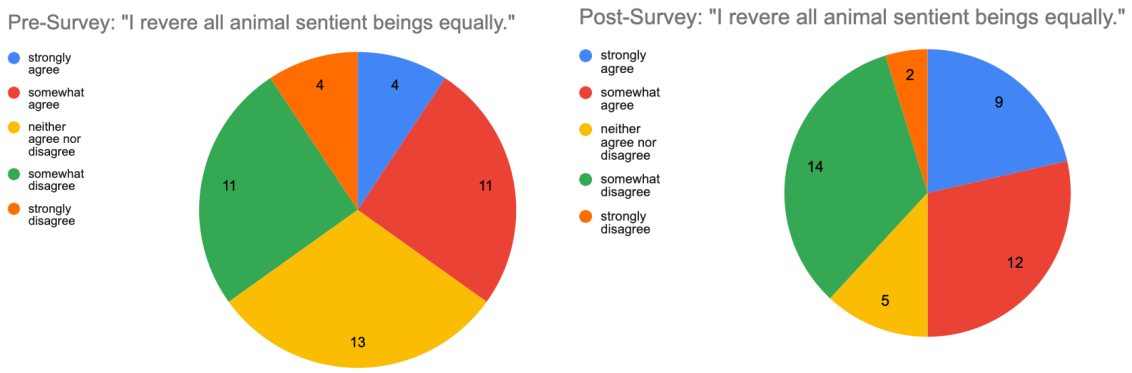



*Figures 4&5: Participant responses to the statement "I value a pet's life more than other forms of animal sentient life" in each survey*

The above figures show the very strong shift in participant responses to the second multiple choice survey question about agreement with the statement "I value a pet's life more than other forms of animal sentient life." The two charts are very different at a glance, with huge

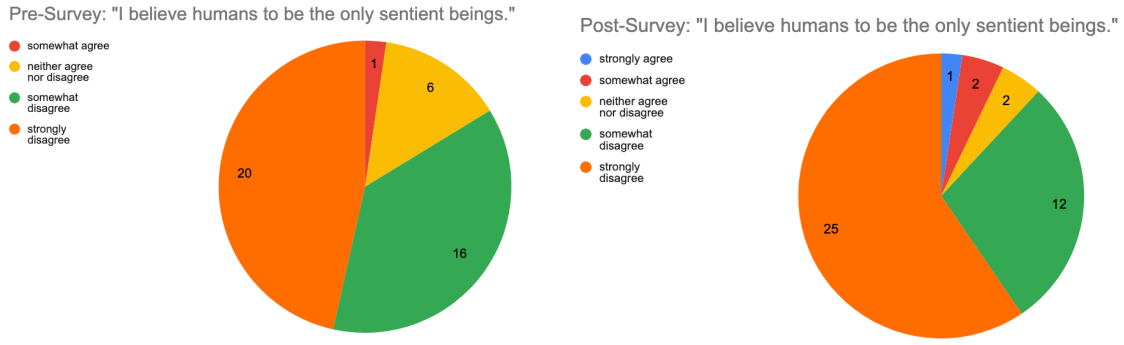
jumps in the group toward disagreement. This indicates that human participants who originally valued pets over other species types, like liminal and other wildlife, shifted more toward an equitable view of sentience across species types. This is also supported by the fact that initial community Facebook posts were companion animal-heavy, but further posting led to more exposure to different species types, interactions, and behavior indicating sentience. This strongly indicates that the Facebook participation led to a positive influence to the group attitude toward sentience in liminal and wild species.




*Figures 6&7: Participant responses to the statement "I revere all sentient beings equally" in each survey*

These figures above illustrate the change in participant response to the statement "I revere all animal sentient beings equally," getting more specific in different species type sentience. Similarly to Figures 3 & 4 in the previous question, these charts indicate a trend toward a more equitable attitude to animal sentience across species type. There is a significant decrease in "strongly disagree" responses, and although there is an increase in "somewhat disagree," there is also an increase in "strongly agree" responses. Another important aspect of these changes is the major decrease in neutral responses, indicating that participation in the Facebook group strongly solidified participant opinions on multi-species animal sentience. These

shifts in responses send the message that the group overall moved to embrace a multi-species definition of nonhuman animal sentience after participation in the Facebook community.




