BIRDING AND SUSTAINABILITY AT THE ARCATA MARSH AND WILDLIFE SANCTUARY: A FOLKLORIC ANALYSIS

by

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A THESIS

Presented to the Folklore Program
and the Graduate School of the University of Oregon
in partial fulfillment of the requirements
for the degree of
Master of Arts

June 2011

THESIS APPROVAL PAGE

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Title: Birding and Sustainability at the Arcata Marsh and Wildlife Sanctuary: A Folkloric Analysis

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Degree awarded June 2011.

THESIS ABSTRACT

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June 2011

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The Arcata Marsh and Wildlife Sanctuary (AMWS), located on the Humboldt Bay of northwestern California in the town of Arcata, is an excellent example of reciprocity between humans and the natural environment. The AMWS is a constructed wetland ecosystem that works in conjunction with the town's wastewater treatment plant, providing a healthy habitat for birds and other wildlife and a context for the folkloric activity of birding. Interviews with seven local birders at the AMWS and an analysis of the material, economic, biological, social, and spiritual implications of the activity in context serve to support the assertion that reciprocity is an important factor in the sustainability of folkloric interactions between humans and the natural environment.

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ACKNOWLEDGMENTS

Words cannot fully express my appreciation for the family and friends who have encouraged me throughout this process. This project would not have been possible without the birders who participated in this study, as well as all of the actors associated with the Arcata Marsh and Wildlife Sanctuary, and especially the birds! Thank you to all who contributed both directly and indirectly. Thank you to all of the faculty and staff in the Folklore Program, Environmental Studies Program, and Sociology Program at the University of Oregon, and immense gratitude to Dr. Sharon Sherman, Dr. Kathryn Lynch, and Dr. Jill Harrison for their invaluable insight and support.

For J.W.L. and Mika.

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INTRODUCTION

When many people think of folklore, they think of fairy tales, legends, superstitions, and proverbs that have survived through time but bear little relevance to the reality of the modern world. The term "folklore" is often used to imply that a subject is invalid, untrue, old fashioned, or only applicable to "primitive" groups (Sims and Stephens 1). However, the study of folklore is more broadly applicable to traditional means of human expression, verbal and non-verbal (Brunvand 3), that persist through time and space, sometimes undetected in the realms of institutional and popular culture. According to folklorists Robert Georges and Michael Owen Jones, folklore includes

> expressive forms, processes, and behaviors that we customarily learn, teach, and utilize or display during face to face interactions, and that we judge to be traditional because they are based on known precedents or models, and because they serve as evidence of continuities and constituencies through time and space in human knowledge, thought, belief and feeling. (1)

The study of folklore can include traditional human expressions and behaviors that require interaction with the natural environment and continue to impact individuals, societies, and the earth as a whole.

Folklorists are often concerned with the sustainability and preservation of cultural heritage and folkloric knowledge, practices, and beliefs for present and future generations (Westerman 122, Zeitlen 12, Feltault, and Wells 9). Recent concerns about environmental changes and resource depletion have led to a worldwide discussion of "sustainability," which was first defined by the United Nations World Commission on Environment and Development in 1987, from a perspective of sustainable development, as "development that meets the needs of the present without compromising the ability of future generations

to meet their own needs" (United Nations). However, development that disrespects natural habitats and loss of healthy ecosystems "also threatens humans with a loss of meaning," and "disfigured, diminished landscapes can less readily serve as a source of inspiration for art, folklore, and national symbolism" (Gibson 247). Stories, traditions, folkloric behaviors, and human activities in general, cannot persist through time if their context, the earth, is degraded beyond the capacity to sustain human life.

Bird-watching, or birding, is a folkloric activity reliant on human engagement with the natural environment. Essayist and birder Jonathan Rosen claims that bird-watching, at least in the United States, "is the real national pastime, it just isn't televised" (121). Birding occurs around the world in different contexts, and birding activities can vary slightly depending on location, place, and landscape. As Rosen points out, "all birding is global, given the borderless world birds live in, but it is also… always local" (81). Birders can form a group on all levels – international, national, regional, and local. When the members of a social group "share a traditional culture" (El-Shamy 318) and an attitude, behavior, sense of meaning, and vernacular system of reference (Toelken 58), they can be viewed as a folk group. According to Rosen, birders can often easily become environmentalists with the realization that if the natural environment is not healthy enough to support birds, "the sky will be empty" (94).

On the northwestern coast of California, the Arcata Marsh and Wildlife Sanctuary (AMWS) offers a sustainable context for birding based on reciprocity between humans and the environment see Fig. 1). The stories and esoteric knowledge of seven local birders at the AMWS reveal that group identity and meaning, shared through experience,

stories, tradition, and festival, contribute to the sustainability of birding activities in context.

Figure 1. A Great Egret lands at the AMWS (Photos by J. Lemke).

CHAPTER II

LITERATURE REVIEW

Several realms of literature merge to provide a background for investigating the folklore and sustainability of birding at the Arcata Marsh and Wildlife Sanctuary. The following literature review begins with a discussion and definition of sustainability, with an emphasis on both the positive and negative consequences of the reflexive relationship between humans and the environment. Previous studies focusing on human relationships with other life forms are addressed, followed by a brief history of birding in the United States and a synthesis of previous studies related to birding and birding landscape. A description and history of the AMWS landscape concludes the literature review, setting the stage for an analysis of birding-related folklore in context.

Sustainability

Human activities have had an impact on the environment for the entire existence of humankind (Dickson). Every action has a reaction, and "all organisms modify their environment," humans included (Vitousek et al. 494). James Hansen, professor of environmental science at Columbia University and head of the NASA Goddard Institute for Space Studies in New York, argues that the earth's ecosystems can undergo limited changes before reaching a point of irreversible damage (Rockstrom et al.472). According to Hansen and colleagues, climate change caused by increased levels of carbon dioxide, methane, and other greenhouse gases in the earth's atmosphere, loss of biodiversity caused by habitat destruction, and the overflow of nitrogen and phosphorus from chemical fertilizers and pesticides into the earth's ecosystems, are threatening to exceed the earth's predicted thresholds of stability (Rockstrom et al. 472). These threats imply

that if humans continue on the path of environmental destruction, the earth's ecosystems may change in a way that might exclude humans from the scenario.

Some scientists and historians agree with chemist Paul Crutzen that the earth has reached an Anthropocene epoch "in which humans and our societies have become a global geological force" (Steffen, Crutzen, and McNeill 614 and Heise 50). "Anthropocene" literally translates to "human centered," referring to the notion that humans often view themselves as the center of the universe. According to the Anthropocene theory, the environmental effects of human activities over time have come to rival the force of earth's natural ecosystems, and continued activities such as pollution and deforestation may eventually completely alter the earth's ecosystem as we know it (Steffen, Crutzen, and McNeil 614). Sociologists John Bellamy Foster, Brett Clark, and Richard York have built upon this assertion in *The Ecological Rift: Capitalism's War on the Earth* (2010), with the idea that human alienation from the natural world contributes to human-caused environmental destruction (14).

Humans have managed to transform one third to one half of the earth's land area, not to mention atmospheric and aquatic changes that have driven about one fourth of the earth's bird species to extinction (Vitousek et al. 494). Climate change increasingly threatens birds as their traditional habitats become inhospitable. For example, arctic ice provides a resting point for sea birds. Without it, several bird species will lose out on food, mating, and other benefits provided by the ice (*The Tipping Point* 2009). Migratory bird species have been struggling to keep within their habitat range as typically colder regions of the globe become warmer (Foster, Clark and York 36). Humans are responsible for extinctions caused by habitat loss and invasive species, and some

biologists have declared “the sixth mass extinction” in the history of the earth (Heise 49). Between the years of 1890 and 1891, 60-80 European Starlings were released in New York City’s Central Park, simply because they were mentioned in a play by Shakespeare (McNeil 253, Weidensaul 128, and Rosen 59). Starlings are very good at surviving in the United States, at the expense of many native bird species that they have pushed aside in competition for resources, and they have become such “pests” that the U.S. government had to take pest control action against them in 2004 (Rosen 60).

Beyond Anthropocene

The Anthropocene theory highlights the negative effects that human activities have had on the earth, birds, and other species, but the possibility for healing some of these damages still exists. Humans may be a dominating force in environmental changes, but we have the capacity to help and care for the other living species around us and the ecosystems in which they thrive. In turn, other species and natural resources provide for human survival. As natural landscapes give way to cities and industries, humans must remember that, as a species, we have lived and survived alongside other living things, and “our senses have evolved through interactions with animals” over time (Gibson 66). All aspects of the natural environment, including “climate, soils, forests, mountains, rivers, and animals, act as ‘co-creators of histories’ that cannot be ignored” in the sphere of human wellbeing (Mosley 917).

Some scholars have brought animals into academic discussions in recognition of their importance to the human world. Sociologist John Grady and folklorist Jay Mechling argue that “unexpected significance” can be found in everyday things that are often taken for granted, such as animals and human-animal relations (Grady and

Mechling 92, 94). For example, in a discussion of folk traditions, Mechling applied folklorist Elliot Oring's "dyad" folk group theory to human relationships with pets, arguing that humans and animals can compose an interspecies folk group (313). Mechling and folklorist Angus Gillespie also approach wild animals as "texts" and "attractive symbols for American thinking about everyday life," to discover what certain animals "mean" to Americans (1). They assert that "American symbolic discourse about a wild animal is, simultaneously, American symbolic discourse about human social relations" (Mechling and Gillespie 1). Similarly, geographer Catherine Johnston seeks to "explore the ways in which we develop our knowledge of and relationships with nonhumans" as well as how "social networks shape nonhuman life spaces" (633). Johnston asserts that humans often fail to consider animals seriously as key actors in sustainability, culture, and community (634).

Measuring Sustainability

Several different definitions of "sustainability" include social, economic, and environmental considerations. The United Nations added dimensions of "environmental protection, economic growth, and social development" to their original definition of sustainable development at the 1992 Rio de Janeiro Sustainability Conference (United Nations). Academics have continued to dissect and analyze this definition, at times rejecting the notion that "development" should be the main goal of sustainability on a global level (Sejersen 80). According to the United States Environmental Protection Agency, "The 1970 National Environmental Policy Act (NEPA) formally established as a national goal the creation and maintenance of conditions under which humans and nature 'can exist in productive harmony, and fulfill the social, economic and other requirements

of present and future generations of Americans','" reflecting notions of sustainability years before the U.N. published its definition (U.S. Environmental Protection Agency). Actually measuring true sustainability in contexts where change is inevitable is difficult (Batie 12).

Architect and cybernetics consultant Dr. Michael Ben-Eli, founder of The Sustainability Laboratories, in conjunction with the Buckminster Fuller Sustainability Institute, asserts:

> Sustainability pertains to a balanced interaction between a population and the carrying capacity of an environment such that the population develops to express its full potential without adversely and irreversibly affecting the carrying capacity of the environment upon which it depends. (2)

This definition implies that a sustainable system will not jeopardize the ability of future generations to express their full potential as well. According to Ben-Eli's "Five Core Principles" of sustainability, activities must meet certain criteria in the material, economic, biological, social, and spiritual domains to achieve true sustainability (3-7). The Material Domain refers to the physical processes and energy that "provide the basis for human existence," and sustainability in this domain requires that human activities strive for high productivity in resource use, amplify performance with each cycle of use, and recycle non-renewable resources that are "required to ensure lasting abundance" (Ben –Eli 3). The Economic Domain focuses on sustainable management of wealth and accounting systems, which require a "comprehensive biospheric pricing guide to the economy," as well as alignment with the "regeneration capacity" of resources and the costs of pollution (Ben-Eli 4). In this domain, money is not the sole value indicator; wellbeing of all life forms and human development are also important in sustainable economic calculations (Ben-Eli 4). The underlying premise of the Biological Domain is

that complexity and diversity are essential to the "lasting stability" of all living systems (Ben-Eli 5). Responsible stewardship, conservation in living species harvests, limited human land use, and conservation of variety in existing gene pools are required to achieve biological sustainability (Ben-Eli 5). In terms of the Social Domain, "societies, like ecologies, depend on diversity and internal redundancy for robustness, long term viability, and health" (Ben-Eli 6). With this principle mind, sustainable activities must "enshrine universal rights within a framework of planetary citizenship, foster tolerance as a cornerstone of social interactions, provide for inclusion and effective democracy in governance, [and] ensure equitable access to life nurturing support" (Ben-Eli 6). The Spiritual Domain "identifies the necessary attitudinal orientation and provides the basis for a universal code of ethics," which include acknowledgement of "the transcendent mystery that underlies existence," recognition of "humanity's unique function" in earth's ecosystems, as well as use of compassion in all interactions and activities (Ben-Eli 7). In terms of this model, considerations for sustainability are "fundamentally systemic in nature, meaning that each principle affects all the others and is affected by each in return…[which] reflects the interdependent nature of reality itself" (Ben-Eli 1).

This sustainability model covers aspects of human activities that purely economic or social models might overlook, such as existential or spiritual meaning, friendships, and emotions, expressed through the stories of the people involved.

Reciprocity

Although definitions of sustainability vary, reciprocity is needed to sustain any relationship, including interactions between humans and the natural environment. Many traditional Native American societies hold cultural beliefs and practices that support

reciprocity between humans and the natural environment and ecological sustainability (Trosper 17, Robyn 199, and Magoc, 3). In a study of the traditional practices of several Native American Nations of the Pacific Northwest, ecological economist Ronald Trosper explains that reciprocity in economic, social, and ecological relations ensures good health to all of the parties involved in a system (11). Trosper interviewed Chief Umeek of the Nuu-chah-nulth Nation of Vancouver Island, about the traditional belief in the "Law of Generosity":

> It is necessary to give in order to receive. According to this law, it is not better to give than to receive because both giving and receiving are equivalent and interactive values. Consequently generosity can be viewed as a natural law of reciprocity. The Nuu-chah-nulth felt so strongly about the importance of the relationship between generosity and the quality of life that the opposite of generosity was equated with death. (qtd. in Trosper, 13)

Chemistry has also revealed the need for reciprocity in sustainable interactions with the natural environment. In 1859, German chemist Justice von Liebig discovered that fertile soil contains nutrients essential to the health of plants, and thus food crops (Foster, Clark and York 123). While a plant is growing, it absorbs these nutrients from the soil. When humans and animals eat a plant, nutrients are absorbed, which are essential for our survival. After food passes through the digestive system, waste is produced, which contains organic nutrients that can be recycled back into the soil as fertilizer. This cycle of nutrients has sustained human life for centuries.

