

**EMPOWERING ALL WHO DWELL HERE: NATURAL RESOURCE  
MANAGEMENT AND PUBLIC PARTICIPATION**

A Dissertation

by

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## ABSTRACT

I studied the potential for community-based planning in the winter habitat of the federally-endangered whooping crane (*Grus americana*) to better understand the relationships, barriers and opportunities to conservation and public participation.

Rooted in the literature of public participation in natural resource management, I describe my project within this larger discourse. I seek to address the issue of local public resource management and the ways in which it is or is not represented in public processes. I submit constructive ameliorations for improved democratic engagement, resource and wildlife conservation. My methods are qualitative: 35 local and regional individuals interested in crane conservation were interviewed, transcribed, and coded in NVivo Qualitative Analysis software from QSR International to conduct a content analysis. I employed theoretical and pragmatic constructions to provide constraints and perspectives on the same dataset.

I apply a ritual communication perspective to the communication among birdwatchers and with birds. Though a wide-ranging topic, I describe the key aspects of birding, and how competition and cooperation are the two sides of birding's social relations. I propose that wildlife managers could pay attention to these relationships to better represent interests in birds in management.

I examine how wildlife managers are tasked with engaging the public for natural resource management and planning, and I propose that including a responsive public can improve the plan and conservation. I found that the public was amenable to working

with wildlife managers due to whooping the crane's iconic nature and economic value, and the public was responsive to agency intervention when they were dependent on their knowledge and standing for navigating the dynamic complexity of managing the species and ecosystem. By recognizing a responsive public, wildlife managers can expand public participation to include more public perspectives.

From a public understanding of science perspective, I explore the dominant scientific narratives associated with whooping crane conservation. I examine these narratives for their ability to empower and to constrain public participation in various management schemes. I argue that production of a reductive scientific narrative reproduces an equally reductive public discourse that limits possibilities for public participation.

## **DEDICATION**

For my family, who taught many to love wildness.

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## **NOMENCLATURE**

CBP	Community Based Planning
CWS	Canadian Wildlife Service
PP	Public Participation
PUS	Public Understanding of Science
STS	Science and Technology Studies
TAP	The Aransas Project
USFWS	United States Fish and Wildlife Service

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## CHAPTER I

### INTRODUCTION AND LITERATURE REVIEW

#### I. 1 JUSTIFICATION OF RESEARCH: PUBLIC PARTICIPATION AND NATURAL RESOURCE MANAGEMENT: ALTERNATIVES TO REGIMENTED LEGAL ACTION FOR IMPROVED ENVIRONMENTAL RESULTS

To preserve wild animals, implies generally the creation of a forest for them to dwell in or resort to. So is it with man. A hundred years ago they sold bark in our streets peeled from our own woods. In the very aspect of those primitive and rugged trees, there was methinks a tanning principle which hardened and consolidated the fibres of men's thoughts. (Thoreau 1862)

Once you begin to trace an absolute distinction between what is deaf and dumb and who is allowed to speak, you can easily imagine that this is not an ideal way to establish some sort of democracy....But no doubt that it is a fabulously useful ploy, invented in the seventeenth century, to establish a political epistemology and to decide who will be allowed to talk about what, and which types of beings will remain silent. (Latour 2010)

In 1970, the National Environmental Policy Act (NEPA) defined environmental standards, established a federal organization to manage oversight, and declared public participation procedures for employment on all federal lands, by all federal agencies and under any federal funding which affected the environment. Governmental natural resource managers have adhered to at least this minimum of public involvement, and the public, in case after case, has followed the procedures of natural resource management to provide their perspectives, which are only partially codified within this institution. Scientists too have done their part to create databases and syntheses of these environmental issues, affording more knowledgeable and informed management plans.

Arguably, the management plan which emerges from the NEPA process, the only formal end sought, is a representation of authoritarian (e.g. scientific, agency) preferences and public preferences. According to NEPA's website, "Beneath the lofty rhetoric lay practical concerns. NEPA did not advocate environmental preservation at all costs. Rather, it sought to balance environmental concerns with the social, economic, and other requirements of present and future generations of Americans." Nowhere on this webpage does the word "science" appear.

However, criticisms of NEPA processes point to the limitations of such calculated public participation. In general, the process, regardless of differences among local cultures and ecosystems, is: a localized problem is identified; scientists and agencies respond by developing a plan and announce its "completion"; the local people and other stakeholders respond to the plan within the bounds of a response period; the agencies respond to comments, amend the plan, publish the plan and implement the plan.

The only aspects that encourage and require public participation are the response to a pre-existing plan. The paternalistic acronym is appropriate here: decide-announce-defend model, also known as DAD, is the basis for agency control of natural resource management (Hendry 2004). Beyond prescribing what is good for the public, volumes of research have been devoted to examining the problems of agencies, ranging from institutional memory and bureaucratic stagnation to lack of training and impetus to engage the public (Riley et al. 2002, Hamilton 2004). And external problems to agencies include the capture of agencies by interest groups and facilitators (Toker 2005); lack of funding for social science research (Bierle and Cayford 2002); and the imposition of

multi-scale deadlines (Stave 2001). A few studies have been devoted to what constructs, each with their own organization, a “good” public participation process (Jamal et al. 2002, Senecah 2004, Tuler and Webler 2010).

Research consistently supports a democratic approach: culturally-relevant process and consensus-free outcome, interspersed with an iterative and flexible monitoring design (Peterson et al. 2005; Peterson et al.2004). Through reviewing previous case studies and environmental decisionmaking research and collecting data and materials for a case study on community-based planning around the whooping crane, I address specific audiences and actors within these processes: the wildlife-interested public, wildlife managers and wildlife scientists. I show how the ways in which they engage in conservation planning leads to predetermined consequences, even before NEPA is put into place. Preventative and preemptive research of this kind can benefit stakeholders and their processes.

In this way, I am contributing to the research for “good” public participation processes with local and targeted communication rhetorical strategy. This addresses the diversity of stakeholders and their needs and contributions: After all, the definition of a stakeholder is “any person who will be affected by, or will affect, wildlife or wildlife management” (Riley et al. 2002, Decker et al. 1996). The end goals are to affect improved management plans, empower a diverse stakeholder base, and redistribute influence among those most affected by the process and outcome of natural resource management.

## I.2 PUBLIC PARTICIPATION AND NATURAL RESOURCES

Any form of participation is already a form of conflict (Miessen and Mouffe 2007:B47).

In this introductory chapter for dissertation research, a blend of environmental communication, science and technology studies, environmental political theory, and rhetorical criticism, I begin by further developing the public participation theory to which this project contributes. I describe the stakes and “on-the-ground” benefits and consequences of theoretical shifts. From this position, I define the research questions, case study and methods employed for pursuing these questions, and finally the contents of the following chapters of the dissertation.

Public participation has as many definitions as participants but at its simplest “is pre-decisional communication between an agency responsible for a decision and the public” (Daniels and Walker 2001:8). The lauded adaptive, iterative aspects of public participation are voluntarily instituted for the local situation by those holding the most (legal) responsibility for the plan. For Daniels and Walker, the “decision space” is the negotiable opportunity for public participation processes, the degree to which the deciding authority, often a government agency or landowner, will “open up and share” its decisionmaking process (2001:160). In other words, to what degree can nonauthoritarian stakeholders affect the process and the outcomes? For many natural resource managers, planning is not why they chose the occupation. More importantly, once in the position of agency scientists and field officers, managers are trained in ecology, not sociology; scientific genres, such as journal articles, not legal veracity or media-safe sound bytes; and might prefer non-human animals to people. In these

common cases, following the letter of the law, managers select public participation bare minimum baselines. Things are changing: there are trainings and hirings within agencies, notably the U.S. Fish and Wildlife Service, to make equivalent the decision space and the stakeholder capacity to plan around natural resources.

Researchers call for wildlife managers to adapt to the public's increasing interest in wildlife management (USFWS 2009c). At its best, public participation leads to the mutually beneficial relationship among stakeholders of acceptance of a policy that is locally relevant and culturally significant (Corniccelli et al. 1997). Scholars measure these outcomes—based on 239 case studies, Beirle and Cayford (2002) are unapologetically anthropocentric in their assessment of social outcomes from improved public participation: public values into decisions; improved quality of decisions; building relationships among interests and institutions; and educating the public.

Other scholars have focused on the forms rather than the outcomes: public participation can be required or voluntary; based on experts or lay participants; consensus-driven or eternally and ephemerally agonistic; performative or pragmatic, but is generally determined by an institution (Daniels and Walker 2001, Ellis 2008, Peterson et al. 2004, Peterson et al. 2005). Yet Kallis et al. (2009) and Peterson et al. (2004) have argued that the institutions are exactly what need to have public input and design: public participation processes ought to determine appropriate institutional and interpersonal interactions to improve saliency and a more egalitarian influence.

Based on decades of experience, Senecah's (2004) description of the "trinity of voice" supports the potential of public participation in natural resource decisionmaking

is facilitated through the process: *access* to information and resources; *standing* as legally recognized stakeholders intimately involved and affected or representative of those who are; and *influence* on the process and decision. Devising means of participation increases the emancipatory and empowering agency of all involved; improves information on which the decision is based through diversification of sources; validates the final decision through socially approved processes; and decreases the appeal of immediate litigation (Daniels and Walker 2001).

Of course there are alternatives to institutionally sanctioned public participation—abandonment, or opting out, of the system is necessary to achieve a group’s desirable means and/or ends: When the hegemony of the existing system continuously results in favor of the same interests, however incrementally, there is no incentive to continue to participate (Ellis 2008). In the case of a political structure, for example, the temporary nature of environmental permitting, the democratic process that allows for temporary allocations of land use other than habitat reduces permanently the land use as habitat *and* “the scope of future democratic decisionmaking irreversibly” writes Ellis (2008). “This presents a paradox for democratic theory, since decisions that do not undermine democracy itself should always in principle be available for democratic decisionmaking.” Another issue with the construction of such processes is how they frame a false duality: pro versus con, costs versus benefits, environment versus economic growth. To continue to play within these rules or under this framing is to continue to risk the natural resources in question and the democratic processes through

with recourse is possible. And often in opting out of a sanctioned process, people maintain power against certain unfavorable structures (Martin 2004).

Alternatives to the existing system include, but are not limited to revolutionary actions, personal engagement, defunding detrimental projects (Cox 2010a), and participatory art (i.e. 350.org. (Non-)violent revolution may employ “monkeywrenching,” tree-sitting, tree-spiking, and other disruptive acts that could encourage appropriate behavior through appeals to fear and other emotions as often these acts are meant to be witnessed as performances and media events (Abbey 1981, Dayan and Katz 1992, DeLuca 1999, Hill 2000, Killingsworth and Palmer 1992, Peters 1999). Solnit questions her own civil disobedience staging “as largely media stunts or whether they’re moral acts taken to change the world with less of an eye to press coverage” (2004:190). Arguably, even if the moral is performed, it is still a moral observed, and the more who observe it can be informed ritually. But Thoreau did not attack any of his agrarian neighbors, however pitiful he considered their works (“The farmers and their works are scarcely more obvious than woodchucks and their burrows”), and instead adopted a prescient agonism (Mouffe 2000): “I am as desirous of being a good neighbor as I am of being a bad subject” (Thoreau 1862).

Contributing to counter-systems has become less revolutionary and more standardized. For instance, people seek engagement with the natural environment for many reasons and in many ways, but often these are based on a scientific rationalization of place (Jamal et al. 2003). This can include learning the natural history of the area through attending an interpretive walk (Peterson 1988). Citizen science would be a likely



extension of this kind of knowledge, exemplified by the massive data sets generated by citizen birders (Wiens et al. 2009). Though it can be codified in scientific systems, this knowledge is also useful for providing in-depth but free discovery. Translating these experiences into politically effective acts requires another step, one that can be established through participatory art and social movements (Endres et al. 2009) and tourism (Milstein 2008, Pezzullo 2003, Spurlock 2009).

Skeptics of public participation concern themselves with the fairness of representation (Brown 2009, Senecah 2004); risks of oscillating tyranny of (temporary) majority (Ellis 2008); and the constraint of consensus (Peterson et al. 2005). Others are concerned that the agency is rewarded for denying creative civic engagement: “efficiency and expertise replaced cooperation and participation as criteria for decision making” (Toker 2005:198). Fiorina (2000) makes the bold claim that more engagement does not lead to better social welfare, indicating the irony of a government open to public opinion, whose opinion is that they are unhappy with government. Delicath and Depoe (2004), proponents of democratic public participation in natural resource management, synthesized this literature into key shortcomings and concerns: the hegemony of rationality over emotional appeals; public engagement takes place too late in the process; adversarial dynamic between manager-public and among publics. For others the faults of public participation lie within a dominant conceptualization of democracy.

Chantal Mouffe (2005) has contributed to the pluralist democracy through criticisms of social thought in general and liberalism, despite good intentions for a

rational, universal consensus if only the information were available, specifically. Rather than seeking a utopian steady-state democracy, she proposes inherent, endless conflict characterized by temporary alliances, or “sedimented” social bonds pursuing, in Daniels and Walker’s terms, interests rather than positions as mitigated by institutions of discourse and decisionmaking. The conflict arises for Mouffe, and Daniels and Walker when the border of self-definition abuts the “other,” that is, when “they” begin to define or to intrude on the self—self-interests ossify into positions to prevent the interruption of what one person or group thinks is best. Spontaneous conflict sparks from exercising one’s “rights” of use.

Mouffe’s argument that not all social bonds are put into question at the same time provides for a different kind of ephemerality than what worries Ellis. Rather this shifting site of agonistic pluralism eradicates stalemates, and provides ways of considering “they,” the adversary, in different terms, for this “is to envisage the possibility of different types of we/they relation[s]” (2000:19). In facilitating such conflicts, her thoughts on managing the identity shaping seem crucial:

The major difference between enemies and adversaries is that adversaries are, so to speak, “friendly enemies,” in the sense that they have something in common: they share a symbolic space. Therefore there can exist between them what I call a conflictual consensus. They agree on the ethico-political principles that inform the political association, but they disagree about the interpretation of those principles. ... You can never say this is the correct interpretation... That is how I envisage the agonistic struggle—a struggle between different interpretations of shared principles, a conflictual consensus: consensus on the principles, disagreement about their interpretation. (Meissen and Mouffe 2007:B39)

As an additional heuristic, Latour (2010) recently edited his statements on representation through his Compositionist Manifesto. Rather than provide a critique of

naiveté in deliberative democracy or pluralist leanings, Latour submits “composition” because “it underlined that things have to be put together (Latin *componere*) while retaining their heterogeneity” and that “what is to be composed may, at any point, be decomposed” (2010:473-4). The trend of the universe is diversity without end: evolution rarely simplifies without diversifying. Pluralism is the human construct of this process, or as Latour borrows the term from William James, the “pluriverse” as the site where any “human, atom, virus or organism” has resided (2010:477). How can these plural interests arrive at any long-term, sustainable management goal?

The kinds of pluralism described by Mouffe and Latour require some grounding. Fiorina notes that the moderate views of the public are often overshadowed by the extreme’s “rhetoric emotional and excessive” on singular and myopic issues (2000:411). Similarly, he shows how in the past group membership moderated extreme views and led to interaction and discussion with different people and their perspectives, the proliferation of single interest groups has attenuated agonistic pluralist communication: “Thus, only small minorities of highly motivated citizens take advantage of the new participatory opportunities, minorities who are by and large extreme voices in the context of American politics and who have less reason to moderate their commitments than in the past” (1999:413). Fung (2006) shows that by simply diversifying or selecting for different characteristics in participants, both of the other continua in “the democracy cube” shift: the form of communication and mode of decision can become more varied; and the authority and power are dispersed among the new group.

Though social capital advocates rarely define the factors that lead to it, for community capacity to flourish within public participation, institutions must move beyond tokenism from various interests and moderate the most vocal and extreme perspectives through diversity and mechanisms. Fiorina turns to Dewey and argues that the way “to answer problems created by increased civic engagement is even more civic engagement” (414). Brown would endorse such a parallel structure as well, returning to the issues particularly addressed in this thesis, “If representative democracy is the best form of democracy, then democratic representation is the best response to the politics of science” (2000:193).

Brown shows that representative democracy is dependent upon communication between the represented and the representatives. Hobbes, in Brown’s (2009) reading, would claim that there is no representation until there is something or someone to be represented. In democracy, it is impossible then to discern the representative from the represented: the crane and the egg of the process is to be represented. To return to the purpose of this dissertation, the output of a (pseudo)NEPA-induced public process is a management plan: the composite form of representation.

Representation has a crucial function in common resource management—a classification applicable to most environmental resources. For Ostrom (1990) the asymptote to perfect information is perfect engagement. In highlighting the importance of cooperation, Ostrom shows that no group could entirely manage, let alone define, the commons for use by everyone: no real leviathan sleeps in the sheep-dotted fields or trawled oceans. And the resource that ought to be managed might not be encompassed

by all the participants in the process all of the time—but the benefit to participation is that the opportunity for management and planning is greater than any one interdependent stakeholder could accomplish alone (Getz and Jamal 1994). Also the tokenism approach of “collecting” stakeholders of “kinds” not only predetermines the outcome (interviewee), but negates the capacity for other stakeholders to engender mediation within stakeholder groups through a form of third party witnessing (Peters 1999).

Why discuss representation and democracy to this extent? The hegemony of scientific powers among the established delocalized forces of corporations and their allies within government obscure the capacity for publics to choose how they want to live within the more-than human world. In encountering a largely amenable, dependent and active community around the whooping crane, I see the stakes for participation in natural resource management as urgent and imperative and wholly an issue of democracy.

### I.3 DEVELOPMENT OF RESEARCH QUESTIONS

The structure of my dissertation is that the research questions are enmeshed and entrenched in the data of my case and the training of my mind for each question is explored specifically within a chapter but throughout each chapter to varying extents. In common, the research questions stem from the premise improved public participation processes and recognition of plural publics will result in improved democratic natural resource management. I describe what has led to these research questions in this section before finally naming them.

Scientists and activists have attempted ethical and pathetic appeals to the public and political decision-makers with respect to natural resource management and conservation, but often these ignore the human component in the construction of conflicts (Killingsworth and Palmer 1992). Seeking more science to support ideas ignores that most environmental problems are of our own making and are actually conflicts among human interest groups (Peterson et al. 2010). Arguments based on scientific rationales for (eco)logical behavior changes, according to Killingsworth and Palmer (1992) fall to the dilemma of introducing science to an incongruent socio-political-economic system. While I disagree with some of Murray Bookchin's simultaneous narrative of the falls of men and utopian framing (Anderson 2010), the following from an essay defining "social ecology" illustrates why I developed this research:

Social ecology is based on the conviction that nearly all of our present ecological problems originate in deep-seated social problems. It follows, from this view, that these ecological problems cannot be understood, let alone solved, without a careful understanding of our existing society and the irrationalities that dominate it. To make this point more concrete: economic, ethnic, cultural, and gender conflicts, among many others, lie at the core of the most serious ecological dislocations we face today—apart, to be sure, from those that are produced by natural catastrophes. (2007:19)

In his books, Bookchin's sense of urgency, the exigence of his appeals (Killingsworth 2005), are made more clear: "We cannot defer the need to deal with these prospects indefinitely: either a movement will arise that will bestir humanity into action, or the last great chance in history for the complete emancipation of humanity will perish in unrestrained self-destruction" (2007:52). I am of the mind that at every moment that a decision about human use of natural resources is also an opportunity of the kind that

Bookchin describes—a chance to change the ways in which we are living with the more-than-human world on this finite, singular, rare earth (Abram 1996, McKibben 1990, Ward and Brownlee 2000). Accepting truncated responses to a predetermined “draft” does not afford for this expansion and ascension: the quality of life for all beings stands to be improved to exist in current situations, by process of evolution and by the flourishing vigor, creative and equitable management of natural resources.

How are we to foster capacity to navigate new, intractable, and extremely complex social-ecological issues within the categorical present structure, in the short and long-term time scales, and small and large spatial scales? In other words, in what ways can people develop democratic and ethical and sustainable decisions about natural resources and wildlife conservation? As an example, The Nature Conservancy (TNC) has claimed that the need for more diverse systems of conservation has reached a pinnacle: after forty years of research and practice, all we have are litigation and compensation (Sanjayan et al. 2011). These are very limiting situations under which to be working; yet the decision space for the general public is likely much larger.