*Figures 8&9: Participant responses to the statement "I believe humans to be the only sentient beings" in each survey*

The charts above show responses to the final question in each of our surveys asking about the statement "I believe humans to be the only sentient beings." Although our human participants started off with general disagreement with the statement, their disagreement became stronger after being part of the Facebook community. There was a significant decrease in neutral responses as well. One outlying point shows an uptick in agreement with the statement, but the responses trend overall toward disagreement. This strongly indicates that the Facebook group influenced human participants more toward an inclusive definition of sentience in comparison to their own human experience. These particular charts illustrate the message that our human participants moved toward a rejection of their own human superiority and toward an multi-species framework of sentience.

Each of the four questions outlined in the above figures and paragraphs indicate that the Facebook community fostered a growing embrace of nonhuman animal sentience across a multi-species framework to include pets or companion animals, pests or liminal species, and other wildlife interactions. This quantitative analysis of our human participants supports our

other data collection from the Facebook postings themselves and the short-answer survey questions, all showing a communal trend toward nonhuman animal sentience acknowledgement and acceptance. This further shows how wildlife interaction and community participation can positively influence individual response about animal sentience, which itself has beneficial implications about biodiversity across species types.

*Role of Proximity and Location of Interaction*

A final finding detected from the research conducted deals with the matter of proximity and location as indicators of sentience perception. Tying together the videos and photos themselves with the actual text describing the profound interaction revealed revelations regarding proximity and location among our three different classifications of animal beings. Physical closeness was measured through the multimedia attachment shared through the Facebook page, in which distance between the human being and the animal being were classified as: touching, close (less than arms distance), medium (several steps away), and far (significant distance before the two beings). In discussion of location, interactions as shared in the images and videos were categorized upon detection of a theme in which many posts indicated: nearly all of the posts provided insight as to whether the interaction occurred: inside, outside, or near the home.

Pertaining to the identified classification of liminal species/pests, we noted two findings. First, interactions with liminal species in which the human person identified the other species as a sentient being were strongly correlated with locations outside, of greater distance to the house. In accordance with such, when interactions with liminal species occurred in or around the house, the human participants overwhelmingly noted that the “pest” was not sentient/ had a lower

perceived level of sentience. For example, upon attaching a video showcasing an interaction of an unidentified crane around a boat dock near a house, a participant details how they perceive a crane to be “unaware” and “just chilling,” classifying the animal being as not sentient primarily. They further detailed that upon approaching the crane further, the liminal species had not moved. And secondly, we noted an absence of touch, the closest proximity, between liminal species and humans, perhaps illustrating an absence of comfortability around such species as permeated through mass human culture. However, it cannot be concluded for certain why such is the case.

With regards to the pets/companion animals, the role of proximity and distance are not the same as they are for pests/liminal species. In this classification group, we noted the closest proximities of interaction, with all human participants that chose to share profound interactions with companion animals sharing images and videos either touching or in close proximity to the animal being, while also expressing that they spend a long period of time with these particular animal beings. As already identified earlier in this findings section and revealed from results in the pre- and post-surveys, pets/companion animals are often perceived as having a greater level of sentience than other animal species by their human counterparts. Such is the case irrespective of location. Human participants recorded companion animal interactions in all of the three location settings identified, and perceptions of sentience did not waver respective of location. For example, as written by one participant reflecting on encounters with their dog in an indoor setting, they state “she is very aware of the world around her… she enjoys interacting with us... [she] gets upset when she is locked out of the room and is aware of feeding habits.” The sentiment seems to be shared with fellow respondents as such is the case when looking at another participant’s reflection on an interaction with their dog that occurred alongside a beach, writing: “She is aware of social interactions with humans and is able to follow our lead. She also seems

super eager to learn about her surroundings." In both of these instances, human participants note high perceptions of sentience regardless of location.