With the industrialization of agriculture and the growth of urban cities, organic wastes are no longer regularly recycled back into the soil, creating a rift in the interdependent relationship of humans, animals, and the land. Karl Marx identified capitalist ideology as the root of this problem, and sociologist John Bellamy Foster coined the term "Metabolic Rift" to describe the disconnect between humans and the

land, or nature, as an extension of Marx's work. The Metabolic Rift theory implies that a cyclical, reciprocal relationship between human beings and the earth is necessary for sustainability. For example, ever since industrial and mono-crop farmers started using chemical fertilizers and pesticides rather than organic fertilizers, agricultural soil has been robbed of the essential nutrients needed to grow a healthy sustainable crop year after year (Foster and Magdoff 47). When organic wastes are burned or buried as in today's management systems, we are wasting our waste, rather than recycling it back into production (Foster and Magdoff 51). Von Liebig spoke of this unsustainable rift as irrational, noting that humans must "*give 'back* to the fields the conditions of their fertility'" (italics added for emphasis, qtd. in Foster and Magdoff 47).

After all of the environmental destruction that industries have caused, humans must now also *give back* "the conditions of…fertility" to *all* of the living creatures and ecosystems that provide for our wellbeing and survival. Sustainable activities must recognize that, in the words of Aldo Leopold, "land…is not merely soil; it is a fountain of energy flowing through soil, plants, and animals" including humans, and "death and decay return the energy to the soil" in a cyclical system that sustains the "fund of life" (qtd. in Kubasek 121). Although the Metabolic Rift theory was developed in relation to agricultural practices, in today's world the need for healing the rift can be applied to any human interaction with the natural environment.

The earth provides every resource that humans need for survival – animals and plants for food, medicine, water, air, sunlight and shelter – and any human action that directly enhances an ecosystem or other living species can be considered an act of reciprocity with the earth and other living creatures. Although some ecosystems in the

United States have been polluted and diminished over the past few centuries, Americans have recently started giving back to the earth and its ecosystems. For example, many communities have restored damaged ecosystems, like the Mattole River in northern California, that had been degraded due to logging activities. Naturalist Freeman House participated in the restoration, and described the experience:

> Working together, with our feet in the water, moving large rocks and logs to armor raw and bleeding stream banks, or on the dry slopes above, planting trees, seemed to carry from our muscles to our minds a buried memory of human communities deeply integrated with the wild processes surrounding. (qtd. in Gibson 3)

Sociologist James Gibson puts the entire theme of humans caring for nature into perspective in his book *A Re-Enchanted World: The Quest for a New Kinship with Nature* (2009). Gibson calls attention to the overwhelming trend in human "yearning" to be close to nature in the past 20 years at least, explaining that "some suburban residents came to feel deeply connected to the few remaining open spaces – slivers of forest, wetland, [and] meadow around them, dedicating years…trying to save them from development. Others restored degraded places such as polluted wetlands and rivers" (3). Gibson sees this trend in human behavior as a search for "transcendence" or spirituality and meaning in life that he calls the "culture of enchantment," and he likens contemporary human environmental protection to "traditional unity between humans and the rest of creation typical of premodern societies" (9). He reports that the remaining natural spaces and objects in today's industrialized society have "become a symbol of all the other trees, animal life, and open spaces lost to development" (3). According to Gibson, many people see nature in a spiritual light:

> It offers them something they need (and cannot find elsewhere in consumerist America): *transcendence*, a sense of mystery and meaning, glimpses of a numinous world beyond our own. The spiritual connections made to animals and landscapes almost invariably lead…to a new relationship to nature in general. (11)

What Gibson refers to as the "culture of enchantment," is addressed by biologist Edward O. Wilson's theory of "biophilia," or urge to affiliate with other life forms, which asserts that " 'the living world is the natural domain of the most restless and paradoxical part of the human spirit. Our sense of wonder grows exponentially: the greater the knowledge, the deeper the mystery and the more we seek knowledge to create a new mystery'" (qtd. in Rosen 48). In reference to this theory, Native American studies professor Gregory Cajete states that "this biophilic sensibility appears to be a primal and innate dimension of our humanity" that plays "a very important role in maintaining our physical, mental, and psychological health" (190). Similarly, according to Gibson, a renewed connection with nature is "not only a dream of interspecies companionship, health, and happiness; it is indispensable for human survival" (67).

Participation in restoration work helps individuals and communities become re-acquainted with the impact of their decisions and actions, and "could contribute in a potentially profound manner to the shift in consciousness that must accompany the formation of an ecologically sustainable society" (Smith 215). The ways in which individuals and societies choose to interact with other life forms and the natural environment are crucial to the sustainability of the earth as a healthy, functioning ecosystem.

Sustainability in the Field of Folklore

Several folklorists have recently brought attention to the need for a discussion of sustainability in various aspects of the field. For example, Archie Green's article, "Birds

of a Feather: Gorbeys and Petrels," explores the similar relationships formed between sailors and Petrels, and woodsmen and Gorbeys, and the potential of these folkloric connections to influence environmental policy. Green explains that many folkloric occupations, such as Oregon Loggers, Appalachian Strip-miners, and Newfoundland Cod fishers, rely on activities that are "assaulting and altering the environment," drawing attention to the need for a dialogue between humans and "Mother Nature," for the purposes of sustainability (207). William Westerman questions how folklorists can support the conservation of meaningful traditions while at the same time "critique the historical and economic factors that prevent us from meeting human needs and safeguarding the environment" (124). Patricia Wells takes a public folklore approach, asserting that "the issue of sustainability is at the forefront of most current cultural and heritage tourism initiatives in the U.S.," and tourism projects that emphasize the unique history, traditions, natural resources, historic sites and festivals of an area, "integrate local businesses with an overall interpretive theme as part of a sustainable economic strategy" that will "last over time" and "preserve and perpetuate essential resources" (Wells 9,10, 12). Folklorist Kelly Feltault has suggested that folklorists should consider elements of traditional culture, public policy, human rights, environmental management, and economics in order to contribute to sustainable communities and cultural heritage (Wells 12 and Feltault). According to Steve Zeitlen, folklorists "have yet to realize [their] potential to sustain and foster – even in cyberspace – the fragile cultural ecology of the planet" (17).

Birding

Birds in general are an almost unavoidable component of any landscape, and most people notice their presence. Rosen claims that "there are two kinds of birdwatchers: those who know what they are and those who haven't realized it yet" (3). Before industrialization and urbanization, close observation of birds was necessary because "humans and animals lived in close proximity" and "birds were an essential part of life" (Lawrence 161). For example, the pre-European Gualala nation of present day Soloma County, California, paid very close attention to the birds around them, especially the California Woodpecker. The Gualala knew that woodpeckers customarily make small holes in trees to store acorns, so in times of famine they would chop down a few small trees to access the acorns for food (Ingersoll 278). In terms of hunting, the earliest known duck decoys were discovered buried in the Nevada desert, ancient relics from a "pre-Paiute civilization called the 'tule eaters,'" who had fashioned reeds into the shape of canvasback ducks over 2000 years ago (Peterson 162-163).

Birds appear frequently in several Native American myths and folktales as well. For example, the hummingbird is a common character in several indigenous American stories, including the Quechuan people of South America and the Haida people of the Pacific Northwest (Benjamin 2008). One story tells that long ago, when the forest burned and all of the animals were frightened, displaced, and seemingly helpless, only the Hummingbird did all she could to bring water to the forest, extinguishing the fire one drop at a time (Yahgulanaas 2008). This story implies that even small creatures like the Hummingbird have purpose and value to the ecosystem and small actions can make a difference, even if hope seems lost.

Traditional Native American societies have found symbolic meaning in birds, but birds and other animals are also respected and seen as inherently valuable to the continuation and health of all life forms. The idea that the natural world is not separate from the human world, as well as the concept of reciprocity with the natural environment, have guided traditional Native American cultures regardless of other differences between indigenous nations (Magoc 2002, Robyn 2002, and Trosper 2009). Traditional indigenous worldview and actions are largely based on humans' relationship with animals, and the reciprocal responsibility that humans have to other life forms, including birds (Cajete 195). According to Winona LaDuke of the Ojibwe Nation, every plant, rock, and creature, including birds, are "gifts from the Creator…not to be taken without a reciprocal offering, usually tobacco or *saymah*, as it is called in the Ojibwe language" (Robyn 3). The Chilula people of northern California customarily regard animals as equals with humans, and traditionally "they considered all natural entities endowed with a spirit and earthly purpose" (Lake 69). Several Nations of the Iroquois Confederacy traditionally give explicit recognition to birds in their Thank-You prayers (Zolbrod 29-45).

European settlers observed birds in America as well, contributing to the beliefs and knowledge associated with different birds today. Naturalist Scott Weidensaul's *History of American Birding* (2007) addresses bird-watching in the early days of the United States, acknowledging that official history has generally "overlooked those who rested at the plow to watch a flight of teal come twisting down the creek valley, or the farmwives who shared crumbs of scarce family bread for the pleasure of seeing juncos and sparrows scuff in the snow on a cold day" (70). Weidensaul explains that "birds

were guideposts to the seasons, to planting and harvest, forecasts of the changing weather and even changing personal fortune – visible tokens of what was soon to come" (70). For example, Whip-poor-wills could symbolize the coming of death or "luck if you wished on the first one of the spring, and if you had a backache, turning somersaults in time with the whip's call could cure you" (Weidensaul 71).

From a European perspective, birds on the American continent were so abundant and plentiful, it was believed that they could be killed in large numbers with no effect on the bird population. The popular 19th century Christmas tradition of killing as many birds as possible in a "match hunt" or "side hunt" competition persisted for several decades, proving terribly harmful to bird populations (Weidensaul 148). During these competitions, men would compete to see who could kill the most birds, regardless of species, and more were killed than could be used for food, leaving behind a display of waste. Once birds started noticeably declining in number, this tradition of butchery finally invoked a mass movement to protect birds, and was transformed into the Christmas Bird Count in 1900, a competitive birding activity whose focus was counting and identifying live, rather than dead, birds (Rosen 41). In a bird count, teams of birders compete to observe and count as many different kinds of birds as possible. The ongoing traditional Christmas Bird Count has several purposes, each requiring specific activities in a series of steps that are repeated each year. Bird observations recorded by region during the Christmas Bird Count are collected by the Cornell Ornithology Lab at Cornell University, and the combined data reveals trends in bird population and migration patterns. According to a 2001 report, "there are now about 1800 counts in the United States and Canada, and with an estimated 55,000 people playing this year, it's the largest

participatory sporting event in the world" (Anderson "Last Count" A1). As birder Roger Tory Peterson notes, "if we are to regard birds as a litmus of the environment, we must take note of their increases and declines so as to take remedial action if we can" (19).

In the 1880s, birds with desirable feathers were hunted down and killed for their plumes to adorn women's hats and fans in the popular fashion of the time. Wiedensaul explains:

> A single great egret – the 'long white' of the plume hunter – has thirty to fifty aigrettes cascading down its back, each feather worth roughly twice its weight in gold in the late 1890s…Overall, the plume trade was chewing through an estimated 200 million birds a year…never mind the multiplying loss in eggs and chicks. (151)

When the numbers of dead birds drew alarm from conservationists and environmentalists, actions were taken to stop the bird slaughter: "In the very first issue of *Audubon Magazine*, in 1887, Celia Thaxter wrote against the feminine fashion of decorating hats with the feathers of rare birds" (Foster 74).

A discussion of John Jacob Audubon, whose name became the moniker for Audubon Society conservation groups, can be found in almost any birding-related literature. Audubon was a 19th century birder and a bird painter, although most of the history of bird study did not distinguish between ornithologists and birders (Weidensaul 4). People who studied birds had to literally go outside and shoot a bird in order to see it clearly, note or paint all of its characteristics, classify it and contribute to the growing science. While most bird painters simply painted just the specimen, Audubon developed a more realistic style: "Audubon loved birds, shot them by the hundreds, and then delicately impaled them on wires attached to a special board of his own devising that allowed him to pose them and paint them in lifelike attitudes" (Rosen 39). Although he

had to kill birds for his art and scientific purposes, Audubon's paintings and pragmatic approach to protecting the environment have contributed to awareness and conservation. According to 20th century birder and bird painter Roger Tory Peterson, "Awareness inevitably leads to concern, and because [Audubon] opened the eyes of others, it is understandable that that he has become the father figure of the conservation movement in North America" (182).

The tradition of killing birds was replaced with birding as we know it today, "the less materially consumptive activity of observing birds in the field with binoculars and cameras" (Greer 36). Some of the first non-killing birders were known as "opera-glass fiends" because binoculars had not yet been invented, and opera glasses were the only available optical aid for peacefully observing birds (Weidensaul 105). Florence Merriam published *Birds Through An Opera Glass* in 1889 at the age of 26 – "a breezy, informal book that showed readers how to identify live birds in the field, instead of specimens shot for collections…in a sense, the first field guide to American birds" (Weidensaul 133). In 1895, field guides with bird song jargon started coming out, listing for example, the Carolina Wren's call as "tea-kettle tea-kettle tea-kettle!" to help people identify live birds (Weidensaul 194). Birding became increasingly popular in the 1900s, especially with the publication of Roger Tory Peterson's *Field Guide to the Birds* in 1934 that offered easy to identify field marks so that anyone could identify birds in the field. Known as "the Birder's Bible" (Cashwell 27), Peterson's easily accessible field guide sold out in two weeks, and more than five million copies have been sold since (Gordon 19).

Modern Birding

Nineteenth century nature writer John Burroughs, the "patriarch of 20th century birders" (Cashwell 9), "believed that animals, in general, and birds, in particular, reflected the most noble traits of humanity and could shed insight on human behavior…and to better understand nature was to better understand ourselves" (Magoc 64). The activity of birding today means different things to different people. To some, birding is a relaxing, spiritual activity. To others, it is a competitive sport. The yearly "World Series of Birding" bird count competition, Massachusetts' "Superbowl of Birding," and the weeklong "Great Texas Birding Classic" competition on the Texas coast are only a few examples of just how sport-like birding has become for some people (Weidensaul 267-268). Birding can be an extreme sport, as explained in *Birding on Borrowed Time,* by avid birding competitor Phoebe Snetsinger, for whom birding eased stress and provided healing, but was also very addicting (Manalis 451). Birding can be an obsession, according to *Birders: Tales of a Tribe* (2002) by British Ornithologist Mark Cocker, which investigates the sacrifices that some people make because they are "addicted" to birding (Manalis 450).

Approaches to birding differ from person to person, and today 47.8 million people in the United States consider themselves birders (Rosen 3). Weidensaul explains:

> Everyone knows a birder – we're hard to avoid, since there are tens of millions of us. We spend more than a billion dollars each year on feeders and birdseed, and birding festivals attract hundreds, sometimes thousands, to places like Cordova, Alaska, and Bisbee, Arizona. We put Sibley's guide on the best seller list, mix oceans of sugar water for hummingbirds and crowd places…birding has become (well, almost) cool. (230)

Many people see or hear birds on a daily basis, but the term "birder" is often reserved for those who seek to identify the kind of bird they see. Peterson describes the process of identifying a bird:

> We see a bird. With an instinctive movement we center it in our glass. All the thousands of fragments we know about birds – locality, season, habitat, voice, actions, field marks, and likelihood of occurrence – flash across the mirrors of the mind and fall into place – and we have the name of our bird. (220)

Birders can keep track of their sightings on a list. Life Lists identify all of the birds seen in one's lifetime, and lists can also be made based on location or region, such as a Backyard List or a California Birds List. California has one of the most diverse array of birds in the country and thus a lot of birders (Weidensaul 250). According to the U.S. Fish and Wildlife Service, 6 million Californians consider themselves birders today (California Audubon). In fact, the birds of California inspired the kind of list-making birding that is popular today (Weidensaul 255). In the1970s, the approach of non-stop bird-chasing became popular in California under the influence of birder Kenn Kaufman, now a well-known field guide author (Rosen 135). Kaufman believed that if people could identify a bird and realize the bird's need for a healthy habitat, birds and the environment would be better protected (Weidensaul 295).

