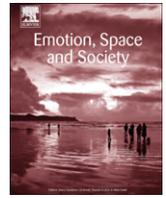


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## Tangled up in knots: An emotional ecology of field science

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### ABSTRACT

Over the past 20 years, wildlife biologists, birders (bird watchers), and environmental activists have converged on the Delaware Bay, New Jersey USA every spring to study a migratory shorebird called the red knot (*Calidris canutus rufa*). Linked intimately with the spring-time landscape of the Bay and dependent on another species, the horseshoe crab (*Limulus polyphemus*), for survival, the population of this bird has declined precipitously with the advent of a horseshoe crab fishery in the eastern U.S. — a situation studied extensively by state biologists. Following the work of Lorraine Daston and Kay Milton on moral economies and ecologies of emotion, respectively, this article takes these studies as its central concern, showing the constitutive role of emotion in the generation of environmental knowledge. I describe field sites on the Delaware Bay as spaces where human and nonhuman actors create an "ecology of emotion" that serves to cohere social groups and motivate actions. These actions, however, move scientists from research sites on the bay into public decision-making fora, requiring the translation and obfuscation of the values underpinning their work into forms socially acceptable in bureaucratic contexts. I suggest, therefore, that the selective filtering of emotion and value in such contextual shifts impoverishes the quality of public environmental discourse and policy.

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### 1. Introduction

In February 2008, the American Public Broadcasting Service (PBS) premiered an episode of *Nature* about the decline of North American red knots (*Calidris canutus rufa*) — a species of small, colorful shorebirds — and the connection between this population crash and the east coast horseshoe crab (*Limulus polyphemus*) fishery. In the penultimate sequence of the program, the camera pans over a barren-looking stretch of the Canadian arctic, as a shorebird research team led by New Jersey state biologists Larry Niles and Mandy Dey tries, and fails, to find nesting red knots. The tenor of the scene is unmistakably sad and foreboding: viewers see the bleak landscape as scientists wander over rocky terrain in the distance, and soft, minor-key keyboard music plays in the background of Niles' voiceover: "We're getting in touch with what this decline really means. You lose 80,000 birds out of a population of 90,000 it just sounds like a bunch of numbers. But you come up here, and you can see what that feels like." The camera cuts to a close-up of Dey and Niles, as they contemplate the meaning of what they have failed to find on this trip to the arctic. Mandy is the one speaking: "If you've ever held a bird or a small animal in your hand, you realize how really vulnerable they are..." Her voice

cracks, and she exchanges a glance with Larry, her colleague and husband, as she composes herself and continues: "...and how could you, how could you not want them to continue to exist?" (Argo, 2008).

Is this just good television, the artifice of a conservation-minded filmmaker? It is certainly that, but it also points to the material realities and lived experience of wildlife biologists like those on the New Jersey shorebird research team. For this particular group of scientists, the arctic expedition chronicled by *Nature* was the denouement of a decade-long controversy surrounding the conservation of red knots and other shorebirds on the east coast of the United States. Erupting in the nineteen-nineties, this political conflict was centered in the Delaware Bay, the primary stopover for red knots along the Atlantic flyway between their arctic breeding grounds and wintering locations in South America. While in the bay, these shorebirds fatten up over the course of a few weeks on the eggs of the spawning horseshoe crab, another animal that occurs in tremendously high concentrations in the bay each spring. The crux of the controversy is this: fishers were harvesting horseshoe crabs to use as bait in the relatively new eel and conch fisheries, and local scientists and wildlife managers — bolstered by international researchers who began coming to the bay in the late nineties to study the shorebird phenomenon — began to fear that excessive crab harvesting was having a disastrous effect on red knot populations (Sargent, 2002: 67–85, 114–119). This fear launched

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one of the largest mark/recapture studies of a single migratory bird in the world, as well as a political battle in mid-Atlantic state governments and in the federal Atlantic States Marine Fisheries Commission (ASMFC) over the best way to continue the horseshoe crab harvest and at the same time stabilize red knot populations (Niles et al., 2008).

In this article I draw upon my own experiences with shorebird scientists in the field in order to focus on the expertise that this controversy has spawned and subsequently been built upon. Over two years, I spent the spring migratory season in the Delaware Bay, working as a volunteer with shorebird research teams in both New Jersey and Delaware.<sup>1</sup> During my time with these groups, I was struck by the range of emotions, values, and motivations that were underpinning this work and its use in shorebird conservation efforts. The study of affect and emotion has become a fruitful component of multi-disciplinary scholarship in “animal studies” (Arluke and Sanders, 2009; Haraway, 2008; Raffles, 2010), as well as equally discipline-crossing analyses of environmentalism (Milton, 2002; Satterfield, 2002; Smith, 2001, 2005; Soper, 1995). Emotion is also a newly reinvigorated subject in science studies and the history of science. Anthropologist Anna Tsing has recently noted that “There is a new science studies afoot...and its key characteristic is multispecies love” (Tsing, 2011). And Paul White, introducing a recent focus section of *Isis* devoted to emotion and history of science, uses Lorraine Daston’s “moral economy of science” as a reference point for reincorporating discussions of values and affect into historical accounts of scientific practice (White, 2009: 796). Indeed, Daston’s framework is a tremendously useful springboard for discussing emotion and science. Conceptualizing her “moral economy” as “a web of affect-saturated values that stand and function in well-defined relationship to one another,” she shows how specific virtues (e.g. impartiality, trust, civility, curiosity) in scientific communities gave rise to specific regimes of practice: quantification, empiricism, and objectivity (Daston, 1995: 4). The affect and emotion in her historical examples, however, and the role of emotions in co-constructing these virtues and practices of “scientific sociability,” are themselves not detailed. Anthropologist Kay Milton, on the other hand, has described the role of emotion in great detail with regard to humans’ identification with, and enjoyment of, nature and environmental conservation (Milton, 2002). Milton, focused on environmentalist discourse, discusses science to the extent that, like Daston, she wants to point out that objectivity and rationality are themselves feelings, affected and morally-saturated choices and practices. What happens, however, when conservationists with direct experience with non-human nature and scientists are the same people? That is, can we merge a focus on emotion and environmentalism with close attention to scientific practice?

