Bird Monitoring and New Media: An Anthropological Exploration

by

Mallory Moscovitch

A thesis

presented to the University of Waterloo

in fulfillment of the

thesis requirement for the degree of

Master of Arts

in

Public Issues Anthropology

Waterloo, Ontario, Canada, 2019

Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis,

including any required final revisions, as accepted by my examiners. I understand that my thesis

may be made electronically available to the public.

ABSTRACT

As the diversity of new media increases, people have more choices than ever before to select between various media for specific uses. In this thesis, I draw from my own research to look at the ways that bird monitors associated with the rare Charitable Research Reserve in Cambridge, Ontario, share or keep their observation records of birds in the digital age. I conducted participant observations, semi-structured interviews, and survey fieldwork from May – September 2018. In chapter one, I highlight how the proliferation of digital media provides users with novel choices of which medium to select for specific uses. In the following chapter, I unravel this further to reveal that bird monitors choose to use a diversity of media and I explore how this accords with the expectations of the rare Charitable Research Reserve. I suggest that while some bird monitors share their observation records in accordance with expectations, some share in other ways, or choose not to share at all, keeping their records without sharing. In the discussion of chapter two, I emphasize the joint role that media and exchange play in the context of eBird. I argue that eBird produces a kind of fame, or at least recognition, that may increase one's credibility as a bird monitor or discredit them through instances of bird species misidentification. It is my hope that this research and the insights that might be gleaned from this study have practical applications for the rare Charitable Research Reserve and other organizations that engage the public in the digital age. Furthermore, I hope that this research might meaningfully contribute to the growing body of literature on the interaction between humans and technology.

Acknowledgements

Table of Contents

Chapter 1: Bird Monitoring with Old and New Media

1.1 Introduction

As the diversity of new media increases, people have more choices than ever before to select between various media for specific uses. In this chapter, I highlight how the recent introduction of a digital medium has provided bird monitors associated with the rare Charitable Research Reserve in Cambridge, Ontario, with the choice to select between old and new media to monitor birds. In the following chapter, I unravel this further to reveal that bird monitors choose to use a diversity of media to meet their own needs and I explore how this accords with the expectations of the rare Charitable Research Reserve and broader exchanges of sharing data amongst bird monitors.

1.2 Citizen science bird monitoring associated with the rare Charitable Research Reserve

My research focuses on bird monitors associated with the rare Charitable Research Reserve (henceforth referred to as rCRR) in Cambridge, Ontario. rCRR is a land trust with a mission to preserve and conserve 900 acres of biologically rich flora and fauna on its property (The rare Charitable Research Reserve, 2018b). rCRR seeks to provide, through its stewardship of the land, "engagement opportunities in ecological and cultural research, education, community engagement, and recreation" (The rare Charitable Research Reserve, 2018b). The reserve is an ecologically diverse landscape home to 238 known bird species (The rare Charitable Research Reserve, 2018a). Birding and bird monitoring at rCRR have long been practiced beginning in 1971 with observations of birds along the Grand and Speed Rivers (The rare Charitable Research Reserve, 2018a).

Birding is the practice of observing wild birds in their natural habitats for scientific, conservation, recreational, and/or competitive purposes (Dickinson and Bonney, 2012; Liep, 2001; The rare Charitable Research Reserve, 2018a). In this study, I focus on the kind of birding for scientific or conservation purposes rather than recreationally bird watching or birding as a competitive event. While birding for scientific or conservation purposes may be simply referred to as "birding" in the literature and by participants in this study, it may also be referred to as "bird monitoring." Bird monitors may participate in censuses and surveys where they count bird populations to gain deeper insights about bird distribution and abundance over time (Dickinson and Bonney, 2012; The rare Charitable Research Reserve, 2018a.) To clarify, all "bird monitors" are "birders", but not all "birders" are "bird monitors". Those individuals who volunteer to bird at rCRR are designated as "bird monitors" by rCRR. As such, I also refer to the participants in this study as "bird monitors" and their practice as "bird monitoring."

Birding and bird monitoring can be forms of citizen science, or the pursuit of scientific research by volunteers frequently as part of a coordinated scientific endeavor (Dickinson and Bonney, 2012). Citizen science, marked by being innovative, is a growing field and frequently takes place in digital contexts; however, volunteer and amateur citizen science also takes place in non-digital contexts. Birding is noteworthy because it is a long-established practice and one of the most developed areas of citizen science (Dickinson and Bonney, 2012).

Citizen science is about engaging members of the public to contribute to scientific and/or conservation endeavors. This is the model that rCRR takes in approaching bird conservation. By mobilizing a team of bird monitors, rCRR has access to more data about the birds on its property and thus, can reach deeper insights about that data to inform conservation efforts like habitat restoration, ecological monitoring reports, and grants.

1.3 A new technology is introduced to bird monitors associated with rCRR

In an interview with me, a rCRR coordinator shares that rCRR encourages bird monitors to share their observations of birds to a very popular digital citizen science project called eBird. eBird is a bird monitoring platform and database of user-generated observation records of birds that standardizes data for the purposes of easy retrieval by birders and organizing bodies (Dickinson and Bonney, 2012; Wood et al., 2011). eBird data allows birders to "keep track of their observations, view their personal bird lists, and compare their observations with others" (Wood et al., 2011: 2). rCRR introduced eBird to the bird monitors approximately 3 or 4 years ago. Although some time has passed since eBird was first introduced at rCRR, considering that handwritten checklists had been the primary method for recording bird observations for decades, I perceive the introduction of eBird at rCRR as being relatively new and thus representing a unique moment across space and time for bird monitors associated with rCRR. In chapter 2, I seize on this particular moment in time to better understand the social phenomena engaged in sharing observations of birds in a digital context.

In my interviews with the participants, I learned that until recently, bird monitors only had a small number of ways to share their observation records. In the past, they frequently handwrote paper checklists of the birds they observed. Even today, some bird monitors tell me in interviews that they handwrite checklists that they may share or keep. Bird monitors may share handwritten checklists by photocopying their records and sending them away to various organizations or they may reference their observations while transferring that data to a digital medium like Microsoft Excel or eBird.

In an interview with a rCRR coordinator, I learn that rCRR regards eBird as a positive advancement for bird conservation. The rCRR coordinator characterizes eBird advancements as

positive, noting "that apps and technology help increase people's awareness [about conservation]," in addition to making "it easier for them to submit sightings" that in turn helps rCRR "look at how things have changed over time." The rCRR coordinator describes a kind of media hierarchy from most ideal to least ideal that bird monitors may choose from to share their data with rCRR: 1) they can share to eBird directly by making an eBird checklist; 2) they can email rCRR a digitally-formatted checklist (i.e. Word or Excel documents); or 3) or they can share a handwritten checklist. Although handwritten checklists are least frequent, the rCRR coordinator states: "data is data and we're happy to have it." She also tells me that over the course of approximately 3 or 4 years, rCRR has organized two instructional eBird workshops, with the most recent one taking place in April of 2018. She explains that she feels bird monitor's beliefs about eBird have changed over time:

> Our first workshop, I mean it went well, people were engaged, but people were extremely resistant, didn't want to learn the technology, and I think the overwhelming take-home message was that people…had privacy concerns and that was their driving concern. So there was…one side where people didn't want to learn something new, didn't want to engage with tech, and you know it was pretty normal in terms of just nature and conservation, there was a lot of resistance to tech for a long time. It was seen as…being outdoors is about disconnecting.