Birds have made their way into the poems, myths, and other texts of several cultures worldwide (Swainson 1886, Massingham and Squire 1922, Ingersoll 1923, Scollard 1979, Benjamin 2008, and Yahgulanaas 2008). However, few folkloric studies have focused specifically on birding activities in relation to sustainability. Veterinary anthropologist Elizabeth Lawrence's book, *Hunting the Wren: Transformation of Bird to Symbol* (1997), traces the history and implications of the Wren Hunt tradition in the British Isles, as a study in human-animal relationships. The wren is known as the "King

of all birds," in many cultures, and killing or harming a wren, its nest, and eggs is traditionally thought to bring bad luck in the British Isles. However, until the early 1900s, several villages in the British Isles would enact a ritual Wren Hunt every year near the winter solstice; a time of year when killing a wren was actually considered good luck. This practice stemmed from ancient Druidic practices and beliefs, and some villages still have a Wren Hunt Ceremony, without the killing, today (Lawrence 25-26). Lawrence views the traditional killing aspect of the Wren Hunt as detrimental to human-animal and human-environment relations, pointing out that humans are part of nature, and we need to preserve other life forms and resources for future generations because ecologists have proven "bonds of symbiotic interdependence between all species on the planet" (195).

A focus on cultural groups in relation to birds is found in more recent publications. For example, ornithologist and ethno-biologist Amadeo Rea published an extensive *Folk Ornithology of the Northern Pimans* (2007), or Tohono O'odham people of Arizona that provides a highly descriptive account of cultural bird names, uses of birds, symbolic meaning, and human relationships with birds among the members of the nation. Ethnomusicologist Imani Sanga has also investigated the "Aesthetic Appreciation and Cultural Appropriation of Bird Sounds in Tanzania" (2006), focusing on the Wawanji people of Tanzania who compose music based on local bird songs. However, these bird observations and relationships are not framed in terms of the modern notion of birding. Geographers Kirsten Greer and Jeanne Guelke have investigated the role of gender in the history of Canadian birding activities**,** noting that birding "may best be viewed as a cultural practice that is informed and influenced by the prevailing social

norms of its particular time and place," and is increasingly popular in North America today (Greer and Guelke 323-324).

Birding and Landscape

Birding activities rely on landscapes, which can be perceived as scenery, geography, nature, environment, habitat, place, location, territory, and also artifact, because "landscapes may themselves be symbols and become the focus of group identity" (Atkins et al. xvii). Archaeologist Patricia Rubertone asserts that the landscapes contribute to individual and group identity because they are shaped by social and individual expressions and in turn are "an active force in creating the social order" (Rubertone 50-51,53). Landscape can thus be approached as a material expression of a culture (Rubertone 53) that "frames the actions people take, provides for their physical existence, and informs cultural understandings" (Bunting 45). Anthropologist Christopher Tilley also asserts that " 'the landscape is the fundamental reference system in which individual consciousness of the world and social identities are anchored'" (qtd. in Gibson 88), and sociologists Thomas Greider and Elaine Garkovich agree that the ways in which humans culturally and socially give meaning to the natural landscape around them ultimately reflects the way they view themselves (Greider and Garkovich). Folklorist John Michael Vlach asserts that concepts related to community, including ideas and behaviors that reflect localized social patterns connected to landscape, are critical to the study of folk housing and vernacular architecture (63), and the same considerations can be applied to birding activities in context. According to Vlach, both landscapes and folk groups contribute to a sense of individual and community identity (69).

Greer addresses the connection between birders, landscapes, and birds in her 2005 article "Swee-ee-et Can-a-da, Can-a-da, Can-a-da': Sensuous Landscapes of Birdwatching in the Eastern Provinces, 1900-1939." Greer asserts that birding relies on the senses, popular discourse, feelings towards particular landscapes, and the birds that animate those landscapes, which in turn contributes to a birder's identity (Greer 36). She explains that landscape is not an inactive thing, rather it is a "process in which social and subjective identities are formed," and "birds have played an important (and often overlooked) role in animating that process" (Greer 35). As birders "develop intimate relationships with landscapes and their rhythms," they are more likely to advocate for and act to protect bird species as well as habitats and landscapes that support birding, which reflects a measure of self-preservation (Greer 39-40). Birders also bond with the birds of an area, and "bird and watcher are intimately connected" (Rosen 121).

Rosen's experiences, as reported in his book, *The Life of the Skies* (2008), reflect this notion of connection between birders, birds, and the landscape. After a birding excursion to the swamps of Georgia, Rosen realized:

> It was not until I started birding that I had a way of relating to swamps, of thinking about the life inside of them, of realizing how central swamps are, how much I need them – and how much they need me. Birding, in its own small way, had given me a place in the swamp, made me part of the fellowship of people drawn there for their own reasons…with whom it turned out…I had the most basic things in common (267-268).

Wetland landscapes have contributed to individual and group identity through time. According to an article by archaeologist George Nicholas on "Prehistoric Human Responses to Wetland Ecosystem Transitions," "wetlands provide an often ignored avenue through which to explore the interrelationship between humans and their environments" (309). Wetlands "were a central focus of the lifeways of many prehistoric

and historic cultures" and "have for a very long time represented an important ecological component of the North American human landscape" (Nicholas 309). However, "over the past two hundred years, more than half of the wetlands in the continental United States have been drained and filled," including over 80% of California's wetlands, to agriculture and industrial activities (Gibson 163). The Humboldt Bay area has seen a 90% loss of original wetlands to transportation, agriculture, housing, and industry (Branch 2000).

In contemporary society, wetlands are "valued primarily for wildlife preserves, duck hunting, and for water purification and reserves," (Nicholas 309) and have proven to be a major site for bird-watching as well (see Fig. 2).

Figure 2. A Saturday morning birding tour looks out over the Arcata Bay.

Weidensaul comments on the popularity of wetlands associated with sewage treatment amongst birders:

> The committee creating a Washington State birding trail specifically nixed including [sewage] lagoons on its list of hot spots, saying, "There may be birds, but sewage lagoons are not tourist attractions." Which tells me the people creating the Washington birding trail weren't *really* birders. Did they miss the article in *Birding* magazine a few years back, 'North America's Topflight Sewage Ponds'? There's nothing like a good whiff of primary sewage effluent to clear the sinuses on a cold morning. (5)

Rosen also comments that "every birder knows that there is fine birding to be done…at sewage treatment plants," which symbolize both humans' destruction of and interconnectedness with nature (115).

Access to specific locations is important for the activity of birding, as birder and writer Peter Cashwell explains,

> I had never realized just how large a part specific location plays in spotting birds…they are concentrated very much according to terrain…You can live in a county populated by any number of Belted Kingfishers, but unless you go down to the waterside, you'll probably never see one. (46)

Humans' decisions about land use and whether or not to build on a natural area or restore a degraded area, affect birds and the places they can be seen. Landscapes are "created and refreshed on an everyday basis by the individual actions of ordinary people," even if those actions include leaving a natural area alone, and "the protection of species in all kinds of nature reserves creates a landscape element devoted to the maintenance and indeed enhancement of biodiversity" (Atkins, Simons and Roberts 220, 268).

The Arcata Marsh and Wildlife Sanctuary

The Arcata Marsh and Wildlife Sanctuary (AMWS) is located in the town of Arcata, on the Humboldt Bay of northwestern California (see Fig. 3). Surrounded by huge redwood trees, a beautiful coastline, and accessible along Highway 101, Arcata attracts travelers and lovers of the great outdoors, and Humboldt State University also brings academics and activists to the area. Arcata, formerly known as "Union Town,"

was once dominated by logging interests, but over the last several decades, the community has developed a reputation of being environmentally aware and active (Bretnall 131-139).

Figure 3. Map of the Arcata Marsh and Wildlife Sanctuary (FOAM "Maps").

The AMWS is similar to a park in that it provides space for jogging, dog walking, and other outdoor activities. Five miles of trails provide access to 225 acres of both fresh and saltwater marshes where birds and other wildlife are easily viewable. An on-site naturalist and volunteers operate the Marsh's Interpretive Center (see Fig. 4), where visitors can go to learn about how the marsh works or take a guided tour. Students and faculty from Humboldt State University also work closely with the AMWS, conducting research and helping maintain the area. The Marsh is a sanctuary – a safe place for all forms of wildlife, birds being the most abundant and visible. Located on the Pacific Flyway bird migration path, more than 300 bird species, resident and seasonal, visit the Marsh on a yearly basis, and they attract local and traveling birders regularly (Streshinsky). In fact, *Birder's World* magazine featured the AMWS as a "birding hotspot" in their August 2010 issue (Rich 42).

History of the AMWS

The Marsh looks natural, but in fact it is a restored ecosystem – a constructed wetland that works in conjunction with the town's wastewater treatment plant (see Fig. 5). Before Europeans arrived in northern California, the Arcata Marsh area was a brackish marsh, containing some freshwater and some saltwater from the tides of the Bay. Like many other wetland ecosystems across the United States, the wetlands along the Humboldt Bay were drained when European settlers arrived, and the area was used for several mills, a railroad, and eventually a wastewater treatment facility and dumping ground. From 1965 to 1973, part of the area was used as a landfill, or more accurately the town dump – no regulations for landfills were in place at that time. Historically the wastewater treatment plant released raw sewage directly into the Humboldt Bay, and over

time, contaminants from the landfill leached into the waters of the Bay, harming fish and wildlife populations and the coastal ecosystem as a whole.

In 1973, the community of Arcata decided to close the landfill and try to restore the wetland ecosystem of the area. Pressures to regulate wastewater were in effect, and the community's treatment process was being re-evaluated. In 1979, Dr. George Allen, Professor of Fisheries at Humboldt State University, found that properly processed, non-toxic effluent from the wastewater treatment plant could actually contribute to the health of the wetland ecosystem when released into the Bay, providing nutrients for the bacteria, plants, fish, and therefore birds, that rely on wetland habitats to survive (Allen "Unpublished Reports"). This research helped the community of Arcata decide to construct a wetland, rather than the several other land-use proposals that were offered up for the site.

Figure 4. The AMWS Interpretive Center was built on the foundation of an old mill.

The City of Arcata basically conducted a “Wastewater War” to gain approval for combining the systems of the reconstructed marsh with the wastewater treatment plant, but their efforts were not in vain (Allen *Humboldt Bay*). In the early 1980s, steps were taken to integrate wastewater treatment with the natural processes of the restored marsh, turning “wastewater into a resource” (FOAM “The Marsh”). Today, not only does the wastewater contribute to the health of the Marsh’s ecosystem, sewage sludge from the plant is also recycled into fertilizer. The Friends of the Arcata Marsh (FOAM), a non-profit organization committed to informing the public about the benefits of Arcata’s system, explain:

> Raw sewage enters the headworks, where the sludge is separated from the effluent. The sludge is digested, dried, and composted for use on city grounds. The clarified wastewater is sent to the 49 acres of oxidation ponds where time, aquatic plants, and microorganisms purify it. Arcata's wastewater then circulates through a six-marsh system, filled with plants and animals that feed on the nutrients that are left. The water that is finally discharged into Humboldt Bay has gone through ‘enhanced’ secondary treatment, thanks to the marsh system, and is completely potable. (FOAM “The Marsh”)

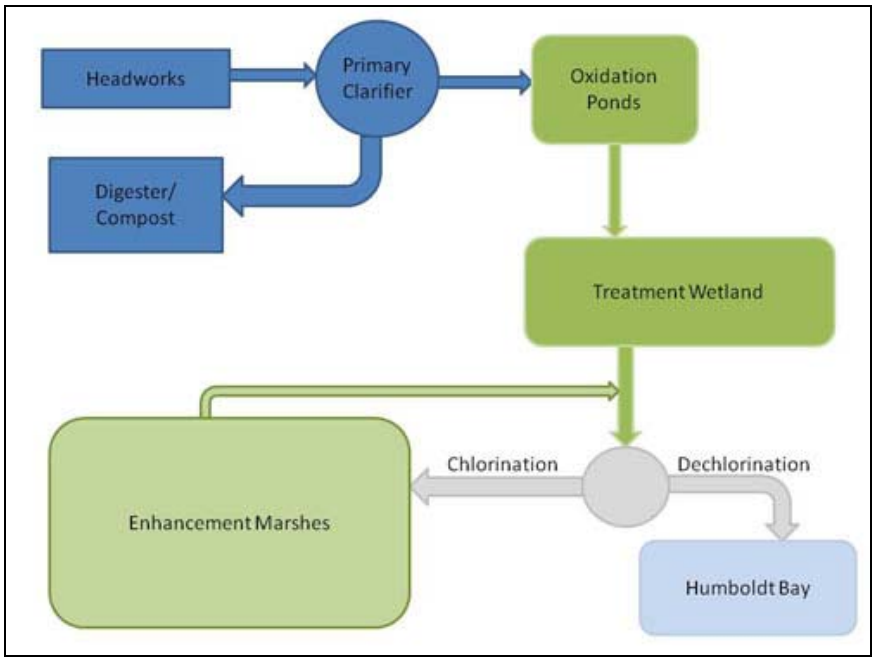

Figure 5. Process for Wastewater Treatment at the AMWS (Environmental Engineering Resources).

Nutrients in the wastewater and nutrient-rich runoff provide sustenance for the "billions of microscopic animals which form the base of all food chains in the marsh" (Branch 2000). The previous landfill site is now known as "Mount Trashmore," and "supports grasslands, shrubs, and trees that attract many wildlife species" (FOAM "What is the AMWS?"). The Marsh's Interpretive Center was built on the foundation of an old mill, and pilings from past structures and old railroad tracks are still part of the Marsh's landscape. Peterson points out that "landscapes can change in a single lifetime," a reality that is reflected by the context of the AMWS (270). Today, birding activities give continued meaning to the Marsh's wetland ecosystem on top of its function in cleaning wastewater.

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CHAPTER III

METHODS

The existing body of literature investigating birding, sustainability, and reciprocity between humans and the natural environment, as reviewed in the previous chapter, indicates that the folkloric realm of human-animal and human-environment interactions has yet to be fully explored. No folkloric studies have been published specifically on modern birding or birders at any location, although scholars in other fields of study have provided a theoretical approach to birding and landscape. The goal of this research is to address the ways in which the landscape and birds of the AMWS provide a shared sense of meaning for local birders as a folk group, as well as how traditional birding activities contribute to the sustainability of birding in context. An analysis of birder's beliefs and behaviors in terms of traditional birding activities serves to integrate a folkloric perspective into ongoing discussions of sustainability and its implications.