Environmental communication is a way of thinking that can help find the temporary decision space and alternative means for environmental conservation and management among diverse publics. As a cohort at Texas A&M University, members of Dr. Peterson’s Lab have repeatedly refined the call of environmental communication (EC) is: a constitutive, discursive and iterative process of perception and representation of the more-than-human world. As scholarship, it is inherently engaged—verging on

interventionist—in order to practice the relationships with the more-than-human world people prefer.

I have established the need to pursue social progress to practice conservation. I have also developed a rationale for social and institutional means of engaging with an informed and affected public on natural resource management issues. I have placed this research within the discourse of EC as accompanied by interdisciplinary methodologies to augment the critical and cultural component of these issues. And I have provided a rationale for combining areas of study in order to pursue interrelated issues and offer pragmatic, methodological and theoretical knowledge to the growing body of scholarship on natural resource management. Though it might seem that I have missed reviewing literature for some of these questions, the reviews are specific enough that I covered them at greater depth in the chapter descriptions that follow the methods section. The following research questions are explored in this dissertation:

How can people make democratic and ethical and sustainable decisions about natural resources?

How can public participation processes balance multiple stakeholders and mandates of various parties?

In what ways can we as scholars and researchers reinterpret stakeholders through their own terms?

The focus is environmental conservation, making room for those who are not equally represented at the table of decisions. Providing the best institutions and processes through which people(s) can make decisions for their own survival and *with respect to* the more-than-human world is my primary pursuit to these problems. If there is an end to this work, environmental and ecological improvements would be the hope.



## I.4 RESEARCH DESIGN

Ontologically and epistemologically speaking, the methods that have already been conducted were based on previous research methods practiced by the lab group and based on the naturalistic inquiry of Lincoln and Guba (1985), on pursuing questions of democratic decisionmaking, and an ethical bind to respect the individual and specialized knowledge of local people with respect to natural resources (Davis and Wagner 2003). I subscribe to an emancipatory epistemology, one that purports the subjectivity inherent in the production of *all* knowledge. As is the case in some studies, the researcher does not necessarily “see” what is salient to their questions until after an exploratory study. My research and lab colleague Chara J. Ragland and I conducted our exploratory study and real study simultaneously, adapting to new information and amending our interview protocol as necessary. All research was conducted under Texas A&M University Institutional Review Board #2010-0355. The following section describes the case study I used to ground my research and practice as well as the methods for data collection, both past and present.

### *I.4.1 A case study approach*

Relying on case studies can be limiting in the equal and opposite ways it is expansive. Because of the fine detail of information, the local embeddedness, and the personal consistency of data collection and relationship-building with the community, discussion beyond these rooted results may be tenuous. On the other hand, in issues of conservation and natural resource management, case studies have been implemented to refine what we

know about a society's relationship with the environment and how our values are expressed in the environment.

As Eisenhardt (1989) defines it, "the case study is a research strategy which focuses on understanding the dynamics present within single settings" (1989:534). She describes variance among case studies topically and geographically as irrespective of an "embedded design" in which multiple levels of analysis probe a *single site of discourse*, which the researcher proscribed, or rather perhaps circumambulated. Lincoln and Guba, my primary source for methodology, favor specificity without exposing the identities: "The case study represents an unparalleled means for communicating contextual information that is grounded in the particular setting that was studied" (1985:360-361). Intuitively, I embrace the complexity of context because how can any researcher know in such naturalistic and exploratory work *which* detail, *which* definition of a variable, and *which* model will reveal what is important to the phenomenon about the phenomenon?

That is, how can these findings extend for quality beyond qualification? In the past, I wrote about natural details and experiences, and nothing could be less "paraphraseable" than the embodied experience of the wild. This too, I learned, was the goal of poetry: "no matter how serious the overt message of a poem, the unparaphraseable and undiminishable life of the poem lies in the way it performs itself through the difficulties it imposes upon itself. *The way in which it means is what it means.*" (Gradgrind qtd. Ciardi 1996:230). I want my representations of respondents and

what they care about to be irreducible, tactile and translatable into systems of decisionmaking without losing their quality.

For scholarship and outreach purposes we must reach beyond the case study's specificity: Eisenhardt shows the triple bottom line of case study research: description, testing theory and developing new theory. For description, case studies provide unparalleled details of the setting, the context, an important event. For places with multiple inhabitants and stakeholders, case studies are discussion points, a site for discourse, a bridge to one another, similar in some ways and unfamiliar in others.

As for dealing with conflicts, Mouffe remarks that they are temporary, as ephemeral as the group's alignments within the agonistic public sphere: a case study is the snap shot of the situation which helps inform future conflicts. My fidelity to a single theorist fails in light of the diversity and complexity of environmental and natural resource management issues. By keeping respondents voices and theorists voices democratically in dialogue—at least within the pages of this dissertation—I hope to not test theory as much as contribute some small detail to bodies of literature which have shaped my own “observer effects.” In this way, I see the work contributing to theories of democratic institutions of public participation within natural resource management and recognition of social conditions and values for the environment.

While this is my primary method, I resist the urge to force specifics to the general and the general to appear within specifics: “They insist that any learning context can be described in terms of any theory of learning, if we are willing to stretch and overemphasize certain aspects of the context to fit onto the Procrustean bed of the

theory” (Bateson 2000:171). Like a poem, the interviews entrusted to me ought not be ‘stripped’ or ‘pinned’ to an imposed logic. I attempt to tell the basic story and provide a site for many voices to speak at once, even if only on one page at a time. Still, it should remain a heteroglossia.

#### *I.4.2 Epistemology*

Experience is the only way to speak with conviction, that is, to speak as one who has been, through representation, convinced. I have been convinced by each of the rhetors and respondents I encountered, each rare whooper overhead: phenomenology. My constructed reality is bound to the “multiple constructed realities” I have experienced and is but one of the infinite “authentic” and consistent realities (Lincoln and Guba 1995:295). My case study is in this way a Latourian “composition,” as best as it can be when filtered through the human instrument, of the myriad case studies revealed through each micro-interaction.

Epistemologically, I concur with a modified social constructivist paradigm in that the world is real, but the ways in which we interpret this reality are equally and differently real to each person’s experience, that is, there are multiple constructed realities. In this way, I prefer the term “respondent” over “subject” of a study because it is the respondent’s subjective perspective I am most interested in (Lincoln and Guba 2000). My research reserves the rights and agency of the person who so chooses to participate in this study.

### *I.4.3 Axiology*

Naturally epistemology has bled into axiology. I choose to make my interests explicit: As a human instrument, I am interested in the interaction between respondent and interviewer and believe it necessary to vet, to verify and to groundtruth my findings with the people affected by and affecting the area, each other, and the research. However, I have clear biases toward the more-than-human world, women's issues, transgendered, and transdisciplinary, the unbinaried, pluriversal, and prefer a "transformative agenda" in which the pragmatic theory is rendered worthwhile by improving the described situation. The improving of a situation risks latent however well-intended consequences, but the more we know about how others think about the situation the more empathetic and creative our solutions can be. I take great care in preparing my remarks in order preserve the privacy and represent as well as possible given the potential effects. In this way, exposition of the case study is a forum of public exposition too.

In my research I have employed many kinds of data in order to better understand the phenomena of social capacity surrounding the whooping crane in its wintering grounds. The study results would likely be very different culturally along the migration route or in the breeding grounds for the whooping crane or if my focus was on any other species. But the selection of this species and site, a convenience of funding, illustrated important aspects for other sites that have some commonality in one or more of the "sites of discourse," as Eisenhardt refers to comparing multiple sites. Using a case study of the high-profile, charismatic megafauna, the federally endangered whooping crane and the people who live and work around the species' wintering grounds of coastal Texas, I

explore in this dissertation the relationships that people have formed and the ways in which they have communicated about issues related to the cranes through scientific constructions of the situation, representations of cranes, and wildlife watching expectations. Critically exploring these issues of representation and relationships could lead to improved understanding and practice of community-based planning around natural resources, setting the place as dynamic and central, not backdrop to the actions of humans; placing knowledge of many as structural as opposed to imposing the logic of few; and providing for plural natural resource foci within plans.

#### I.5 STRATEGY FOR ANALYSIS

The basis of this research is how people communicate about and represent the issues of concern in image and word. I follow from the ground-building work of Lincoln and Guba (1985) by valuing the individual respondent as knowledgeable as any other respondent. Similarly, Daniels and Walker teach us that collaborative learning in natural resource management needs to position each person as a source of information and knowledge, a teacher and a learner—that is, someone who stands to gain the experience of others to inform the relational conflicts. As I mentioned above, the first step for analysis is to realize the respondent in many ways: anthropologist “This is the essence of the holistic approach. The material and ethnographic concerns are not cut to size at the start. The people who are the subject of study are themselves free to volunteer their concerns in their own voice and context” (Okely 1994:20). In this way, I democratically establish all information from respondents. When respondents value a certain kind of information, I have learned from Jamal’s tutelage to make “the familiar, strange.”

Methods courses focus on collecting data—not what you do once you have it in your possession: analysis of data collected is often conducted within a black box and has been deemed the “least codified part of the process” (Eisenhardt 1989:539). This is basically the faultiest part of the process according to critics: How can one “show their work” with this kind of analysis?

On an organizational note, I employed QSR International’s software NVivo9 and NVivo10 for Qualitative Research to organize, to code at nodes, and to query my interview and other forms of data. The software also has the capacity to add a quantitative dimension in counting utterances or other units. I used queries within the software to cross tabulate communication in categories. The categories will be semi-structured and mutable and based on the research questions and theoretical constructions. I described the development of the coding system and code-book as well as explicitly rationalize the queries used in the software as an important part of the methodology and results in each chapter of this dissertation. Disclosure is necessary to contribute to the transparency of public participation research and practice as well as show my bias as a human instrument. Short of showing the NVivo file, it is the best way I can describe the process for pursuing information.

My codebook changed over time. Sometimes it grew and other days I congealed nodes together. Once I coded for each main theme, I began to do more fine scale coding within a topic. I repeatedly returned to the full interviews in order to make sure that each coded “quotation” was not merely taken out of context, but was truly embedded within the respondents voice and my interpretation. In future research I would capture the

changing structure of the codebook in a more clear and iterative fashion in order to not lose that dialectic with the data when presenting the final codebooks.

## I.6 CASE STUDY: COMMUNITY-BASED PLANNING AROUND WHOOPING CRANES

Whooping cranes (*Grus americana*) are the largest birds in North America and also one of the most endangered. In 1941 there were only 14 individuals, but through conservation efforts such as captive breeding programs with amateur aviculturalists, endangered species designation and legal protection, and the establishments of habitat reserves in their nesting, migration and wintering grounds, the crane population has increased to approximately 280 individuals (Cannon 1996, Dunlap 1991). However, to date, these efforts have not been enough to “downlist” to “threatened” status or delist the species from the Endangered Species Act protections. Local citizens, crane activists, tourism bureaus, government agencies and university researchers are currently working on ways in which the crane population can continue to increase despite continued threats of climate change, rising sea levels, salt water intrusion, decreased freshwater inflows due to human consumption and drought, predators, and development affecting their few remaining quality areas of habitat.

Whooping cranes occupy an important place in human’s environmental imagination. They are rare, endangered and protected. Aesthetically, the cranes are beautiful, elegant, large, affording them the term “charismatic megafauna.” They were hunted (and accidentally still are, allegedly because of the resemblance to White Pelicans), but now are sought mostly by wildlife watchers and birders. They migrate



from coastal Texas through the corn, soy and wind farms of the US American Midwest to Wood Buffalo National Park in Canada. The birds live in marshes and seek protection from predators in the water. They also defend their wintering territory from other cranes as a family unit, which is a different behavior from most migratory birds (Cannon 1996). Given the many affiliations with human characteristics, cranes are an excellent study sample for questions of economic, aesthetic, tourism, anthropomorphism, and conservation values. Because these human values at times are incongruent or lead to differing management goals, crane discourse is an excellent site of conflict to study such constructed binaries as individual-family, individual-community, pastoral-wilderness, land-water, human-wildlife, agrarian-preserved—and more pluralist perspectives among these relationships and constructions.

In 2010, Dr. Tarla Rai Peterson was approached by Joy Nicholopolos of the US Fish and Wildlife Service to determine the capacity of the local community around the whooping crane wintering grounds of coastal Texas (along the coast from Port Aransas to Port Lavaca) to participate in a Community-Based Planning (CBP). According to the proposal and contract “the project is an attempt to identify potential barriers that may impede progress in the development and implementation of program activities. The process should enable community participants to generate recommendations for how such barriers can be avoided or transformed into opportunities.” This work was to be in a similar vein as the Edwards Aquifer Recovery Implementation Process, one that would eventually develop a multiple species Habitat Conservation Plan under the Endangered Species Act, a project Peterson and Nicholopolos had conducted previously. Many of the

same stakeholders participated in and informed the CBP research. However, this was a different system and rationale related primarily by governance structures.

#### *1.6.1 Methods of data collection*

The analysis is based on a set of 36 interviews and 80 surveys collected from July 2010 to September 2010. My colleague Chara J. Ragland (also in the Dr. Tarla Rai Peterson research group) and I found respondents through a media search and internet search. We looked for the term “whooping crane” in conjunction with terms like “Texas,” “winter,” “tourism,” “conservation,” and “activism.” This process gave us a starting picture of the general history of crane conservation on their wintering grounds and the key players in those efforts. We also started to build a preliminary base of how people constructed their relationships with cranes.

We also employed snowball sampling once the interviews were begun to find more (Lincoln and Guba 1985). Semi-structured interviews were based on a theoretically-grounded questionnaire (Appendix A), and typically were for 45-90 minutes in duration, though a few were multiple hours and involved participant observation and field site visits. We met respondents in their chosen places (offices, hotels, homes, ranches) and audio-recorded each interview. The interviews were transcribed by a transcription company and checked by members of our lab for accuracy.

In addition to the interviews, we either spoke to or presented a short informative PowerPoint regarding the project to various stakeholder groups. In order to allow further interaction, a website regarding the project was provided a forum for direct contact with the researchers, comment-monitored discussion, the opportunity to receive

and participate in an open listerv forum, and resources for further learning opportunities regarding collaborative learning and community-based planning. The website did not generate discussions, but we did receive many personal emails that were included as data in this study. Also we collected observations within the community, visiting tourist bureaus, hotels and housing developments.

Based on the interviews we designed a 2-hour long workshop/public meeting held in Rockport, Texas on September 30, 2010. Advertisement was facilitated by participation at all jurisdictional levels, as well as the local business community. At this meeting, participants were encouraged to communicate who they were, what issues they deemed important, and how issues and concerns within their small groups (3-6 people) were interrelated. 120 citizens attended the meeting, representing various municipalities and counties around whooping crane habitat. Some also represented their government agencies and private interests. The activities of the meeting were each meant to collect more community members' information which could later be used to structure more involvement.

At the meeting there were presentations by Joy Nicholopoulos on behalf of the USFWS and the research team. Meeting participants were asked to describe the “best possible future” and the “worst possible future” for the community. This was followed by small group sessions in which attendees discussed what they had written and were asked to further define their ideas as “simple” or “complex” issues and to show how the various issues related to each other. During the short break periods, participants had the

chance to define the history of the area on a large timeline or place comments or markings on area maps that reflected how they related to the area.

After the meeting we sent an online survey request to all of the attendees and had a 68% response rate (Appendix B). We asked them about what would be important next steps and what was valuable for them at the meeting. We also left many questions open-ended for further comment. This data set was useful for demographics of participants and for examining how people construct viable public participation mechanisms and seek to participate.

Though I did not rhetorically analyze the images, I searched multimedia reserves on the internet: newspaper archives, websites, and film. For the newspaper search, I searched ProQuest Newspapers Database provided by the Texas A&M University Evans Library to search from 1900 to 2011 for images and text about whooping cranes. While a finer detailed study of the images could review the ways in which people communicate about cranes both visually and verbally over time, the predominance of the crane presence provided sufficient results for wildlife managers.

Another data set was collected to understand the relationship to place and to bird of the temporary population of attendees to the annual Whooping Crane Festival in Port Aransas. It also responds to calls by tourism scholars for more interaction directly with tourists would better inform practices. I surveyed, with Matthew Turner, all of the people who were on a crane watching boat tour, made ethnographic field notes and interviewed animal, bird and crane watchers throughout the festival weekend. This data set was not be directly incorporated into my dissertation but augmented aspects of the

relationship between tourism and charismatic megafauna for future publications and a report to the Chamber of Commerce of Port Aransas.

#### *1.6.2 Additional data sources*

I collected interviews and participant observations of birdwatchers and birders throughout my tenure at Texas A&M. These wildlife watchers, experts in observation, and fanatics have intrigued me since 2004, but my formal study began within the qualitative methods course taught by Dr. Yvonna Lincoln. Fifteen interviews form the base of my research, two of which were supplied by a fellow researcher, Dr. David Scott. These interviews are used primarily for the first chapter but mutually informed the research on wildlife watching and birding with the respondents in the Community-based planning around the whooping crane study.

The multiple forms of data were not incorporated into every chapter of this dissertation but have enabled me to have a better understanding of the whole community of stakeholders. The information I gathered shaped the selection of stakeholders for full analysis that was covered here. It is primarily useful in cross-checking theoretical and critical readings against the opinions and experiences of the public as well as see the relationships among well-integrated members of the communities and organizations and those of temporary residents.

#### *1.6.3 Components of the study*

In the three chapters of the dissertation that follow I focus on the capacities of various stakeholders and how they can redefine and improve natural resource management plans. In the first chapter I focus on a particular group of non-consumptive natural

resource users, birdwatchers. The next chapter empowers public servants, the wildlife managers themselves, to move beyond bureaucratic standards and to employ simple “armchair sociology” methods to recognize the community capacity for collaborative opportunities for management. Finally I address wildlife scientists and the degree and manners in which they affect public participation processes through reductive narratives of their research. For each stakeholder group, I employed a compositionist and social constructionist, verging on emancipatory lenses.

### **I.6.3.i Chapter II: Flocking: Bird-Human Communication**

Ritual communication provides us an opportunity to see in a social phenomenon what has been normalized and what is mutable through non-coercive means. I employed ritual communication to better understand the animal-human relationship of birds and birders, how that leads to specific values toward bird species and in some cases individuals, and conservation of birds.

The kinds of reforms I propose are non-coercive, ritualistic practices built on substantive ethical demands (Critchley 2008, Rothenbuhler 1998). Ritual can be based on legislation or encouraged through normative behaviors, but these changes in culture must be carefully adopted so as not to assume the same hegemonic role that capitalism and globalization have in our current paradigm. Providing the best institutions and processes through which people(s) can make decisions for their own survival and *with respect to* the more-than-human world is my primary pursuit to these problems.

Birdwatchers and birders have usurped hunting and fishing in the number of annual participants in the United States (USFWS 2009b, 2009c, 2011). Wildlife

watching in general is an activity that over 30% of the USAmerican population participates in. I include both designations here because not all crane watchers are birders and because cranes may not be a key species to elite birders, though the Texas coast provides the best viewing (or listing) opportunity. Wildlife watching is often part of “ecotourism,” defined as “a conservation-oriented, market-based activity in natural areas” (Jamal and Stronza 2009)., or what I developed as concept for future research which is also evidenced in my research: “ecological heritage tourism,” defined as to an activity which affords the visitor an experience of direct, personal interaction with an ecosystem and its inhabitants a connection to past and present ecological, evolutionary and historical values. Ecotourism has been the focus of extensive communication research that has enhanced understanding of how the touristic experience may contribute to environmentally sensitive behaviors (Green 2005). Additional studies show that experiences with charismatic megafauna produce similarly favorable behavior changes (Montag et al. 2005, Zeppel and Muloin 2008).

However, these benefits of engagement are troubled by considerations of motivations. Many tourists are not really citizens of the area and have no interest in participating in political issues while on vacation. Even temporary residents, such as winter Texans, may feel pulled toward the leisure instead of conservation aspects of ecotourism and wildlife watching. To further complicate conservation efforts, recreationalists may have conflicting interests in resource use. Layzer (2008) provides excellent examples of how recreationalists may directly interrupt conservation practices, requiring timing limitations on leisure activities. This chapter has been published in the

book Human-Animal Communication as edited by Emily Plec in December 2012. In 2013, the collection earned the Christine Oravec award for Environmental Communication.