The final findings regarding proximity and location to be discussed deal with interactions with animals often dubbed "wild". As this categorization grapples with animal beings often perceived as "wild" and the location in which the research is confined is on a college campus in an urban environment, it comes as no surprise that none of the interactions occurred in close proximity of the home, thereby minimizing the effect of location analyzed for this particular grouping of animal beings. In terms of physical proximity of the person and the animal being, these interactions occurred from the furthest away on average, with photos and videos often seen utilizing zooming in and out features that often affect visual quality. It became apparent through the accounts and reflections of human participants that those who gave the highest ratings of sentience were the greatest distance apart from the "wild" animal whose sentience was being perceived, highlighting a potential direct relation between perceived levels of sentience and proximity. From the data and account, it has been inferred that the further the human individual in question was to the "wild" species, the greater they perceived the animal's sentience to be. As one participant frankly put it, "The farther away I was from a wild animal, the more I felt as though I was seeing the animal in its natural habitat. If I got closer to it, it felt like I was intruding on the group of bison and their capacity to reason, govern, and just do what it wants, which to me are all tied to sentience."

## Discussion

### *Summary, Synthesis, and Explanations*

On a broad scale, our results overwhelmingly indicate that participation in the Facebook community positively influences a more inclusive understanding and definition of nonhuman

animal sentience as it pertains to the multi-species framework of pests or liminal animals, pets or companion animals, and otherwise "wild" animals. Evidence from the Facebook group posts gave us insight into a wide variety of different types of multi-species interaction. The two surveys gave us further qualitative and quantitative avenues through which to analyze the dynamic changes of the group over time.

Within the Facebook posts themselves, parsing out significant attitude shifts proved challenging as the group engagement varied over time. However, it was very evident through the interactions online and the variety of the posts that sentience understanding grew and developed among human participants and definitions became more inclusive across species. The pre- and post-surveys further compounded these findings, with a qualitative analysis of the short answers showing significant increases in positive attitudinal ways of knowing toward liminal species and a heightened mention of other wildlife. The multiple-choice questions provided further quantitative insight into these shifts, allowing us to observe the embrace of a multi-species definition of sentience in our human participants' opinions on various statements. Although many of the observed attitude shifts were not as strong or detectable as we anticipated, our main finding indicates an overwhelming increase in confidence and decrease in neutrality over understanding of sentience after participating in the Facebook group. We also noted an increase in the embrace of a multi-species definition of sentience that includes all three of our species categories, including companion animals, liminal species, and other wildlife. In particular, the experience introduced several human participants to the concept of liminal species for the first time, invoking an understanding for animal beings in between companions and wildlife for which they previously had no vocabulary. Through this expanded understanding, human participants were able to effectively analyze their interactions with species like rodents and

insects and eventually incorporate these nonhuman animal beings into their understanding of sentience.

The Facebook group was successful in building a community in which we actively participated as researchers (Borda 2006; Contreras 2019). By putting ourselves into the community, we were able to offer guidance and support in the emotional journey of shared experience and developing definition of animal sentience, as is highlighted by Richardson (2001). All of this is of course heavily influenced and inspired by Kirksey and Helmreich's (2010) work on multispecies ethnography, allowing us to formulate our framework beyond the traditional binaries of human and animal that our human participants originally held. By nurturing our Facebook community, we emulated Paleco and colleagues' (2021) description of inclusivity and openness and the importance of accessibility in research.

Similarly, previous research (Thornton and Quinn, 2009; Baeza, 2020; Hosaka and colleagues, 2019) indicates that childhood interactions with wildlife influences perceptions of animal beings in the future, and this was noticeable in our study as well. For many human participants, exposure to animal beings earlier in life encouraged many to seek out similar experiences at Boston College. For those who felt indifferent towards animal beings, it was found that many human participants who expressed this did not interact with many animal beings growing up. Therefore, previous interactions greatly influence how willing human participants are to interact with animal beings further.