Locating the Research

In the course of reading about all of the ways in which human activities and industries have harmed and changed the natural landscape and environment, I researched ways of interacting with the natural environment that enhance, rather than degrade, the other living creatures and natural resources that exist alongside us. I discussed my interest with a colleague, who told me about the Arcata Marsh and Wildlife Sanctuary. He explained that the community of Arcata was using natural wetland ecosystem processes to clean wastewater, and that the area had recreational uses as well. After conducting a preliminary investigation online, I found that the creation of the AMWS was a conscious community decision, and it provides an excellent context for birding.

Choosing the Interviewees

I used cluster and snowball sampling methods to secure interviews with seven local birders at the Marsh (Bernard 97). I sent email requests to the Friends of the Arcata Marsh (FOAM), the Redwood Region Audubon Society, and the Naturalist at the Marsh Interpretive Center, inviting recipients to forward my email to others who might be interested in participating. Several interviews were tentatively scheduled through email and confirmed in person or over the phone. I traveled to Arcata for two consecutive weekends in February of 2011 to network with local birders, conduct interviews, and attend some of the Marsh's weekly birding tours, hosted by the Redwood Region Audubon Society and FOAM (see Fig. 6).

Interviews

Using semi-structured interviewing techniques, I presented each birder with several questions addressing the who, what, when, where, why, and how of birding (See Appendix A). Using Ben-Eli's "Five Core Principles" as a guide for measuring sustainability, I asked each birder about the materials needed, economic implications, biological needs, social aspects, and spiritual beliefs related to birding at the Arcata Marsh. I also asked birders for their own definition of sustainability, as well as their most memorable experiences with birding at the AMWS. I conducted two afternoon interviews at the Marsh Interpretive Center on Sunday, February 13, 2011, and I returned to Arcata the following weekend for an afternoon interview at the Interpretive Center on Friday, February 18, and Saturday, February 19. On Sunday, February 20, I met one interviewee at his home in the morning, then I conducted two final mid-day interviews at the Interpretive Center. Each interview lasted an hour, and I obtained permission from

interviewees to digitally audio record each session and use their names in my analysis. I transcribed each interview and provided a copy of the transcription to each participant.

Qualitative Research

To analyze the interviews, I identified and coded themes of folk group, tradition, and festival in the transcripts. Then I coded responses for additional topics addressed in the interview, such as the biological and social implications of birding (See Appendix F for coded themes). I then analyzed the ways in which birders' folklore and traditions contribute to the sustainability of birding at the Marsh, using Ben-Eli's "Five Core Principles" as a theoretical framework, and I identified degrees of reciprocity represented in each folklore form.

Figure 6. The Audubon Society leads free weekly birding tours at the AMWS.

CHAPTER IV

RESULTS

Fieldwork for this study resulted in two guided tours of the AMWS and interviews with seven local birders, including the tour guides.

Tours

My first research-based encounter with the AMWS centered on the Saturday morning Audubon birding tour, which gave me a good idea of what it might be like to go birding at the AMWS. The tour leader, Jim Clark, was a member of the AMWS Planning Committee in 1982 as a Redwood Region Audubon Society representative. Today, he is the president of the Society and interfaces with all of the people who are involved with the Marsh. As the tour began, he welcomed everyone and explained that the AMWS combines community and biological sustainability so that people can, in essence, "enjoy sewage." He passed a clipboard around for everyone to sign, ensuring us that after the tour, a list of the birds we saw would be emailed to each of us (See Appendix D). Jim explained that by keeping track of the birds that we see, and sharing this information with other birders online, our observations can be combined with other people's to see trends in bird activity.

The tour rambled up I Street, through Mount Trashmore, and around Klopp Lake. Along the way, we saw Great Egrets, a Red-tailed Hawk, and at least 200 Least Sandpipers, among other species. Jim set up his birding scope and let tour participants use it to get a closer look at the birds. A few of the other birders had scopes, and many people had binoculars and birding books. The more experienced birders discussed the

different names, field marks, and characteristics of each species, and conversed about different types of birding equipment and advances in birding technology.

Through the course of the tour, I learned that several of the Marsh's plants actually collect and filter heavy metals and other toxins from the water, and are periodically harvested to be used for compost around the town, "from poop to pansies," as Jim described. Stories about the various place names within the Marsh, such as Mount Trashmore, and the "No Name Pond" were told during the tour as we passed by these areas. I learned that trees are not growing on Mount Trashmore because their roots could possibly break into the capped landfill, causing waste to leach out into the surrounding land and water. In terms of the "No Name Pond," the story is that local waterfowl specialist Dr. Stanley Harris, one of the original contributors to the existence of the AMWS, did not want any part of the landscape to be named after him, so one of the ponds within the Marsh was fully named "Stanley Harris' 'No Name Pond'," to honor Harris while at the same time respecting his modesty.

I also attended the Friends of the Arcata Marsh's Saturday afternoon tour of the Marsh, hosted by birder Jean Santi, a retired French teacher and volunteer at the Marsh. When I arrived at the Interpretive Center for the tour, I found myself among a group of local 4H students, mostly ages 5-12, and their parents. Jean's tour worked nicely to hold the kids' interest for an hour as we explored the Log Pond, Mount Trashmore, and Butcher's Slough near the wastewater treatment plant. Jean explained that, in the past, the fir and plywood mills that once occupied the area used the Log Pond for storing logs, but when Dr. Allen tried to raise fish in the pond for an aquaculture project, he noticed that they began to die. His students dove to the bottom of the pond and found that tannin

from old sunken logs, combined with water and heat, was harmful to the fish. A concrete fish ladder still remains on site today as a testimony to the past uses of the area. Although inhospitable to fish, the Log Pond now serves as a habitat for several birds, insects, bacteria and plants.

Jean explained the past uses of “Mount Trashmore” as well as the basic ecosystem functions of the Marsh in conjunction with wastewater treatment. Along the tour we saw Black-crowned Night Herons, an Anna’s Hummingbird, some Great Egrets, and even a tiny tree frog with which the kids were especially pleased. Another highlight of the tour was the appearance of an American Bittern. Jean explained that bitterns are special because they usually blend in with the cattails and are difficult to spot.

Interview Responses

Birder’s Values and Preferences

Several different motivations for birding were mentioned by the interviewees. Jim first became interested in birding as a young man growing up in the San Joaquin Valley of California. His best friend’s father was a wildlife biologist, so Jim and his friend would search for different birds and other wildlife. Jim believes "we all envy birds because they can fly," and he explained, “I’m not a ‘serious’ birder. I only do it for fun.”

Jean loves birding because it’s an outdoor activity that is challenging: “It calls upon you to use your mind, and every time it’s a little bit different…it’s beautiful, it satisfies your curiosity, it opens up new vistas – a new way to see a place.” Jean initially took a bird-watching class when she moved to Arcata, and she learned more about birds and their habitats by attending tours at the Marsh.

Cindy Moyer, a music teacher at Humboldt State University, member of the Friends of the Arcata Marsh (FOAM), and volunteer and docent at the AMWS, first became interested in birding when a friend helped her hang a birdfeeder in her yard, and she gained more knowledge through birding tours at the Marsh as well.

Denise Homer, the Marsh's Interpretive Naturalist, was born and raised in Humboldt County, and birds were an ever-present part of her childhood. Growing up, her parents would point out different birds and other living creatures or natural formations, which caught Denise's attention. She explained, "I think that birding is popular because birds can do one thing that we can't, and that's fly. We associate that ability to fly with a sort of freedom, [that] I think, as humans, we generally crave."

Ken Burton, a docent and volunteer at the Marsh, is a former board member of FOAM and chair of the Marsh's Habitat Concerns Committee. He organized restoration work as a liaison between FOAM and the City of Arcata. Ken is an expert birder and just published a photographic guide to the common birds of the AMWS. He explained his interest in birds and wildlife to me with the acronym SMNLFB – Scientifically Minded Nature Lover From Birth. To Ken, birding is mostly about being outside and opening up the senses. He explained that "[birding] can be a totally relaxing, sort of spiritual experience, or it can be an intense, stressful, obsessive compulsive activity, or it can be anything in between. It's a very personal sport…I think there are as many different ways of [birding] as there are people doing it."

George Ziminsky, a board member of FOAM and tour guide at the Marsh, moved to Arcata in 1985 and was quickly introduced to the AMWS as a great place for outdoor

recreation. George explained that "part of the attraction to birding is that we can't fly…I never get tired of watching birds flying."

Darlene Marlow has been volunteering at the AMWS for about ten years, and she developed an educational program for young children about processes associated with human and animal wastes, since wastewater treatment is a big part of the Marsh's ecosystem. Darlene was introduced to birds at a young age, and for her, birding is not so much about the naming and identification of birds, but more about the enjoyment of being outside, the amusement of watching and connecting with different birds, and learning about the natural environment as a whole.

All of the birders interviewed agreed that the "best" conditions for birding depend on the habitat and behavior of the species of bird, although little wind and moderate sunlight provide optimal conditions for seeing birds in general (Moyer, Homer, and Burton). Ken explained that on overcast days, "you can look at the bird from any angle and lighting is not going to be an issue," although he admitted that sunlight from the right angle can bring a different aesthetic to the experience: "when the sun is shining the right way on a bird it's just magical." George stated that rain is not optimal, but birding can even be successful in rainy and otherwise inclement weather condition with the right gear.

In the context of the AMWS, best conditions for viewing shorebirds and wading species depends on when the tide pushes feeding birds closest (Moyer, Santi, and Homer, see Fig. 7). At high tide, shorebirds can also be seen flocking over Klopp Lake, which usually attracts raptors, like Peregrine Falcons, who try to catch one of the flock for a

meal (Cindy, Jean). The best time to view songbirds, according to Cindy, is in the early morning or at sunset when they are out singing.

Figure 7. Shorebirds can be found feeding on the mudflats as the tide goes out.

Denise told me that every day brings new surprises and birds can be seen at the Marsh all year long, but many of the migratory birds leave the Marsh in the spring to nest elsewhere. So fall, winter, and spring are the best seasons to go birding at the AMWS. Jean agreed that October through June offers the widest variety of birds at the Marsh, and Ken explained that "fall and spring are the highest diversity periods, because…depending on whether it's late fall or early spring, you may have some of the summer birds around and some of the winter birds too, and maybe some of the few species that you just see in transit."

Among interviewees, the most mentioned values that go along with being a birder at the AMWS, are that humans are not the only living creatures on earth, and we are not

isolated from nature. Jean asserted, "the most important value is to realize that you are not the only living being on earth, that there are other living creatures who enhance your own experience, and it's your responsibility to try to enhance theirs." Cindy and Denise both mentioned that they value awareness of human effects on ecosystems, and Denise even signed an "Environmental Pledge" upon graduating college. With awareness of birds comes values of conservation (Jim and Cindy), knowledge (Jean), as well as care for birds, their habitats, and life in general (Cindy, Darlene and George). Ken explained:

> I think that to be a birder, you have to value wildness and maybe unpredictability a little bit, and just…accept and even embrace the fact that we haven't conquered everything, that there are things out of our control…We share the planet with a lot of other beings who are directly and indirectly important to our survival, but also have an inherent right to exist independently of us. So I don't think that those values, per se, are critical to being a birder, but I don't think you're likely to be a birder if you don't have those values.

Denise mentioned that some birders value the opportunity to observe and identify rare birds. In general, Darlene asserted that we must value what we have and not make environmental conditions worse, and we must teach children about nature and the environment so that future generations will understand and protect all living things and ecosystems.

Sustainability

Each birder offered thoughts pertaining to the meaning of sustainability. The idea that sustainability is affected by time, change, and the passing of resources to future generations was expressed most frequently. For example, George's definition of sustainability includes preserving a resource for someone else, and ensuring that

> this environment will be nurtured and it will be here for somebody five years from now, ten years from now…I'm only going to take something from [the Marsh] without taking anything away from it. And with that, if you can gain enough benefits from something without being detrimental to it, then it's always there for

> those benefits, they're kind of renewable. So, tourism and birding…that can happen infinitely on a basis that's sustainable. The resource that [birding is] deriving its benefit from isn't damaged or used up in the process of using that resource.

Cindy mentioned that driving is not environmentally correct, and she usually walks to the Marsh to go birding. For Cindy, sustainability

> means preserving resources, using them wisely, making sure that you don't use them up, that there are sufficient resources for the next generation of people and for time going forward, and that probably means that you're adjusting what you have to do and how you interact with that over time… you have to keep monitoring what's going on.

Similarly, according to Jean, in the context of birding at the AMWS, sustainability implies continuity, and a habitat that is "nurturing to the life which depends on it."

Jim explained that "for a single activity to be sustainable, it means that you don't have to deplete another resource to do it; it's kind of self-generating, not quite perpetual motion but close to it…not dependent on an outside resource, but contributes to that outside resource and recycles it."

For Denise, "In terms of the Marsh, [sustainability means] looking at a biological system that remains diverse and productive over time…" In terms of

> the large puzzle, needing very much to throw humans into it, sustainable communities balance the economic natural assets for diverse needs of the local residents, so that they can be met now and in the future, and with limited environmental impacts.

According to Denise, there is nothing about birding at the AMWS that's not sustainable, unless someone leaves trash, which is "not a birding activity, just a human possibility."

Ken explained that sustainability refers to

> using resources to meet our needs, and whether those needs are really subsistence needs or more sort of fulfillment needs, in a way that does not deplete them

> unnecessarily…I even kind of shy away from using the word "resources" in that sense because it implies that they are there for our use, and yes, to us they are resources, but that's not all they are…I think sustainability is a nice goal, unfortunately I'm not sure how realistic it is in the face of nine billion people… it really just depends on how much damage you're willing to accept. So if we wanted sustainability with no impact, a pristine environment, then we can't be here. What we may be headed for is sustainability in some world that bears very little resemblance to what we have now, which already bears very little resemblance to what it looked like a few hundred years ago, so really it all comes down to how much we are willing to sacrifice.

Perceptions of Community and Identity

Several respondents mentioned that the community of Arcata is concerned with issues of sustainability (Cindy, Jim, and Denise) and is forward-thinking (George). Denise stated that "The City of Arcata is really trying…to balance human needs and environmental needs" in order to ensure sustainability of the community and surrounding ecosystems. Both Denise and Cindy described Arcata as a "small" community, and others agreed that the city is highly involved in activities at the AMWS (George, Jim, and Denise). According to Denise, the AMWS is

> the heart of Arcata. I think it's the single thing that everyone is the proudest of [and] knows the most about…Early on there was something called 'Waterfront Days' and that was the earliest special event that we had, and the slogan for that was 'Flush With Pride.'…We are treating the City of Arcata's wastewater through marshes that provide habitat for wildlife and public recreation and passive recreation, [and] it's just a win-win situation, so everyone's very proud of it, and it's an important part of our community.