### **I.6.3.ii Chapter III: Identifying responsive publics for improved species conservation planning**

Social science findings can seem common sense to those of us with a predilection for the social but for those trained under different epistemologies, the methods and results are inaccessible. Wrapped in theory and obscured by qualitative metrics, ecological scientists and wildlife managers could be confused by the enigma of their stakeholders. In the interest of pragmatic and practicable science, I created alternative means for natural scientists and managers to understand the communities in which they work. By fostering interdisciplinary methods, mid-level theory of social science as engaged research, this work proposes to democratize science data collection and practice.

Critics have laid blame against agencies: “Agency commitment to participation may be no more than empty rhetoric hindered by the competition between agencies, which are sometimes forced to work in partnership. In these circumstances, it is perhaps unsurprising that agencies are unwilling to clarify the purposes of their cooperation and that the partners are unwilling to delegate authority. Hence the observation that organizational behavior is too often determined by internal preoccupations with individual needs, rivalries and risk aversion” (Sidaway 2005:195). Yet part of the capacity I better understood from my respondents lay in the commitment among the field



officers and agency personnel not only to the species under their charge, but to their community.

In this optimistic strategy, I assume the wildlife managers wish to improve relations with the public and their management plans. I provide a way to measure the amenability of their public for planning and the species. This is based on four criteria: economic need for the presence of the species, abundance of iconicity, ideology about the species, and the public need for assistance in navigating multiple bureaucracies.

#### **I.6.3.iii Chapter IV: How reductive scientific narratives limit possibilities for public participation: A case study of community-based conservation**

Scientists claim a paucity of influence in political processes because of their professional code of unbiased and objective research. However, the influence of the narratives, a singular reduction or representation of an interconnected phenomena, they create through their research affect public perceptions of how, for example, “ecosystems” “function,” cranes “cohabitate” with human “disturbance,” and what “factors” affect “well-being” the most. In the case of whooping cranes, the narrative of freshwater inflows determining the quantity and size of blue crab, the alleged primary food source for cranes, has led to particular public responses. My argument here is that the reductive narratives of scientists limit the public participation in natural resource management.

I posited that a more representative narrative would lead to improved representative democracy. The importance of examining metaphors in environmental discourse has been expressed by various stakeholders in the debate: scientists (Kuhn 1962, Botkin 1990), theorists (Merchant 2004) and critics (Carolan 2006). Of course, the

training of the general public is not such that they can disembody an argument from the ethos of the person, in this case the educated and expert.

I illustrated this phenomenon through the narrative constructions around cranes and scientists within the community. I showed how the solutions suggested for managing the cranes are related discursively. I relied on the respondents from both the public meetings and interviews, providing a close and rich description of how these narratives became established within local and public discourse.

Following from Cox's (2010b) definition of environmental communication and the aforementioned discussion, how we talk about the environment has real impacts for the environment. In the case of the whooping crane, science has figured prominently in public debate, leading to conflicts among community members, including litigation and public outcry. Who produces this scientific evidence? And how can citizens understand the value-based aspects of science? Scientists who actively work within a community or politically-charged situation like the management of a federally-endangered species can figure prominently in how publics determine how to respond to local, state and federal management.

In order to better understand the timeliness or the seemingly emergent issue of politicized science in the case of the whooping crane management in Texas, I turn to political theory and science and technology studies. Mark Brown's (2009) impressive volume on *Science and Democracy* seeks to locate science's politicization and policy's scientization in order to better analyze the relationship. Science is not political under three conditions: when ritual and norms are accepted as ways of life; when there is

conflict but no power (in the Foucauldian sense); and when there is power but no conflict.

Arguably, the research on cranes was conducted in an acceptable way and presented to the public through beyond-DAD means, via a website and other things. Additional scientific information was collected by different means and perspectives. Very few scientists however managed the land on which the cranes lived, and a monopoly of information controlled the public understanding of science. Until the cranes died off in 2008-2009, there was no conflict. I have used this parsing of politicized science to explain how the situation for scientists in the case of whooping cranes reached one of the climaxes over its time, which became the impetus for the study.

Many descriptions apply to scientists' roles in a civic situation. They can serve as gatekeepers to the community. If the scientific results are incongruent with the public's construction of the situation, the scientist can apply their ethos to negate the value of the science (Friedman et al. 1988). The converse is also as likely, thus reifying the status quo of current knowledge. Scientists may work to control the flow of data, allowing only certain types of research in their area or controlling the messages that are publicized based on this research. They produce their own information, and some have informal means of communicating this research (Olson 2009).

Celebrity is one component that organization communication scholars have identified that leads an audience to respond favorably to scientific information. Research on the environmentalist ethics invigorated by Steve Erwin, the late Crocodile Hunter, indicated that celebrities, especially those who "walk the walk" provide an entrée into a

new or deeper ethical relationship (Brown 2010, Northfield and McMahon 2010). Like hero worship, a cult of personality can develop around this individual, reenacted through impersonation. Then individuals can continue to use simulacra of their own image to produce an idealized and heroic public image. Scientists may produce this public image by communicating in media other than their own publications. But scientists are supposed to be “objective.” Using charisma to communicate science to a lay public might does not necessarily cross this artificial construction. Then again, power changes a person, and celebrated power may lead to acting as a spokesman for certain political strategies, as if assuming the role of demagogue. Other celebrity-like characters further problematize the animal-human relationship, as described in the extensive scholarship on *Grizzly Man* (Ladino 2009, Schutten 2008) or climate change and Al Gore (Johnson 2009).

An analogy that would be easily transferable to scientists, especially ecologists is keystone species. The ecological metaphor fits because according to one ecology textbook, keystone species are those that have a disproportionately large impact and effect relative to abundance (Begon et al. 2006). As an effect of federalism, many areas have a limited number of scientists working for agencies and universities. Some areas may have more given their importance to general knowledge and research, as might be the case with the coast of Texas. And when political issues arise the keystone scientist may be able to construct the scientific understanding of the situation in their favor relying strongly on their ethos.

These are temporary, power-based relationships, niches within the production of scientific and ecological understanding that will, in the bureaucracy or community, be occupied by someone else eventually. Begging a question of relevance: What is the role of these keystone scientists in local natural resource management? And, as an interventionist/emancipatory researcher, can there be ways in which other stories about the scientific understanding of the situation can become part of the public discourse? This research has real effects on public participation in natural resource management because it seems that so much of natural resource management depends upon science as interpreted by local citizens.

This research has the potential to disagree with some recent arguments that encourage the involvement of scientists in politics. Randy Olson (2009), “scientist-turned-filmmaker” as he calls himself, provides scientists a litany of ways of improving their communication with non-scientific, lay audiences. In the case study, on scientist practices multi-faceted, multi-media communication with the public about crane management and ecosystem health, blurring the artificial boundary of science and politics, but also influencing substantive actions on behalf of cranes. A more worthy aspect of this research would be to trouble the boundaries of science and politics, and how institutions could be established to better mitigate disproportionate power relationships and dynamics while allowing scientific debate to be a part of informed decisionmaking (Brown 2009; Latour 1993, 1999). Following from Kinsella’s remarkable studies of physical sciences and nuclearism, I would like to explore similar dynamics: “Throughout, my analysis examines the tensions between the autonomy of

individual scientists and the constraints provided by the larger discursive systems in which they participate” (1999:173). This research responds to the questions of public participation in natural resource management because it shows how scientific discourse coming from particular individuals may greatly affect the ways in which people construct political responses. Multiple scales of discourse were interrogated to see if this is a possible antidote to the hegemony of science in decisionmaking.

## CHAPTER II

### FLOCKING: BIRD-HUMAN RITUAL COMMUNICATION\*

#### II.1 INTRODUCTION: WHY BIRDS AND WHY RITUAL

I may know the names of the birds I see, but not the nature of my relationship to them, not how much of my own fate to read into theirs. (Rosen 2008:50)

The language of birds is very ancient, and, like other ancient modes of speech, very elliptical: little is said, but much is meant and understood. (White 2009:91)

Humans long for birds. We long to be, eat, see, hear, touch, resemble and fly with birds.

They represent an unparalleled freedom combined with a cross-cultural aesthetic.

Throughout history, they have been our gods—the Egyptian falcon-headed Horus; lovers as in Zeus’s attraction to Leda the Swan; and guides, from the raven for the Koyukuk to the raven and dove for Noah (Mowat 2005:134–135; Genesis 8). Birders are one of the latest embodiments of this yearning—cultures of people seeking birds in their backyards and beyond for enjoyment, beauty, recreation, natural history and counting.

In the past century, nature writers have accomplished more than making birds muse and metaphor for human life; instead they have sought parallels in our existences. Terry Tempest Williams’s (1991) *Refuge* describes Great Salt Lake’s flooding of nesting and foraging habitat at the Bear River Refuge in Utah as a latent effect of humanity’s large-scale manipulation, all too like her own matrilineal experience: Every woman in

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her family has been exposed to radioactivity and suffered from mastectomies. Loren Eiseley's (1997) essay "The Brown Wasps" details how pigeons seek home even when the habitat has been altered and removed under the guise of progress. Their memories, unrelenting, draw them back to the same place. For Rick Bass's (1997) youthful protagonist, a golden eagle entrapped on a hill is mother, identity and eagle. She makes the eagle's body her body. Many authors exemplify musing internaturalist literati's vision of birds as nothing less than some miraculous kin. Jonathan Rosen's (2008) book is entirely devoted to the interconnected relationship of human reflection and bird existence:

What has all this to do with birds? Birds say life life life, but something right alongside them is always whispering death death death. More than the blue sky, death is the backdrop against which the birdwatcher sees the bird. We go to look at them while they are still here to be seen and while we ourselves are still here to see them. (Rosen 2008:68)

Birds *are* the proverbial canary in the coal mine. Fifteen birders and birdwatchers participated in hour-long semi-structured interviews in 2009. As a birder-researcher, I have collected participant observation data at three Christmas Bird Counts, a Whooping Crane Festival and twenty birding outings with Audubon, ornithologists and private groups.<sup>1</sup> And although conservation was but an undertone to these events, birders expressed sensitivity for the frailty of birds, as this respondent claimed:

They're an indicator of what we're doing in this world, just like most wildlife are. I think birds are extra sensitive to the things we're doing to our planet. We ought to be paying attention to it and educating people about it because you know these contractors go out and buy these big chunks of land and they're not thinking about wildlife. They're thinking about making money.



Discourse about birds' environmental sensitivity often centers on general ecosystem health. Birds illustrate the ways in which mobile animals respond to climate change in varying ways (Wiens et al. 2009). Even the rhetoric of Partners in Flight, a trinational conservation alliance, emphasizes the ecosystem service birds provide as “indicators of environmental health,” as well as the ecological importance of birds to all other organisms (Berlanga et al. 2010:1). Consider too the opening paragraphs of Rachel Carson's diatribe against chemical-dependent culture, the 1962 environmentalist classic *Silent Spring*: “There was a strange stillness. The birds, for example—where had they gone? Many people spoke of them, puzzled and disturbed. . . . The few birds seen anywhere were moribund; they trembled violently and could not fly. It was a spring without voices” (2002:20). Birds inform humans of the repercussions of their actions, but how do we learn from their actions? And where are the sites, when are the times for valuing birds for their inherency, their existence?

Some wild birds depend upon humans for resources and actions, finding creative ways to manipulate our structures for their own uses. Barn and Great Horned owls, among the most common owls, thrive in areas with agricultural fields and buildings (Cornell Lab of Ornithology 2011). According to the Purple Martin Conservation Association, east of the Rocky Mountains in North America, Purple Martins nest only in “human-supplied” houses constructed for their colonies. Urban members of the corvid family (ravens, crows, jays, magpies, jackdaws) crack the shells from nuts with cars—in crosswalks (Klein 2008)! However, birders and ornithologists gain knowledge of birds' capacities for coexistence through careful, patient observation as most field guides do

not address the ways in which a bird affects or is affected by humans and our artifices (Schaffner 2011). Scientists argue that many birds' range shifts are as much a response to people changing what they plant in their gardens as to climate (Weidensaul 2009). Birds, perhaps as much as any nonhuman animal, call and respond, that is communicate, within the myriad yet myopic perceptions of humans and our actions.

For this chapter, we depart from typical birder studies, in which birds are represented in symbolic and instrumental forms. I take birding as the major text in order to pursue a ritualistic perspective on the social world of birds and humans. Rappaport, a key theorist of ritual communication, indicates that symbolic forms (mythic, artistic, etc.) lie at the depths of ritual and are the "least distinctive"; he proposes seeking the superficial and obvious aspects of ritual because "certain things can be expressed only in ritual" (1979:192). This is not to say that bird-human relationships are entirely articulated through a ritual communication reading, nor is birding purely ritual with the result that all other explanations fail. Whereas symbolic life exposes a second tier of thought and response, ritual studies the primary experience, the visceral reception and production of symbols. Ritual communication, for this author and birder, provides theory and practice through which to query the cultural and communication phenomenon of birding.

Birding, I will argue in the following pages, depends upon what happens before our animal eyes shift from the more-than-human world<sup>2</sup> toward our own internal desires. What happens when human and bird meet? As I can only ask humans of their experiences and as of yet am unable to interview the birds, I represent the

anthropocentric side in this review of ritual communication between birder and bird. However, I find solace in Peters's perspective that communication among the more-than-human worlds and humans is not commensurate but ephemeral. He writes at the close of *Speaking into the Air*, "If we thought of communication as the occasional touch of otherness rather than a conjunction of consciousness, we might be less restrictive in our quest for nonearthly intelligence" (1999:256). And as recipients of messages, we could be more open to their myriad meetings. For Peters, dolphins within the agoric ocean represent the ultimate polyvocal democracy; for us, walking in the atmosphere, birds are the most outspoken and omnipresent taxa, connecting with our senses on many levels. In short, birds offer a communicative connection—one that birders understand well.

These are the stakes of studying birds and birders. Not to mention that while texts on birds continue to collect a wide interest, the act of birdwatching is America's fastest growing pastime (American Bird Conservancy 2010). According to surveys on wildlife watching and hunting, birdwatchers compose one-fifth of the American public, numbering 47.7 million people (U.S. Department of Interior et al. 2006:36). This collected action of watching, hearing, calling to, pishing at, playing ipods for, naming and counting birds is a social phenomenon, learned in practice as in value; that is, a ritual.

## II.2 METHODOLOGY

In order to conduct this study, I combined interviews of birders with participant observation for ethnographic fieldwork as a way of engaging and describing a culture Spradley has argued that participant observation is best conducted in situations where

simplicity, accessibility, unobtrusiveness, permissibility and frequently recurring activities are valued and available (1980). By participating in birding activities, from field trips and festivals to personal listing and citizen science counts, I sought “to understand another way of life from the native point of view,” thus learning from people how to be a birder (Spradley 1980:3). Because birding has a strong but open social network, and access to wildlife watching areas is generally limited only by a nominal fee, I was able to participate in an unobtrusive way, often identifying myself as a social science researcher within the Department of Wildlife and Fisheries Sciences, an appropriate level of discretion for defining the human instrument, according to Lincoln and Guba (1985).

I also conducted ethnographic interviews using a semi-structured protocol (Lincoln and Guba 1985) and digital audio recorder. Snowball sampling and attendees to local Audubon Society meetings supplied the respondent base. I was also given two additional interviews completed two years prior by a colleague, totaling fifteen formal interviews. To increase the scope of birding culture I have also included texts on how to bird; field guides; first-person narratives in book and blog forms; bird counts; histories on the subject; and environmental literature. In short, the ethnographic field notes I have collected from 2008–2012 include fifteen interviews, hundreds of hours of participant observation, first-person narrative texts and secondary materials from private, public and nonprofit organization sources. In the end, I have become a birder by process of interacting and learning from the texts and conversations from which anyone could learn how to bird.

I feel it is important for the reader to understand that although I never intended to become what I study, I am a birder. Like the author of *The Big Year*, “Slowly but certainly I realized I wasn’t just pursuing stories about birdwatchers. I was pursuing the birds, too. . . . I needed to see and conquer” (Obmascik 2004:xi). I am interested in collecting birding experiences, and have been involved in some great birding rituals. I had been warned that raptors are a gateway drug, and I kept watching anyway. Perhaps this is what happens to humans when we participate in animal-human communication: We want to talk and to listen and to participate more.

### II.3 RITUAL COMMUNICATION THEORY

Whether it is Emile Durkheim’s serious life, Mary Douglas’s purity and danger or Mircea Eliade’s sacred and profane, the binary of ritual and non-ritual distinguishes between regular life and religious life. This is not religion in the typical connotation we use in daily conversation but the ways in which the world adopts meaning. For Eliade, the context is less about choosing a religion; he denies the wholly existential agency of the modernist: “we are confronted by the same mysterious act—the manifestation of something of a wholly different order, a reality that does not belong to our world, in objects that are an integral part of our natural ‘profane’ world,” but instead arrive, alight, observe, fly away of their own volition and “something sacred shows itself to us” (1959:11).

However, the ability to experience the manifestation, to access the sacred meaning, depends on a transition through experience: “the initiate, he who has experienced the mysteries, is he who knows” (Eliade 1959:189). Initiation requires

people who have had this experience to structure the performance, to transmit information and impart knowledge and significance to the information. The participants in ritual are hierarchically defined, although these hierarchies may transform in the liminal space, and those in positions of privilege (experience and knowledge) perpetuate coded and defined ways of being (Rappaport 1979, Douglas 2005). For Rappaport:

The point to be made here is that this relationship of the act of performance to that which is being performed—that it brings it into being—cannot help but specify as well the relationship of the performer to that which he is performing. He is not merely transmitting messages he finds encoded in the liturgy. He is participating in—becoming part of—the order to which his own body and breath give life. (Rappaport 192)

For example, in birding, the experience means little until someone else can recodify the value of the ordinary object into a sacred subject. Through training with other birders or bird texts, the Socratic discussion transforms the open participant.

Novice: What does it mean to see a bird you have never seen before?

Expert: Nothing. Except that this is now socially, cumulatively, personally, ecologically and scientifically significant.

Novice: What does it mean to see the yellow-crown feathers of a Myrtle Warbler?

Expert: Nothing. Except that it is rare and you have been close. You may not see that for awhile, if again.

Another way birds impart the significance of their sighting by humans is through this interaction. Many novice birders cite the first time they truly saw a bird; they recall the species, place and age when this occurred; and the bird-human interaction led to value changes. Once a participant chooses to engage in the ritual and has learned some of the ritual of birding's structures, there is an in-between place experienced when the bird arrives and none of the birders have identified it. This is a rite of transition, where life is different upon seeing and identifying the bird (Turner 1986; Van Gannep 1960).

The space through which the birders passed is known as the liminal space, a threshold where everyone is relinquished from their roles and still engaged (Rothenbuhler 1998).

Ritual communication is uncontrollable yet calculated and structured. It depends upon self-perpetuation, symbols connected, configured and mutually supportive, yet flexible enough in order to change, be co-opted and contrived for other situations, creating a shared world of meanings among individuals. However the “liturgy” of birding may seem, it is entirely dependent upon the manifestation of birds. Should there be no birds, there is no experience. Further nuance within the reactive ritual depends on which birds appear, and how and where, as the values of sacred objects are disparate and uncertain depending upon place and case.

Lest it seem I am imposing circular logic to define the ritual by the ritual being defined, I would like to identify the key, “obvious” aspects of ritual, although there are as many definitions as authors. The synthetic definitions of Roy Rappaport and Eric Rothenbuhler provide succinct and lucid criteria to apply not only to birding but to other animal-human interactions, and perhaps beyond to those of the more-than-animal world. Levy discusses some of the nuances that distinguish “ceremony” from ritual for Rappaport and asks, “When is a ritual not a ritual and why do some parts of a ‘ritual’ . . . seem more like a ‘ritual’ . . . than others?” (1979:154). I find Rappaport’s succinctness useful: “the formal, stereotyped aspect of all events” consists of formality, performance, seriousness, voluntary action, repetition and congregation (Rappaport qtd. in Levy 2001:154).