*Strengths of the Current Study*

Due to the COVID-19 pandemic, our research has taken a unique approach in order to work within the confines of a global pandemic. One of our most defining strengths is our ability

to create and maintain a sense of community during a pandemic through an online platform that celebrates sentience. In addition, our current study not only used social media as a research tool for data collection, but also used it as a platform to facilitate community building. This platform provided an opportunity for human participants to both reflect on their own sentient interactions as well as read, comment, and interact with other participants. During a time where many participants are not able to encounter or talk to each other in a physical space, this Facebook group held all the more meaning. This research format also broke the mold of a participant-researcher binary and allowed space for participants to participate in rich dialogue with each other on the topic of animal sentience. In addition, the voluntary participation model through Facebook meant that human participants were welcome to engage as much or as little as they would like after 2 minimum posts. This achievement is a testament to the adaptive nature of our human species in the context of unprecedented social dynamics as well as the emerging capabilities of social media as a data collection tool.

Another strong feature of our research model was the combination of quantitative and qualitative data. The surveys functioned as formal methods of data collection that prompted human participants to describe and quantify their perceptions of sentience. The Facebook posts enabled human participants to craft their own narratives, dialogue with others, and have fun in the process. This unique pairing of data collection methods served to add richness to our data and allowed for complex perceptions of sentience to emerge. Human participants were able to pull from profound experiences and reflect on important relationships they have with other sentient beings while writing their Facebook posts; whereas, the surveys allowed them to respond to designated prompts and to formulate a formal definition for animal sentience. In this way, human participants were able to share appreciation and gratitude for those memorable intimate

moments, yet also recognized their participation in traditional research. The post survey in particular demonstrated to human participants that the objective of our research was not merely to create a community celebrating sentience, but also to start the conversation about something larger: BC's culture of (dis)respect towards the preservation of sentient life.

Lastly, our research advanced the literature on animal sentience by adding intimate qualitative data to the realm of human-wildlife interaction fieldwork. Not only do we add to the literature by demonstrating how social media can be used as a data collection tool, but we also highlight how personal narratives can reveal profound, beautiful, and multifaceted relationships with non-human sentient beings. Moreover, our research indicates that reflections on profound interactions with animal beings has facilitated recognition of animal sentience. This finding has many implications for how activists and researchers might work most effectively to dismantle people's preconceived notions of animal sentience.

*Limitations*

The way in which our study was structured posed numerous limitations. Our first limitation was that all of our findings were conducted online, making it much more difficult to interpret qualitative data as our results are reliant on hearing tone of voice, interpreting body language, etc. This limitation was largely due to our inability to meet with human participants in person as a result of COVID-19. This online format amplified problems further when trying to determine who had completed the pre- and post-surveys. As a result, we were left with six less post-survey respondents than the pre-survey with little means of knowing which human participants failed to complete them. This proved to be our largest and most notable limitation as

experiencing and discussing sentience with others is much less profound and influential when the primary form of communication is two-dimensional and over a laptop screen.

Another limitation of our study was the difficulty of keeping human participants motivated to post consistently. While this coincides with the limitations of online communication, it also points to the idea that, potentially, many human participants' motivation declined because of the already substantial amount of school work human participants had on a regular basis on top of actively engaging in our study. This connects to the study by Paleco and colleagues that works to create a more inclusive and active involvement from citizens (2021, pp. 261). This is because, the researchers argue, we need to focus less on frequency of participation in general, and instead incorporate more *inclusive participation* and the obstacles and discriminatory actions that discourage certain groups to participate: "Just as motivations differ between individuals, they also may differ for the same person at different times. [...] it is necessary to understand the cultural, social, economic, and natural barriers that currently stand in the way of volunteering involvement." (2021, pp. 264). Moreover, as we were not able to enforce any authority to ensure students would continue to participate and engage in the Facebook group, this made it increasingly difficult to change motivation habits and, thus, we received less data for our study. This is another prominent limitation because, if we had received more data that we otherwise would have if all human participants posted more regularly, our sample size would be larger and, thus, more accurate of the overall perceptions of animal sentience in the greater Boston College community.