George explained more about the role that the AMWS plays in the lives of community members:

> There's no end to the good things you can say about the Marsh. You know, friends that I've had who have lived here and moved away, they always tell me to watch the sunset for them or something like that. When people leave the area, this is one of the things they miss the most. But, it's always here for them to come back. So when a friend is in town that used to live here, that's one of the first things they want to do is come out here and walk around Klopp Lake and catch

> the sunset…That's one of the best things to do when you're re-connecting with a friend who used to live here, come to the Marsh and hang out. It's great.

The AMWS plays a large role in the Arcata community, and a large role in the local birding community as well: "It's easy access to town, it's level walking, and the big factor, of course, is that we have 317 species that come through here in the year, [and] about 84 year 'round. We've got the birds, and we have also been pretty good at catching some of those rare birds that come through that are just totally unexpected" (Denise). Essentially, the AMWS Interpretive Center doubles as a "clearinghouse" for California birders (Denise). People from other areas like San Francisco will call and ask about their chances of seeing rare species that might be in the area, and local birders also use the Center for meeting and networking: "the birders [are] out here every day – coming and telling me what they've seen or trading stories" (Denise).

Several interviewees spoke of a perceived transition in self-identity from a "non-birder" to a "birder." Ken explained that he did not think of himself as a birder until he took a trip to Kenya and became involved in a social group of birders: "When I went over there I thought of myself primarily as a herpetologist, and when I came back I thought of myself as an ornithologist." For Jean, a bird-watching class field trip to the Sacramento Wildlife Refuge changed her self-identity: "…I think from that moment forward I would call myself a birder. It was the most beautiful natural experience…that I have ever had in my life. I have never seen so many birds in one place. I mean, literally thousands and thousands of geese and pelicans and cranes; things that we didn't have in Colorado."

George also experienced a social and physical transition to the birder identity. He explained:

> I had some friends that were part of the hard core birding circle around here, so I got to know some of the birders socially. [Then] about ten years ago…I injured my back and I wasn't able to go hiking in the mountains. I used to run. I would run through the Marsh or ride my bike through, and when I ended up having to walk, that slowed me down, and I got a better pair of binoculars, and so, that's probably what turned me into a birder…[The AMWS] became my refuge. Instead of being just stuck in town in the apartment, my escape would be to come out here to the Marsh. So over the course of a couple years, I really got hooked into birding.

Denise, Jim, and Darlene have been life-long birders, but Denise described her observation of other people transitioning into the birder identity, sometimes without realizing it:

> What I find here is that a lot of people come [to the AMWS], and eventually they wander through the interpretive center and they say, "Oh, I'm not a birder." And I say, "Well that's ok, you don't have to be a birdwatcher to be here." And after a while they come in and they ask, "What's that big white bird I'm seeing?" [And I say,] "Well that's a Great Egret." And after a while they say, "You know, I noticed a duck." And so I find it quite amusing to realize [that] over time these people slowly become birders…even the people who are not "birders," they start to notice things over time and have questions.

Interviewees commented on their approaches to birding in relation to other birders. For example, Darlene differentiated herself from "tickers," birders who essentially chase birds to add them to their birding lists or "Life List:"

> I watch birds all the time… I love to see the Red-shouldered Hawks, the Red-tailed Hawks, the Peregrine Falcons… But I don't need to know their names to enjoy watching them. I mean, if I were a ticker I would care, but I don't. I just like to see them. I am just interested in their behavior.

Jim explained his approach to birding with a similar distinction: "I like to sit down and watch fewer birds longer, other birders like to watch more birds [for a] shorter [amount of time] and move on to the next one to check their list off, and I am not one of those

people." Denise normally approaches birding by just taking a walk and seeing what comes along: "I'm not so much a pursuer. We get a lot of pursuers here that hear [of] a certain bird and they come faithfully (Homer). Although these birders contrast their identity with pursuer behavior, Darlene explained that she has many friends who are "tickers," and even though she takes a different approach, she gets along with them because they share a love of birds.

Interviewees were familiar with the comparison that is sometimes made between the "ticker" approach and birding as religion. Ken explained, "I guess you could compare it to a religion in terms of its importance to some people in the way that religion is important to some people. So if people tell you that [birding is] like a religion to them, I guess you have to believe them." At the same time, Cindy explained that this metaphor is sometimes made in a joking manner. I asked Denise about this metaphor and she replied, "when you talk about some people saying that birding is their religion, and I know some of those folks, they're the ones with the checklist and they're out there to get every bird they can. It's an interesting thing that they do, but they sure know their birds." Not all birders with a "Life List" are "tickers," considering that both Darlene and Cindy mentioned that they keep or have kept a "Life List." Cindy did admit that having a Life List can sometimes overwhelm other life priorities.

All of the birders interviewed identified themselves as part of a birding group, although several interviewees explained that birding does not always take place in groups (Ken, Cindy, Jean, Darlene). Ken explained, "I often think that birding is a way for inherently anti-social people to be social, because they've found this community of people that have something in common, some shared interest." Ken and Cindy also

revealed that birders are often connected by their fascination with birds that can be found in wastewater treatment areas around the globe. Cindy explained, "Somebody that I met in Florida commented that [as you become a birder], you start hanging out at wastewater treatment plants, thinking this is a good place to go," and Ken agreed:

> Sewage lagoons, wherever they are, are often very popular and productive birding locations. We joke about how we spend our vacations in sewage treatment plants… and that's not where you're typical tourists heads for. You don't usually go to the visitor information desk at the airport and ask how to get to the nearest dump. But birders do.

In terms of socio-economic status, Jim estimated that most birders are in the middle to upper income range, and Cindy also remarked that the type and quality of a birder's equipment can often reveal their level of interest in birding as well as their income level. However, Cindy explained: "I've never seen any sign of socio-economic status making any difference in the [birding] community… What matters most in the birding community is birding skill, not socio-economic status.

Social Networking

Each of the birders interviewed had some sort of social influence to start birding. Five out of the seven birders interviewed were influenced in childhood by friends, family members, or both. Two out of the seven birders did not become interested in birding until adulthood, with the social influence of friends who were already part of the birding social group. Cindy explicitly mentioned that she has made several new friends since she became a birder.

SOCIAL INFLUENCES:

Cindy – A friend helped her hang a birdfeeder and obtain birding equipment, and tours at the Marsh increased her knowledge.

Jim – Explored birds and nature with a childhood friend and parents' influence, and went on birding excursions with other people.

Denise – Had parents' influence growing up, then took a bird-watching class.

Jean – Her parents and Girl Scouts influenced childhood interests, and a bird-watching class and bird walks increased birding knowledge.

Ken – Interested in birds and nature in childhood, and transitioned from "Herpetologist" to "Ornithologist" in joining a social network of birders in Kenya.

George – Already interested in nature, and local friends were already birders.

Darlene – Exposed to birds from childhood with influence from her father, and led birding tours as a volunteer in adulthood.

Interviewees expressed enjoyment of helping other birders and non-birders learn more about birds and the environment in general. Denise explained that when she "came to the conclusion that people will take care of what they know and they understand, and [she] made a conscious decision [to] go into the education of people." As the Marsh's naturalist, Denise helps people more formally, but all of the birders volunteer at the Marsh and help others informally as well. George stated, "I bump into friends out here, and if someone else asked me a question and wants to tag along, that's great. I'm definitely happy to help someone appreciate birding more, and that happens quite a bit." George receives "good information" about birds' whereabouts "from all the birders around [the Marsh]," and he explained the cyclical process of information sharing at the Marsh, explaining that friends often tag along with each other to find certain birds:

> They hear me talk about a certain thing that's happening, [like] right now, the Short-eared Owls are out in the late afternoon or early evening at I Street, and I talked a couple friends into coming out. That's kind of how it happened with me, I was hanging out with some more accomplished birding folks and they'd say,

> "Hey do you want to go check this out?" It would always be something incredibly cool that I probably wouldn't have noticed going on the same walk without having it pointed out. So I'm really happy to be out a lot and see stuff and then say "Hey check this out," and point things out to other people.

Recent advances in cellular and GPS technology have enhanced birders' ability to network across vast distances. For example, Jim explained that he uses Bird's Eye, a birding program that uses wireless internet and GPS navigation to reveal what birds have been seen recently in the area. Bird's Eye links to the Cornell Ornithology Lab at Cornell University, and the eBird online database. Jim also uses ibird, a comprehensive birding application for the iphone, as well as the Birdwatcher's Diary Application that uses GPS to locate, identify and report species, and upload lists to eBird.

Digital cameras have also contributed to birder networking recently. Cindy, Darlene, and Denise all mentioned that a camera is helpful in providing proof that you've seen a certain bird. Denise explained that cameras are important:

> If you want to play the "birding game" and document rare species and be published in the publications, then you have to have some documentation of what you've seen, and prove that you really saw it. In the olden days that used to be pairing up with a really knowledgeable birder who had a reputation that could be trusted. Today, basically a lot of people have a camera. Some people have a camera right on their scope…People actually bring me photos of birds that they've seen in their yard or elsewhere…and now that everybody's got digital cameras…at first it was really challenging for me because that's a different way of looking at birds…looking at the back screen of a camera, but I'm getting better at it.

Christmas Bird Count Tradition

Six out of the seven birders interviewed have participated in a Christmas Bird Count at some point in their lives, and some birders participate regularly. According to Jim, a Christmas Bird Count is often a long day of hard, but fun, work, and Jean described it as a type of marathon where teams of birders compete to observe, identify,

and count the most species. According to Cindy, the count process is not extremely accurate at times, but it is tradition:

> [In] the whole process for a Christmas Count, you have your area, but there's always this question of, [for example], a hawk flew from your area out into somebody else's area. Well, what if somebody else saw it too and it got counted twice? Or the giant flock of geese flew from one area to the next. So, it's not guaranteed to be super accurate.

However, Ken noted that "from an individual participant's perspective, I think it's more about just having a great experience being out there all day looking for birds, maybe with this sort of underlying feeling that you're contributing to something useful in the process." Jean, described several ways of approaching a bird count in two of her own very different Christmas Bird Count experiences:

> 1) The first person I went with on the Bird Count, it rained all day and it was very, very cold. It was here in Arcata, and we were out on the bottoms with a lot of wind, and sheets of rain, and this person…he's done the same area every year for a long time…his deal was you go and you get out of the car and you look, and you spend not a lot of time in any one place…here you are and you're seeing all the obvious birds, like for example, we saw a whole field of Black-bellied Plovers, maybe 500 in one field. He was sure there was a Golden Plover there somewhere…He was going to find one if it killed him. We were there 20 minutes and he found it.
>
> 2) But this year I also did another Bird Count, and I worked with a different kind of expert…he gets out of the car, and he sets up his scope…and he starts to look. At first glance, there wasn't anything. By the time he got done standing in this one place for two hours, he had found 50 species of birds.

Cindy commented that the Christmas Bird Count grew out of "a tradition of going out and shooting birds on Christmas Day," and the continuity of the Count allows for the visibility of "very long term trends" related to birds. Parts of the traditional process have changed over time. For example, Darlene explained that "in the old days, if you just heard [a bird], it didn't count, but now it counts," and Denise explained that to prove the presence of certain birds on a list or Count, traditionally "that used to [require] pairing up

with a really knowledgeable birder who had a reputation that could be trusted. Today, basically a lot of people have a camera." According to Jim, technology now plays a big role in bird counts, and cell phones are sometimes banned from certain counts because some people think that using a cell phone is an unfair advantage, similar to cheating, although there are different attitudes about that amongst birders.

According to my informants, Christmas Bird Counts are performed in teams, with each member playing a certain role in the process. Ken commented on the team aspect of the activity:

> Christmas Counts do tend to get rather competitive, and teams within a Count circle are competing with one another to find the best birds ["best" meaning rare or unexpected for the time or location, not globally rare], and the circles are competing with one another to find the best birds, and the most birds, and so it does, maybe unfortunately, sort of devolve into "How many species can we find?" and "What's the rarest thing we can find?"

Ken explained that competition is acceptable, as long as birders do not overlook the more "common" species whose numbers are also important for contribution to scientific data. Results from Christmas Bird Counts are compiled to determine long term trends in bird species numbers and behavior (Cindy, Jean, George, and Ken), and provides a "snap shot" of bird activity for the day (Jim and George).

Jim recommends that beginners "team up with one of the expert birders that can identify things and be a note-taker for the first time [to] get the feel of it…From that point, they may decide they just want to be in on it as a helper, take notes, or brush up on the birds and be a good identifier." Jean explained that most teams have a leader, "but at the same time, you're supposed to be helping, and there are a lot of things you can do. You can just help spot birds, you can help write down the birds that you find, [or] you can just give encouragement." Jean commented:

> It's fascinating to be on a bird count, because you see a lot of different things, and people who do the Bird Count, the ones who are the experts…they're in an area that they know really well, and…for weeks ahead of time they know they're going to be in charge of this area, they go every day, every other day, [in] different weathers. They try to go at the time of the tide that they're going to have on the Count…So, it's very interesting and it's very valuable to know what's going on in the world of birds.

George organized the Christmas Bird Count at the AMWS in 2010, although he is relatively new to the experience. He explained that he learned different ways of approaching the Bird Count by tagging along with more experienced birders, who also offered him advice for organizing and conducting the Count on his own:

> Well this year was only the second year I had done it actually. Last year I was on the crew for the Arcata Marsh, and…my social friend, who was one of the birders in the area who introduced me to the rest of the birders and got me involved in that, he always organized…the Arcata Marsh section, and he's been working out of the area a lot, so I just tagged along…the first time I did it and it was really fun. He was not going to be in town this time, so I ended up volunteering to…organize the Marsh component. I spend a lot of time here and I am familiar with area, and I was able to talk to folks like Ken and some of the other more experienced birders, to see what, in particular, would it be really nice for us to find, for a Christmas Count. So the more experienced birders were very supportive to have stepped in and taken a role of some responsibility without having too much of a history of doing the Christmas Bird Count.

Sense of Connection with Birds

A theme of close encounters and close proximity to birds was an unexpected trend in responses. Five out of the seven interviewees specifically noted the accessibility of the AMWS that allows humans to get extremely close to bird species, and Cindy emphasized that the best conditions for birding at the Marsh are when the tide leaves about five feet of mudflat exposed around Klopp Lake, because "that brings the shorebirds right close to you, eating off the mud. That is absolutely ideal." Jim explained that connecting with birds heightens a sense of spiritual meaning:

> I get spiritual refreshment from [birding], particularly when the bird knows I'm there…and connects with me. Once I was doing this senior project on a nature trail up in the Six Rivers National forest. So I hiked in the trail and was making notes on what the interpretive features were, and I hiked in a little further and sat there eating my lunch, and a Wilson's Warbler was perched right next to me, watching me eat lunch, and it was three feet away. I looked at it, it looked at me. That was one of those times when you kind of make that connection. That's what I treasure.

Other birders' memorable experiences also revolve around close encounters with birds, including Jean and Denise (See Appendix B for transcribed personal experience narratives).