The rCRR coordinator goes on to describe the kinds of questions the bird monitors asked after the first workshop:

> Who owns this data if I give it up, and how are we, once we put that information out into the world…keeping these species safe and protected? If we post that we saw a snowy owl at rare, there's going to be a hundred photographers show up tomorrow to try to take that picture, and be trampling.

The rCRR coordinator reveals that bird monitors were concerned that by sharing an observation about a particular rare bird to eBird, they would draw unnecessary attention to it. In other words, sharing to eBird would exploit and make birds vulnerable, counter productive to the goal they set to protect birds. The rCRR coordinator explains to me that out of approximately 25

bird monitors at the time, only two people were willing to use eBird after the first workshop. More recently, she has noticed that the bird monitor's concerns appear to have been alleviated over time and states: "So it took some time for people to get over the hump and realize technology is the way of the world, and we have to find ways to integrate the two [nature and technology]." In chapter 2, I highlight how bird monitors have a choice, and explore how while some adopt eBird, others don't (See chapter 2).

1.4 Old Media and New Media

With the recent proliferation of new media, such as eBird, bird monitors now have a choice regarding what media to use (or not use) when monitoring birds. Media scholar Lev Manovich (2003) aptly suggests that to define "new media" in rigid terms is a scholarly challenge; however, he offers a number of different possible meanings for the term. While I do not seek to define new media here, when I refer to new media throughout this study I most closely reference Manovich's meaning of new media as native to computers and requiring computer technology like internet-based mobile platforms and apps. Thus, the old media I refer to is not associated with computer technology, such as (non-smart) telephones or (non-smart) televisions.

In the past, choice wasn't a possibility for bird monitors because paper checklists were the only medium to standardize and share data. Making choices involving new media is inherently comparative in that one must consider or not consider each medium available. To reiterate, in the past, bird monitors used old media (i.e. paper checklists), but more recently, they have the choice to monitor birds with new media. With any technology, there's an older technology. While bird monitors use eBird to make checklists about the birds they observe, earlier media produced the same type of thing.

What did new media build on? What did the oldness do to the newness? Contributors of eBird note that they "...built upon the established norms of the birding community" to design features in eBird (Wood et al., 2011: 2). As such, earlier variants (such as paper checklists) not only shape how new media like eBird are perceived, but also how they are designed structurally. eBird provides an assemblage of digital checklists, sharing this with paper checklists, an already-established and socially-acceptable way to record data amongst bird monitors.

The participants in this study look at the new through the properties of the old. In interviews with me, a number of participants share that some of the benefits of eBird over old media include: 1) eBird data is often the most up-to-date source of bird data available to the public whereas data from paper checklists takes longer to circulate and may represent historical data once accessed; 2) eBird makes it easy for those who are digitally literate to make a standardized checklist that is shareable and extractable in nature; 3) Photo, video, and textual notes attached to an observation prompt conversations, sharing of stories, and memories that can be revisited through viewing historical data; 4) eBird promotes an environment of sharing data that in turn, increases the amount of data available and encourages opportunities for collaboration and bird conservation; 5) eBird has practices in place to decrease inaccurate data from circulating the platform; 6) social benefits, like career opportunities, may be derived from frequently sharing substantiated claims to eBird (see Chapter 2).

On the other hand, some bird monitors agree on a number of disadvantages of using eBird: 1) personal privacy concerns; 2) bird conservation concerns; 3) the possibility of widely circulating inaccurate bird data and the social repercussions for those sharing incorrect data; 4) the public visibility of data may promote feelings of competitiveness or inadequacy; 5) using eBird in the field may be distracting or detracting from the actually being out in nature; 6) eBird isn't easy for

everyone to use and lack of digital literacy may be an issue while on the other hand, paper checklists are easy to make; 7) eBird can get expensive because it operates on a digital device like a tablet or mobile phone and may necessitate a mobile data plan whereas paper is an inexpensive option; 8) paper checklists are more reliable when birding remotely where access to cellular data is unlikely; 9) expensive tech like one's tablet or phone may be damaged in the field while paper is inexpensive to replace; 10) eBird may be limiting in the sense that data is standardized whereas paper checklists may retain a more interpersonal kind of data when sketches and stories accompany checklists (see Chapter 2).

1.5 Remediation

The participants in this study share their opinions and beliefs about eBird during interviews with me by drawing comparisons between old and new media. As some participants note the benefits of new media over old media, the old gets reevaluated, and vice versa. This phenomenon is called remediation (Bolter and Grusin, 1999). Media scholars Jay David Bolter and Richard Grusin (1999) theorize that media are perceived through comparison in a process they refer to as remediation. Remediation is bidirectional in that new media are reevaluated through old media and "older media can also refashion newer ones" (Bolter and Grusin, 1999: 59).

Anthropologist Ilana Gershon (2010b) interviews young adults at Indiana University to better understand how people use new media to disconnect from each other. The participants in her study choose between diverse media to break up, a telling process in that what Gershon claims they are really doing is drawing comparisons between media, a process that is "always about remediation" (Gershon 2010a: 287). For instance, as Gershon (2010a) suggests, when

participants make the choice to express "its over" in one medium, they are also deciding not to do it "face-to-face, or by calling, on voicemail, by instant messaging, and so on" (287).

As I suggest in the previous section, bird monitors at rCRR now have a choice between various new and old media, whereas in the past, there was no choice. Drawing from Gershon (2010a; 2010b), I interpret that choice as being read or heard as intentional. By Gershon's estimation, people hold personal media hierarchies that sometimes align with or diverge from other people's media hierarchies. This notion leads Gershon to explore the set of beliefs that people hold about communicative technologies that she theorizes as "media ideologies" (Gershon 2010a: 283). She argues that people's media ideologies, coupled with the recent proliferation of new media, make people conscious of their options and give them choices. According to Gershon, an exploration of media ideologies also necessitates an exploration of language ideologies because they often intersect, clash, and both are comparative by nature. At the center of this discussion is the notion of "ideology," and for Gershon (2010a), ideologies represent the strategies people use and thus, the ideologies that inform such strategies (284). Gershon poses an important question to be explored in the future: "…how else do media ideologies contribute to the 'newness' of new media or the 'oldness' of old media?" (290). This will matter in chapter 2 where I explore the social phenomena engaged in the choices bird monitors make in the digital age.

Mirca Madianou and Daniel Miller (2012) provide an anthropological example whereby new media are getting introduced and old media is reevaluated. The authors conduct interviews with migrant mothers and their left behind children in the Philippines, arguing that new media transforms and is transformed by transnational families through the ways they communicate with one another. The authors suggest that 1) availability, 2) technical knowledge, and 3) cost

influence why people choose one medium over another and they theorize a condition of "polymediality" to reflect a state whereby all three conditions are positively met (126). Polymedia is a condition in which media choices can be interpreted as drawing on the affordances that diverse media offer. In addition to a technology's affordances, the authors highlight the ways that cultural context and relationships inform why people choose one medium over another.

1.6 Conclusion

As the diversity of new media increases, bird monitors have more choices to select between various media for sharing data on birds. In the past, bird monitors didn't have the option to choose between diverse new media that they have today. Some bird monitors may adopt eBird, while others may not. Regardless of whether or not a technology is adopted, people inherently compare one medium to another through remediation. In interviews with me, bird monitors share the benefits and disadvantages of each medium, ultimately choosing to monitor birds and share their data according to their own needs, opinions, and beliefs. In the following chapter, I explore this a bit further by looking at not only the structural properties of eBird, but also the social phenomena engaged as bird monitors choose to share or keep their data using new and old media. It is my hope that the conclusions I reach and the insights that might be gleaned from them benefit the rare Charitable Research Reserve and other organizations that engage the public in the digital age. Furthermore, I hope that this research might meaningfully contribute to the growing body of literature on the interaction between humans and technology.