As our study is not generalizable outside of this specific context, it is implausible to assert our findings are representative of the whole Boston College population. Therefore, a more random and larger sample is needed to engage more members of the community rather than

simply increasing engagement solely by word of mouth to friends. While our sample was fairly random, it holds its biases as our results were extrapolated from responses from many of our friends and peers. As a result, it would be insufficient to state how our data conducted within the Boston College community extends to other people in general and their own perceptions of animal sentience. These limitations presented could not be overcome due primarily to COVID-19 restrictions, time constraints, and physical distance. As we had to conduct all of our research online, this made connecting with human participants difficult and, therefore, imposed more of a time constraint. Seeing as we had only a semester to collect our data, there was not ample time to organize, perform, and evaluate a larger, more random sample of the Boston College student population. If given more time, we would have strived to overcome these obstacles, however we will offer suggestions for future research later in our discussion.

The final limitation orients itself on the very classification tactics used in this work. By classifying animal beings into societally-constructed categories, we recognize that we may have perpetuated these stigmas. Particularly, we recognize the rhetorical choice of using the word "pest" in connection with liminal species. While the term 'pests' evokes negative connotations, it was in appeal with common vernacular that we decided to use the word in tandem with liminal species as a means of grouping animal beings from an efficiency standpoint. That being said, these three classification groups also created difficulties when attempting to classify certain beings. For example, trying to assign an interaction with a feral horse to a particular grouping as one can logically posit its belonging in multiple categories.

*Implications*

Our research findings have several implications about the nature of human-wildlife experiences and the importance of acknowledging animal sentience and deepening human perspectives. The method of using a Facebook group to encourage participation in this project indicates that creating, sharing, and reading others' narratives in a community setting can shape and alter individuals' perceptions of sentience. As discussed in our results, people's attitudinal ways of knowing toward liminal and wild species became more positive over the course of Facebook group participation. Perhaps when people share their heartfelt experiences with non-human species with one another, they inspire other members of the community to reflect more deeply and engage with rich, thought-provoking questions about our own nature and how we relate to other creatures of the Earth.

Following Bonisch-Brednich (2018), Conteras (2001), and Richardson (2019), we see that our own posts in the Facebook group as well as comments back and forth with our members created an opportunity for valuable participant-researcher dialogue. Richardson calls on us to not strip away our own humanity by trying to be an academic that maintains his/her distance from the research in order to obtain validity (2009). Sharing our own interactions with sentient life and our own vulnerabilities when it comes to describing what sentience is showed our human participants our glorious authenticity. Thus, our research implicates that truly rich ethnographies allow the researcher to be wholly immersed in their work, without fear of "contaminating" the results, but instead with hope that they illuminate them by allowing for authentic, personal connection between researcher and participant.

It is also shown that sentience of different types of species is socially constructed and can be re-learned through new experiences and exposure to new sources of information. Our

platform served as an educational resource for people to expand their previous conceptions about animal beings that have fallen into certain human-prescribed categories. What was once known as a "pest" may now be regarded as an animal worthy of respect and unharmful treatment. Through our research, we have witnessed that people's attitudinal ways of knowing towards other beings are malleable. By reflecting on their experiences with a variety of species, many of our human participants have recognized the biases they had ingrained within them regarding the inherent value of certain types of animal beings over others. This implies that our assumptions about non-human species are often subconscious and can be brought to light with active effort and introspection. Our research has opened the door to incredible potential for more caring, intentional relationships between humans and all other animal beings.

*Directions for Future Research*

In light of the successes and shortcomings of our research, it is with firm belief that the work presented can be used in further literature pertaining to sentience. With such in mind, we posit the following as questions guiding future research in this field. Firstly, while seeking to understand the role of reflection further, we ask: how does repetitive/consistent reflection on animal sentience change our views over time? To understand the impact of facilitation roles in discussion of sentience, we also encourage further analysis on how facilitating conversation/community help us dismantle our own biases towards animal beings. Next, we recognize the utilization of online platforms as a growing mechanism for data collection for research, but we would like to know more on how Facebook groups as a platform can be used to facilitate dialogue and community in the animal sentience field. Finally, we are left with

questions regarding how our research on animal sentience can be used in a way to more effectively enhance conservation efforts of all animal beings?