Birder Perception of and Connection to Landscape

According to Ken, the AMWS is "a regionally significant and attractive birding location, and is one component of a broader picture that…includes old growth redwoods, generally nice scenery, secluded beaches and maybe some cultural aspects that draw people to this area." Ken is so familiar with the birds of the AMWS and surrounding area that he generally already knows what birds he might see in certain places. He explained that this knowledge "really becomes a second nature after a while, and I think it's really helpful knowing what to expect in a place. I find that when I go to unfamiliar places, it takes me longer to identify birds that I am totally familiar with, than if I were in a familiar place with the same birds because I don't have the expected list in my head." Denise recommends that a local birding checklist can help with birding identification depending on the area or location. For example, the Marsh has certain birds that aren't necessarily present in the rest of Humboldt County. According to Denise,

> We have the Black Capped Chickadee here. They're just in small, isolated populations. Most of the places in the county, they will all be just Chestnut-backed Chickadees. So if you look at a range map you're going to say, "Oh well, that's not here." And if you're a new birder, you might think, "Well, I guess I don't know what I'm looking at." If you have a checklist for the area, you can

> find out that there's an unusual little population that hangs out only at the Marsh; that's the only place in the county you'll see them, all the rest are Chestnut-backed Chickadees…So, the checklist is really helpful.

Ken pointed out that the accessibility of the Marsh's location, which is close to the center of town, allows for diverse recreational use. The Marsh hosts dog-walkers, joggers, hippies, and other people who want to enjoy the Marsh in other ways besides bird watching (Ken). However, diversity of habitats within the AMWS – salt water marshes, freshwater marshes, the bay, the slough, and the grassy uplands provide a "wide variety of habitats that cause a wide variety of birds" (Homer). Denise noted that since the Marsh is so close to town, "people can actually walk to it [and] some people call it their 'back yard'."

Jim noted that "the AMWS provides continuous inspiration to its users," and the level of community involvement in building and maintaining the AMWS helps to sustain the accessibility of the landscape to birders and others. According to Jim, a big part of ensuring the sustainability of a place like the AMWS is to make certain that stories about the people, plants, and animals communicate the "sense of place and personality that's so important to get a point across to people." The story of the AMWS involves many changes in landscape, from a natural coastal wetland to an industrial production and dumping area, to a constructed wetland that serves both human and ecosystem needs. Although George remarked that a natural landscape would be an ideal birding location, he realized that "some of the underlying attraction to the Marsh [is] how you can take a negative place and kind of flip it around, and turn it into some place nice in the course of only ten or twenty years…it's a really…peaceful place, whereas before it was kind of a graveyard of what we used to have here." Darlene also agreed that the AMWS location

used to be a dump, and now the landscape is enjoyable. Darlene loves the end of I Street by Klopp Lake and the Bay, because it offers beautiful views, and she can expect to see certain birds: "Western Grebes do a sort of dance together and Pied-bill Grebes swim in circles to stir up the fish." Jean and Cindy also mentioned the aesthetic appeal of birding at the Marsh.

George explained the spiritual implications of his own connection with the AMWS:

> It's nice to be here, just nice to be out here…you're taking from the environment without extracting anything from it, so it's [a]…passive, zen way of interacting with it, but I know when I come [to the Marsh] I feel a lot better. I would say that the Marsh has a kind of spiritual energy to it. I have a lot of respect for it, and it's kind of what got me involved with helping out here. I regularly pick up trash, and deal with graffiti as soon as I notice it…It's kind of my way of giving back to the Marsh. But then also, when people don't respect this place it really gets me bent out of shape. Unfortunately there's always something that needs to get picked up…I really want to give back and help it out…I would say that it would not be a gross oversimplification to say that I have a spiritual relationship with this place. It's really a big part of me and so I try to help it out as much as I can. It just sits here and it's very generous and it offers a lot to people here.

Jean explained a similar feeling:

> Being out of doors…nurtures the spirit, it helps you to clean [unimportant] things…from your mind. It makes you walk and breathe and concentrate a lot of times, or not think of anything at all. All of these things are…important to me, in order to be whole, to get beyond the daily concerns of life…Birding has been a solace for me…it is a spiritual experience.

Denise pointed out the use of the word "Sanctuary" for the AMWS was no accident. According to Denise, "the City had a choice to make, and I don't know really why they made this interesting choice, that it was a 'sanctuary' instead of a 'park' or a 'reserve' or a 'preserve.' It's a sanctuary, and that's such a big and really sort of spiritual word." Jim

confirmed that the word "'Sanctuary' was carefully chosen to indicate that wildlife is to be fully protected and to convey a specific meaning to the public about the place." Denise explained that the AMWS also provides sanctuary for humans grieving the loss of a loved one, and all of the benches at the AMWS are dedicated to people who have passed away:

> This is a popular place for bereaved folks to walk, to sort it all out…So I've gotten to watch the effect on a lot of people of just walking. Sometimes they come in [to the Interpretive Center] and…they don't want to talk to anyone…and I respect that. Over time, eventually, they do want to talk to someone a little bit. If I can be helpful, I like that aspect of it. So for me, it's definitely a spiritual choice to be here.

Other members of the Arcata community have found the AMWS to be the "Best Place to think about Life, the Universe, and Everything" (George). According to George, one of the benches overlooking Hauser Marsh was named by a local newspaper, the *North Coast Journal*, as one of the best places to sit and think in their "Best of Humboldt" edition. George explained: "It was a nice unsolicited comment that just kind of came out of left field, and that really just reinforced how a lot of us feel here. [The AMWS] is really just one of the nicest places around."

Awareness of Natural Cycles, Processes, and Human Role in Ecosystems

Interviewees explained that birding can make one more aware of natural processes as well as the human role in ecosystems. Cindy emphasized that when "you're with a lot of other people who care about those habitats, you think about what happens when you throw plastic in the ocean and an Albatross eats it…and you start thinking…maybe it's not ok to walk down the beach and not pick up the garbage." Ken explained, "I think [birding has] heightened my senses and made me more

perceptive…about the world as I move through it. It's made me more aware of what's going on; much more finely attuned to natural rhythms and cycles and day to day happenings."

In terms of birding in general, Cindy admitted, "what is best for birds is not always best for birders." Birders are interested in seeing, hearing and interacting with birds, but most birds would probably be better off if humans just left them, and their habitats, alone from the begining (Cindy). However, the birds at the AMWS rely on humans to ensure that their habitat stays healthy. Ken made it clear that "the Marsh is completely artificial…and so none of it would exist in its current form if it weren't for humans. Its original form was totally different, and then it went through an intermediate form, which is quite different from either…We've done both things – wiped out the original community [ecosystem] and replaced it…" Human waste provides the nutrients that provides for organisms in the Marsh, and human operations allow for nutrient cycling to take place (Jim and Darlene).

Humans' role in the Marsh's ecosystem is to care for and respect the habitat (Denise and George), as well as maintain the habitat, which includes monitoring and removing harmful invasive species (Jim and Denise). For example, plants like English Ivy and Pampas Grass are regularly removed "because they are basically rat harborages that promote rats that prey on birds' nests" (Jim). Hydrocolla, a plant that thrives in marshy waters, is also partially removed once a year to maintain open water space for ducks to take off and land (Denise). Denise explained that "there is the question of what maintenance means, because in essence, nature will take care of itself, although it goes along in a pattern of succession." A healthy balance of human and natural influences is

best for the wildlife at the Marsh; too much interference in natural processes can be negative. For example, although people like to interact with ducks and birds by feeding them, birds who become reliant on humans for food might not be able to find food and survive on their own, which is not the goal of the AMWS (Denise).

Several interviewees noted the importance of natural food chain processes at the Marsh because "birds wouldn't be there without the life forms that they need to eat" (Ken, see Fig. 8). For Jim, all species of plants and animals are necessary for birding to continue at the AMWS, including bacteria, algae, and invertebrates… "Birds are just icing on the cake, it shows you that the [food chain] is working."

Figure 8. A Great Egret catches a small fish during outgoing tide (Photo by J. Lemke).

Even predators are key because "birds that eat fish, like eagles and vultures," carry their prey away for consumption, and when the fish carcasses decompose, "they replenish the soil" (Jim). Billions of microscopic organisms provide support for a bird's food chain,

and knowing different birds' feeding habits can be helpful when birding at the Marsh (Cindy, Denise, and Jean). For example, wading shorebirds can be found in the salt marshes during the outgoing tide, when shallow waters provide easier access to fish and shrimp. Knowledge of "how birds react to the environment, both on an evolutionary level and on an immediate level" is important to Jim:

> One time I [went birding] with a group of people and we observed swallows landing in the water. Well, they generally don't do that, but they were doing it because it was a good way to get the insects. So…nature is full of surprises. I like to lead people to discover things on their own.

Darlene asserted that people can learn much from nature and animals. Her experiences with birding have helped her to feel more connected to "Mother Earth" and a part of something bigger, and she believes all living things are connected and humans need to feel a connection with nature. George expressed his disappointment that several people in modern society have tried to separate themselves from nature and the elements, and Denise also realized this divide, which is one of the reasons she enjoys teaching people and helping them to re-connect with the natural environment. According to Denise, "We're actually part of nature. We tend to see ourselves as separate, or like we're over nature, but really we're just part of it. We are one small piece of the puzzle." Jim also agreed that humans are part of nature, not separate. He helps people realize this connection through advocacy with the Audubon Society, as well as birding and interpretive tours. Ken also called attention to the fact that "we…share the planet with a lot of other beings who are directly and indirectly important to our survival, but also have an inherent right to exist independently of us."

George emphasized the need for reciprocity between humans and the Marsh that has become apparent through his birding experiences. He explained that while birding,

> you're taking from the environment without extracting anything from it, so it's [a] passive, zen way of interacting with it, but I know when I come out here I feel a lot better. I would say that the Marsh has a kind of spiritual energy to it. I have a lot of respect for it, and it's what got me involved with helping out here. I regularly pick up trash, and deal with graffiti as soon as I notice it…It's kind of my way of giving back to the marsh…I really want to give back and help it out…I have a spiritual relationship with this place. It's really a big part of me and so I try to help it out as much as I can. It just sits here and it's very generous and it offers a lot to people here.

According to George, "if people didn't appreciate [the Marsh], if enough people didn't want to have…or care to have [it], then it probably wouldn't have happened, so it's a feedback loop of sorts. People really wanted this so they created it and now they maintain it." George explained that when one can extract benefits from a landscape or environment "without taking anything away from it," then it will always be there to provide for others' benefits in the future.

Brown Shrike Stories

When regionally rare birds make an appearance in or near the AMWS, birders come from near and far to catch a glimpse. While I was in Arcata conducting interviews, a Brown Shrike, typically found in Asia, had been spending some time on the coast near the AMWS (Cindy, Darlene, George, and Denise). Cindy was the first interviewee to explain the situation to me:

> This is the fifth, I believe, instance that anyone has found one of these birds in the lower 48 states. This is a super rare bird. And so there are people from all over the country flying in to see this bird this winter. We have incredible amounts of birding tourism going on at the moment. This will end when this bird leaves, but people do come up here, you know, birders get into this thing – if you are making a state list, there are a few species that are available only up here. So if you need to get every species that can be counted in California, you have to come here eventually.

George explained further:

> People spend their vacation to come here and be able to see a Brown Shrike, and they go out to see it on their first morning…and then they come down [to the AMWS] and they've heard about the Marsh and they're looking for other unusual birds around at the moment. I've met probably fifty people from out of the area that came here to see the Shrike and now they're just out here and around…It's pretty amazing that one individual bird would bring in undoubtedly tens of thousands of dollars to the local economy…[The AMWS] is a very viable economic thing [and] tourism as a whole has always been big in this area. When you start realizing that the quality of the environment is huge and a big part of it, that will hopefully affect decisions to make quick economic trade-offs…and also to provide incentive for enhancement and restoration…The aesthetic value of having more quality wildlife habitat around actually could have a snowball effect on tourism.

George mentioned that he often gets tips from other birders as to what species are present and where, and he related a recent birding social networking experience associated with the presence of the Brown Shrike in the Arcata area:

> I was looking for the Shrike, [and] there were all these people from Washington state and elsewhere, and they're all just like, "Oh, you're a local aren't you?" And we were looking for the Shrike, and we found it in a spot that they were looking, and so it's a great common bond. Like, if you bump into somebody, you immediately share that [common interest or experience], and so everything else kind of falls away…As a whole birding is a really positive force and…the birding community is very much into networking.

According to George, the Internet and online birder-networking sites like eBird allowed news of the Brown Shrike to spread "like a shockwave" through birding communities worldwide. Darlene also mentioned the Brown Shrike, explaining that

> sometimes birds get off where they're supposed to be, and there's a Brown Shrike in Humboldt County right now, and everybody's really excited about it. I actually went out to see if I could see it, but I couldn't. But I've seen Loggerhead Shrikes, and once on a birding tour, just walking around, I found a tiny little mouse hanging from a thorn, dead of course, and you know that was put there by a Loggerhead Shrike, which is also known as the Butcher Bird, because they save up their food to come and get it later. It was really cool to see that.

Personal Experience Stories at the Marsh

Interviewee's personal experience stories include elements of closeness to birds, birds' feeding habits and behaviors, as well as social interactions between birders. (See Appendix B for transcribed stories.)

One of Denise's memorable experiences involves the appearance of a Green Heron, three times in one day. Denise told me that Green Herons are unusual to see since they are generally very shy birds. She first spotted the Green Heron from her office window, then she saw it again after lunch flying along the slough, and then again when leaving the office for the day:

> The tide had gone out, and it was just standing there in the mud just a few feet from me, and for a minute we just looked at each other, and then it flew away again because it's pretty shy. I thought, "What an odd day. A Green Heron three times. What does that mean?"

Denise also discussed shorebird behavior at high tide over Klopp Lake:

> It's delightful when [the shorebirds are] going over your head and you hear all those wings…sometimes they'll be coming at me and you know…There's just a wall of birds coming at me and then they just decide to go on either side of me, so that the whole thing splits and they "whoosh" past me on either side and it's like, how do they make that split-second decision, do it, convey it to each other, and none of them collide into me or each other? It's still, I think, one of the great mysteries. There are lots of mysteries left in birds.

One of Jean's most memorable experiences at the Marsh involved the American Bittern. She had been practicing for her tour, and she saw not one, but two American Bitterns. She had seen one land and caught a glimpse in her binoculars, and then when she took the binoculars down, another one was standing almost directly in front of her.

Jim has had several memorable experiences at the Marsh:

> About a year and a half ago, there were two Peregrine Falcons in the high tension power lines, eating breakfast. Each of them had a sandpiper and they were just

> enjoying and having a nice breakfast, and then watching the parts they didn't want spiraling down to the ground – the wings, the tail feathers, and all of that, that was really cool…Maybe about 15 years ago…we were watching shorebirds and along came a, I think it was a Peregrine Falcon, and the Falcon, dove at some shorebirds, directly at our group, because the shorebirds were directly between us and the falcon, and that Peregrine pulled out 15 feet over our heads… it will never happen again, just super impressive. That was really a highlight of my local birding.