I have selected the journal, Public Understanding of Science, for the possible publication of the second chapter of my thesis. Public Understanding of Science is a peer-reviewed academic

journal published bimonthly. Because the second chapter of my thesis focuses on the interaction of citizen science and bird monitoring in the digital age, it addresses scientific issues in the public realm. Public Understanding of Science publishes scholarship that explores the role that science plays in society, a key theme addressed by the citizen science literature in this study.

Chapter 2: Bird Monitoring and New Media: An Anthropological Exploration

2.1 Introduction

   In this chapter, I investigate bird monitors associated with the rare Charitable Research Reserve (henceforth referred to as rCRR) in Cambridge, Ontario, to explore the ways that data is shared by bird monitors. I focus on how bird monitors share or keep their observations of birds, highlighting how they may share in accordance with expectations set by rCRR, in other ways, or not at all, keeping their observation records of birds without sharing. I take an anthropological look at the bird monitors in this study, paying close attention to the social phenomena involved.

2.1.1 What is birding and bird monitoring?

   As a new birder myself, I begin by asking, what is birding and bird monitoring? Birding is the practice of observing wild birds in their natural habitats for scientific, conservation, recreational, or competitive purposes (Dickinson and Bonney, 2012; Liep, 2001; The rare Charitable Research Reserve, 2018a). Birders attempt to ascertain behavioural and morphological features of birds, such as size and shape, often to distinguish one bird species from another (Wood et al., 2011). While much of birding involves watching birds, the term "bird-watching" is used infrequently by the participants in this study to describe their practices. This is perhaps because the term "bird-watching" implies a very general practice whereby anyone can look up at the sky and bird-watch. In this study, I focus on the kind of birding for scientific or conservation purposes rather than recreationally bird watching or birding as a competitive event.

Birding to monitor bird populations is referred to as bird monitoring (Dickinson and Bonney, 2012). Bird monitors may participate in censuses where they count bird populations to gain deeper insights about bird distribution and abundance over time (Dickinson and Bonney, 2012; The rare Charitable Research Reserve, 2018a). While birding for scientific or conservation purposes may be simply referred to as "birding" in the literature and by participants in this study, it may also be referred to as "bird monitoring." To clarify, all "bird monitors" are "birders", but not all "birders" are "bird monitors". rCRR designates those individuals who volunteer to bird on the reserve as "bird monitors." As such, I also refer to the participants in this study as "bird monitors" and their practice as "bird monitoring."

Birding and bird monitoring can be forms of citizen science, or the pursuit of scientific research by volunteers frequently as part of a coordinated scientific endeavor (Dickinson and Bonney, 2012). Citizen scientists are those members of the public who voluntarily collect, monitor, and report data for scientific or conservation purposes (Dickinson and Bonney, 2012). Projects may address environmental issues with the goal of collecting data to make a positive impact on the environment (DiSalvo, Sengers and Brynjarsdóttir 2010; Sullivan et al., 2009; Sullivan et al., 2014). Citizen science, marked by being innovative, is a growing field and frequently takes place in digital contexts; however, volunteer and amateur citizen science has been practiced for centuries, perhaps beginning with early phenology, or the study of cyclical natural phenomena particularly in terms of how the environment impacts flora and fauna life-cycles (Henderson et al., 2012). The Chinese are believed to be the first keepers of written phenological records beginning in 974 BCE (Henderson et al., 2012). Prominent figures like Carl Linnaeus, Thomas Jefferson, Henry David Thoreau, and Aldo Leopold kept phenological

records in diaries and journals (Henderson et al., 2012). The bird monitors in this study may keep phenological records of birds including breeding and migration phenomena.

Birding has been practiced for over two hundred years to better understand "bird identification, distribution, and abundance" (Wood et al., 2011: 1). In the 18th century, Europeans began surveying birds and in 1880, North American Lighthouse keepers gathered data about collisions between birds and aircraft (Dickinson and Bonney, 2012). Beginning in 1900, the National Audubon Society initiated the annual Christmas Bird Count (CBC), a survey of birds administered widely in the Western Hemisphere that still takes place today (Dickinson and Bonney, 2012). Birding is noteworthy, particularly because it is a long-established practice and one of the most developed areas of citizen science (Dickinson and Bonney, 2012). According to Lagoze (2014), citizen scientists may act as participant "sensors" that "independently collect data from the field and submit it" (71). Traditionally, birders kept handwritten checklists and shared their data in paper form, but more recently, they have the ability to share through digital interfaces like their phones, tablets, or computers, thereby digitizing the data and making it widely available for a number of people to use in a multitude of ways (Lagoze, 2014).

2.1.2 eBird is a citizen science project that standardizes bird data

A very popular digital citizen science project is eBird, a bird monitoring platform and database of user-generated observation records of birds created by the Cornell Lab of Ornithology (Wood et al., 2011)[1]. Contributors of eBird note that they "built upon the

---

[1] The Cornell Lab of Ornithology is a non-profit environmental organization and unit of Cornell University that conducts research, promotes education, and supports a large number of citizen science projects involving bird research and conservation (The Cornell Lab of Ornithology, 2018).

established norms of the birding community" to design features in eBird (Wood et al., 2011: 2). Their goal is to "focus on modifying" user "behavior so that the checklists entered are more useful for research and conservation" (Wood et al., 2011: 2). Contributors regard eBird as "one of the largest citizen science projects in existence" (Wood et al., 2011: 3). eBird aims to attract large numbers of birders to share bird data that can be standardized and publicly broadcasted to the platform (Wood et al., 2011). In turn, eBird allows birders to "keep track of their observations, view their personal bird lists, and compare their observations with others" (Wood et al., 2011: 2). Crucially, information about bird species distribution and abundance is subsequently available for scientific investigation.

Shared data must reflect accurate species information. eBird designed an automated system to flag observation records of birds that may be misidentified. Simultaneously, eBird enlists regional editors assigned to various regions for the purposes of vetting those flagged observation records (Sullivan et al., 2009). Regional editors set and adjust filters that may be triggered if an outlier observation record is shared to eBird that contains rare, redundant, or unusually high counts (Sullivan et al., 2009; Wood et al., 2011). Perhaps eBird's rigorous system for vetting records is reflected in Callaghan et al.'s (2015) findings that eBird data is comparable to shorebird survey data contributed by trained observers.[2]

2.1.3 Observation instances are transformed into observation records

Birding is a sensory practice in that the actual seeing and/or hearing birds is essential to identifying and locating them. Bird monitors seek to identify birds visually because they enjoy

---

[2] A number of different surveys monitor bird populations and may be qualified such as "atlas surveys" like "breeding bird atlases" (BBAs). BBAs are "grid-based sampling schemes that depend on volunteer participants to collect data" (Dickinson and Bonney 2012: 118).

seeing and hearing birds. Depending on the species, identifications may be made by a bird's song, or the unique vocal patterns of a particular species (Sibley, 2003). Therefore, observations can be made auditorily and visually, and may be referred to as a "sighting" by participants in this study. The term "sighting" emerged as a possible area of confusion early on in my research because participants use it to refer to two different things. In this section, I share the two kinds of "sightings" that participants talk about — one kind of "sighting" that they experience during an instance of observing a bird, and another kind of "sighting" that is the record of the experience. Let me elaborate. The term "sighting" is twofold in that it may refer to 1) the instance of observing a bird visually or auditorily or 2) to the record of the instance of observation. I refer to these two events as 1) the observation instance and 2) the observation record. I provide four excerpts from my interviews with participants to highlight the two ways they use the term "sighting":