Formality implies a structure or pattern, where certain actions are accomplished at the appropriate time with the proper conduct. The symbols, embodied in persons and in objects, have material effects. There is a tension between structure and mutability, however, because performance affords room for the individual response. Therefore, rituals are embodied, not enacted; spontaneous, not scripted. For Durkheim, serious life is action regarding the sacred. The sacred subject of the bird, manifesting itself and being regarded, can theoretically be supported by the invaluable aspect of communication with the other, that which is not human produced (Peters 1999). Ritual also subscribes to what is beyond value instrumentally or rationally while simultaneously denying frivolity or recreation. A person must participate of his or her own accord, at repeated or circular intervals, for involvement in a social action. The individual who performs within a ritual is always doing so with respect to a collective. In short, I define ritual as a social process of (dis/re)ordering through interaction with the more-than-human world, where common objects manifest themselves within a system of existing or altered values to become sacred objects. Birding performs ritual. When the aesthetic and inexplicable experience undermines presumptions of both recreation and scientific instrumentality, rationalism swirls with emotions of hope, disappointment and excitement in experiencing a bird. It is a rare, and therefore special, time: One cannot bird all the time every day for the same birds—in their own circadian rhythms, their personal phenologies and annual migrations, their molts and matings, the lives of birds permit only intermittent yet repetitive interaction. Roger Tory Peterson's son said, "My father used the comings and goings of birds as both a biological clock of sorts and a



litmus test for the condition of the environment” (Peterson 2008:ix). Finally, even if birding is a solo affair, a dialogic view of natural history and evolutionary interaction would indicate that the social process informs how one ‘birds.’ Natural history is a process of generalization and specification through observation over time and repeatedly, itself dependent upon ritualistic attention to the more-than-human world, both the uncategorized and unclassified. Social action suggests a structure through which the performance of interacting with birds can be embodied by and transformative for the birder. The following descriptions from the case study will enrich our understanding of bird-human relationships from a ritual communication perspective and provide necessary sites for discussion of conservation ethics.

#### II.4 RITUAL COMMUNICATION ASPECTS OF BIRDING

Birding, semantically, relies on the noun—a collection (taxa) of feathered animals—to create a dependent relationship. Just as skiing depends upon skis, birding depends entirely upon birds. The noun transfers into a gerund form (“Don’t tell mom, but I’m birding again”) and creates a new noun form (“Let’s go birding”). Because of this transfer, the noun “birding” can be broken up into the imperative, as in, “Bird the Gnar!”—a *carpe diem* equivalent from Steven Tucker, author of the blog “Bourbon, Bastards, Birds.” To take the present indicative as personal statement, one could utter, “I bird,” bringing very close the subject and the referent, although this is less common in spoken vernacular. More common is to adopt the general name of the referent: I am a birder. An interview respondent expressed a preference for identifying with neither birder nor birdwatcher, but instead simply with the verb in action: “I watch birds.” This

phrase avoids some of the pejorative or “pigeon-holed” connotations of birdwatchers: the “Jane Hathaway” character from *The Beverly Hillbillies* in a many-pocketed outfit; according to a respondent, “some little old lady in tennis shoes and a floppy hat.”

Serious bird aficionados I interviewed put a finer point on the exclusive-inclusive dynamic of terms: “So birdwatcher is a mildly, amusingly contemptuous term. Birder is something that the birders use, other people usually don’t know.” On the extreme end of the artificial continuum of birdwatchers and birders, birders list their sightings and keep records, pursue vagrants and rarities, keep abreast of others’ sightings through call chains and email lists. On the other end, birdwatchers may never leave the comfort of their backyard, porch or house; feed common species; and often do not make records beyond their memory. A respondent noted of university campus birders, “It’s been part of this community whose boundaries are unknown. I’m always finding more people.” Social bonds are formed in proportion to the intensity of an activity— think of the differences in social bonds between elite mountain climbing partners versus novice personal backyard gardeners. This partially explains why the social interaction of birdwatchers, on campus or beyond, is not as strong as that of birders. Nor do they exhibit mutually recognizable behaviors in public spaces. One Utah birdwatcher has refused to learn the names of birds in order to preserve his wondrous experience of them. And Texas master naturalist and professor of English Jimmie Killingsworth has decided that, at some points, “I want my birding to be something easy and profoundly useless” (2009:591). One more collective explanation from birder, Obamscik:

Birding is hunting without killing, preying without punishing, and collecting without clogging your home. Take a field guide into the woods and you’re more

than a hiker. You're a detective on a backcountry beat, tracking the latest suspect from Mexico, Antarctica, or even the Bronx. Spend enough time sloshing through swamps or scaling summits or shuffling through beach sand and you inevitably face a tough question: Am I a grown up birder or just another kid on a treasure hunt? (2004:xii)

The two terms “birder” and “birdwatcher” represent a dynamic relationship and important distinctions within the cultures, but compared to humans who do not interact with birds, they are similar by definition, warranting a single term. Birdwatcher and birder connect through the rite of transition—the bird manifesting itself in the same place as the person, the person experiencing the bird. For the human, at least, something is different afterwards. Phenomenologically, the birder depends upon an experience of the ears, eyes, body and memory (Schaffner 2011:5). In this chapter, in part because of the fluid definition provided by respondents and for practicality, I use the term “birder” to indicate someone who explicitly seeks birds and participates in noting natural history or names.

#### *II.4.1 A day in the life of a birder*

In order to explain birding culture, I invite you to join a group on a typical field trip.

You rise before the sun, meet at the designated spot, caravan in groups of 3–4 in SUVs, sedans and vans to known wildlife watching. In the car, you exchange light conversation and coffee. Upon arrival, just as the sun is breaking, you bumble your cup and all the trappings of birding: occasionally a cigarette (depending on the crowd), bird book (Sibley's, a monstrous tome of paintings superior to photos for most birders in their applicability to field specimens), scope, tripod, binoculars with or without crossback straps, hat. Pen and paper, or write-in-the-rain yellow notebook and pencils in your shirt

pocket. Maybe you have even noted the cloud cover, temperature and time and prepared columns for the four-letter codes for bird-name shorthand, very ornithological. You have a bird checklist for the area. There's wind. There are fire ants. There's your iPod queued up for a potential species in question and speakers in the bag too. There are patches and pins to show where you've been. There's name brand gear and faded birding festival shirts. There are acquaintances from around the region. And there's a bird. Liminal Space. You see: it's on a fencepost, a bird singing and singing. You throw your glass on it, focus your binoculars. You vocalize its presence to alert others, connecting them to the bird. You try to remember the song. You search patches of color, the shape and size relative to the other birds. You look at the way it moves behind the brush and back to the post. You search your memory for similar experiences. You lose the bird. You find it again. Who is it? You render hypotheses. Wingbars. Eying. Tail blunt. Bill relative to head. Bill sharpening against branch. What about the coverts? At this point the bird is not yet a sacred object for ordering the place. When the bird is unidentified yet present. When a group of birders is in the process of identification, liminally hanging between the potential experiences, free from the set knowledge of species and dwelling in the mystery of not knowing the bird. The birders are experiencing *communitas*.<sup>3</sup> Someone states the species name. The game is over. Some people watch the bird longer. Some mark it on a list. You reminisce to the last time you saw the bird. After some time, hours or minutes really do not matter, in the elements, you return to the car, piece through the book, request assistance, deliberate with the group. Not sure. Some lunch, more drive-by birding, people put their personal lists online or nowhere.

#### *II.4.2 Identification*

Birding as a ritual centers on identifying the species of the bird. It is difficult to attribute natural history knowledge or characterize the individual if it has not been named to the taxonomic level of a species: standard protocol for human-biology interaction (Yoon 2009). The more-than-human world enters human understanding through language as a discrete object represented by a single word title (e.g., Veery) or set of words as an epithet (e.g., Yellow-bellied Flycatcher). Often names refer to larger groups such as genus, relating the species to other morphologically similar birds, but as genetics research adds more details, historical titles persist in the halls of the meetings of ornithological societies. To this end, birders speak a general language to name birds by their kind. The standard of the name supports the standard of identifying.

Throughout the history of birding, identification of birds has been limited to the species, but age and sex are becoming increasingly important to advanced birdwatchers. One individual planned to devote the spring to learning the subtle differences between male Northern Cardinals born that year and females. Similarly, another respondent was revered by others in the group for being able to distinguish ages of gulls. The question of whether the gull is more valued because of this enduring inquiry into its age is spurious, but following from the maximization-of-liminal-space argument I am attempting, the more interest in ritual to identify the present bird, the more engagement with the bird, and perhaps, the more sacred its appearance. Species identification reigns primary, but noting behavior and other characteristics enriches the relationship with the birds and shares more of their personal life with birders. The bird is no longer an object or image,

but an entity all its own. It is important to note that this is part of the ritual for more advanced birders. On the other hand, backyard birdwatchers, often debased by advanced or well-traveled birders for their focus on a small set of local species, have the great opportunity to encounter individuals repeatedly, as one of the respondent rejoiced. And birders who scope nesting sites, online<sup>4</sup> or in person, can often develop affection for (a) particular bird(s).

Early bird identification field guides, although based on “collected” specimens, replaced the previous method of hunting, where ‘one in the hand is better than two in the bush,’ by focusing on the aspects of the bird that are distinct and visible to the naked eye, opera glass or best available technology. The organizer of the first Christmas Bird Count, Frank Chapman, who famously identified hundreds of individuals and parts on the fashionable hats of women in turn-of-the-century New York City avenues, preached that “you learned ‘to recognize bird friends as you do human ones—by experience’” (Dunlap 2011:185, Price 1999). This pattern continued through later field guides—the most important technology a birder carries according to field guide historian Thomas Dunlap<sup>5</sup>—where readers were educated to pay attention to the general impression of the bird, the gestalt of the species and the “unchanging physical features of a bird” with respect to what makes sense for the geography and the behavior. They compared humans to birds in that “you could put a name to [your] ‘spouse or best friend a block away,’ a distance too great to allow recognition of diagnostic features” (2011:185). One respondent explained how he recognizes birds:

I'll pick squirrels out in the woods way in the distance just because I'll see an unusual movement. And I'll see it's a not natural move. I can tell there's a bird there. A flash of color or a silhouette. I can tell a lot of birds by their silhouette. You know at dusk, when it's almost dark, and you really can't see them. You can tell a flock of pelicans from a flock of cranes from a flock of geese just by their silhouette and their flight patterns.

In fact, illustrator and author David Allen Sibley suggests that we leave the book behind, pay attention: "The first rule is simple: look at the bird. Don't fumble with the book, because by the time you find the right picture the bird will most likely be gone. Start by looking at the bird's bill and facial markings. Watch what the bird does, watch it fly away, and only then try to find it in your book" (qtd. in Dunlap 10). This would not only improve the ability to take field notes and ostensibly memorize the bird and bird experience but extend the liminal space created through unknowing identification.

#### *II.4.3 Novelty*

Bird guides matter-of-factly state that if you are not birding you cannot possibly identify birds. According to Bob the Birdman's blog, "I'm never not birding." Many rarities are found in the most common and abundantly birded areas. During a birding festival in California, a renowned birder discovered a vagrant in the trees above the whole congregation at the closing events. His friend mused, "All these birds are there, just ready to be seen."

The point at which there is the least amount of hierarchy occurs when one or many people have seen a bird but none have identified it (the primary response). It is the

time where anyone with the right combination of past experiences could respond. Some choose not to respond to the question immediately, though, because of the imposed value of accuracy within the group. Not all birds are equally seen and not all sightings are equally accepted. While Ken Kaufman instructs birders to question authority, experts control historical and regional data, festivals, field trips, events and, in sum, the ritual.

Birders recognize the religious aspects of birding through their comment and practice. In one interview, the respondent denied the power of “self-appointed gurus” and “a self-perpetuating, self-appointed priesthood.” He dismissed their regulatory power over the data sets because it is all “pseudoscientific.” Yet those records make it into regional maps. One respondent, when just a novice, was responsible for contributing to the first sighting in the county and adding “a little dot.” The state rare bird committees, ornithological societies and online databases such as eBird are the end of the road in many ways. Novices must have more proof than others to go against the convention of previous sightings, much like a supreme court. Their perspective is salient because it establishes and maintains a status quo of scientific rigor, although it may not be about science at all, a value of accuracy for birding. For those who are outside of birding, the seriousness may seem to be taken too far. Responses have been to paint birders in a negative light, as obsessive at best. Popular representations like the Steve Martin film *The Big Year* question the worth of paying so much and leaving family and friends to be the person to see the most birds in North America in a year.

#### *II.4.4 Listing*

The list is a private form of discovery. Once a bird has been identified in terms of



species and sometimes sex, then myriad responses are possible, but until that identification occurs, everyone is occupying a space of not knowing, but knowing that they may eventually know: the liminal space. For each new sighting or call or song, the liminal space is regenerated, and the birders respond to this manifestation. A day of birding is only as sacred as the number of birds accounted for; the list is a representation of the number of liminal spaces occupied, the number of times the sacred manifests in the face of the profane.

Accuracy is the most important virtue of listing for most birders. It is important for birders to be correct in the eyes of their peers, realistic within the true ranges of species and for their own records and personal fastidiousness. Some birders will not add the identifications of birds made by others to their list unless they have verified those identifications with their own eyes. One commented on the difficulty of discerning another birder's skill in a group, which partially explains the carefulness. I observed two advanced birders keep different lists for the same field trip, birding almost the entire time with each other. When asked about this, they stated that they wanted to keep personal lists and would not later combine them for submission to a data site. Accuracy in identification and listing is valued by different birders for different reasons and cannot be explained entirely by the ritual of listing. Through other facets of listing we can explore additional values.

One birder transferred ten years of data from paper notes to the Cornell Lab of Ornithology database and citizen science resource, eBird. She admitted about listing,

It's a complete obsession. I buy every checklist. I have several guides for Arizona and Texas. I'm going to go to Florida in a couple of months and I've already bought three volumes. I usually input about 4–5 lists per month. I'll tally my backyard. And one to three, depending on how many counties we go through, for each field trip on eBird.

Her experience shows some of the ways in which birders distinguish the conditions and experience of interacting with birds: by number and quality and among geographic and politically defined regions (yard, fifteen-mile-diameter circle, county, state, country, life). There are no rules, as some birders mark simply in the back of their field guides or keep small notebooks. Uploading data to larger sites creates a collective list for a region.

The greatest adventure for a birder is seeing a “life bird”—a bird the individual has never before seen. Also known as a seeing a “lifer,” the experience has been compared to economics: “the equivalent of reaching into your pockets for change and coming out with the Hope Diamond”; to sports: “It depends, like many males in the U.S., I am defined by achievement in some sense. I'm very interested in seeing something I haven't seen before. It's an adrenaline rush. Like everything has come together”; and to other rites of passage: “How'd you feel the first time you were in the backseat of a '57 Chevy? You know, your heart racin' and your blood pressure up and at my age that is about as big of a thrill as the backseat of the '57 Chevy was.” Yet others compared life birds to more casual experiences: “Yes, it's a good feeling. It's like making a good play in softball. It's not quite as good as getting a paper accepted for publication. Maybe asking a particularly clever question at a scientific conference or

something. It's pretty high up there on the good feeling thing. And because it becomes rare and rarer. . . . But it dies down after a day or two.”

An ornithologist I witnessed in the Amazon oozed excitement for wildlife all day only to render taciturn statements upon seeing one of the only birds he had not seen in the region. As Van Gannep writes in *The Rites of Passage*, “the first pregnancy and first childbirth are ritually most important” (1960:175); so too it could be with life birds. There is a time after people have recognized they are collecting life birds and before the law of diminishing returns devalues each new bird, after which they are rare experiences and the serious education that experts must impart to learners overshadows their personal satisfaction.

The antidote to bird listing ennui is “the big year,” perhaps the most publicized aspect of birding and one that the fewest people have the ways and means to achieve. However, it has greatly affected the importance of the list in birding. When Kenn Kaufman broke from an affluent American elderly male birding tradition and hitchhiked around the continent for his big year, “the list was the thing” (Dunlap 2011:169). And seeing as many birds, listing as many birds as possible within the U.S. political boundary within the distinct time period of January 1 to December 31, is the high holiday of birding ritual. Attested simply by the honor system, the big year birder is followed and celebrated, as well as envied, by birders who watch the tally of their lists climb on their blogs or personal email lists. However, competition, as I will discuss later, often causes their list to be secret until the end of the year. According to the American Birding Association, the current record for North America stands at 745 species.

#### *II.4.5 Cooperation*

“Did y’all get that?” This was a phrase that I initially criticized for taking ownership of the bird and emphasizing the listing of each species instead of the enjoyment. But upon closer and continued observation, it is really an opportunity for people to share sightings efficiently and expediently. If someone has not seen the species, then others will often share their spotting scope or provide accurate directions for finding the bird. Guides will check to make sure everyone sees a bird, but group members also check among their friends and those close to them. Some highly skilled birders will find all of the species in the area first and then slowly release the number so as not to overwhelm the group. During counts, the focus is not on seeing the birds, and often the recorders of sightings see very few birds themselves.

“How many did you get?” This is an entirely different question and centers on competition, but in the case of Christmas Bird Counts, the high holiday of birding, the focus is on the total group contribution to a circle, completed with a dinner for all the personally, they are less likely to add it to their daily or life list. In one case, when a man could not identify a bird at a great distance but was accompanied by someone who said it was a certain species, he did not add it to his list because he did not know if the identifier was more or less skilled than himself.

David Scott, a birder and recreation theorist, has written that the more skilled individual birders become, the greater their contribution to the group’s ability to learn and teach. He explains that the law of diminishing returns affects serious leisure and minimizes personal satisfaction. As one respondent noted:

I lead trips. I never, virtually never, go out birding by myself. Somehow my time budget says that if I'm doing this it's got to be with somebody; I've got to be sharing my expertise. I have to be using my time efficiently. I don't do it as a relaxation, recreation thing. In fact, birding for me now is almost always something where I try to teach somebody else something. Unless, I go, I've seen every bird, virtually, that you could see in the United States.

#### *II.4.6 Competition*

There are many aspects of modern birding that perplex the general public, but the strongest reactions are to rabid birders' sense of ownership and competition. Late-night talk show host Conan O'Brian (2005) satirized the competitive undertones in birding when he joined the New York City Audubon on a bird walk, "This is a birding group here. This is another birding group here. So it's about to get pretty nasty." He proceeded to egg on the two representatives in a comparison of their bird experiences for the day: "I saw a male summer tanager. Heard it and saw it." "I saw a female summer tanager." As one respondent explained:

There is a group that I would call the more or less normal people. ...People that you wouldn't automatically single out as being birders. Then there are the rabid birders, usually young aggressive males whose testosterone for some peculiar reason has been channeled into birding, and I suppose there are a few females like that, but mostly guys. They go out and do it in a very competitive way. They can be amusing or they can be annoying.

Competition is one means of creating hierarchy within the birding social world, which affords opportunities for ritual "high priests" to lead others. Competition also partially helps to maintain the key value of accuracy in data collection from birding

experiences and therefore data points. It also reduces the experience of dwelling in the liminal space of not knowing the bird, because experts can very quickly identify birds. There are many stories of people who travel great distances to see a bird only to add it to their list without watching it, thus ticking the collected experience off of their life list. Intrapersonal and interpersonal competition drives this sport and some of the scientific aspects of it, but is not the sole determinant in birding. In fact, competition among birders may distract from the competition inherent in survival. For instance, there is a darker undertone to accuracy-driven lists that pervades ornithological studies, establishing dichotomies among teams. The Christmas Bird Count (CBC), conducted by citizens, is subordinated to wildlife professionals' Breeding Bird Survey (BBS) data. Meanwhile, the Great Backyard Bird Count is subject to greater scrutiny by experts because backyard birders are not as adventurous or perceived to be as skilled (even though the data cycles through the same online site, the eBird by Cornell Lab of Ornithology); its range is smaller and its data collection increments are much shorter than those of the Christmas Bird Count, yet many who participate in CBCs also contribute to the Great Backyard Bird Count. Even North American ornithologists working on the CBC/BBS data assimilation suggest that these data collections are superior to European studies: "In North America we have information over a much broader area, and we don't have the same uniformity of climate change as in Europe. . . . So we can tell a more complex story" (qtd. in Weidensaul 2009:13). Yet bird conservation will be the primary issue for birders as they experience greater changes, not all due to novelty in new places.