Cindy's most memorable experiences at the Marsh include witnessing a Peregrine Falcon stealing food mid-air from a Red-shouldered Hawk, and also seeing a seagull steal a Green-winged Teal from a Peregrine Falcon while the teal was still alive. One day an otter followed her along the path by Butcher's Slough, which was a rare experience. She also explained:

> Sometimes high tides too, where the shorebirds are resting on the islands of Klopp Lake, is pretty nice, and you go there and you have the experience of shorebirds getting scared and whole huge flocks of them flying up and staying together, and the Peregrine Falcon sitting up in the tower and swooping down and trying to eat them. While I've never actually seen anyone catch things, they must – I've seen them eating so surely they do catch things…

Cindy has also had several memorable birding learning experiences, such as being able to identify Avocets, Blue-winged Teal, and a Ruff for the first time, as well as "field trip leaders teaching that California Gulls have 'corpse-green legs,' or that Buffleheads have 'bubble-gum pink legs' or that song sparrows sound like 'irritating barking little dogs' or that Ruby-crowned Kinglets sound like marbles being clicked together."

One of Ken's most memorable experiences at the Marsh centered on an Audubon trip focused on shorebirds. He invited all of the other local Audubon societies to come along, and it turned out to be a perfect trip:

> We just hit it perfectly. There were shorebirds just pouring back and forth over the levees right in front of us and right at our feet to look at. These people were so appreciative because they just don't get to see them like that back home. The

> weather was great and it all just fell together, and it was the start of a twenty-four hour birding trip focused on shorebirds that just was a really great trip overall.

George's fondest memories of the AMWS include watching the sun set over the Bay from Klopp Lake and watching the shorebirds flying to and fro overhead, hearing the wind in their feathers. George's appreciation for birds is an extension of his appreciation for nature and beauty in general, and the Marsh exemplifies both. Birding has helped George practice patience and perseverance, and he continues to enjoy and appreciate what the Marsh has to offer. George also mentioned experiences with shorebirds flocking over Klopp Lake at high tide:

> Often at high tide, the shorebirds can't be out on the mudflats and they're all congregating on Klopp Lake. Have you seen that yet, when the tight flocks are moving around?... to be standing out along Klopp Lake and have all that going on, and to have birds either coming or going off the bay and they just come at you and just part…to actually hear the wind on their feathers, you know, that "whoosh whoosh" – I've experienced [that] a few dozen times.

Role of Stories in Sustainability

Denise informed me that the Marsh hosts "about 184 tours a year," which serve as a setting for storytelling related to the landscape, ecosystem, and experiences with birds. Denise, Jim, and Ken emphasized the importance of interpreting the natural environment during tours and other educational interactions. Denise explained, "I'm an Interpretive Naturalist, and interpretation is slightly different than teaching...interpretation is giving a story about the place, the object, the bird, the plant; telling a little bit more…[rather] than just identifying." When guiding others, Ken explained, "I try to go deeper… and talk about the birds' ecology, what their role in the environment is, what threats they're facing, [and] that sort of thing. Jim described his approach in a similar fashion: "I have been interpreting almost every time I go out birding. That's my real calling. It's natural

resources interpretation…and I see it as one shot, for not just birds, but nature and natural history and the environment in general." He told me that he often relays personal experience stories during tours and gatherings at the Marsh. He explained that his close encounter with the swooping Peregrine Falcon "is an example that I sometimes use when I lead marsh walks to encourage people to get out in nature often and just let things happen. There must be other stories like mine but one would almost need to catch marsh users at the marsh to get them."

To highlight his assertion that "stories tie us to people and places," Jim relayed an interesting occurrence that took place during the early years of the AMWS in the 1980s. He assured me that anyone who had been involved with the Marsh during that time would know about this "Stump Story:"

> We had some discussions about how stumps might provide some cover for burrowing owls up on Mt. Trashmore, and we thought, "Yea that's a good idea – perch on the stumps." And then one day, in a week, it was discovered that there were many stumps, old redwood stumps, that had been moved and put on the Marsh, and people were very upset about…the change, and these stumps, they weren't exactly landscaped. It was a bit of a surprise, and the public works director had been on the committee and he said, "Well, I've got these stumps, why landfill them when you can put them to a good purpose?" So one day, the Marsh was full of stumps. Big stumps. And some are still there. So it was alittle embarrassing, but… if you mentioned it to anybody, you would always get a smile on their face, 'cause it was kind of funny. It was just one of those stories that people get razzeled a bit about, good intentions, I don't think any harm was done. It was a little sudden, and it was just one of those little things that connects you with the people and the place. It's just a fun thing to remember.

I asked Jim if they ever found out who put the stumps there, and he said that it was public works director Frank Klopp, for who Klopp Lake is named.

Godwit Days Birding Festival

Tourists often come during the city's Godwit Days Birding Festival, a week long event comprised of excursions, classes, and other activities related to birding and the environment (Cindy, Jim, Denise, Jean, Ken, George, and Darlene). Denise explained:

> Godwit Days, which is a birding festival the third weekend usually in April, started out kind of small and was just the weekend, and now it lasts for a whole week. There are field trips all over this area going to look at different birding habitats and seeing rare birds. It's been very successful and continues to grow. People…are actually coming from all over the world to attend this thing.

The City of Arcata and local sponsors pay for the promotion and organization of the festival, and the local economy enjoys the benefits of the related tourism (Jim). George explained that Godwit Days brings people and money to Arcata, and "it's pretty famous among the west coast festivals…[it] has gotten quite a reputation for people coming in."

Jim informed me that "there is five times as much money spent on watching wildlife as there is hunting it," and that "birders tend to…have a lot of dispensable income, [so] …if you attract birders to your area, you're going to attract money," which he claimed often leads to incentives for enhancing the local environment for birds, as well as promoting community. Several local birders participate in the festival, including Denise and Ken, who were tour guides for the 2011 celebration. George emphasized the importance of Godwit Days to the economy and the environment:

> When you start realizing that the quality of the environment is huge and a big part of [tourism], that will hopefully affect decisions to make quick economic tradeoffs and… provide incentive for enhancement and restoration… Aside from just the aesthetic value of having more quality wildlife habitat around, it actually could have a snowball effect on tourism.

CHAPTER V

ANALYSIS/DISCUSSION

Role of Folk Group in Sustainability

Birders at the AMWS can be considered members of a folk group because they are bearers of tradition, knowledge, practices, and beliefs associated with birding, and they share a vernacular system of reference based on birding experiences in the context of the Marsh's landscape. Local birders at the AMWS are in close proximity to each other, allowing for interactions and shared experiences that create and maintain a shared sense of meaning and identity (Sims and Stephens 38). The AMWS plays a central role in communication amongst the local birding community, as Denise explained, because birders visit the Marsh and trade stories and experiences on a daily basis. Based on the interviews, the everyday behaviors of birders at the AMWS reflect a degree of reciprocity with the landscape, as well as reciprocal interactions with each other, in turn contributing to the sustainability of birding at the AMWS.

The seven birders revealed their perceptions of what it means to be a "birder" and what the identity entails. Based on the interviews, general requirements for being a "birder" include enjoyment of watching, seeing, observing, and otherwise appreciating birds and the outdoors. Jim pointed out that birders must be able to relate their experiences to each other and describe birds they've seen in a way that is meaningful to other birders in order to effectively communicate their sightings. Some people slowly become birders, as described by Denise, while others experience a distinct shift in consciousness or self-identity based on a single event, experience, or influence from other

birders, as was the case for George, Jean, and Ken. People who slowly become interested in birds can rely on other birders to help them learn more, which in turn furthers their interest in birding. As Jean pointed out, "The more you know, the more you want to know." At the AMWS, anyone who has an interest in birds and wants to learn about them can become a "birder" by attending free weekly tours led by volunteers from the Audubon Society and FOAM. The Interpretive Center offers binoculars for loan, and other birders are often willing to help beginners and each other (see Fig. 9). In this regard, birding at the AMWS allows for equitable access, cooperation, and inclusion, and builds community.

Figure 9. A spotting scope inside the Interpretive Center is available for visitors.

According to interviewees, the changes that come with the transition to "birder" identity include increased awareness of other life forms, natural cycles, and the importance of human care for the natural environment. All of the birders I interviewed

expressed a clear appreciation for the planet and all life forms, with an emphasis on the recognition that humans are not the only important things on earth, and that respect for other life forms is crucial for the wellbeing of all. These values indicate that careful and close observation of birds can highlight the reality that humans share the planet with birds and other wildlife. Cindy explained that birding, especially under the social influence of other birders, can direct individuals' values toward environmental awareness, conservation, and activism. Jean emphasized "that there are other living creatures who enhance your own experience, and it's your responsibility to try to enhance theirs," indicating values of reciprocity between humans and other life forms. According to Darlene, humans are part of Mother Earth, and recognition of the interconnectedness of all things is an important value associated with birding. Jim and Denise also expressed the belief that humans are actually part of nature because we depend on natural resources for survival, and we must care for and respect the habitats of other species. The birders interviewed expressed a clear understanding that all of the life forms at the Marsh, other than a few invasive plant species, are crucial to the presence and variety of birds there. Birders communicate these beliefs and knowledge to others esoterically and exoterically through behavior as well as words.

Almost all of the birders enjoy helping other people understand the role of humans in the natural environment, as well as the biological importance of birds, their habitats and ecosystems in general. George mentioned that when he first became interested in birding, other more experienced birders would invite him on excursions, and now he passes along birding information to others and invites newer birders to tag along with him. George, Denise, and Jim specifically mentioned the enjoyment that comes

with helping others to learn more about birds and their habitats. All of the birders interviewed are also volunteers at the AMWS, which provides an opportunity for them to help others learn about how humans are connected to birds and Marsh biologically. Ken, Denise, and Jim all discussed the importance of interpreting nature, telling people a story about a bird or a place, as opposed to just relaying facts, so that people will have a memorable story to pass along to others, contributing to ecological awareness. Darlene emphasized that teaching children about nature and the environment is important so that future generations will understand and protect all living things and ecosystems.

In the context of the Marsh, birders share esoteric vocabulary associated with bird names and descriptions, landscape references, and stories of their experiences. In accordance with Toelken's description of folk group dynamics, these "expressive communications" provide "the educative matrix in which...newcomers...are brought up" (56). For example, on the Saturday morning Audubon bird tour that I attended, I witnessed birders trying to determine whether some birds in a pine tree were Palm Warblers or Townsend Warblers. In this discussion, it was mentioned that the Palm Warbler exhibits a “flick” or “wave” of the tail like a Black Phoebe, a characteristic that could help in bird identification. Jim also made a bird noise as an attempt to get a response from the birds, another possible clue to the birds’ identity. Birders on the tour debated about the difference between the Eastern and Western Sandpiper, and used alternate names for different birds, such as Coot and “mud hen.” Birders must share this detailed knowledge and meaning associated with various birds in order to communicate effectively and work together to identify birds. As an exoteric observer, I was not able to fully understand the discussion because I lacked the knowledge needed to identify and

name these different types of birds. If I continued to spend time around these birders, I would eventually learn this kind of knowledge. As we walked by Klopp Lake, on the same tour, the tide was completely out, exposing a vast stretch of mudflat and leaving the islands on Klopp Lake empty. Jim told the group that at high tide, shorebirds usually cluster on the islands "pintail to pintail," a reference to ducks that infers extreme closeness. It was not until later, after hearing other birders talk about the same birds at the same location, and experiencing it for myself, that I grasped the full meaning of Jim's analogy.

The landscape of the AMWS contributes to local identity. As Denise explained, the AMWS is the pride and "heart of the City," and Ken described the AMWS as a prime birding location on the Pacific Northwest coast. Whether or not community members actively volunteer to care for the landscape, or simply "flush with pride," they are contributing to the landscape in turn, and helping birds and other life forms to thrive. The cycle of land use at the site of the AMWS has established a constructed ecosystem, thus the landscape of the AMWS is a material and cultural artifact, representing the community of Arcata and the birders there, while providing a thriving habitat for birds and other wildlife who "animate the landscape" (Greer 35-36). In its transformation from a "dump" (Darlene and George), or industrial "graveyard" (George), into a productive ecosystem and "sanctuary," the Marsh's landscape truly embodies a recycled use of resources and community pride. The current landscape, defined as a "Sanctuary," implies a feeling of safety for wildlife and humans. Like other wildlife sanctuaries, a major goal of the AMWS is to preserve the biodiversity of animals and plants (Chadwick 13 and Denise), which in turn assures that both humans and other life forms have the resources

needed to survive. Dr. Robert Rasmussen, professor of Botany at Humboldt State, declares that "the secret to the animal and bird diversity [at the AMWS] is found in the plant diversity of those habitats," which in turn are dependant upon the "quality and quantity of water available to them" (361). The Marsh cleans human wastewater while at the same time providing nutrients for a diverse array of life. In addition to the hundreds of bird species, River Otters, Gray Foxes, Pacific Tree Frogs, Red-legged Frogs, Rough-skinned Newts, Solitary Bees, Ctenucha Moths and Swallowtail Butterflies" can also be found at the Marsh among many other creatures, as well as a wide variety of plant species (Anderson "History"). This list, as well as the birding checklist for the Audubon tour (Appendix D), provide evidence that healthy species biodiversity is present and encouraged. For restored or constructed wetlands like the AMWS, the capacity to provide benefits to the environment as well as human society "increases over time, as the plants and grow and spread and the biological community develops until the ecosystem reaches its mature state" (Gren et al. 68), so the sustainability of birding at the AMWS should increase over time as well.

The AMWS is a "sanctuary" of sorts for humans as well, a quiet retreat from the city that provides consolation for community members, travelers, and birders. According to the North Coast Journal's report on the AMWS as the "Best Place to Reflect on Life, the Universe and Everything" in the 2010 "Best of Humboldt" edition:

> The number one place to go when life's got you down and you need some solitary time to hash out the specifics in your mind is, by far, the Arcata Marsh**.** This place has long served as a quiet and beautiful place where you can stroll through the inter-looping trails or just sit down on the rocks overlooking Humboldt Bay and ponder the greater questions in life. The shoreline here is beyond breathtaking, especially when the ocean growls and ferocious waves lick the land intensely. There is something about the Marsh that is unmistakably fascinating in its inspiration and isolation. This place will devour you with its serenity, and by the

> end of it whatever problems were gnawing at you will at least, for the moment, be forgotten. (Osborn)

In response to this article, George confirmed that many people who visit the Marsh feel the connection to the landscape described above. George emphasized his personal bond to the Marsh's landscape that inspired him to start devoting time to caring for the Marsh and helping others learn. The Marsh has given a sense of healing and spiritual meaning to George, and in return he helps to care for, respect, and appreciate the Marsh. He explained that knowledge, patience, wellbeing, and experience can be gained from the Marsh without actually extracting anything from the material landscape: "I'm only going to take something from this without taking anything away from it, and with that, if you can gain enough benefits from something without being detrimental to it, then it's always there for those benefits, they're kind of renewable."