*Conclusion*

The research brought forward advances dialogue surrounding perceived levels of sentience between human- and animal-beings. Such a conversation shifts existing modalities toward a principle of coexistence, building upon work by Schauer (2021) and highlighting that evolving definitions of animal sentience are possible through the creation of an online community via Facebook in which critical thinking and a willingness to actively participate in sharing their interactions with animal-beings proved valuable. Through a unique combination of qualitative and quantitative data, key findings such as proximity and location, as rooted in principles of coexistence, help to illustrate perceptions of animal sentience in manners that affect each grouping--of our socially-constructed classification groups deployed including: companion animals/pets, liminal animals/pests, and animals often dubbed "wild"--differently.

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Appendix A
Survey Questions

- Consent question (Outlined earlier)
- Please describe in a few sentences (3-5 sentences) your current relationship with animals.
- Please describe your understanding of animal sentience. (perhaps provide a definition of sentience)
- How often do you regularly interact with animals broadly speaking? Particularly pets/companion animals? Particularly pests/liminal animals? Particular animals often understood as “wild”?
- Pick the extent to which you agree or disagree with the following statements: (strongly agree, slightly agree, neither nor, slightly disagree, strongly disagree)
    - I believe animals are sentient beings.
    - I value a pet’s life more than other forms of animal sentient life.
    - I revere all animal sentient beings equally.
    - I believe humans to be the only sentient beings.

Appendix B

## Consent

You are being asked to participate in a research study titled "Reflections on Sentience: Exploring Human Understanding of Animal Sentience Among Companion, Liminal, and Wild Species" that I am completing as part of my research methods course this semester. The purpose of this study is to better understand the role of reflection and profound interactions with wildlife in understanding animal sentience. You will be asked to participate in a pre-survey, upload consistently in the Facebook group detailing your interactions with wildlife, and a postsurvey.

The pre- and post- surveys will not collect your name or other individual identifiers, and the researchers will not have the ability to associate any of your identity with the survey responses that you provide. Similarly, all identifying information, such as usernames, from the Facebook posts will be deleted in the analysis, and the private Facebook group will be deleted once research is finished.

There are no direct benefits to you, but you may feel gratified knowing that you helped further the scholarly work in this research area. You will not be compensated for the time you take to complete this interview. There are no costs to you associated with your participation. I will exert all reasonable efforts to keep your responses and your identity confidential and will use a pseudonym in all of the research writing. Your participation is voluntary.