## II.5 CONCLUSION: CONSERVATION AND THE RITUAL RELATIONSHIP

Citizen science has been touted as the next wave in “big data” collection and science. The data sets are massive and accurate, and the process of participating and contributing fosters individual understandings and appreciation for science. In short, it is the Deweyan response to technocratic governance. It has also become part of the ritual of birding, both cooperative and competitive. Yet the theory of ritual communication assumes no direct link between rational collection of information and improved action, in this case conservation, begging the questions: How does the participation of birders and birds in ritual lead to better conservation and not just better information? How are ethical relationships emerging among birders and scientists? I wonder if augmenting the rationalist propensity of birders encourages birders to pursue identifications and data points in lieu of lingering relationships with birds or a bird as an individual. This changes the ritual of watching the bird into one of pursuit, always at the root of this natural history avocation (Weidensaul 2007).

Birders have noted changes to species ranges because of their complex record keeping. For instance, one man noted that there were never White-winged doves in North Texas forty years ago but that they now represent the dominant species. Others have commented on phenological shifts because some keep records of the first time they see the bird in that area each year. They can track the timing of arrivals and departures, and often submit to larger data sets like eBird that can create a much broader picture of bird response to land use and climate change. Whereas I have little sense of how many people actually create these range maps from the larger data sets, it seems that birders

value their own records. These records provide information about birding opportunities and form an annual and seasonal map for birding ritual.

Birds find suitable habitat in many of the places humans have modified for their uses: urban and suburban parks, barns, bridges, agricultural fields and sewage treatment ponds. These sites have the potential to be elevated from their sullied position of “human-made” and therefore not-wilderness in the eyes of birders, a problem Cronon (1995) identified as central to the improvement of the environmental movement’s conceptualization of what qualifies as Nature. From a ritual communication perspective, the birds as sacred objects within a rite of transition serve a greater function of ordering an otherwise sordid landscape: A place of multiple human uses like a sewage pond is also used by something other, an animal who has manifested itself there, lives there and survives there—a Palm Warbler after the Christmas Bird Count on a California sewage treatment pond bank. Dozens of birders, having birded since six in the morning, came to the area and marveled at the nontraditional scenic beauty, the reflection of the yellow bird in water sullied and cleaned for continued use by humans—one more bird. In Mary Douglas’s terms, the disordered landscape has the potential to be reordered as valuable to birders:

Granted that disorder spoils pattern, it also provides the material of pattern. Order implies restriction; from all possible materials, a limited selection has been made and from all possible relations a limited set has been used. So disorder by implication is unlimited, no pattern has been realized in it, but its potential for patterning is indefinite. (Douglas 2005:117)



Birders' pursuit of wild birds in strange places has the potential to guide people to see beyond the tenuously perched dichotomy of wholly human spaces and a separate and monolithic "Nature" and instead reenvision in a more complex, postmodern ecological manner. After all, "birding grew from a common human fascination that was directed by the culture's accepted authority about the world—science—and was driven by a desire to keep and keep touch with a nature while living in a society that threatened it" (Dunlap 2011:199). But because birders focus on wild birds, they have a different organization of the more-than-human world than even ecologists, ornithologists or conservationists, with whom they align in other ways: Their science is one of an interest in seeing birds regardless of where they fit. Aside from "trash birds" or "bad birds," the rigorous division of boundary maintenance between native and nonnative, worthy of conservation and unworthy of conservation, is not of interest to birders as it is to conservationists (Milton 2000). Here novelty, like biodiversity, provides a new vision for conservation action, one that might better deal with present and unprecedented challenges, such as species migration to new areas due to rapid climate change.

In a more general sense, Rothenbuhler has written that the greatest benefits of ritual are the lack of coercive effects on social action, the opportunity to show what could be possible, if only temporarily (1998:15). Similarly, Weidensaul has pointed to the "twin polarities of modern birding": birds as marks on a list or birds as living, wild creatures full of their own inherent value (2007:281). And by returning to communication scholarship, we remember that "empathy with the inhuman is the moral and aesthetic lesson that might replace our urgent longing for communication" (Peters

1999:246). A ritual reading of birding potentially leads to a renewal of clarity in the bird-birder relationship, which is based on what a respondent clearly stated as the reason for participating in this activity at all: “It’s the birds. That’s what it’s all about. That’s why I do it. That is what it is all about. It’s the birds.”

In a poignant moment for conservation, British naturalist David Attenborough’s “The Life of Birds” documentary series shows the forest songs of the Lyre Bird, a master of vocal mimicry, singing the songs of all that surrounds it: local birds, car alarms, camera shutters, chain saws (Salisbury 2002). Other birds may be singing or communicating in similar ways, telling us more about our relationships with the more-than-human world than we thought possible. What are we saying in return?

**CHAPTER III**  
**IDENTIFYING RESPONSIVE PUBLICS**  
**FOR IMPROVED SPECIES CONSERVATION PLANNING**

III. 1 INTRODUCTION

Wildlife managers often enter the profession trained in the biological sciences, hoping to work with animals and habitats, but find themselves working with the public on planning documents (Decker et al. 2014). Through education and training, wildlife managers have increased their capacity to work with the public to meet minimum public participation (PP) requirements and improve natural resource management (Center for Environmental Quality 2007). Simply put, PP “is pre-decisional communication between an agency responsible for a decision and the public” (Daniels and Walker 2001:8). The National Environmental Policy Act (NEPA) “requires federal agencies to integrate environmental values into their decision making processes,” and establishes minimum requirements for public participation: scoping of citizen preferences; notification through the federal registry; response to all public comments submitted during the specified period; and argumentation for selection of final option (Environmental Protection Agency 2012, Council on Environmental Quality 2007). These requirements provide a means of “giving voice to those who must bear the economic, social and environmental consequences of governmental policy and land use decisions” (Hendry 2004:99), or stakeholders.

Despite declines in some wildlife recreation activities, the public has demonstrated increased interest in the governance of non-game, wild species for their intrinsic values (Czech and Krausman 2001, Peterson and Messmer 2010, Teel and Manfredo 2009). Additionally, much work has examined the importance of endangered species, as in willingness-to-pay studies and taxonomic preferences (Czech and Krausman 2001, Dalrymple et al. 2012, Rodriguez et al. 2012). These studies suggest that identifying and cooperating with communities of individuals who are interested in conservation of a species can improve the effectiveness of wildlife management.

Although we recognize that wildlife conservation is often the site of intense conflict (Peterson and Feldpausch-Parker 2013, Parker and Feldpausch-Parker 2013, Treves et al. 2009), this is not always the case. For some publics, a species or ecosystem is a site of beauty, economic utility and deep personal pride. In such cases, to emphasize conflict is to miss the opportunity to engage with a local community that knows and cares about wildlife, has a genuine stake in the outcomes of any resource management plan, and depends upon management agencies to integrate local public interest into state and federal government mandates (Peterson et al. 2010, Yaffee and Wondolleck 2006). Furthermore, engaging with such publics can support trust and cooperation, which helps to establish positive relationships for future management efforts (Wagner et al. 2007, Decker et al. 2014).

Identifying responsive publics is an important initial step in wildlife conservation because responsive publics can foster solutions that help wildlife managers mitigate the hostility aroused whenever government agencies attempt to perform duties that conflict

with individual preferences and desires. Riley et al. suggest that “wildlife managers must carefully determine which stakes to address in a particular situation because the number and diversity of potential stakeholder groups may be large” (2002:586). Because responsive publics will have more ideas than can be addressed in any one plan, it is important for managers to work with local communities to determine appropriate boundaries for each PP process (Peterson et al. 2004).

The purpose of this study is to explore how wildlife managers can harness the capacity of a responsive public. By understanding such a public, wildlife managers can inform the kinds of public participation and public engagement that ought to be employed for natural resource planning. Our objective is to discover publicly identified barriers and opportunities to resource planning around the whooping crane. Based on our case study of Coastal Texas and the wintering habitat of the crane, we found three key categories that provide evidence of a responsive public: iconicity, economic value and dynamic complexity. Caveats are necessary in extrapolating from any in-depth, qualitative study. We do not advocate a single species management technique here; instead, we argue that public interest in a species may provide impetus to addressing many conservation issues that are important to the species and people who share its habitat. The categories we identified would likely be informative in a variety of other contexts around endangered species.

In this paper, we first establish a context for community-based planning around the whooping Crane. Second, we describe the qualitative methodology used to arrive at the three characteristics representative of this responsive public. Third, we explain the

narrative whereby iconicity, economic values, and dynamic complexity work together to produce a public that is keen to participate in whooping crane recovery efforts but feels excluded by the people they are most eager to assist. To conclude, we suggest management implications for involving responsive publics in conservation of charismatic species.

### III.2 STUDY CONTEXT

The Texas gulf coast is made up of barrier islands, bays, bayous and estuaries. Several freshwater streams, fed by rainfall and springs, influence salinity throughout the system as they flow into the bays (Johns 2012). In addition to human recreation, a variety of wildlife species use the unique brackish habitats: birds for winter and migratory stopovers; fishes as nursery sites; and reptiles, such as the endangered Kemp's Ridley sea turtle and American alligator, for long-term use. Managed by the U.S. Fish and Wildlife Service (USFWS), The Aransas National Wildlife Refuge Complex (ANWR), established in 1937 expressly for the conservation of migratory birds such as the whooping crane, protects 115,931 acres and ten confirmed federally endangered or threatened species (ANWR 2010:C-1). Goose Island State Park and easements the Nature Conservancy has negotiated with private landowners provide additional habitat for cranes. State-level organizations that collaborate with the USFWS to encourage recovery of the whooping crane population include Texas State Parks and Wildlife Division (TPWD), General Land Office and Comptroller of Public Accounts. Additional cooperating organizations are the US Army Corps of Engineers, local navigation districts, county commissioners, and chambers of commerce.

Our study focused on an area commonly known as the central Coastal Bend. Corpus Christi is the largest city in the area, with approximately 500,000 inhabitants. Smaller communities have a combined population of 100,000 and are comprised primarily of Port Aransas, host of the annual Whooping Crane Festival; Rockport, an arts community south of ANWR; Lamar, on the same peninsula as Goose Island State Park; and at the northern end of the study area, Port O'Connor with an economy based on resource extraction and chemical production (Evans et al. 2012, US Census Bureau 2013). The major economic drivers are agriculture, tourism (mostly recreational fishing and birding), and energy and chemical production.

### *III.2.1 Impetus for study*

As one of the first species protected by act of Congress, the whooping crane holds special significance for the conservation movement (USFWS 2009a). Congress protected the species in 1967 before the passage of the Endangered Species Act of 1973 (ESA) (Federal Register 32:4001). In 1941, the population of whooping cranes was 15. When the nesting grounds were discovered in Wood Buffalo National Park, Canada, the sole self-sustaining, wild migratory flock was named the Aransas-Wood Buffalo population (AWBP) (USFWS 2014). Through captive breeding and habitat protections AWBP has rebounded to 250-300 individuals; and its conservation was driven by professional scientists and managers in collaboration with amateur aviculturists and local citizens (Dunlap 1991). The trend toward recovery remains vulnerable to the AWBP's recurrent exposure to risks such as power lines and wind energy development along its 5,000 miles migration (Stehn and Wassenich 2006). In the winter of 2008-2009, drought

conditions and water use allocations limited freshwater inflows to ANWR. Government agencies, media, non-governmental organizations and local residents explained the deaths of 23-40 cranes through a scientific narrative of interdependence between freshwater, blue crabs (*Callinectes sapidus*), and cranes. According to this narrative, blue crabs, which form the primary protein source of cranes, were negatively affected by the lack of freshwater to the bays, which increased morbidity and mortality of individual cranes, and harmed the overall population (The Aransas Project (TAP) vs. B. Shaw 2010, Bernacchi and Peterson, in review).

### *III.2.2 Identifying a responsive public*

Wildlife managers are required to address the needs of both wildlife and the public in an increasingly complex decision-making environment. Identifying and cooperating with a responsive public demonstrates respect for local ecological knowledge and for the relationship between local livelihoods and the species or ecosystem of interest. When wildlife managers engage directly with a responsive public, it demonstrates their agency's intent to assist local residents with negotiating the institutional complexity that is further magnified when species have been classified as endangered. Whooping cranes illustrate an opportunity presented by charismatic species to work with, rather than against, a responsive public. This responsive public is made up of stakeholders who are directly affected by management decisions, and who are interested in how those decisions use scientific information to influence both short- and long-term outcomes in their region.



The iconic nature of certain species symbolizes their importance to human communities. An icon, or a picture, image, sign or other representation, stands for its object by virtue of a resemblance or analogy to it (Dictionary online). Dawkins argues that such images “construct affective resonance...to convey essential meanings, to demonstrate ideas, to define the good” (2009:91). Icons function as a form of shorthand or branding. An animal’s iconic status differs from the biological or legal terms used to describe it, in that iconicity develops out of aesthetic and ethical sensibilities, and the production and circulation of iconic images contributes to cultural meanings (van Leeuwen 2004). In the case of the whooping crane, iconic status provides local residents with a sense of connection to the crane, to each other, and, to a lesser extent, to the larger ecosystem that sustains the crane. Whooping crane iconography speaks to a human-animal connection and generates a call to action.

Conservation also depends upon economic incentives for local endorsement (Dalrymple et al. 2012, Rodriguez et al. 2012). In other words, when nature-based livelihoods are affected there will be more political action (Teel and Manfredi 2009). Although the economic values for species and habitat are often undervalued because it is difficult to quantify wildlife-based use (Knoche and Lupi 2012, Carver and Caudill 2013), they remain an important aspect of conservation. Many of these efforts include reframing ecologic concerns in economic terms to persuade human populations that conservation is economically valuable. Significant resources have been expended, for example, to demonstrate the relative cost-effectiveness of ecosystem services when

compared to technological solutions to environmental pollution (Peterson et al. 2010). Responsive publics have already figured this out for themselves.

Especially in the case of endangered species, U.S. wildlife management agencies often initiate, shape, and conclude public involvement processes related to wildlife management decisions. Natural resource management agencies are especially integral to recovery of endangered species, not only out of legal obligation but also through procedural experience and institutional longevity. In addition to providing ecological knowledge, they guide the public through the labyrinth of legal complexity that has emerged from administrative law. On the other hand, public agencies require at least a minimal level of political legitimacy in order to conserve (much less recover) existing wildlife populations (von Essen et al. in press). The interdependence between these agencies and the publics they serve provides “the necessary condition for cooperation to occur” (Thomas 2003:3). Wildlife managers who have the opportunity to work with a responsive public are in a strong position to build on that condition.

### III.3 METHODS

Our study was grounded in social constructivism, which was developed as an alternative to the positivistic quest for a single “truth” that fails to recognize the partiality that always privileges certain voices and structures over others (Lincoln and Guba 1985). We used qualitative inquiry to identify and explore the issues our informants identified as important. Our intent was to privilege the knowledge of each informant and register that person’s understanding of their experience as a legitimate version of reality.

We reviewed media coverage and management documents to develop the initial list of potential informants. We then employed snowball sampling, inviting each informant to recommend other informants who were engaged in crane conservation (Lindlof and Taylor 2011). This approach gave us a sample that emphasized those who have been active in crane conservation and public service. In 2010, we conducted interviews with 35 individuals involved in crane conservation and management: 21 lived in coastal bend towns and 14 lived in other parts of the region. We categorized our informants as government (ranging from local to federal) personnel (10), non-governmental organization (NGO) employees or volunteers (7), landowners or private land managers (7), tourism operators (8), and local residents who did not fit the above categories (3). In compliance with requirements of TAMU Institutional Review Board for Human Subjects, Protocol 10-0355, we protected participant confidentiality by assigning numbers to each informant, along with a code indicating the primary capacity they were acting in during the interview (G=Government; N=NGO; L=Landowner; T=Tourism and R=Resident).

Our research questions aimed to understand the opportunities and barriers to crane conservation from the perspectives of those who lived and worked in the region. We recognized the species was of economic, political, cultural and personal value, and structured our interview protocol around these themes. We conducted informant-directed interviews (Peterson et al. 2002), which enabled interviewers to adjust the protocol as guided by each informant. Lasting from 45 minutes to 3 hours, interviews were digitally recorded and transcribed.

We conducted both *a priori* coding based on the interview protocol themes and emergent coding. This combination allowed us to maintain consistent questions while allowing informants to organize their own narratives (Denzin and Lincoln 1994). Ethnographic inquiry includes field notes (Marcus 1998) and we used field notes from early visits to the site, along with media analysis, to develop the *a priori* codes of iconography and economic value. For example, it was difficult to find a position in any town in the region where one could not see multiple crane images; they were hung from doorways, displayed in windows of retail establishments, and appeared on road signs.

Emergent codes are those discovered through engagement with research texts, which highlights the importance of recognizing that researchers and informants co-construct the data (Denzin and Lincoln 1994). The primary emergent themes swirled around limits to action, which our informants most often linked to dynamic complexity, including jurisdictional conflicts, multiple scales, and confusion over roles. Based on the interview experience, we added dynamic complexity as a third category. Text queries and coding queries assisted in understanding relationships across codes, further subverting the *a priori* organizational schema.

We organized and analyzed interviews transcripts using NVivo10 software for Qualitative Research (QSR International). We coded at the level of the paragraph because it includes sufficient context to establish a concept and allows for the connection of multiple ideas and in conversation includes the thought process around a subject. Paragraphs could be coded into multiple categories.

## III.4 RESULTS

### *III.4.1 Iconographic interest*

More than “a big white bird in a green marsh” (N4), Whooping cranes were identified as aesthetic, rare, a story of recovery, emblematic of the bay ecosystem, and signifiers of human-crane relationships. “People really rally around the whooping crane: it’s a very iconic species” (N5). “First of all, it’s just a majestic bird. The ultimate, charismatic, mega-fowl—it’s just really hard not to love the whooping crane.” (N1). And all our informants had seen a crane. “You will see cranes on people’s homes as emblems, as some of the art.... We are very proud to have them here because they don’t go to every community in the country” (T2).

Informants told us about how the most familiar individuals had been highlighted in books, such as the “Lobstick Pair”, the oldest wild whooping crane in the world (T4, N5), and “Fred and Ginger,” dubbed by a guide because of their leaping dances (T1). Several informants had learned to recognize individual cranes, and some expressed their hope for the life-long pairs to bring healthy young to the wintering grounds (L1, L6).

Media coverage can punctuate the public awareness of a species, and during the drought cranes were a central feature for the local and regional newspapers: “The drought kind of put them a little more in the public awareness because a lot of articles were written about this endangered, five-foot bird. I’m sure a lot of people for the first time said, ‘Wow, there’s only 500 whooping cranes. You know, I didn’t know that’” (G3). The images used in local, national, and international publications supported the

iconic image of cranes and fostered a sense of their importance: “They’re very important to us and-- *National Geographic*; that’s some wonderful advertising” (G2).

Our informants recognized the crane as “an iconic species that gives us an idea of whether or not the overall system’s in good health” (N2). Some of our informants noted that the bird’s symbolic status had been crucial to conservation that would otherwise have been unlikely: “There is nothing that has been viewed less productive to western European humans than a wetland. Can’t farm it. Can’t ranch it. Can’t build a house on it. It holds mosquitoes....It’s worthless, so they’ve drained them and filled them in” (T1). Because residents know that local wetlands host whooping cranes, they have become strong supporters of wetland preservation.

For many informants, the story of hard-fought recovery adds to the crane’s iconic status. Many informants shared personal memories of observing the population increase. The story of recovery is a source of pride for the area. “People are, I think, proud of the fact that they’re [whooping cranes] there and that they’re doing well” (G8). That pride was expressed in different ways: “the fact the whooping cranes were here made it a neat year, something to brag about” (G3). Others noted, “there is a sort of pride—pride of ownership in a sense. [Cranes are] one of the things that puts Rockport on the map” (N1). Whooping crane images flourish throughout wildlife photography and contests, as amateur and professional photographers capture the cranes in their winter habitat.