Jack: There's been a couple sightings I've had from linear trail over the years…
(Observation Instance)

Kate: Certainly, we've had some interesting sightings…
(Observation Instance)

Kate: When you share a sighting of something [a bird], that can call a lot of attention to it.
(Observation Record)

Scott: Yeah, I don't even know if I have any bird sightings on iNaturalist...[3]
(Observation Record)

To clarify, the observation instance is the actually seeing and/or hearing birds, while the observation record is most frequently in the form of a print, digital, or mental list that may be

---

[3] iNaturalist is a popular digital citizen science project whereby data is crowdsourced by individuals who record photographs and audio of natural organisms and share their data online, enlisting other naturalists to make or confirm identifications based on shared data (iNaturalist, 2018; Nugent, 2018).

shared with others, or kept to oneself. For example, in the first two excerpts, Jack and Kate use the term "sighting" to refer to observation instances. On the other hand, in the final two excerpts, Kate and Scott use the term "sighting" to refer to observation records. Drawing on Law and Lynch (1988), I argue that bird monitors transform in their practice the fleeting instance of observation into the observation record. In this study, I wonder then, how social phenomena is engaged in the sharing (or keeping) of observation records amongst bird monitors associated with rCRR.

2.1.4 The rare Charitable Research Reserve

In this thesis, I investigate bird monitors associated with rCRR in Cambridge, Ontario. rCRR is a land trust with a mission to preserve and conserve 900 acres of biologically rich flora and fauna in Cambridge, Ontario (The rare Charitable Research Reserve, 2018b). rCRR seeks to provide, through it's stewardship of the land, "engagement opportunities in ecological and cultural research, education, community engagement, and recreation" (The rare Charitable Research Reserve, 2018b). rCRR is an ecologically diverse landscape; ecological rarities on the site include the junction of the Grand and Speed Rivers, or the confluence which is home to waterfowl such as puddle ducks (The rare Charitable Research Reserve, 2018c). The ecologically diverse landscapes at rCRR are home to 231 known bird species including bobolinks, ospreys, herons, cranes, and owls just to name a few; additionally, the perimeter of the confluence is foraged by bald eagles during the winter months (The rare Charitable Research

16

Reserve, 2018a). Bird conservation research has been conducted in the past and it is rCRR's

goal to continue providing research opportunities into the future.[4]

Birding and bird monitoring at rCRR is a long-established practice beginning in 1971 (The

rare Charitable Research Reserve, 2018a). Currently, rCRR sets expectations for the sharing of

observation records for the purposes of easy retrieval of data at a later time. Particularly, rCRR

encourages bird monitors to share their observation records to eBird, a bird monitoring platform

and database of user-generated observation records. I show that while some bird monitors share

their observation records in accordance with rCRR's expectations, some share in other ways, or

keep their records without sharing. I argue that while rCRR has one idea for how observation

records ought to be shared, some bird monitors may have another idea.

2.1.5 Relevant Scholarship

I will now consider how social scientists have looked at birding in the past. Sociologists John

Law and Michael Lynch (1988) look at birders through their media uses to argue that birders

perceive birds through list-making and field guides. List-making depends on factors like the

number of observers present and the type of protocol taking place (Law and Lynch, 1988). Lists

may be qualified as "life lists," or the collection of all bird species one has observed in their

lifetime, "Christmas counts," or lists that specify particular bird species that have been

"identified within a particular regional jurisdiction during an organizationally specified time

period," and so forth (Law and Lynch, 1988: 274). The authors foreground lists as central to the

practice of birding and note that birders adhere to socially-acceptable methods of list-making for

---

[4] See Wilson (2017) "Monitoring Bobolink in rare's South Field: A Five-Year Perspective, 2013
– 2017."

the purposes of standardizing data and for easy retrieval of data later on (Law and Lynch, 1988). The authors suggest that list-making is embodied in the sense that "perception is list-driven," maintaining that birders must choose to list or not list that which they observe (Law and Lynch, 1988). They claim that individual perception and cognition depends on the structure of lists and "the source of social interaction through which that list is composed" (274).

There is the possibility that bird monitors and rCRR personnel hold competing opinions and beliefs about new media. Anthropologist Ilana Gershon (2010b) interviews young adults at Indiana University to better understand how they use new media to disconnect from each other, or put simply, how they break up.[5] By Gershon's (2010b) estimation, people hold diverse ideologies about media, a notion she theorizes as "media ideologies" and defines as the set of beliefs that people hold about communicative technologies (2010b: 3). Critically, media ideologies vary between individuals and do not always align, leading to misunderstandings. Drawing from Gershon (2010a, 2010b), I wonder if media ideologies come into play when thinking about how bird monitors share their observation records in accordance with rCRR's expectations, in other ways, or not at all, keeping their observation records without sharing. I also wonder if because various participants hold competing media ideologies, will their ideas about what should be done with observation records accord with expectations set by rCRR? As such, I consider the anthropology of media in the discussion of this thesis.

Anthropologist John Liep (2001) also conducts a social scientific study of birding. He looks at birders through notions of exchange, property, and authorship, focusing on how competitive

---

[5] Media scholar Lev Manovich (2003) aptly suggests that to define new media in rigid terms is a scholarly challenge. Rather than defining new media, I draw from Manovich's offering of new media as native to computers and requiring computer technology like internet-based mobile platforms and apps. Thus, the old media I refer to is not associated with computer technology, such as (non-smart) telephones or (non-smart) televisions.

male birders seek fame, much like male traders engaged in the Kula exchange.[6] He studies

competitive birders, or those who typically bird to increase their life lists. He draws on his

fieldwork in the Kula region to ask why Danish birders, like the Kula, strive to accumulate things

which they cannot own. He suggests that the goal of birding is to accumulate instances of

observations whereby birders can temporarily possess, or "appropriate and incorporate into the

self," natural objects, or birds, that can never be owned (Liep, 2001: 15). Liep argues that

through the process of accumulating instances of observations, each birder contributes to the

birding network in hopes that their name may circulate like in the Kula exchange.

Following Liep, I also ask if the Kula may be a particularly useful model for this study;

however, Liep examines the Kula primarily through Bronislaw Malinowski (1922), and as I

explore in the discussion, Nancy Munn (1986), Annette Weiner (1988, 1992), and others have

demonstrated that the Kula is more complex than Malinowski imagined. Thus I also consider the

anthropology of exchange in the discussion of this thesis. Readers familiar with anthropological

studies of the Kula will realize that Liep's (2001) sources are partial.

Other work is done by Annette Weiner on the Kula. Malinowski disregarded what Trobriand

Islanders and their neighbors did not trade, but kept for themselves. This is the subject of

Annette Weiner's (1988, 1992) work on the Trobriand Islanders and the Kula Exchange. She

argues that many things have their value because of not being shared. There is also Nancy Munn

(1986), who did fieldwork on the island of Gawa. Munn (1986) considers the Kula not only

through the production of fame through trade, whereby the names of the traders and their islands

---

[6] The Kula exchange, Kula ring, or Kula, made famous by Bronislaw Malinowski (1922), is a
ceremonial system in the Trobriand Islands whereby valuable necklaces and armbands are
exchanged between islands in a directional (clockwise and counter-clockwise) and political
manner.

circulate widely, but also through its destruction through witchcraft, which shrinks the reach of their circulation. This is a model that anthropologist Daniel Miller (2011) found useful for exploring social network sites like Facebook. He argues that fame can be produced through making friends, but also destroyed through sharing inappropriate content, as he demonstrates with his study of how people in Trinidad have used Facebook in the 2000s. While I do recognize some elements from Liep's (2001) research in this study, my focus in the discussion is to explore how this study differs.