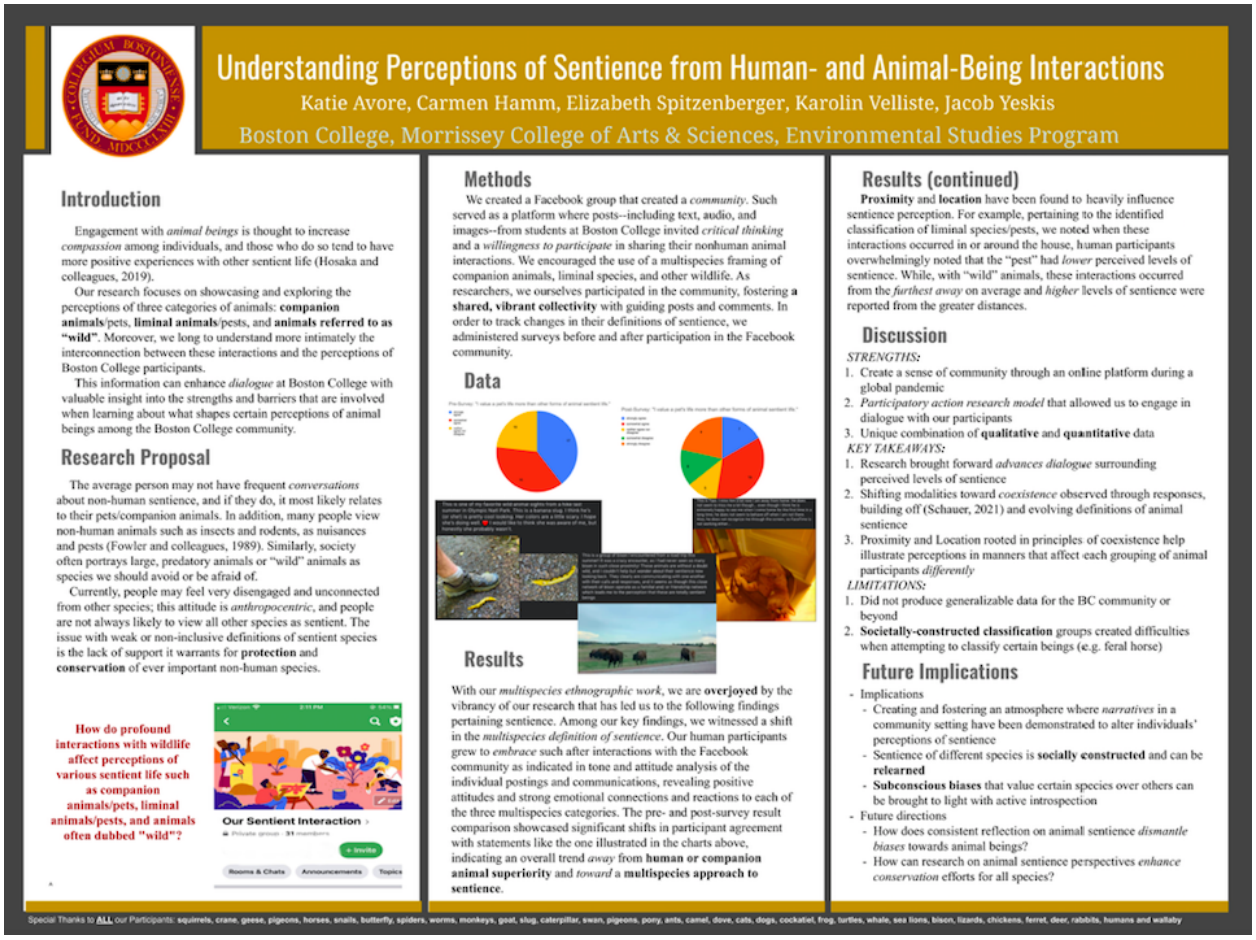
If you choose not to participate it will not affect your relations with Boston College or with me. You are free to withdraw or skip questions for any reason. If you have questions or concerns concerning this research you may contact me or my professor kellyajf@bc.edu.

If you agree to the statements above and agree to participate in this study, please confirm this with me.

Appendix C

“Hello! This is an invitation to join our Facebook Group called Our Sentient Interactions, a page created by the Environmental Studies Research Seminar class at Boston College. This is a platform we intend to use to create a community where individuals feel called to share profound interactions they have had with non-human animals. In this group, you will be asked to complete a pre and post survey that asks questions about your perception of sentience and your experience with non-human animals. Following the presurvey (link will be provided once requesting admittance into the group) in which consent will be asked for, we would like you to follow the prompts as a guide when writing a written reflection and uploading any photos, videos, or audio you have of the experience. We intend for each member to upload at least twice during our one month of data collection. We then will ask you to complete a post survey after uploading reflections. We hope this Facebook Group will give you a place to reflect on your own experiences, as well as see the value in others’ responses.”

Appendix D



# Understanding Perceptions of Sentience from Human- and Animal-Being Interactions

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## Introduction

Engagement with *animal beings* is thought to increase *compassion* among individuals, and those who do so tend to have more positive experiences with other sentient life (Hosaka and colleagues, 2019).

Our research focuses on showcasing and exploring the perceptions of three categories of animals: **companion animals**/pets, **liminal animals**/pests, and **animals referred to as "wild"**. Moreover, we long to understand more intimately the interconnection between these interactions and the perceptions of Boston College participants.