#### *III.4.2 Economic values*

Amateur photographers support the landowners by renting blinds or a room with a view that enables them to photograph wildlife privately. Professionals often pair with

landowners to enter as teams in wildlife photography contests, some with payouts as high as \$90,000 (L4, R1, L6). While “selling [nature-based photography] is a pretty good way to make sure you starve to death” (R1), shooting photographs is a way to add value to an endangered or threatened species (L1, L2, L4, L6). As one landowner succinctly stated, “You can have healthy habitat and good environmental practices and make a profit. . . . You can shoot a turkey once. You can take its picture a thousand times. We made more money last year off of photography than we did cattle” (L4). Reproduction of these images on websites and books about the ranches, or sales in the many art vendors of coastal towns illustrates the interdependence between the ecosystem, iconicity and economic values of whooping cranes. As one informant noted, “they are doing their economy because of the ecology, the lay of the land” (N6).

#### **III.4.2.i Nature-based tourism and other industries**

Ecotourism, was identified by many residents is the main industry in the area, with cranes at its center (T6, R2, R3). Other wildlife watching, hunting and fishing also bring economic benefits to the Coastal Bend., These interests do not overlap seasonally or compete for the same resources. For example deer and cranes feeding together at a private ranch’s corn feeder, provides content for photography, wildlife watching, and improves fall hunting season. Similarly the communities have considered several ways to preserve their “nature/tourism dollars” and have focused on “protect[ing] the wetlands because if there’s no more wetlands, there will be no more whooping cranes” (G3). Landowners respond positively when asked if they would manage for the crane if it

would increase the likelihood that cranes would come to their property “Oh, we definitely would” (L4).

In the drought years, many tourists and residents were able to see cranes from their cars, homes, and in agricultural fields closer to town or easily accessible roads. Some expressed concern that “maybe they’re getting to where they’re not as afraid of humans as they used to be. Which could be good, could be bad” (G2). One vendor was unconcerned, stating, “in all fairness, I had my best year ever this year when there’s whooping cranes all over and people can drive up and see them” (T4).

Access to water for production and transportation of goods has also led other industries to locate along the Texas gulf coast: “Your South Texas Nuclear Power Plant ...your petrochemical company, your mariculture, they’re here because of the water” (N6). Similarly, agricultural interests “need the same water that the whooping cranes do” (G9). The water not only serves production needs, but improves the shipping capacity of the Intercoastal Waterway. Some informants worried that chemical industries pose risks to nature-based tourism, while others assumed that with the presence of natural resource management agencies and universities, the water is tested frequently and resources are protected.

#### **III.4.2.ii Tax revenues**

Several informants pointed out that public interest in whooping cranes contributes directly to tax revenues through hotel, sales, and property taxes (R3): When asked “what percentage of your tourists are seeking the crane?” one local vendor flatly stated “ninety-nine” (T4). In Texas, property taxes are administered by local governments (Texas



Comptroller of Public Accounts 2004), and people buy residential property in the region because they want to be around whooping cranes. Our informants pointed out that the region benefits from part-time residents' contributions to the tax roles: "I'd say almost half the population live here all the time. Another half are weekenders, and live in high end homes. So they get to pay the taxes, but they don't get to vote. Which is nice for us" (G2).

### **III.4.2.iii Economic dilemmas**

Although our informants told us they would "rather see the environment intact than more tourism" (L6), they also viewed development as inevitable. One reflected, "Progress is going to happen. Development's going to happen. People want to move down here. I wasn't born here. I moved here. But like everybody else, I wish everyone stopped right after I got here" (G3). We heard that housing development was "an area of concern for us as conservation agencies. . . . People can probably make a lot more by selling that land to these housing developments than they ever made running a few cows out there and farming it" (G5). Partnerships among landowners, NGOs and agencies have mitigated some development through conservation easements. As one informant explained, "we sat down with them and told them the advantages of looking at conservation easement for their own tax benefit" (R3). However, another noted that conservation easements limit economic growth, and "I have to imagine that will affect the economy either at that time or at some time in the future" (N5). At the same time, informants recognized that the "sleepy fishing village" zeitgeist they loved would be changed irreversibly by development (T1, T5, G2).

### *III.4.3 Dynamic complexity*

#### **III.4.3.i Scientific uncertainty**

As with many productive ecosystems and areas inhabited by endangered species, Texas's Coastal Bend has been the site of many scientific studies to inform management decisions. These studies have produced a plurality of results that have frustrated this responsive public. Perhaps not surprisingly, the public is impatient with what they see as petty details, and prefers to focus on the current status of cranes and plans for their recovery:

The community members are, it seems, frustrated because they can't get a clear answer from the resource agencies on what the populations is, what the threats are. And part of that is because there's not enough research out there but it is frustrating when the community is being told, 'look, you need to do something,' and there's not an agreement on what needs to be done. (G9)

Some are frustrated by the level of precision required for credible scientific studies. For example, one group proclaimed that they do not care about "the mites on whooping crane backs," or the controversial studies on freshwater inflows: they simply want someone to tell them what they can do to help (N7). And they are prepared to act. For example, because interested community members have heard that cranes require blue crab for their primary protein, some have explored options for transporting blue crabs to where the cranes are, and others have explored growing blue crabs through aquaculture (G2, N6).

At one level, the public realizes that the complexity of the estuarine system makes it difficult to provide simple answers. For example, informants noted that airboats and low-flying aircraft disturb the cranes, but airboats preserve seagrass habitat better

than propeller boats, and planes are the primary method used to estimate crane population numbers (T1, G7). And, despite years of research suggesting that freshwater inflows are important to whooping cranes and the entire system (TAP v. B. Shaw, et al. 2010), the San Antonio Guadalupe Estuarine System (SAGES) study found that cranes rely on a multitude of resources and were little affected by freshwater inflows (Slack et al. 2009).

Our informants considered full recovery of the whooping crane to be an important conservation goal, but not one that was achievable. As they noted, one-third of the crane population lives beyond the ANWR, on various types of private property. “They’re never going to be delisted—ever. There’s just not enough room left” (T1). Others claimed there is still habitat on the coast “to continue to recover,” but they worry that, without formalized protection, it will be lost to development: “I think with an expanding population, they [cranes] run into a few more risks” (G5). Some talked about their personal observations of crane population recovery over a lifetime in the central coastal bend region, but they do not believe the population will ever recover sufficiently to be delisted (T5, G2).

#### **III.4.3.ii Multiple spatial and temporal scales**

Perhaps the greatest frustration expressed by informants related to the scale of recovery efforts. The whooping crane migration between ANWR and Wood Buffalo National Park in Canada cuts across multiple land use types, ownership patterns, and political jurisdictions. Although the vast, international scale of whooping crane recovery can be overwhelming, local residents are eager to receive direction from agencies such as the

USFWS and TPWD: “There are times when we go and we do projects that we know are just for whooping cranes, and if [wildlife agencies] would come to us and say we really need you to do this, we’re prepared to find the monies to go and do that to help any way we can” (N7). Informants from multiple sectors expressed interest in working cooperatively to help cranes at the local level, stating, “we need to identify the ground” (T1), “develop some maps,” or “blueprints” (R3, N3). Although our informants recognized that some decisions regarding whooping cranes must be taken at the international level, they also noted that, “those [international migratory flyway] plans, just due to the limitations of the planning process, are sometimes limited. There could, in fact, be a much more extensive and comprehensive plan on what we could be doing locally” (N7). They are advocating working from a both/and perspective, rather than from an either/or perspective. In response to questions about the limited resources available to natural resource management agencies, one noted that, “if they would come to us and say we really need you to do this, we’re prepared to find the monies to go and do that to help any way we can” (N7).

The temporal scale of whooping crane recovery also intimidated our informants. The ANWR whooping crane recovery goal is “to allow the overall population to reach a level of ecological and genetic stability so that it can be downlisted to threatened status and eventually removed from the list of Threatened and Endangered species” (ANWR 2007). However, this responsive public is well aware that the same language is applied to all threatened and endangered species. The International Recovery Plan provides more specific criteria for the whooping crane as a species, and specifically for the AWB

population (Canadian Wildlife Service and USFWS 2007). It suggests a baseline of 1000 birds, in addition to experimental populations and captive breeding programs could justify downlisting to threatened status. It does not suggest criteria for delisting, because “the status and biology of the species dictate that considerable time is needed to reach downlisting goals” (Canadian Wildlife Service and USFWS 2007).

Many residents of the central coastal bend region want wildlife biologists and managers to help them translate the time scale from words such as “eventually” and “considerable time” used in official plans, into a series of small objectives that are possible to achieve during the lifetime of a local group or a political term. Our politically savvy informants noted that even supportive political leaders have limited tenure (N7), and are beholden to constituents (N2).

#### **III.4.3.iii Private rights and public goods**

Our informants expressed strong awareness of the potential conflicts between private rights and public goods, and they would like to feel that they have a partnership with wildlife managers when it comes to negotiating this conundrum. One tried to explain that even the most adamant advocates of private property rights also supported wildlife conservation:

from your most conservative to your most liberal citizen, they all believe that protecting natural resources is very important...and a lot of them are very conservative people who are very much private property rights; strong individuals. And you see that passion to protect these natural resources because it's part of Texas. It's part of their environment. They want this (G6).

Several informants told us about their (unsuccessful) efforts to purchase known crane habitat which was contiguous with other protected lands, but said they had been outbid

by a developer. Another explained his organization's approach differently: "We try to steer them [developers] to places to minimize their impacts. We try to help them come up with designs to avoid impacting the resource. . . . It's a private property state here: if you own it, . . . you could develop it" (N7). Others shared their frustration regarding a failed attempt by agency personnel and NGOs to stop new development in known crane habitat by calling jeopardy. Although agency and NGO personnel who had spent time on the effort expressed the most bitter disappointment (N3, N7, G3), local landowners who believed the land would have provided valuable crane habitat said the failure demonstrated to them the weakness of the existing ESA (L1, L6).

Residents of the central Coastal Bend have expressed a strong preference for tourism over other industry, and for long-term bay health over short term gain. Members of this responsive public are convinced that many other regions are struggling to restore the same ecosystem services that the Coastal Bend currently provides: "Florida, Maryland, Virginia are now spending billions of dollars trying to recover that system that we already have here. All we have to do is protect it" (The Aransas Project 2013). They expressed concern about the potentially irreversible effects of development, noting that "there could be a point where that next one acre, or two acre, or ten acre little second home on the bay overlooking the salt marsh might be the last nail in the coffin" (N5). They expressed a strong interest in working collaboratively with wildlife management agencies to construct a more positive scenario for their region.

### III.5 DISCUSSION

By exploring how this responsive public made sense of whooping crane conservation and identifying their primary goals and interests, this study suggests some ways wildlife managers can move beyond the minimal NEPA requirements for PP to develop cooperative relations with responsive publics and create conservation plans that people identify with.

Icons represent more than themselves. Species may become representations of environmental issues (e.g. World Wildlife Fund's Giant panda), or whole ecosystems (e.g. as whooping cranes have for this responsive public). The iconic presence of the whooping crane throughout the central Coastal Bend offers valuable potential for cooperative conservation with members of a community who recognize their interdependence with this "vulnerable" bird through shared consumption of water and habitat (N5). The iconic status of whooping cranes in this region should signal to natural resource managers that many residents experience the birds as members of the community, and they want their feathered friends to flourish. These icons also attract tourism which can be fostered in a variety of locations, including private land should crane territories expand beyond current habitat. This may spur competition for the excludable resource market of crane watching on private land, but at this time, the crane tourism market is likely unsaturated. Certain expertise in caring for cranes would protect them from predators and make available the appropriate food resources. Crane territories at present are fairly contiguous, but they may be fragmented due to development and

population expansion, as more human migrants are attracted to habitats intended for cranes.

Our informants suggested ways to address the financial challenges of crane conservation, including increased taxation at the county level and coordination across agencies to confirm the appropriate pricing of conservation easements per acre. Given the Texas tax code strategy of hinging public services on property tax revenues, local services depend on the generation of new development, and new approaches. Central Coastal Bend residents have the interest and capacity to cooperate with wildlife managers in crafting conservation approaches that support both crane recovery and local economies. Tourism to wildlife refuges throughout the U.S. generates \$2.6 billion, and much of this is due to the 47 million Americans who observe birds (Carver and Caudill 2013). Increases to visitor taxes or fees for wildlife viewing could increase the economic value of cranes for a broad segment of the human population. The local community's interest in tourism is consistent with both the iconic and economic relationship residents feel toward the crane.

Many of our informants struggled with the ecological and institutional complexity of whooping crane recovery. Coordination across agencies, and cooperation across sectors were the solutions suggested by our informants. Ciuzio et al. (2013) supports our informants' assertion that coordinating funding for wildlife conservation from multiple sources offers an excellent tool for high-priced land, especially with bird conservation. A responsive public appreciative of the potential value in conserving the



social-economic-ecological system could be an excellent ally for a manager seeking to preserve species habitat.

### III.6 MANAGEMENT IMPLICATIONS

This research suggests an alternative means for wildlife managers to enhance the efficacy of natural resource management plans by making greater use of responsive publics. Responsive publics provide a relatively untapped resource that could spark an approach to conservation that relies on mutual service among all stakeholder groups.

Wildlife managers have the potential to cooperate with human communities that have developed in regions inhabited by endangered, iconic and/or economically-important species. These communities often include responsive publics ready to support and act on behalf of the species. Working with responsive publics is especially important in today's political climate of drastic budget cuts and limited new inputs. Effective conservation must engage the public in ways that are as yet untested and uncomfortable. Appeals to the iconic nature of charismatic species combined with assistance in techniques for improving habitat for those species could interest the responsive public described in this study.

When human communities recognize their interdependence with an iconic and economically valuable species, they seek ways to protect that species. Excluding responsive publics from wildlife conservation divests the public from their communal identity, responsibility and interest in species conservation. On the other hand, identifying responsive publics and incorporating their visions into future conservation planning can enhance wildlife conservation, as well as improve relations between local

residents and agency personnel. On those occasions where wildlife managers encounter strong identification with species and ecosystems already established among a responsive public, it makes sense to further empower that public through jointly established goals and timelines that meet local needs and also complement the longer temporal and broader spatial scales of existing planning efforts.

**CHAPTER IV**

**HOW REDUCTIVE SCIENTIFIC NARRATIVES**

**LIMIT POSSIBILITIES FOR PUBLIC PARTICIPATION:**

**A CASE STUDY OF COMMUNITY-BASED CONSERVATION**

IV.1 INTRODUCTION

This paper stems from a desire to understand the relationship between scientific narratives and how the public interprets and applies those narratives within their individual and communal lives. In order to understand public interpretation of scientific narratives, we first identify and explore the scientific narratives used to describe the endangered whooping crane (*Grus americana*) and its habitat needs, and then explore how these narratives influence public narratives about how this species should be managed.

This article follows from the tradition of Wynne (1992) and others who have followed his approach to public understandings of science (Blok 2007, Locke 1999) in that we are pursuing the public's knowledge primarily, but we neither attribute special knowledge to the public, nor privilege scientific knowledge (Durant 2008). Interactions between the public and scientists reveal opportunities and limitations to democratically construct policy alternatives that are often submerged within scientific narratives. As Eden observed, "the role of science can still be critical, if not determinant, in the more 'participatory' model...because of the political and cultural demand for scientific rationality" (1996:190). In this essay, we rely on a qualitative case study of the

community surrounding the whooping crane's winter habitat to explore how multiple types of scientific expertise are woven into a scientific narrative that interacts with public participation.

Endangerment is legally defined by the Endangered Species Act (ESA), passed nearly unanimously in 1973, as “any species which is in danger of extinction throughout all or a significant portion of its range” (Stanford Environmental Law Society 2001:46). The whooping crane was designated as endangered in 1967 under the predecessor of the current ESA, the Endangered Species Preservation Act of 1966, and remains listed because it is in danger of extinction in its only wild population due primarily to the likelihood that “human population growth will continue to reduce and degrade its suitable migration and winter habitat” (USFWS 2009b). Although many endangered species remain relatively unknown to the public, the whooping crane illustrates charismatic endangered species that garner significant public interest and support (Leader-Williams and Dublin 2000), if only by virtue of its large size, distinctive call, and life history characteristics such as life-long monogamous partnering and 5,000 mile migration (Audubon Nature Institute 2014, Gulf Coast Bird Observatory 2014).

We have drawn our descriptions of scientific expertise from prior scholarship to coalesce the hierarchy of expert knowledge, which Collins and Evans (2007) describe as a periodic table, into a mutually informing cycle of trials and iterations. By dismantling the hierarchy and arranging the pieces around the crane, we can see plural perspectives. We will describe the theoretical underpinnings for each type of expertise and their distinctions, but it is crucial to understand them as part of a continuum that doubles back

on itself, recognizing that one expertise cannot be garnered without the others. We first summarize the paper's conceptual framework which is centered on relationships between scientific expertise and public participation in plan development and implementation. Second, we explain our research methods. Third we report the findings from our interviews: how they understand science and cranes, and how these understandings limit public participation. Finally, we discuss potential interpretations of those findings and their implications for the public understanding of science.

#### IV.2 THEORETICAL CONSTRUCTIONS

Our focus here is on the relationships of science and public discourse: "Too much greed for scientific authority is bad for science, forcing scientists to act in scientifically inauthentic ways" (Collins and Evans 2007). In science and technology studies (STS) literature, science generally is understood in three mutually informing and inextricable, yet different ways: personal experience; social expertise; and knowledge about a subject, termed subject expertise (Collins and Evans 2007, Petts 1997). Etymologically, "to try, test" or "knowledge gained through repeated trials" unites experience and expertise (Harper 2013). However, experience can be organic, personal, and visceral, whereas expertise includes an explicitly valued rigor, participation in appropriate groups or produced through in-depth study of a subject. Social expertise refers to trust in the people who are seen as authoritative because of their established patterns of interacting with others. Subject expertise is knowledge about something. These two are intimately connected because social and subject expertise interact to establish what is considered valuable knowledge.

Critical scholars have shown that the experience industry associated with environmental conservation, best exemplified in tourism, sells the experience of being in the world as the product (Pernecky and Jamal 2010). In this study, however, we conceptualize experience not as a commodity, but as practices of sensing through interaction and organizing embodied information—the epistemology is the body (Abram 1996). Collins and Evans return to a positivist’s self-perceptions of objective expertise. They move from STS standards of examining the social construction of scientific knowledge and build upon public understanding of science to take a reflexive perspective on knowing something as a real thing but not actually separated: “our raw material is expertise mixed with experience” (2007:9). They recognize the integrity of multiple forms of expertise in social life: “democracy cannot dominate every domain—that would destroy expertise—and expertise cannot dominate every domain—that would destroy democracy” (2007:8). In this essay, we explore how expertise and experience are represented in the scientific narratives of the community that has formed around whooping cranes. From there, we show how these scientific narratives enable and constrain public participation in the development and implementation of environmental policy. We argue for this conception, because repeated experiences and interactions with experts elucidate apodictic patterns, and obscure alternative structures.

#### *IV.2.1 Personal experience*

Understanding the nature of expertise, especially within a scientific context, requires the most primary of sources—physical, personal experience and interaction. People of all socioeconomic and geographic situations engage with their environments, acting as

naturalists. Though not unique to the lay public, local ecological knowledge (LEK) and traditional ecological knowledge (TEK) shift the attention from imposed scientific methods to how people encounter the more-than-human world (Abram 1996, Durant 2008, Young and Matthews 2007). Personal experience and cultural categorization have primacy (Yoon 2009). Invocation of phenomenological knowledge is an attempt to wrest power from scientific expertise's control over democratic decisions, growing the truncated decision space available to lay persons, and improving on-the-ground conservation (Peterson 1997). Via John Dewey, Brown (2008) suggests that the experience of individuals living in a place, motivated by knowledge of what is true in their reality, is critical to any decision-making process, equally as critical as the social connections among a stable group of invested stakeholders.

An individual experience gains relevance through its communication (Collins and Evans 2007). Fischer (2000) summarizes the high power stakes of communication:

Because of the fundamental differences in the legitimacy and power of their respective languages—technical versus everyday language—the interaction between the technocratic planners and the members of the local community tends to give shape to an unequal communicative relationship, or what Habermas has described as ‘distorted communication.’