2.2 Bird monitors associated with rCRR share (or keep) their observation records

2.2.1 Fieldwork and Data

I conducted participant observations and unstructured interviews between May – September 2018. Additionally, I administered a survey in May 2018. I used snowball sampling techniques to recruit retired and non-retired adult bird monitors associated with rCRR.[7] In total, I recruited seven participants for the semi-structured interviews, five participants for the participant observations, and ten participants for the survey. A number of participants participated in both interviews, observations, and the survey.

I conducted 8 semi-structured interviews that lasted anywhere between 60 – 240 minutes per interview and I used an interview guide.[8,9] During interviews, I asked open ended questions and typically embraced instances when participant answers diverted from my original question. Rather than directing participants back to my original question, I asked new questions. I used a

---

[7] Snowball sampling is a nonprobability sampling method whereby recruited participants in turn recruit future participants from their own contacts (Bernard, 2018a: 150-152).
[8] Semi-structured interviews are typically structured by an interview guide, or a list of questions; however, questions are relatively open-ended (Bernard, 2018b: 164-165).
[9] I used a semi-structured interview guide (See Appendix A).

combination of manual transcription and Google speech recognition to transcribe the interviews totaling approximately 160 pages. I paid particular attention to the social relations involved, and focused my questions on how bird monitors share or keep their observation records of birds.

2.2.2 Bird monitors associated with rCRR monitor birds for conservation purposes

In this section, I provide brief profiles of seven participants that I interviewed for this study. While the bird monitors vary in terms of their sociological backgrounds, it is important for me to note that all of them shared with me a desire to observe birds in their natural environments and to contribute to bird conservation. Essential to this research then, is that bird monitors in this study are motivated to monitor birds for conservation purposes. It is my sincerest hope to keep this intimate interaction, between bird monitors and the natural elements they observe, at the core of my research. I include below the profiles of six bird monitors and one rCRR staff member.

Margo is a retired adult female with a science background who has been interested in nature and conservation since childhood. She has a deep interest in being outdoors and participates in hiking excursions and birding groups. In an interview with Margo, I asked: "Who taught you how to bird?" She explains:

> My mother…when I was a child we lived on a farm, and so every Sunday afternoon, or pretty well every Sunday afternoon, she and I would go out to the woods. She would identify the flowers or the birds and then I got to hear the voices and the songs.

Stefan is a non-retired adult male currently employed as a scientist. He is heavily involved in bird monitoring both professionally and personally for conservation purposes. He has extensive experience using eBird and shares a significant number of observations to the eBird database.

Jack is a retired adult male with a science background. He has been active at rCRR for many years and has been involved in a multitude of bird monitoring projects that he notes are "defined in terms of bird conservation." He explains: "Well I've been interested in birds as long as I can

remember…" Jack goes on to share that he had set a goal to observe at least 600 bird species in North America, noting that he was in retirement when he reached his goal. He emphasizes that "behind all of this…you would have to acknowledge that getting out and walking about is something I've always enjoyed doing..."

Scott is a non-retired adult male currently employed as a scientist who has been interested in nature and conservation since his youth. He birds frequently all over Ontario and in a wide-range of conditions. He aims to observe 100 bird species in each of Ontario's counties, amounting to a goal of approximately 5,000 overlapping county ticks.[10]

Peter is a semi-retired adult male with a science background who enjoys being outdoors and volunteering across Ontario for conservation purposes. He frequently birds in remote locations and tells me that he hikes, backpacks, and canoes because he enjoys being outdoors. In an interview with me, he explains:

> Well my intro to birding was when I was a little kid. My mom, as soon as I could write…she got a field guide, *Peterson's Field Guide*, from the library, I think it was like, a 1946 issue…or edition, and she got into birding, and then she had me make a list of birds.

Loucas is a non-retired adult male with a science background who enjoys nature and being outdoors. He tells me that he birds for exploration purposes, "the being out in nature," and for conservation purposes: "…I'm really interested in the conservation aspect." He goes on to explain:

> …for me, bird monitoring especially by ear, is very meditative. Because you're…slightly disconnected from your vision and much more in tune with your ears…I find it's a very meditative, almost calming thing…

Kate is a non-retired adult female with a science background and is employed by rCRR. She oversees and coordinates the bird monitoring program. In an interview with me, she explains

---

[10] Additional observations made by a bird monitor may be represented as a "tick" to one's list, such as in a "county tick."

that while she is confident in her ID skills in other ecological monitoring efforts, she finds bird

monitoring to be "intimidating" because "there's so many people with a lot of birding expertise."

She refers to the bird monitors as the "knowledge keepers" of birds at rCRR and describes her

role as directing their efforts to ensure that bird data is collected in a consistent way.

2.2.3 What do bird monitors want?

rCRR plays a role in the lives of bird monitors because it provides a place for observing and

conserving birds. For example, Jack frequently birds at the confluence at the junction of the

Grand and Speed Rivers located on rCRR property. He enjoys waking up early at 5:30am,

noting his mornings consist of "an early breakfast" before he heads down to the river:

> What defines the area that I'm birding at is the Environmentally Sensitive Policy Area 36, which lies within the rare Charitable Research Reserve…I used to walk it regularly, usually on the weekends, I'd go end-to-end…around 5 km, and one of the reasons I was so attracted to rare was the opportunity it afforded me to pursue an interest in birding and other aspects of natural history in a relatively close location.

Jack prefers to be able to go outside and do his birding and bird monitoring locally, rather

than travelling long distances as he has done in the past. He notes that last year, he had been

birding at the confluence: "…we had that, a couple days of good golden eagles...it was satisfying

to be able to observe these birds sort of fly through your neighborhood as it were." He also notes

he is drawn to the confluence:

> …this year seems to be a bit different along the river, that's why it's so enjoyable to go to the river, it's never the same two days in a row. Although there are patterns of course. It's just the time of year that you would expect certain species to be showing up, and roosting or loafing about the cobbles on the confluence. One of the things that varies is the number, it's usually the birds that you would expect to see show up. And the water levels fluctuate so on rivers, such that…for example the amount of mud can vary from one season to the next, one year to the next of course as well.

In an interview with me, Loucas echoes Jack's sentiment and notes a particular connection to

rCRR property:

Loucas: … I'd be very happy to see an incredible landscape of something well conserved and at the same time, I think, 'this is not the norm.'

M.M.:   Are there specific sites where you do bird at, where you feel that they're doing a good job with protecting the landscape?

Loucas: Yeah, so, down at rare…especially the woods by the Slit Barn near the osprey nests, they have multiple poles up and there's tons of old growth forests there…the protected areas are doing well…it's more so, everything else in-between, there's a lot of the, connectivity of the landscape is often lost.