This information can enhance *dialogue* at Boston College with valuable insight into the strengths and barriers that are involved when learning about what shapes certain perceptions of animal beings among the Boston College community.

## Research Proposal

The average person may not have frequent *conversations* about non-human sentience, and if they do, it most likely relates to their pets/companion animals. In addition, many people view non-human animals such as insects and rodents, as nuisances and pests (Fowler and colleagues, 1989). Similarly, society often portrays large, predatory animals or "wild" animals as species we should avoid or be afraid of.

Currently, people may feel very disengaged and unconnected from other species; this attitude is *anthropocentric*, and people are not always likely to view all other species as sentient. The issue with weak or non-inclusive definitions of sentient species is the lack of support it warrants for **protection** and **conservation** of ever important non-human species.

**How do profound interactions with wildlife affect perceptions of various sentient life such as companion animals/pets, liminal animals/pests, and animals often dubbed "wild"?**




## Methods

We created a Facebook group that created a *community*. Such served as a platform where posts--including text, audio, and images--from students at Boston College invited *critical thinking* and a *willingness to participate* in sharing their nonhuman animal interactions. We encouraged the use of a multispecies framing of companion animals, liminal species, and other wildlife. As researchers, we ourselves participated in the community, fostering a **shared, vibrant collectivity** with guiding posts and comments. In order to track changes in their definitions of sentience, we administered surveys before and after participation in the Facebook community.

## Data



## Results

With our *multispecies ethnographic work*, we are **overjoyed** by the vibrancy of our research that has led us to the following findings pertaining sentience. Among our key findings, we witnessed a shift in the *multispecies definition of sentience*. Our human participants grew to *embrace* such after interactions with the Facebook community as indicated in tone and attitude analysis of the individual postings and communications, revealing positive attitudes and strong emotional connections and reactions to each of the three multispecies categories. The pre- and post-survey result comparison showcased significant shifts in participant agreement with statements like the one illustrated in the charts above, indicating an overall trend *away* from **human or companion animal superiority** and *toward* a **multispecies approach to sentience**.

## Results (continued)

**Proximity** and **location** have been found to heavily influence sentience perception. For example, pertaining to the identified classification of liminal species/pests, we noted when these interactions occurred in or around the house, human participants overwhelmingly noted that the "pest" had *lower* perceived levels of sentience. While, with "wild" animals, these interactions occurred from the *furthest away* on average and *higher* levels of sentience were reported from the greater distances.

## Discussion

*STRENGTHS:*

1. Create a sense of community through an online platform during a global pandemic
2. *Participatory action research model* that allowed us to engage in dialogue with our participants
3. Unique combination of **qualitative** and **quantitative** data

*KEY TAKEAWAYS:*

1. Research brought forward *advances dialogue* surrounding perceived levels of sentience
2. Shifting modalities toward *coexistence* observed through responses, building off (Schauer, 2021) and evolving definitions of animal sentience
3. Proximity and Location rooted in principles of coexistence help illustrate perceptions in manners that affect each grouping of animal participants *differently*

*LIMITATIONS:*

1. Did not produce generalizable data for the BC community or beyond
2. **Societally-constructed classification** groups created difficulties when attempting to classify certain beings (e.g. feral horse)

## Future Implications

- Implications
  - Creating and fostering an atmosphere where *narratives* in a community setting have been demonstrated to alter individuals' perceptions of sentience
  - Sentience of different species is **socially constructed** and can be **relearned**
  - **Subconscious biases** that value certain species over others can be brought to light with active introspection
- Future directions
  - How does consistent reflection on animal sentience *dismantle biases* towards animal beings?
  - How can research on animal sentience perspectives *enhance conservation* efforts for all species?

Special Thanks to ALL our Participants: squirrels, crane, geese, pigeons, horses, snails, butterfly, spiders, worms, monkeys, goat, slug, caterpillar, swan, pigeons, pony, ants, camel, dove, cats, dogs, cockatiel, frog, turtles, whale, sea lions, bison, lizards, chickens, ferret, deer, rabbits, humans and wallaby