This distortion is exacerbated as bureaucratic regimes impose regulations on speech, truncating communication by sanctioning who gets to speak and, more importantly, how one may legitimately express expertise (Senecah 2004). Reinforced by the legislated structures of public participation, personal experience is categorized and rendered disjunct from the world where it was formed through the body-place interaction (Jamal and Hollinshead 2001).

#### *IV.2.2 Social expertise*

Social expertise is engendered through social interactions, primarily supported by belief in the ethos of the expert, and sometimes, regardless of technical knowledge. Although in-group pressure to perform expertise socially varies across cultures (Yuan et al. 2013), charismatic scientists are able to lead responses to environmental problems because they have gained acceptance, trust and respect in their communities. Social expertise can be won through developing a positive ethos: belonging to the affected community (Rogers 2003); maintaining the status quo, often through race and gender (McCright and Dunlap 2011); and providing “celebrity” support for issues affects how others receive expertise (Brown 2010).

Collins and Evans (2007) build their “periodic table of expertise” on past STS (Wynne 1992, Collins and Evans 2002), and separate social expertise into interactional and contributory expertise. Interactional expertise is the capacity to communicate as if one is an expert on a subject, while contributory expertise is the capacity to add knowledge to the subject through research. Interactional experts garner their expertise through spending time, learning to value what has been established as worthwhile, and studying the discourse of contributory experts.

Scientists can enhance their social expertise by performing social functions that the attentive public—individuals who are actively involved in resource management decisions—request (Lach et al. 2003, Peterson et al. 2004). For example the attentive public frequently asks scientists working for natural resource management agencies to define and explain the available decision space (Daniels and Walker, 2001). In our case,



the attentive public appreciates having formally trained ecologists explain how they have integrated science into decisions about management of whooping cranes.

Most of what people know is through relationships with others. Arguing that “truth is based on trust,” Devereux (2013) argues that, “the environment, by its very definition, goes beyond any one of us, and thus beyond the experience of any one of us...Consequently, we must rely on social relations and their environmental knowledges to transcend these gaps and gulfs of space and time” (2013:227). The democratic and phenomenological nature of experiencing the more-than-human world is inherently too large to construct individually, and thus environmental knowledge must be entrusted to experience that occurs in relationships (Carolan and Bell 2003).

#### *IV.2.3 Subject expertise*

Subject expertise describes knowledge of a topic, established through a variety of experiences, including studying, and communication with interactional and contributory experts, and practicing the functions of contributory experts. From standardized language and college entrance exams to dissertation defenses, rituals help determine the quantity and/or quality of expertise an individual holds, but those are the social fashions which lead to deep understanding of particular subjects. From the perspective of an interpretive epistemology, much research has focused on the relational and subjective understanding of expertise. Collins and Evans’ contribution is unusual in that they assume a critical perspective in an attempt “to treat expertise as real and substantive” (2007:2). Subject expertise, in their conception, entails latent understanding, where “complete contexts are unselfconsciously recognized,” reactions are fluid, and a way of

understanding structurally different from a novice in the same subject (2007:25). A useful construction through which to study expertise by disregarding social status and influence, subject expertise reinforces multiple ways of knowing deeply about a subject.

#### *IV.2.4 Interactions among expertises and heuristic processing*

Because of epistemology, in part, but mostly due to teleological differences, conservation biologists must demonstrate both subject and social expertise, and also bridge the divide between interactional and contributory social expertise. As practitioners of a self-designated crisis discipline (Soule 1985), they must synthesize scientific knowledge into practicable projects for species, habitats, and permits. Contributory scientists must be accepted by the hierarchies guarded by peer-reviewed journals and funding sources. Scientific communication is truncated for a variety of media which do not adequately express the process of knowledge building (Latour 1999). For example, their communication is run through the sieve of specificity for journals and minimized to dualities when moderated by courts. The fact that media “tends to present even disputed science as revealed knowledge emerging from a unified community of experts” (Collins and Evans 2007:21) exacerbates public misunderstanding of scientific processes. At least in cases where scientists are charged with managing the recovery of endangered species, neither policy decisions nor biological processes wait for certainty to emerge.

Scientific expertise does not exist separately from personal experience; rather it transforms personal experience. Personal observations and the structure of scientific narratives fit into and around each other. People who disagree with a dominant scientific

narrative often are excluded from discourse about a politically or communally salient topic because they do not operate within the recognized communicative structure (Haraway 1988). As Latour (1999) has shown in tracking the isolations of measurements in ecology, and as Collins and Evans contend, “Any redescription of events in the core of science, even when it is designed for a professional audience, is bound to simplify; when the description is for a popular audience, it will simplify more brutally” (2007:21). In this way, scientific discourse truncates itself as much as it does public discourse.

In a classic psychology study, Chaiken described heuristic processing, or the cognitive process whereby people judge the validity of information. She found that people “rely on typically more accessible information such as the source’s identity or other non-content cues” (1980:1387). Teel et al. (2006) applied this concept to wildlife issues and determined that biased processing limited the influence of logical arguments. When participants saw what they already believed in a neutral argument, they simply used it to augment and reify their own beliefs. Similarly, Li found that persuasive information is only persuasive among those who are “sufficiently motivated or have sufficient cognitive resources” to engage in the argument (2008:573). Heuristic processing, when coupled with the various forms of expertise and experience, explains how a simplistic scientific narrative may take root within a community, and limit the possibilities for public participation in policy development.

#### IV.3 METHODS

Our primary resource for this case study was a set of semi-structured interviews developed within the paradigm of privileging individual truths (Lincoln and Guba 1985).

We conducted interviews (45minutes to three hours in length) with 35 people involved in crane discourse. Interviews were digitally recorded, transcribed, and analyzed with NVivo10 software. We employed snowball sampling, but also garnered respondents through web searches and media articles. Most respondents (n=22) lived in the area where cranes spend the winter. Others were involved in management of natural resources that affect the cranes. Agencies, educators, business owners, and non-profit organizations represent some of the most important sectors to crane conservation. We augmented the transcripts with court testimony and decision (The Aransas Project (TAP) vs. Bryan Shaw 2010); planning documents developed by wildlife agencies for crane recovery; and scientific studies on cranes and the bay ecosystem.

In accordance with Texas A&M University's Institutional Review Board for Human Subjects (IRB 10-0355), all names have been changed to preserve the confidentiality of our respondents. We used emergent coding of the interview transcripts to guide a qualitative content analysis. After an initial coding, we further categorized all demonstrations and claims of scientific knowledge. We ran analyses with respect to their sources of information, and relationships to different community members. The results section presents the narratives of scientific knowledge that emerged. Quoted extracts are identified by a unique number.

## IV.4 RESULTS

### *IV.4.1 Dominant scientific narrative*

The most predominant response for knowledge about cranes was the statement that cranes are dependent upon the blue crab (*Callinectes sapidus*) as a food source. For

many community members, the die-off events of the crane population during drought years, especially the winter of 2008-2009, were the result of blue crab population declines under low freshwater inflow conditions. The narrative of cranes' reliance on crab as the best food source and the crabs' habitat constraint of lower salinity as determined by freshwater inflows is well established. These results explore the ways in which this narrative was expressed and understood through personal experience, social expertise and subject expertise within the community around the cranes' winter habitat.

We found that scientific and management sources mostly supported this narrative, but not exclusively. The wildlife managers charged with the state, federal and international responsibilities presented this narrative in planning documents: "A simple inverse relationship exists between blue crab catch rates and mean salinity within an estuary. Inflows are already at times insufficient and reduced over historic levels, leading to increases in mean salinity and decreases in blue crabs, the primary food of the whooping cranes" (CWS and USFWS 2006:21). Citing personal communication with whooping crane specialist and Aransas National Wildlife Refuge (ANWR) employee, Tom Stehn, the comprehensive planning document for ANWR states, "The whooping crane's primary food source (blue crabs), are directly affected by lack of freshwater inflows, which in turn may affect whooping crane survival" (ANWR 2010:4-15). As per NEPA requirements, the comments recorded from the public are responded to by USFWS planners: The nutritional value of blue crabs emerged as the first issue of concern among the public comments to ANWR comprehensive conservation plan. "With respect to whooping cranes, there is concern that reductions in freshwater inflows into

San Antonio Bay and outflow through Cedar Bayou may severely affect the blue crab population, which is a critical food source for whooping cranes” (ANWR 2010:2-16). However, not all scientific studies supported the dominant narrative. The Guadalupe-Blanco River Authority, San Antonio River Authority, San Antonio Water System, and Texas Water Development Board manage the watersheds of resource to two of Texas’ largest cities, where the majority of stakeholders, constituents and water consumers live, and their consumption affects bay systems at the end of the water system receive. These organizations funded “San Antonio Guadalupe Estuarine System,” familiarly termed “SAGES,” which “found that the diet of whooping crane is varied and included blue crabs, wolfberry fruit, clams, snails, and insects” and “consistent with prior studies, blue crab abundance tends to increase with bay salinity,” (Slack et al. 2009:vi).

The causal relationship of low freshwater inflows negatively affecting whooping cranes was clearly explicated by all respondents. Some stated it scientifically: “The whooping cranes are endangered and without crab they can’t make it, and with these two dry years, then the whooping cranes have to have crab. They have to have the river flowing to have the right pH factor for the crabs to survive and reproduce” (20). Respondents referred to the diets of cranes and their dependence on blue crab with absolute confidence: the crab is “an important food source for cranes,” “the major food source,” and “a staple for their food” (3, 5), and “it’s an enormous amount of blue crab. It’s not a little—it’s not a few blue crab” (9). Respondents shared information about crabs’ habitat requirements less assuredly, but many described the importance of freshwater and cycling to the bay ecosystem as a whole. Through media coverage, email

listservs, and the unofficial ANWR crane report, knowledge of 23 cranes dying became common knowledge (7, 27, 30). We show each form of expertise, supporting or dissenting from the dominant scientific narrative, and how the public responses for management are intimately connected to the scientific understanding.

Personal experience reflected in and reflecting the dominant scientific narrative

Local respondents observed strange behaviors and changes in distributions of the tall, white, conspicuous bird during the drought year, and correlated it to the health of the bay and estuary system. Established residential areas became homes for cranes during the drought, because “there was nowhere for them to go eat, and they didn’t have any more territory” (27), enabling more crane viewing opportunities for residents and visitors (5).

Respondents also observed declines in the blue crab populations during the drought year. Fisher people, who are interested in the diets of their catch, which includes crab, did not observe crab while in the bays guiding daily fishing trips. “Well, see, I make my living fishing in water about that deep [holds up hand to show about 6 inches]. ...And the last three years, because of the drought, I mean, you can fish all day and not see one [blue crab]” (24). When faced with a flood instead of drought, the relationship between water and crabs was confirmed for respondents. “There are thousands and thousands of blue crabs, little ones, quarter sized” (qtd. 13).

Two respondents criticized the methods for calculating freshwater inflows (12, 18), and instead relied on their own experience. One measured the San Antonio River against their ankle, and commented on the backwards flow based on their fishing

equipment stagnating (12). Another noted that based on their experience serving on advisory boards and working with water users, that water was wasted and over-allocated, especially during a drought year (17).

A key emergent issue for respondents personal experience was Cedar Bayou. It is one of the many “unjettied natural pass[es],” in the area, where locals guide and recreate (1, 7). The pass was artificially closed in 1979 at the behest of a Texas governor facing pollution from an oil spill and has not been successfully reopened (26). The relationship between opening Cedar Bayou and improved water quality and bay health and habitat are clear to some respondents: “All the crab and fish and shrimp that spawn in the Gulf would be coming through that pass...I think we lost 23 birds last year to starvation. And why? Because Cedar Bayou’s closed” (7). When it was open, “it kept these back bays clean for circulation...we had a full circle of circulation from Port Aransas to Cedar Bayou there...And it’s sludged in; it’s been sludged in for years” (27). The public interested in Cedar Bayou relies on the same scientific narrative based on their firsthand experience but is interested in more than the cranes: “If I can get Cedar Bayou open, everyone’s going to be happy,” including the fishing and fishing guiding industries which had left the area because of lack of fish (7).

#### *IV.4.2 Social expertise reflected in and reflecting the dominant scientific narrative*

Due to the complexity of the ecosystem, human access to marshes limited mostly to boats, and the large distribution of the crane population, community members rely on the experiences of others through trusted communications. Respondents attributed their understanding of the ecosystem to interactions with other community members who



have lived in the area for a long enough time or participate in nature-based economies, including fishing and tourism. People who run the whooping crane tour boats train the next generation of guides; one government guide named a boat guide as his mentor (2). Some guides lead informal tours for kids and increase their social expertise (6).

Most respondents attributed their understanding of the bay ecosystem to particular influential scientists with extensive social expertise. Instead of scientific reports, individual scientists, identified by name, often their given name, were a direct source for information about cranes and crane-crab-water causative narratives. Experts gained credibility through their social status and interactions. Many named wildlife and fisheries managers scientists who had worked on landmark management of natural resources in the area for decades and others visited as experts on cranes generally at the festival, “where anybody who knows anything at all about whooping cranes and their habitat, they show up there” (4). Two individuals noted “good coastal estuary program professors” and the Mission-Aransas National Estuary Research Reserve (9, 17). One respondent noted “I’m not sure I would take on the whooping crane thing” because all of the people mentioned above “are good people down there” (17).

Sixteen respondents named a local scientist as their resource for tourist interpretation (2), management of habitat and supplemental feeding (26), distributions (11) and connecting to the larger scale crane conservation movements (6). Local crane manager Tom Stehn, eponymously suited by rhyme with Mr. Crane, worked at ANWR for more than 30 years, freely described his emotional attachment to cranes during the court cases, making a pathos appeal: “I know these cranes. I’ve been watching some of

the same ones since 1982. I hate to be...anthropomorphic, but it's almost like they're my kids out there" (qtd. Berryhill 2012, TAP v. Shaw, 2010). He conducted a census of the population by territory annually, which took a toll physically on him, and shared "the crane report" via email so the community would know about it (2, 25, 15). Respondents placed unique faith in Stehn: "I think the cranes function very well; except for Tom Stehn, I believe if the federal government will leave them along they would function a lot better" (7) and many reported their crane and habitat observations to Stehn (2, 13).

#### *IV.4.3 Subject expertise reflected in and reflecting the dominant scientific narrative*

The precise origin of the dominant scientific narrative is difficult to pinpoint because scientists, research institutions, industry and government agencies have examined the bay system over time—but for their different ends. We know that an initial lawsuit sought to purchase instream water rights for whooping cranes in 1990 (17). And another manager said, "I think it was the mid-90s when I said to Tom Stehn, 'we need to be thinking about freshwater inflows and crabs'" (29). Identifying the initial producer of expertise on this subject of crane-crab-bay relationships is secondary to identifying the contemporary supporting experts of this narrative.

Social expertise is a bridge for subject expertise to be relevant and persuasive—it is what motivates people to listen to the subject expert. The same people with social expertise were also well respected for the research and applied perspectives. Working with subject experts on crane locations, one respondent appreciated the efforts and knowledge:

We spent a good part of the day, them educating me about...what kind of habitat cranes require during their wintering time here. Tom, in his infinite wisdom,

having worked with cranes probably most of his adult career, began to hold court and tell us here is an area I know cranes are using on the refuge or on pre-existing or existing conserved and protected land. And here's some areas where there are cranes setting up territories every year. (11)

Again Stehn was shown to be an expert in crane habitat and management. His warning about habitat being susceptible to predators was validated when soon after he spoke with the landowner, "a bobcat ran out of the brush and flew in the air and caught a whistling duck in its mouth, ...and I show up right after that happens and I'm thinking, 'Boy, Tom Stehn is so much on his game. He's so smart. I'm going to be right out there and trim that brush tomorrow'" (26). Though these examples focus on habitat, because Stehn is a proven valid source in the crane conservation world, the public accepts his crane knowledge. In online resources he is often attributed doctoral status, indicating his expertise; he holds a masters degree.

Experts also showed their subject expertise in production of the SAGES report, and others' review and comments on the SAGES report. According to SAGES authors, the primary issues reviewers wanted addressed before release of the report were the discrepancies in crane diet and the accuracy of the freshwater inflows model (Slack et al. 2010). Expertise converged after the crane die off in the drought years. In 2010, TAP brought suit against Texas Center for Environmental Quality (TCEQ) for mismanagement of water allocations and illegal take of the cranes that died during the drought year (TAP v. Bryan Shaw, 2010). The lawsuit forced a duality of those who accepted the dominant narrative (plaintiff) and those who supported the SAGES findings (defendant), and the validity of crane subject expertise was determined in the court. The

following subsection addresses through expertise the discussion between those who adhere to the dominant narrative and those who had different perspectives.

#### *IV.4.4 Troubling the dominant scientific narrative through personal experience*

Not all responses neatly fit into the dominant narrative, and some dissented or diverged from the clear, causal relationships. The purpose of the lawsuit, at its essence, was to determine the veracity or falsity of scientific claims about crane diet and cause of purported die off. Because testimony and examinations are conducted on an individual basis, much of it relied on personal experience. Only four of our interview respondents directly discussed the SAGES report by name, and they lived outside of the study area. Their understanding was that it reported “when blue crab population is not as robust, the cranes will go eat snails or clams or other things” (22). The SAGES methods were clear and simple: “We had grad students out in the marsh watching what cranes ate from blinds and videoing this and carefully marking down when they eat a blue crab...I mean there’s not really much interpretation of that. They ate what they ate” (10). Other residents had anecdotal evidence of cranes consuming snakes (4), and the timing of wolfberry availability being important (27), but still noted the dominant narrative.

The change to a different technique for estimating crane numbers also complicated people’s ability to experience and to perceive of crane health. Because of Tom Stehn retiring the year following the drought die-off, new wildlife managers at ANWR conducted methodologically different estimates of the population, rendering 2010 accounting incomparable from all prior censuses.

#### *IV.4.5 Troubling the dominant scientific narrative through social expertise*

Stehn's methods were criticized by multiple scientists and were changed as soon as he retired, but his social status remained important to both the community and the legal case (Berryhill 2012). Alternatively, despite a reputable career at one of the prominent wildlife universities, the SAGES lead scientist's social expertise suffered because during his examination, he admitted that the salt glands which allowed cranes to survive on salty water were unfounded (TAP v. Bryan Shaw 2010).

Before the lawsuit social relations between water agencies and the wildlife agencies were already suffering from attrition. For example, "We had tried to extend SAGES to try to answer some of the questions that the critics raised on the study and the Fish and Wildlife Service won't let us do it...A national wildlife refuge should be open for research" (10). Dr. Slack commented during the case that the four groups involved in developing SAGES were the water authorities "and in-kind support from the U.S. Fish and Wildlife Service" (TAP v. Bryan Shaw 2010). As one respondent noted, "the regional USFWS leaders were very quiet about this. I mean, 23 cranes died" (28). The position of USFWS during this process was minimized and maintained a level of social expertise within the community. However the Guadalupe-Blanco River Authority, who contributed funding to the SAGES study, was vocal about the consequences of the lawsuit: "It has the potential of undoing more than 100 years of surface water right law in the State of Texas. ...This potentially would turn that precedent upside down and could be seen as a basis for similar lawsuits on other river systems in the state" (Polly 2012).

#### *IV.4.6 Troubling the dominant scientific narrative through subject expertise*

Several organizations, scientists and wildlife managers reviewed and commented on a draft copy of the SAGES. According to SAGES authors, the primary issues reviewers wanted addressed before release of the report were the discrepancies in crane diet and the accuracy of the freshwater inflows model (Slack et al. 2010). Some respondents qualified their perceptions of the SAGES findings by describing the complexity of the system, indicating subject expertise is difficult to attain, and it is a more in-depth question to know “what the dynamics within water movements and temperatures and salinities...are. And so I think SAGES just said they couldn’t find that salinity would predict. Inflows would not predict blue crabs being less available for whooping cranes. But I think it’s just because it’s a pretty complex” (29). Another commented on the overall decline of blue crab in Atlantic coast bays (8). Some felt that the court case would show subject expertise and overcome some of the dissent from social expertise: “The litigation is going to be the point where there’s a real test of what has this information that people have heard for years and years, and they read in the newspaper 10 or 15 articles as least every winter saying ‘X is happening.’ ...So that’s going to be tested” (10).