2.2.4 What does rCRR want?

It is clear that rCRR provides a space for bird monitoring to take place but I wonder if rCRR expects something in return. In this section, I highlight rCRR's role in setting expectations for the sharing of observation records. Birding and bird monitoring at rCRR is a long-established practice beginning in 1971 (The rare Charitable Research Reserve, 2018a). rCRR's identity hinges on engagement from volunteers and data collection. For instance, in an interview with me, Kate explains that rCRR uses spatial data to prioritize specific locations for habitat restoration and to build artificial structures to protect bird nests; rCRR also uses data for ecological monitoring reports and grants. Kate emphasizes the significance of data for rCRR: "We have goals to protect, conserve, restore the land. All of that is informed by data. So I always say, we can't protect what we don't know."

In an interview with me, Kate explains that bird monitors recently completed a 10-year bird monitoring program at rCRR. She tells me that reviewing bodies at rCRR are taking time to examine the data they do have to develop new strategies and ways to apply that data in the future. In the interim, Kate expresses that she hopes to continue retrieving observation records from bird monitors, albeit more informally than previously, because that data informs operations at rCRR. It is rCRR's goal to retrieve bird data in the format of eBird. As mentioned eBird is a

bird monitoring platform and database of user-generated observation records. Critically, as I explore in the discussion, eBird is a means to produce data in the form that rCRR wants.

2.2.5 What is the trouble for rCRR?

In an interview with me, Kate explains that rCRR encourages bird monitors to share their observation records to eBird for a number of reasons: 1) observation records at rCRR can be circulated widely, creating new opportunities for engagement; 2) rCRR can in turn, retrieve the best available data to inform research, grants, monitoring reports, etc.; 3) digitally sharing alleviates the administrative burdens of a) processing and b) vetting observation records. Kate tells me that observation records not directly shared to eBird are processed "on a significant delay, often a year or later" due to administrative burdens. By then, records represent historical data and are no longer sharable in real-time. Vetting, or appraising the quality of a particular observation record, is standard practice in the birding community due to the concern of species misidentification. In interviews with me, some bird monitors share that they are concerned about misidentification, an instance of erroneously identifying a bird species.

2.2.6 Bird species misidentification is a concern for some bird monitors

Accurately identifying birds is a complex process that depends on a number of factors and conditions (Wood et al., 2011). I learned early on in my research that misidentification is a sensitive subject that necessitates careful treatment. Although it is difficult to ascertain how often misidentification occurs, effort is made by the birding community to address this issue through vetting practices. While misidentification is not as likely with certain species, others are more likely to be misidentified. According to a participant, a morphologically charismatic

species like a red-headed woodpecker is not easy to misidentify; on the other hand, ross's geese are often confused with snow geese.

In an interview with me, a participant explains:

…I think there's always the problem of misidentification. I think that's the biggest thing, just assigning the same weight to everyone's observations…I think it's important to know who did it and how good their birding is.

Another participant shares with me that, though not uncommon, when he misidentifies a bird, he thinks: "Oh, I'm so dumb, how could I have messed that up?" He goes on to note that he worries about misidentification, asking himself, "Am I doing a good job? Do I know what I'm doing?" He explains, "I don't want to be embarrassed." For this participant, misidentification represents the low of bird monitoring. For another participant, misidentification is of greatest concern when he birds with others who share their checklists with him. In this instance, he notes: "you may have species on your checklist that you may not have observed." Another participant emphasizes that all bird monitors have to start somewhere, and he believes that the rate of misidentification is low, noting that familiarity with particular bird monitors in the community can indicate "what level of experience people have, and what their credibility is."

Furthermore, reviewing bodies at rCRR must be assured that observation records, and particularly, rare observation records, are accurate. By encouraging bird monitors to share their observation records directly to eBird, rCRR transfers the administrative burden of vetting to eBird. As explored previously, eBird has a more rigorous vetting system because it employs an automated system that flags outlier records and enlists regional editors to vet those flagged records.

2.2.7 Some bird monitors share in accordance with rCRR's expectations

Thus far, I have demonstrated how eBird is a means to produce data in the form that rCRR wants. I explore in this section how in accordance with rCRR's expectations, bird monitors share their observation records directly to eBird. Bird monitors share their observation records directly to eBird primarily through sharing of checklists that contain information about what has been observed, such as the bird species, location observed, number of birds, etc. Bird monitors may share observation records directly to eBird or by first recording a handwritten checklist on paper that can be transferred later to an eBird checklist.

Textual observation notes, photographs, and videos may be shared as part of an eBird checklist. In an interview with me, Stefan explains that he includes as much information as possible when making an eBird checklist. He typically shares his observation records directly to eBird using his tablet in the field. Similarly, Scott tells me he uses the eBird app on his cell phone to make checklists in the field. If he doesn't have access to cellular or wireless data, such as when he is birding or monitoring remotely, he uses a paper checklist that he later shares to eBird. He notes that he tries to immediately share his observation records to eBird to get them "out of the way," and that he feels a sense of satisfaction seeing his county ticks (counts) go up in real time. He says: "So, being able to submit checklists to get those county ticks, I find really satisfying…it makes me happy to see my county lists go up instantaneously." Additionally, because Scott's social network is abundant with birders, he frequently birds with others and exploits the "shared checklist" feature in eBird whereby multiple observers share one checklist.

Furthermore, Jack typically records his observations in the form of handwritten checklists in journals that he transfers to eBird at a later time. In an interview, he explains that "in the interests of bird conservation in our region," he decided to transfer the entirety of his handwritten

Waterloo region observation records to eBird, beginning the process approximately three or four years ago, and having just recently completed the transfer. He notes he decided not to share historical observations from other regions to eBird because, according to him, "it would just lock up too much time on the computer, and I'm not really interested in doing that." He keeps his journals and finds it interesting to revisit his observation records at the confluence to compare the similarities and differences of the birds seen there. Additionally, he revisits his observation records to look back at the birding trips he took with his family as, according to him, a "memory lane type exercise." He explains: "…you're revisiting the ages of your children as well as the birds."

2.2.8 Some bird monitors share in other ways or keep without sharing

Thus far, I have highlighted how rCRR needs data in the format of eBird and bird monitors share their observation records to eBird in accordance with rCRR's expectations. Now I'm going to talk a little bit about how some bird monitors share in other ways or choose not to share at all, keeping their observation records without sharing.

All of the bird monitors in this study share some of their observation records through word-of-mouth; however, the bird monitors discussed in the previous section share both through word-of-mouth and to eBird in accordance with rCRR's expectations. For instance, during an interview with me, Stefan shares: "One day, we had an orchard oriole, male, just kind of, must have seen it's reflection in the window, it was right on the windowsill." In addition to sharing this observation record with me, he also has shared it to eBird. In a final example, Stefan shares with me:

> I was out looking for the red-headed woodpeckers in the Hamburg area…I got lucky, saw both the male and the female…that was a real delight. I was out of the country when it was reported, and I finally made it to the site…

While some bird monitors share through word-of-mouth and to eBird, other bird monitors choose not to share to eBird at all. For instance, Loucas shares his observation records most frequently through word-of-mouth conversations with friends, but he chooses not to share to eBird. In an interview with me, Loucas explains that his word-of-mouth conversations about birds typically take the form of: "I heard this…or I saw this warbler here." Loucas chooses not to share his observation records to eBird in large part due to his profession: "I think I am hesitant to put my data up…having worked in the consulting field," whereby "the monetary penalties for giving away a species at risk…" is high. Scott, who birds professionally and personally, echoes a similar concern, and while he shares an abundance of personal observation records to eBird, he chooses not to share any professional observation records to eBird. Additionally, while Peter frequently shares a significant number of observation records with the organizing bodies he volunteers for, he rarely shares to eBird.