This article, following Daston and Milton, takes wildlife biology and ecology as its central concern, showing the constitutive role of emotion in the generation of *knowledge* about the environment, not just the motivation behind its conservation. The relationships between science, rationality, and emotion have been an important subject of scholarship (Barbalet, 1998, 2002; Lutz, 1988; Roberts, 2003; Williams, 2001), and I am interested in capturing this relationship by following “science in action” (Latour, 1988). Emotions are an integral part of the moral economy of science, helping to

generate the affects, experiences, and values of communities of scientists. And like Daston’s virtues, specific shared emotional experiences do more than simply motivate science, they instantiate specific practices. Furthermore, in the context of field biology, assemblages of landscapes and actors beyond the human are implicated in the generation of these emotions, experiences, and practices. I describe field sites on the Delaware Bay as “niches” in which human and non-human actors create an “ecology of emotion” that serves to cohere social groups, motivate actions, and suggest particular scientific and political interventions in shorebird conservation.<sup>2</sup> In the vein of anthropology of science scholarship recently dubbed “multi-species ethnography,” (Candea, 2010; Kirksey and Helmreich, 2010), I describe interactions between scientists, volunteers, shorebirds, and horseshoe crabs – with specific attention to emotion, practice, and the role of these animals in human knowledge-making.

Sharing the concern of these multispecies ethnographers with the too-often dichotomous conceptualization of human versus non-human nature, I attempt to articulate a more nuanced web of relationships between specific animals, landscapes, technologies, and their human researchers and interlocutors. Not every animal has the same lesson to teach environmental scientists and activists, and migratory species like shorebirds and horseshoe crabs remind us of the importance, above all, of well-timed *movement* – the “transient convergence” (Anderson, 2009) that co-constructs all of “postnature” made explicit and manifest at migratory stopovers like the Delaware Bay. Taking this lesson to heart, however, requires the movement of my own focus from the bayside sites of knowledge creation to places of policy-making. That is, bridging the gap between Daston’s focus on scientific communities and Milton’s attention to environmentalist discourse, I trace the movements and translations of the “facts and values” surrounding the red knot from one social context to another. In what follows, I sketch an ecology of emotion that generates and permeates knowledge and practices in shorebird research. Empathy, wonder, and technological and methodological enthusiasms make science in the Delaware Bay happen, and this is visible in the prosaic experiences of wildlife researchers and managers there. These scientists move, however, from research sites on the bay into multiple public, decision-making bodies, and these movements require the translation and obfuscation of the values underpinning their work bayside into forms socially acceptable in the context of rational bureaucracy. This move creates a series of modern abstractions in sharp contrast to experiential ways of knowing nature (Descola, 2008; Milton, 2002; Trudgill, 2008; Turner, 1996). I end the article, therefore, with a brief scene involving shorebird researchers’ testimony before the New Jersey State Assembly, and suggest the ways in which the selective filtering of emotion and value in such contextual shifts has ramifications for equitable and (a/e)ffective environmental policy.

## 2. Scenes from the Bay

In this section I present a selective pastiche of field work I observed and participated in during the spring red knot migrations of 2009 and 2010, including cannon-netting, bird-banding (called “ringing” outside the U.S.) and “resighting”. In sections to follow I

<sup>1</sup> A brief note on methodology: my descriptions of shorebird research stem from my time as a participant observer during spring migrations. I also conducted subsequent semi-structured interviews with research team personnel as well as substantial documentation of shorebird science in North America. Direct quotations from researchers as a result of personal communication are denoted as such within parenthetical references.

<sup>2</sup> I am utilizing Milton’s metaphor, an “ecology of emotion” (Milton, 2002), over “moral economy” (Daston, 1995), “emotional economy” (White, 2009), or any number of other metaphors in use in multi-species ethnography. Not only does this metaphor seem more apropos of a discussion on emotion and ecology, but it lends a certain connotation of emotions and relationships that are beyond human control. While both rooted in humans’ *oikos*, “economy” seems much too controlled, systematic, and human-dominated for the web of connections I am describing here.

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