The subject expertise of the SAGES report, however, was dismantled during the court case because of the lack of training for researchers who were supposed to be field technicians; their results were not replicable; other subject experts could not identify species being consumed by cranes on videos either (TAP v. Bryan Shaw 2010). Additionally, the prosecution did not use Stehn, whose social expertise was strong but

lacked peer-reviewed publications showing subject expertise beyond the local community. The prosecution called Dr. Felipe Chavez-Ramirez, a former student of Dr. Slack, to verify with his data findings which better supported the dominant scientific narrative with solid methods (TAP v. Bryan Shaw 2010).

#### *IV.4.7 Public actions in response to the dominant narrative*

At the same time that the drought and crane deaths reinforced the dominant narrative as a rational explanation, respondent sought relief for the cranes. Some invented ways to deliver blue crab (7), move the cranes to where the crab were (9), grow blue crab (6), and provide alternative food (26). The USFWS and Texas Parks and Wildlife Department (TPWD) have reinforced the importance of cranes by twice extending the no-crabbing zone, with “no objection by the crab-fishing community” (3).

Respondents addressed, based on their conception of crane needs mostly supported by the dominant scientific narrative, blue crab abundance for crane use; managing alternative foods for cranes; freshwater inflows through lawsuits and protests. “If we can find a food that will replenish them like a blue crab, the protein in blue crab, and put it where they’re feeding now,” or “get the blue crab to go where they’re feeding now more,” we could have more success one respondent hoped (7). Eager to help the cranes, one local looked into an aquaculture farm to grow blue crab to help the crane (6). “I mean, surely they eat other things besides blue crab” (6). Only one respondent noted acorns in the diet, and just three respondents named wolfberries, allegedly a good food source which would be available after the rains (27, 28, 29, 30). Some had observed different diets personally: “They eat anywhere from 80-90 blue crab a day, and there’s

not any there today. They're eating out of deer feeders now" (7). Deer feeders, used to attract deer to hunting areas, supply corn feed to wildlife. Corn is a common food for sandhill cranes (*Grus canadensis*) and for whooping crane during migration. But a diet of too much corn can lead to malnutrition: "it would be like you and I eating steak and potatoes every day, and then all of a sudden you're just getting food supplements and artificial food" (5). Another respondent maintained that the diet supplemental feedings supported cranes through the drought and might lead to increased fecundity (26).

Though the dominant narrative focused on water quantity, respondents identified water quality as a concern. Residents protested the plans of Exelon Corporation to build a nuclear power plant on the San Antonio River to pump water, for cooling and reuse. Unconvinced the water would be safe after that, one respondent told the planners to put the "nuclear plant somewhere where the wind doesn't blow and the sun doesn't shine...and they thought I was kind of rude until they listened to the reasoning behind it. We have those capabilities here. We don't need a nuclear power plant" (12).

Excluded from the dominant narrative, several respondents also addressed crane's expanding population, needing more territories and increasing interaction with humans. In response to the question, "What do you think are the most important things that need to happen for crane survival?" one respondent immediately declared, "Habitat, habitat, habitat" (26). Though development had coincidentally declined at the same time as the crane population, property was difficult to acquire for conservation. A key piece of property had been outbid from government preservation actions. "Pretty much [if] you're the government buying land, it's because someone wants to sell it to the



government” (2). Losing coastal habitat is particularly risky, since natural processes chew at existing land (2). Some acknowledge the threats of climate change to the narrow crane-inhabited peninsulas. “You have to have habitat for the population to grow into. So protection, preservation of good habitat for them to expand their range is critical” (14). And “if it’s not already protected, it’s hard to protect” (2).

#### IV.5 DISCUSSION

The findings from the interviews and crane conservation context supported the effects of heuristic processing to simplify perception and expertise. Heuristics, by definition, encourage investigation (Harper 2013), but for psychology, Chaiken (1980) explains that under a “heuristic view of persuasion, recipients exert comparatively little effort in judging message validity: rather than processing argumentation, recipients may rely on more accessible information such as the source’s identity or other non-content cues in deciding to accept a message’s conclusion.” This processing of communication reduces complex, dynamic interactions to simpler studies of experience validation, social expertise, and in this case the scientific narrative simplifies cranes as beings that are reliant on crabs and fresh water. This simplified heuristic of a food chain rather limits management, legal interpretations, and the general understanding of the complex ecosystem with vast biodiversity and fluctuating physical limitations.

Challenges to the dominant scientific narrative were communicated both overtly through SAGES and the lawsuit defendant’s claims and subtly among the public’s emergent and alternative means of protecting the cranes. These alternatives did not supply a simple, causal heuristic of the ecosystem to replace the current one: “I don’t

think we have quite as many causative conclusions that we would certainly like,” said one respondent regarding SAGES (8). Additionally, the public did not see a clear or powerful law to turn their concerns to. The ESA has been used to address habitat conservation as well, but given the current heuristic, it was difficult for the personal experience with cranes to be reinterpreted to legal habitat conservation. The narrowness in the scientific narrative came through in the way our informants perceived the situation. This meant that many possibilities were ignored. But at the same time, the energy with which the public approaches the subject indicated their capacity and interest in participation (Ragland et al. under review, Bernacchi et al. under review).

We propose that the shorthand narrative limited participation in alternative strategies at a crucial time for cranes, particularly with the most difficult aspect of conservation: habitat. Few empowered messages about conserving habitat were uttered by respondents. Instead, they focused on sites they had lost or their wish that cranes would use the habitat they had supplied. Divesting the public of their personal contributions to crane conservation and limiting their reactions to resources faraway or not within the realm of their power to change slows the inertia of the responsive public.

The acceptance of this dominant narrative led many community members to believe that the best path of action would be to secure water rights for the bay system. However, this course of action subordinated the community’s own creative and local solutions, and those that were already in their jurisdiction to regulate. They have power and expertise within local processes—zoning and habitat preservation and alternative economic growth, for example—without appealing to an external power, such as the

courts or state comptroller. Any way of seeing is a way of not seeing, and once the dominant narrative or heuristic has settled, it is difficult to see the problem and its solutions any other way.

Narratives which focus on one charismatic species tend to reduce public options. The legal status of endangered species catalyzes divergent responses. By extension, multiple species habitat conservation plans suggest an effective aggregating of species funding and added value to conserved habitat (Layzer 2008, Rahn et al. 2006). Also Judge Jack's decision that they a Habitat Conservation Plan (HCP) be developed is only for the whooping crane, and by many standards should have already been developed and implemented but was instead included in the whole ANWR management plan. This meant the HCP did not extend beyond the refuge, whereas this new one will be funded by the water authorities and cover a wider area—not a wider number of species. We argue one species cannot possibly represent the whole, as blue crabs have different, for example, salinity specifications than mussels, oysters, seagrass, redfish, and cranes. The narrative placed considerable stress upon ESA protection of cranes.

In many ways, the dominant scientific narrative was unifying. The community came together to meet the perceived needs of the crane and acted in solidarity regarding other expertise that attacked their local perspectives. Within this knowledgeable, responsive community, the crane-crab heuristic is useful as a starting point, onto which many others could add their experience and test, but at this time, it stifles responses through reducing creative interpretations.

## IV.6 CONCLUSION

The purpose of this research was two-fold: the primary goal to show how public participation in natural resource management interacts with scientific narratives and to identify the embodied and communicated similarities among different forms of expertises in an ecological issue. We maintain that everyone has personal experience as an expert, and this type of expertise is the most foundational for public participation. One emotive media image we found showed a wildlife biologist holding a crane by the body under one arm, legs dangling, and its bill shut in the other arm. The caption reads that the emaciated crane later died in transport. Can we really blame the local biologists—who personally experienced the devastation of losing the species they have worked throughout their lives to protect—for overstepping certain socialized bounds of communication? Instead, we submit the need for a reappropriation of the scientific narrative for multiple uses, and encourage public participation structures that support multiple forms of knowing. As for heuristics, in and of themselves, they do not lead to reductive responses in the public sphere. The over-reliance of them to describe a wild environment does. However, capturing heuristic processing and cognitive energy about a charismatic species may be transferrable into deeper systemic processing. There are many ways to represent cranes and the habitats and communities in which they live. Future opportunities for management toward species recovery could be expanded by strategic integration of multiple expertises.

## CHAPTER V

### CONCLUSION

In this dissertation, I have attempted to provide a nuanced and novel perspective of active participants in environmental conservation. My ethical demand is to serve the communities, human and more-than-human, which generously shared their experiences with me. In some ways, my research comes too late to serve the coastal bend of Texas, but many environmental issues cycle repeatedly: nothing is ever “saved” for long. I also attempted to contribute to the growing body of scientific literature on understanding public participation and natural resource management through interdisciplinary methods.

Within this case study, here were many situated knowledges from which to address conservation and communication. I chose to address the perspectives of wildlife watchers, specifically birders; wildlife managers approaching public participation processes; and generally the public surrounding whooping crane wintering habitat, especially the scientific community.

Curious and contagious, birders and birdwatchers have a relationship with birds that fosters particular interests and disinterests in conservation. I attempted to pursue their communication through ritual, where symbolic life is more important than the instrumental purpose. I conducted in-depth interviews and acted as a participant observer with birders, including the high holiday of Christmas Bird Counts. Through the lens of ritual communication, I found birders’ communication centers on the capacity to have an engaging experience with a bird species or individual, often at great expense and

investment of time to reach this goal. The social relations among birders provide standards for birding culture which support hierarchies of expertise; establish values for aesthetics, rarity and science dependent on this hierarchy; and ethics for communication, disturbance and competition in viewing birds. This chapter serves to understand the human-animal communication, especially non-coercive social performances, with the growing capacity for contributing to conservation.

Wildlife managers enter the profession hoping to work with wildlife, but the species requiring the most management is *Homo sapiens*. Despite concerns of conflict around public participation in wildlife management planning processes, there are opportunities for plan improvement through engagement with the public. Wildlife managers can observe certain conditions of amenable and responsive publics which can help them design and expand beyond required public participation practices. We found that the public was amenable to working with wildlife managers due to the crane's iconic nature and economic value. We also found that the public was responsive to agency intervention when they were dependent on their knowledge and standing for navigating the dynamic complexity of managing the species and ecosystem. This provides opportunities for the knowledge of the public to inform plans, increase local-relevancy, improve capacity for conservation and perpetuate an interest in the governance of local species and habitats.

The third situated knowledge is based on the production of knowledge: scientists and the narratives they construct about their study subjects. While collecting data for this dissertation, we found that every respondent described the dependent relationship of

whooping cranes upon blue crab as their primary food source; and crabs upon freshwater inflows to reduce the salinity of the bay habitat. This narrative was so pervasive that I pursued its origins, representations in interviews, media, lawsuits and planning documents, and the effects on crane conservation. The ways in which this narrative affected the community can be understood through the construction of expertise. Because of trust in different scientists and community members as well as scientific findings, the community around the cranes found limited ways in which they could contribute to conservation. Although some had ideas beyond addressing water and crabs, these were subordinated given the prominence of this narrative. I applied heuristic processing to better understand how this form of communication can be addressed in public participation in natural resource management and representation of scientific narratives.

This research is limited in that it focuses on a single species with a small wintering ground in a rural community. This high-profile, popular and endangered species has all the social and political clout and legal support needed to be protected. Despite its social value, the species is still at tremendous risk of extinction. So too is the community surrounding it, given the effects of water rights, development and climate change. If the crane is to be better protected the whole of its ecosystem ought to be considered. Incorporating the many stakeholders along the way would take a different study, but it could better serve the cranes holistic needs.

For example, at the time of data collection, the second largest oil spill in history was gushing 210 million gallons of oil into the Gulf of Mexico, affecting wildlife,

habitat and human communities along the whole of the coast. Currently, through the whooping crane migratory path, the proposed Keystone XL pipeline is being prepared to transport Canadian oil through the US Midwest to Gulf Coast refineries. This oil is produced from the Alberta Tar Sands which has polluted the Athabaska River.

Downstream, the river flows into Wood Buffalo National Park, the nesting grounds of the whooping crane. This is the last wild flock and to treat it as anything other than endemic to each of these sites is to further reduce the public's capacity to assist.

The title of this dissertation, *Empowering all who dwell here*, touches on the issue of living in multiple places, and requiring goods or protections from multiple resources, and deserves some explanation. Empowerment can come from within, socially as with birders, and professionally as with wildlife managers. It can also be structurally placed, such that the space is preserved should anyone seek to use that decision space. By “all” I literally meant all: all living things, all the things that make that place, all the people who visit, all the permanent residents. To dwell can be to live or to stay permanently, in residence. In Old English, it meant heresy or madness. Perhaps what we need is empowering all the madness who lives here, the madness of accepting the stakeholders—all of them. Especially those whose representation is often relegated to the strict forms and facts of science: localized individuals, humans and cranes and crabs and ecosystems. Dwell, more commonly as an action of thought, is to delay or linger over. Cranes spend only so much time lingering over the thin edge of brackish bays and saltmarsh flats. Winter Texans, the “snow birds,” float down from the northern latitudes, white Winnebago's on a black asphalt pipeline to the warmer climes



of the Gulf Coast. Dwelling, ephemerally as we all are, deserves a voice in the processes which determine the kind of “here,” present and place, we create. That is what I meant by *Empowering all who dwell here*. I hope this work addresses the needs of at least some of the dwellers. I was grateful to be one.

Though this research has focused on cranes, I would like to continue researching the relationships among humans and animals. When humans can see themselves in a species they can form a relationship that changes how they want to represent that species, either in image or in court. I would also like to contribute to research on the uses of the endangered whooping crane and public interpretations of the Endangered Species Act. Finally, research on the construction of proactive and empowering communication and narratives for public engagement could support the interested and responsive publics—and foster new ones—who wish to contribute to natural resource management, the shaping of their place, and the preservation of wildness.

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## APPENDIX A

### INTERVIEW PROTOCOL

1. How long have you lived (been involved) here? What makes you want to be here?

If they have some papers/photos/etc. on the table ask them about them. Use this as an icebreaker. Prompt: What are the social benefits, economy, outdoors, people in general like?

2. How would you describe the local community?

How do you fit into it, and who do you relate to?

3. Are cranes are part of this community?

If I say ‘Whooping Crane’ to you, what does this bring to mind?

What is your relationship to Whooping Cranes?

What is your experience been with cranes?

What is your knowledge about cranes in this area?

4. How would you describe the local politics within the community?

In what ways can you or other people be active (politically) here?

Whatever ‘community’ is can be defined by you.

5. How would you describe the politics of crane conservation?

6. How would you describe the local economy?

If you think about this area in the future, how does what you have just told us about the people and the place affect this future?

7. What would increased tourism or birding do in this area?

How does crane conservation impact how you make a living and what it is you do?

What do you think are the most important things that need to happen for crane survival?

8. How do your *other* interests or concerns tie to cranes?

What role do cranes play in the bigger picture?

How do think cranes function for (conservation, community, water, other social things)?

9. We're analyzing the possibility for community-based planning. Where do you see opportunity for crane conservation and the community to work together?

What would lead you to participate in a community-based planning process?

Do you see any obstacles to a public process? If so, what might they be?

With your knowledge about cranes, what questions do you think need to be raised:

Who would you talk to/share your knowledge with?

Where have you gained/learned what you know?

What other information do you think people need to have that they don't already have?

Who do you see as potential participants in a conversation about Whooping Cranes and why? Who else should we talk with about this and why?

10. Is there anything else that we should have asked that we did not? Is there anything else you would like to tell us?

## **APPENDIX B**

### **SURVEY FOR MEETING ATTENDEES**

Survey for Community-Based Planning around the Whooping Crane Kickoff Meeting

See <http://cbp.tamu.edu> for more information or email [whoopresearch@gmail.com](mailto:whoopresearch@gmail.com).

Thank you for your feedback. Your responses are confidential and unattached from your name. They will help us better design future meetings and further inform the CBP's next steps.

We anticipate this survey to take no more than ten minutes of your time.

A scale of 1 to 6, where 1 is strongly agree and 6 is strongly disagree, is used for all of the following questions except where you are asked to rank or to write. An additional space is provided for does not apply or did not participate.

Do you feel this meeting was a productive use of your time.

LIKERT SCALE 1-6 + did not participate

The meeting agenda included several different activities. They are listed below in the order in which they occurred.

Filling in 4x6 cards with best and worst future visions

Introductory presentation (Chara and Leigh)

Who we are: what is your place in the community (individually)

Who we are: introducing yourself to each other using the circle diagram (group)

US Fish and Wildlife presentation on decision-making capabilities (Joy Nicholopoulos)

What we can do: Defining issues activity with post its (group)

What we can do: Writing where the opportunities of progress exist (individually)

Maps (in the back of the hall)

Timeline (in the back of the hall)

Please rank them in order of usefulness, with the most useful as 1.

Identifying useful activities is very important. Please take each of the aforementioned activities and rate them according to usefulness on a scale of 1 to 6, where 1 is strongly agree that this was a useful activity and 6 is strongly disagree that this was a useful activity.

Filling in 4x6 cards with best and worst futures

Introductory presentation (Chara and Leigh)

Who we are: what is your place in the community using the circle diagram (individually)

Who we are: introducing yourself to each other using the circle diagram (group)

US Fish and Wildlife presentation on decision-making capabilities (Joy Nicholopoulos)

What we can do: Defining issues activity with post its (group)

What we can do: Writing where the opportunities of progress exist (individually)

Maps (in the back of the hall)

Timeline (in the back of the hall)

Other (please specify) \_\_\_\_\_

Which of these activities do you think would be most useful in future meetings (check all that apply)?

What do you think the meeting accomplished?

Some people were unable to attend the meeting. Please list people whose participation would be helpful in future meetings.

How did you hear about this meeting? (check all that apply)

From a friend

From a co-worker

Email

Website

Newspaper

Listserv

USFWS

Flyer

Presentation

Other (please specify)\_\_\_\_\_

Where would you like a community-based planning effort to go next? (check all that apply)

One more meeting and take it from there

Stakeholder meetings for CBP around Whooping Crane

Join existing stakeholder group

Which one(s)\_\_\_\_\_

Habitat Conservation Plan (HCP)

Landowner Incentive Program

Conservation Easements

Conservation Plan

Storm-water drainage planning

Recovery Implementation Plan (RIP)

Litigation

Resource Efficiency Plan (REP)

Legislation/Bill/Referendum

Senate Bill 3 In-stream flows process

Agency-developed Plan

Other \_\_\_\_\_





- 5.g Historical importance of the birds to the community and environment
- 1    2    3    4    5    6    7
- 5.h Guilt that humans have negatively impacted the bird population
- 1    2    3    4    5    6    7
- 5.i Hope that birds can fully recover    1    2    3    4    5    6    7
- 5.j Seek change in human approach to endangered species
- 1    2    3    4    5    6    7

Do you define yourself with any of these terms (check all that apply)?

Birdwatcher

Birder

Wildlife Enthusiast

Wildlife Watcher

Crane Enthusiast

Artist

Wildlife Photographer

Nature Photographer

Ecology expert

Naturalist

Texas Master Naturalist

Other \_\_\_\_\_

What makes Whooping Cranes special to you? Please rate the following items:

(1 not at all important, 4 somewhat important, 7 most important)

		Not Influential		Somewhat		Highly Influential		
		1	2	3	4	5	6	7
9.a	Endangered	1	2	3	4	5	6	7
9.b	Population Size	1	2	3	4	5	6	7
9.c	Limited Habitat	1	2	3	4	5	6	7
9.d	Beauty	1	2	3	4	5	6	7
9.e	Family Unit	1	2	3	4	5	6	7
9.f	Sound, Call	1	2	3	4	5	6	7
9.g	Flight Patterns/ "Dancing"	1	2	3	4	5	6	7
9.h	Ecological importance	1	2	3	4	5	6	7
9.i	Migration Pattern	1	2	3	4	5	6	7
9.j	Other_____	1	2	3	4	5	6	7

Other Comments

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Please provide any additional comments or email the researcher Leigh Bernacchi, Texas A&M University at [whoopresearch@gmail.com](mailto:whoopresearch@gmail.com). Thank you for taking the time to support this research and the Whooping Cranes!