In the same vein, Margo shares her observation records in other ways through conversation, but chooses not to share to eBird. For Margo, bird monitoring is about the present moment when she is looking for and identifying a bird. She chooses not to share her observation records to eBird, but instead, she records her observations in journals that she may keep to herself. I accompanied Margo as she birded and she shared with me a trail she's been birding for 21 years. She explains that she had been out previously looking through her binoculars for a blue heron that she often observes. She says: "I'm always looking for the blue heron…he's always here…if I spot him, then I'll know all is well." She recounts amusedly that she had once, nearly missed observing the heron because he was camouflaged in the landscape:

> I was looking all over the pond, looking for him, and here he is, just three feet in front of me, but he just looked like he was an extension of the log.

When we encounter her neighbor, Margo shares the same story about the blue heron, and they both laugh about it. At nearly every bend in the trail, Margo shares an observation record with me through conversation about the birds she has observed in the past: "One time, I came along here and there was a hairy woodpecker…it was sitting there, just pecking away at an old log and whatever bugs he could." Later as we peer through binoculars, she excitedly reports she spotted the blue heron, noting, "See how still that blue heron is? He just melts into the lily pond." She continues on to explain, "…and the other bird that I look for is the kingfisher":

> …I remember watching this kingfisher. He was up on one of the twigs and branches and he was looking down on, there were a lot of goldfish in here, and they reproduce, and all the sudden he dived down and got a goldfish, and went up, and he hammered it on the limb, and it dropped, and he flew and caught it going down, and went back up, it was…quite a production. Do you know what a kingfisher looks like?

Rather than sharing her observation records to eBird, Margo typically hand-writes a checklist in a paper journal, and draws or sketches the birds she observes along with textual notes such as species, location, time, date, weather patterns and/or flora and fauna information. She draws both in the field and at home, noting that she always brings a sketchbook and a pencil with her when she birds. Sometimes, she makes paintings that she shares with family or displays in her home. She keeps her records, revisiting them from time to time.

2.3 Discussion

From my interviews with the bird monitors, it is clear that while rCRR has one idea for how observation records ought to be shared, bird monitors may have another idea. Asymmetrically, bird monitors can share their observation records however they wish to because rCRR needs them more than they need rCRR. Putting it more symmetrically, rCRR offers the bird monitors a place to bird, and observation records in the material sense, but rCRR may want something in return: data and public engagement.

Drawing on Law and Lynch (1988), I interpret that observation instances of birds can be transformed into observation records. I wonder then, how social phenomena is engaged in the sharing (or keeping) of observation records amongst bird monitors associated with rCRR. In the previous sections, I have highlighted that bird monitors share their observation records in a diversity of ways: 1) sharing in accordance with expectations set by rCRR, 2) sharing in other ways, or 3) keeping without sharing.

In this thesis, I take an anthropological look at the bird monitors associated with rCRR, paying attention to the social relations involved. Because I have focused on the diversity of media used by bird monitors, one possibility could be to look at this as the anthropology of media. In that case, I ask, what happens here in terms of media? Like sociologists John Law and Michael Lynch (1988), I agree that list-making is situated and central to the practice of birding, but taking this a step further, I suggest that different media ideologies seem to be at play. Drawing from anthropologist Ilana Gershon (2010a, 2010b), I suggest that media ideologies come into play when thinking about how bird monitors share or keep their observation records. Because the participants have different media ideologies, their ideas about how or why observation records should be shared (or kept) do not always align with expectations set by rCRR.

Another possibility is to look at this in terms of the anthropology of exchange. Anthropologist John Liep (2001) looks at birders through notions of exchange, property, and authorship, focusing on how competitive male birders seek fame, much like male traders engaged in the Kula exchange. He draws on his fieldwork in the Kula region to ask why, like the Kula, Danish birders strive to accumulate things which they cannot own. He argues that the goal of bird monitoring is to accumulate instances of observations. By his estimation, each birder

contributes to the birding network in hopes that their name may circulate widely like in the Kula exchange. He suggests that a "network of ornithologists spins natural objects into a web of meanings which through continuous interaction, competition, and common celebration confirms their high value and desirability" (Liep, 2001: 15). He draws from consumption studies to distinguish "ownership" and "possession", arguing that one can own a commodity without experiencing a feeling of it belonging to them. In turn, he suggests that bird monitors temporarily possess, or "appropriate and incorporate into the self" natural objects that can never be owned during an instance of observation (Liep, 2001: 15). Following Liep, I also ask if the Kula may be a particularly useful model for this study.

Liep examines the Kula primarily through the work of Bronislaw Malinowski (1922), but as anthropologists Annette Weiner, Nancy Munn, and others have demonstrated, the Kula is more complex than Malinowski imagined. Like Malinowski, Weiner (1988, 1992) conducted fieldwork on the Trobriand Islands. She influentially argued that Malinowski (1922) ignored what Trobriand Islanders and their neighbors did not trade, but kept for themselves. She reasons that many things have their value because of not being shared.

Munn (1986) conducted fieldwork on the island of Gawa. She considers the Kula not only through the production of fame through trade, whereby the names of the traders and their islands circulate widely, but also through its destruction through witchcraft, which shrinks the reach of their circulation. This is a model that anthropologist Daniel Miller (2011) found useful for exploring social network sites like Facebook. Miller (2011), informed by Munn's (1986) account of the production and destruction of fame, argues that fame can be produced through making friends, but also destroyed through sharing inappropriate content. Miller argues that Munn's (1986) work is "a theory of culture" and following this, he argues that "if Kula

exemplifies what anthropologists mean by the word culture, then so does Facebook" (Miller, 2011: 214). Miller proposes that Facebook is a model for culture whereby social relationships are produced and reinforced (Miller, 2011).

Drawing on scholarship from the anthropology of media and exchange, I argue that eBird increases the value and desirability of the "sighting" by making observation records a matter of public display. I suggest that eBird is not only a means to produce data in the form that rCRR wants, but that eBird also has this incentive, it attracts birders to share their observation records in a public and somewhat competitive manner. In turn, by entering this partly competitive domain, rCRR gets more data, and the bird monitors feel good that their data may be widely used for conservation purposes. Data from eBird is easily extractable; however, it isn't just that eBird is the right format for rCRR, but that it attracts people to use it. Because the names and images of birders are fixed to their shared observation records, eBird does produce a kind a fame, or at least recognition, for those birders who share rare or abundant observation records. In an interview with me, a participant explains that eBird "is really promoting competitiveness. It's keeping track of all your records." Although he shares a great number of observation records to the organizing bodies he volunteers for, because he doesn't share his observation records to eBird, according to him, "I don't rank very high in that because I haven't been inputting the data."

Depending on whether or not the bird monitors share to eBird, the possibility of fame, or at least recognition in the birding community, may increase or decrease respectively. For the bird monitors in this study, recognition is typically not just based on numbers and counts, but on aspects of what those numbers and counts represent: credibility and conservation efforts. Frequently sharing substantiated claims to eBird increases one's credibility in the community

whereas observation records shared by unfamiliar bird monitors must be vetted more rigorously. A participant tells me that he follows eBird accounts of those that he considers "good" birders to determine where species at risk have been observed for professional purposes. Another participant explains that sharing a rare bird gets one's name "out there, for…the glory, and the career developments that come with being renowned as a good birder, finding rare stuff."

Drawing from Miller (2011) and Munn (1986), I argue that with the possibility of eBird fame, or at least recognition, is also the possibility that one's reputation as a credible birder may be discredited through sharing inaccurate data such as in specific cases of species misidentification. Misidentification in this context is an instance of erroneously identifying a bird species and may be a concern for some bird monitors. The impacts of misidentification are amplified in an arena such as eBird whereby observation records are widely visible and so too are instances of sharing inaccurate data.

The data format of eBird is preferred by rCRR. Photo, video, and textual notes attached to an eBird checklist may prompt conversations between birders, sharing of stories, and memories that can be revisited through viewing historical data. While eBird data is indeed extractable and useful to rCRR, there are other kinds of data, such as found in journals like Margo's. Margo's data retains the sensory quality of being there in the field, a different, and perhaps more interpersonal kind of data than is found standardized on eBird.

I do recognize some elements from Liep's (2001) research in this study; however, while he examines sharing in the birding community pre-internet, with a bias toward competitive males striving for fame similar to the Kula, this study investigates sharing amongst male and female bird monitors in the digital age. I argue that Liep is focused on male Kula traders and maybe fittingly he has only looked at Danish male competitive birders, but the participants in this study

reveal that recognition isn't everyone's focus when sharing to eBird, and that some bird monitors may share their observation records in other ways or even keep without sharing.

2.4 Conclusion

   In this thesis, I investigate how bird monitors associated with rCRR share or keep their observation records of birds. To accomplish this, I highlight the practice of bird monitoring and I reveal how fleeting observation instances of birds are transformed into observation records that may be shared or kept to oneself. Asymmetrically, bird monitors can keep records to themselves because rCRR needs bird monitors more than they need rCRR. Looking at this engagement more symmetrically, bird monitors need rCRR too, as rCRR provides them a place to bird and observations in the material sense. In turn, bird monitors may feel that they have the chance to give back to the birds they observe through conservation. Furthermore, I argue that sharing (or keeping) in this setting, and the interpretations that I glean from this research, are made possible because media and exchange phenomena are interconnected in this digital context.

   Anthropological work on the Kula can illuminate birding in the digital age beyond Liep's (2001) study. Its benefits are to see relations where other accounts would see isolated practices. What the Kula illuminates is useful, but like all models, it is limited. The Kula is limited and limiting in that it makes certain phenomena visible and leaves others out. Haraway (1988) argues that any vision is partial. In this chapter, the Kula is the partial vision, but it is useful as it illuminates what would otherwise not be visible.

References

Bernard RH (2018a) Sampling III: Nonprobability Samples and Choosing Informants. In: Bernard RH (ed) *Research Methods in Anthropology*. Lanham: Rowman and Littlefield.

Bernard RH (2018a) Interviewing I: Unstructured and Semi-structured. In: Bernard RH (ed) *Research Methods in Anthropology*. Lanham: Rowman and Littlefield.

Bolter JD and Grusin R (1999) Remediation: Understanding New Media. Cambridge: MIT Press.

Callaghan C and Gawlik D (2015). Efficacy of eBird data as an aid in conservation planning and monitoring. *Journal of Field Ornithology*, 86(4): 298-304.

The Cornell Lab of Ornithology (2015) About us. Available at: http://www.birds.cornell.edu/page.aspx?pid=1609.

Dickinson J and Bonney R (2012) *Citizen science: Public Participation in Environmental Research*. Ithaca; London: Comstock Publishing Associates.

DiSalvo C, Sengers P and Brynjarsdóttir H (2010) Mapping the Landscape of Sustainable HCI. Paper presented at Proceedings of the 28th International Conference on Human Factors in Computing Systems.

Gershon I (2010a) Media Ideologies: An Introduction. *Journal of Linguistic Anthropology* 20(2): 283-93.

Gershon I (2010b) *The Breakup 2.0: Disconnecting over New Media*. Ithaca: Cornell University Press.

Haraway D (1988) Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective. *Feminist Studies* 14(3): 575-599.

Henderson S, Ward DL, Meymaris KK, Alaback P and Havens K (2012) Project Budburst: Citizen Science for All Seasons. In Dickinson J and Bonney R (eds) *Citizen science: Public Participation in Environmental Research*. Ithaca: Comstock Publishing Associates.

iNaturalist (2018) Homepage. Available at: *https://www.inaturalist.org/*

Lagoze C (2014). EBird: Curating Citizen Science Data for Use by Diverse Communities. *International Journal of Digital Curation* 9(1): 71-82.

Law J and Lynch M (1988) Lists, field guides, and the descriptive organization of seeing: Birdwatching as an exemplary observational activity. *Human Studies* 11(2-3): 271-303.

Liep J (2001) Airborne Kula: The appropriation of birds by Danish ornithologists. *Anthropology Today* 17(5): 10-15.

Madianou M and Miller D (2012) *Migration and New Media: Transnational Families and Polymedia*. London; New York: Routledge.

Malinowski B (1922) *Argonauts of the western Pacific*. London: Routledge.

Miller D (2011) *Tales from Facebook*. Cambridge; Malden: Polity Press.

Munn N (1986) *The fame of Gawa: A symbolic study of value transformation in a Massim (Papua New Guinea) society*. Cambridge: Cambridge University Press.

Nugent J (2018) iNaturalist. *Science Scope,* 41(7): 12-13.

The rare Charitable Research Reserve (2018a) Bird species. Available at: http://raresites.org/conservation/flora_fauna/bird-species/.

The rare Charitable Research Reserve (2018b) Strategy Plans. Available at: http://www.raresites.org/wp-content/uploads/2016/05/strategy-plans_v2l-5_LR-resize_FINAL-for-web.pdf

The rare Charitable Research Reserve (2018c) Confluence. Available at: http://raresites.org/conservation/core-areas/confluence/

Sibley D (2003). *Field guide to the birds of eastern North America*. London: Christopher Helm.

Sullivan BL, Wood CL, Iliff MJ, Bonney RE, Fink D and Kelling S (2009) EBird: A citizen-based bird observation network in the biological sciences. *Biological Conservation* 142(10): 2282-2292.

Sullivan B, Aycrigg JL, Barry JH, Bonney RE, Bruns N, Cooper CB…Kelling S (2014) The eBird enterprise: An integrated approach to development and application of citizen science. *Biological Conservation* 169(C): 31-40.

Weiner A (1988) *The Trobrianders of Papua New Guinea*. New York, Toronto: Holt, Rinehart and Winston.

Weiner A (1992) *Inalienable possessions the paradox of keeping-while-giving*. Berkeley: University of California Press.

Wilson, Bill (2017) Monitoring Bobolink in rare's South Field: A Five-Year Perspective, 2013 – 2017. Report, August.

Wood C, Sullivan B, Iliff M, Fink D and Kelling S (2011) EBird: Engaging Birders in Science and Conservation. *PLOS Biology* 9(12): 1-5.

Appendix
Appendix A: Semi-Structured Interview Guide

Can you take me through your typical birding/bird monitoring routine?

When you go to rare, what is your main purpose?
What about other birding/bird monitoring activities, like festivals?

Do you belong to any other birding/bird monitoring-related groups other than rare?
Are you attending any upcoming birding/bird monitoring events this summer?

You mentioned in your survey…

How did you begin birding/bird monitoring?

How long have you been birding/bird monitoring for?

What are some feelings you experience when birding/bird monitoring?

Do you think you rely more on sight or hearing?

Do you usually bird/bird monitor alone or socially?

Can you share with me how you record information?

Where does the information go?

Why do you prefer to use…

Do you think there are any advantages to using _____ over _____?

Do you ever look through your journals? Why?

Do they help you remember anything?

Since attending the eBird workshop, have you used eBird?

What do you think the purpose of eBird is? Benefits? Disadvantages?