Other birders might not have a direct spiritual relationship with the AMWS, but some interviewees expressed a sense of spiritual meaning that comes with being outside or birding in general. Like many other people, some birders definitely "look to nature for psychic regeneration and renewal" (Gibson 8). The trend among stories of close encounters with birds reveals that some birders value closeness, which can be viewed in terms of biophilia. Jim's experience indicates that closeness and proximity to birds increases the sense of connection between birders and birds that can provide spiritual meaning or a sense of mystery. Denise's eye contact with the Green Heron, and Jean's close encounter with the American Bittern support this notion. Denise questioned the meaning of her experience within her story of the encounter: "What an odd day. A Green Heron three times. What does that mean?" Jean described her experience as amazing, wonderful, and serendipitous. The sense of wonder and curiosity associated with these

experiences is shared when stories of the encounters are relayed amongst birders. Based on interviews and my experiences at the Marsh, when birders have a unique sighting or experience, they share their story with others and direct people with the location, time of day, and other essential tips that might help someone else have a similar experience.

The animated landscape serves as a basis for the shared knowledge and experiences that unite birders at the AMWS. Klopp Lake, Mount Trashmore, the Log Pond, the Interpretive Center, and all of the material features of the AMWS contribute to the landscape and provide a shared vernacular system of reference for local birders at the Marsh, with several layers of meaning that are not readily apparent to outsiders. The names of places within the Marsh are connected to the landscape's history and transformation, and stories are associated with each place. For example, Klopp Lake was formed when mud from the bay was extracted and used to cover Mount Trashmore, which has its own history and associated meaning, and the lake is named after Frank Klopp, who is also the source of Jim's Stump Story.

Several interviewees mentioned specific birding highlights at and around Klopp Lake, including the presence of shorebirds and Peregrine Falcons. The birders all know, through shared experiences and personal interaction, that to see shorebirds feeding on the mudflats, the tide must either be going out or coming in. To see them flocking above Klopp Lake, high tide is ideal, which also increases the chances that a Peregrine Falcon or other raptor will be spotted (see Fig. 10). The birders I interviewed all know and talk about the raptors that will often perch on the electrical towers overlooking Klopp Lake at high tide as they try to swoop down to catch a shorebird to eat. Denise and Cindy explained that shorebirds will flock to and fro above the lake as an evasive mechanism in

response to Peregrine Falcons and other birds of prey. Witnessing this event has been one of Jim's most memorable experiences at the Marsh, and this spectacle has become a shared story that not only connects birders, but also anyone who experiences the landscape in this way. George described Klopp Lake birding at high tide as his favorite time at the Marsh, noting in particular the experience of having the birds "come at you and just part…to actually hear the wind on their feathers…that 'whoosh, whoosh'." Denise's story of this same experience similarly emphasized the "wall of birds coming at me and then…the whole thing splits, and they 'whoosh' past me on either side." I spent some time at Klopp Lake during high tide as well, before hearing these stories, and I wrote about the experience in my fieldwork journal, noting specifically that "it actually sounds like a wave breaking when the birds all take off together."

Figure 10. Shorebirds flock over Klopp Lake at high tide (Photo by J. Lemke).

References to the sounds of the flock as the fly reveal conservatism in these experiences, but each person also tells about the experience in their own way. George connected his

story to the sunset at the Marsh, while Denise drew attention to the mystery of the flocking mechanism. Further collection and analysis of similar stories can reveal even more aspects of continuity and change over time.

Sensory experiences of birds that are tied to place, like seeing and hearing shorebirds flock over Klopp Lake, serve to connect birders to the landscape and familiarize them with natural processes, such as bird behavior and tide cycles. Sharing stories of these similar experiences creates a bond between birders at the AMWS, contributing to self and group identity. When these landscape-specific stories are shared with people who have not had a similar experience, they might be intrigued enough to investigate the phenomenon for themselves. Natural, everyday occurrences, like the Klopp Lake flocking display, bring local birders together on a regular basis. Other more rare natural happenings, like the presence of the Brown Shrike, brings locals together with birders from other places, and provides yet another context for shared experience and stories, as emphasized by George. Internet networking sites, like eBird, allowed news of the Shrike to travel far and fast among birders, extending inter-group communications from the physical world to cyberspace. Founded in 2002 by Cornell University and the National Audubon Society, eBird relies on amateur and expert birders to provide input for photos of birds, animated maps of recent bird sightings, blogs, and message boards that provide "real-time information to the birding community" (eBird “Welcome”). The website allows birders to record, keep track of, and share their experiences with the eBird community and data collected on eBird contributes to scientific knowledge of bird trends and behaviors as well. The recent launch of the "eBird Rare Bird Google Gadget" now allows reported sightings of rare birds to stream directly to an individual's computer

desktop (eBird “Welcome”). Birders can connect and talk about different birds and rare sightings online, but George acknowledged that actually seeing birds, like the Brown Shrike, with a group of other people provides a “great common bond” that connects birders to each other, the bird, and the landscape.

The shared knowledge, experience, awareness, and values that unite local birders at the AMWS continue to reinforce group identity in relation to the Marsh’s animated landscape. As individual birders connect with birds and the AMWS landscape and then share these experiences and stories with others, strong social ties can support continued respect and care for the environment. The knowledge and values that are perpetuated by the seven birders mirror the requirements for biological sustainability and care for material resources, and open access to the resources and the ways that information is shared indicate progress toward social sustainability.

Role of Tradition in Sustainability

The Christmas Bird Count tradition and the Godwit Days Birding Festival reinforce group identity on a yearly basis and contribute to the sustainability of birding at the AMWS. Traditions represent shared values and group identity that are culturally recognized and sustained from generation to generation (Allison 799,801). Toelken asserts that all traditions have conservative elements of processes and attitudes that remain constant over time, as well as dynamic forces “that function to alter features, contents, meanings, styles,” and other aspects of a tradition as it persists through time and space (39-40). Conservatism and dynamism in the Christmas Bird Count tradition over time, and the group dynamics that define the activity, reflect elements of social cooperation and respect for biodiversity in contribution to sustainability. Continuity and

change in the Godwit Days Festival reflects growing values that contribute to community and the surrounding environment, as well as the benefit of the local economy. These are some of the traditions that serve as a special context for circulation of oral expression and customary example among birders.

Christmas Bird Count

Every year, elements of the Bird Count stay the same, and every year, elements change, depending on the people involved, the weather conditions, and the birds that are spotted. The goal of finding as many birds as possible on a given day has remained in place over time, although the unsustainable tradition of killing the birds gave way to counting and observing, and now wireless internet and GPS technology contribute to the Bird Count, as mentioned by Jim. eBird plays a large role in Bird Counts today in terms of recording and keeping track of sightings as well as collating Bird Count data. Every year, sightings reported on eBird contribute to a national report on "The State of the Birds," sponsored by several universities, government agencies, and non-governmental organizations, like the Audubon Society (State of the Birds). The 2011 Report highlights President Barack Obama's new initiative, "America's Great Outdoors," in recognition of the need for environmental conservation as an important part of national cultural heritage (State of the Birds 3). The Christmas Bird Count, in connection with technologies like eBird, allows citizens to become involved in conservation. Before technology was introduced to the Christmas Bird Count, as Denise explained, birders actually had to pair up with each other to search for, find, and identify the birds they saw. Today, cell phone birding applications give hints on where and how to find birds, and sightings of rare birds in specific places travels fast online. Digital cameras now provide evidence of birds seen,

which would seem to reduce the need for face-to-face social interaction in birding. However, the Christmas Bird Count is traditionally performed in teams, so it remains a social activity.

The Bird Count tradition takes place around the world, but teams of birders form on a local level, and team members usually have different roles in the process. Jean explained that more experienced birders will often be team leaders, and other members help to spot, identify, count, and record birds, or just provide encouragement for the group. Over time, as birders gain familiarity with local birds and landscapes, they can opt to increase their level of responsibility in the Count each year. George was able to learn enough about the Bird Count process and AMWS landscape, with help from other birders, to become the tour leader for the area within two years. The knowledge needed to be a leader in the tradition cannot be learned from a book – intimate knowledge of the animated landscape in various conditions requires experience and/or networking with others, especially at the Marsh where the landscape is constantly changing depending on tide. Cooperation in a Bird Count strengthens social bonds amongst birders and bonds between birders and the landscape, contributing to group identity and purpose.

At the same time, Bird Count teams often compete against each other, and Jim pointed out that cell phones are sometimes banned from Counts because some birders view these technologies as an unfair advantage among competing Bird Count groups. As Ken explained, "Christmas Counts do tend to get rather competitive" because birders in neighboring regions often try to outdo each other in quantity and rarity of species counted. Competition in the Christmas Count tradition has persisted through time, first in the form of the match hunt, and now in the form of a checklist. According to a 2001

report of Christmas Bird Count activities in the Humboldt region, Centerville and Arcata are yearly competitors:

> Beating your count's previous record is the aim of the game. A secondary goal on the Centerville Count was beating Arcata's total of 175 [birds]…The count-down starts when each of 10 sector teams has added up its list of all the birds, individuals as well as species, found in its assigned area… The size of [Centerville's] "expected [species]" list makes Centerville one of the top 20 counts in North America. Last year it was 15th out of 1,750, but arch-rival Arcata was 14th. (Anderson "Last Count" A10)

For those who enjoy competition, it provides an additional element of excitement and motivation for continuing the Bird Count and the stories that grow out of the experience. The Christmas Bird Count tradition brings birders together yearly for a shared purpose, and strengthens social bonds and dynamics in the birding community. The Count requires participants at all levels of birding skill, and provides a traditional setting for shared knowledge, experience, and stories. More experienced birders ensure that knowledge is communicated to other participants to ensure that the Count process will continue over time. The data collected in the Bird Count process also contributes to awareness of biological events and the role of humans in monitoring, respecting, and caring for birds and their habitats. Dedicated focus to counting birds in this traditional manner not only strengthens shared bonds and identity within the birding group, it also increases the sense of responsibility to pay attention to birds and the natural environment, contributing to social, biological, and material sustainability.

Godwit Days Birding Festival

Arcata's yearly Godwit Days Birding Festival, established in 1995, can be described as a "spring migration bird festival celebrating the Marbled Godwit and all the birds of the coastal redwoods, bays, marshes, and mudflats of California's Redwood

Coast" (Godwit Days "About"). Festivals reveal the basic values and worldview shared by the community, which in turn contributes to social and individual identity (Falassi 296). Godwit Days reveals that the community of Arcata and the birders of the AMWS value healthy ecosystems and bird habitats, and they are willing to share their landscape and knowledge with others (see Fig. 11). While festivals provide outlets for human culture and creativity, many festivals that celebrate aspects of nature, including Godwit Days, are "actually based on biocentric and ecological principles" (Grabill 126). The timing of Godwit Days is in conjunction with the spring migration of several bird species, indicates that once again, humans are drawn together by natural processes and cycles in order to celebrate, witness, and find a connection to the other life forms around them, which in turn connects festival participants to each other.

During the week-long celebration, over 100 different tours, activities, and gatherings related to birding and the environment take place in the Arcata area, including events at the AMWS. The "Shorebird Spectacle at the Marsh" is a featured event that invites birders and the community to

> Witness the spectacle as flocks of thousands of shorebirds become tens of thousands, and then form a huge milling swarm as the last of the flats out by the old wharf footing get covered. They then fly off low over the bay toward the west. North Humboldt Bay is a shorebird staging site clearly of hemispherical significance. The birds are colorful, sexually charged, and are flying in an energetic manner not seen in fall or winter, plus they often give snatches of summer "song" and other utterances seldom heard at other times. (Godwit Days "Schedule").

This event provides observers with a similar experience described earlier by George and Denise, but on an even grander scale, and represents the basis for the Godwit Days Festival. The AMWS also hosts free tours of the Marsh in the morning, afternoon, and night to feature the variety of birds that are present at different times of day. The morning

tour focuses on “the dawn chorus” of bird song and calls, while the night tour explores birds’ twilight activities and includes a “bat hunt” (Godwit Days “Schedule”). In literature about the festival, the AMWS is described as the “crown jewel of birding on the North Coast,” and festival-goers are invited to attend a tour of the wastewater facility, a children’s tour of the Marsh, and an Optics Exposition at the Interpretive Center. These gatherings provide a context for shared experiences, as well as shared stories about the Marsh’s landscape and past bird encounters. During the festival, tours of the Marsh and the stories that are told, such as the Stump Story, the story of Mount Trashmore, the “No Name Pond,” and what birds to expects in different parts of the landscape, serve to reinforce local birder identity and express community values to visiting birders.

Other Godwit Days events include birding excursions and classes, as well as children's programs and art contests, native plant tours, whale-watching, field sketching, wood decoy carving, and social gatherings. This year, a lecture on “Two Decades of Habitat Restoration in Arcata” opened the festivities, and other similar talks give the Festival a hortatory character, and reveal the importance of ecosystems and education in the local and birding communities. Several children’s activities, such as owl pellet dissection, art workshops, and birding field trips at the AMWS, communicate birders’ values to the next generation of potential tradition bearers. The entire Festival revolves around humans sharing knowledge and experiences with each other. Participants in each activity become a folk group through their shared connections, which can be re-established again at the Festival each year.

Godwit Days includes “rites of exchange,” where participants exchange money for equipment, information for advice, and stories and experiences to form a temporary

"community of equals under certain shared laws of reciprocity" based on the opportunities that the local landscape provides (Falassi 300). During the Festival, a "Big Day" Bird Count takes place on Saturday and Sunday as a "rite of competition" that re-affirms group values, providing networking opportunities and recognition for birders who observed and identified the most species (Falassi 300). Birding is the main theme of the Festival, but the importance of creativity, community, and the natural environment as a whole contribute to community and birder identity as well. A description of the Big Day Count explains that the 2011 Festival will have smaller groups than previous years, providing a "better chance for all participants to see or hear all the species tallied on the list" (Godwit Days "Schedule"). This change reveals that within the competition, inclusion and education are important aspects of the Big Day tradition at the Festival.

George mentioned that Godwit Days has gained "quite a reputation" amongst birding festivals, and Denise agreed that "it has been very successful and continues to grow." In the past 16 years, Godwit Days has changed from a weekend gathering to a full week of celebration, indicating the continued importance of birds and respect for the environment within the Festival community. Since the Festival depends on healthy environmental quality and the presence of birds and other wildlife in the area, the local community and local birders must maintain the environment to perpetuate the economic and social benefits from Godwit Days, as well as the shared stories, experiences, and group identity that the Festival context provides. George and Jim emphasized the connection between economic benefits from tourism, environmental quality, and community identity: "If you attract birders to an area, you're going to attract money. The

side benefit is you're going to want to enhance the environment for birds, which is another good thing, and you're also going to promote...community" (Jim).

Not only does the festival attract birders who contribute to the local economy, it also provides birder networking opportunities and a sense of individual, group, and community identity in Arcata. Godwit Days, in which both birders and the surrounding community participate, contributes to the economic sustainability of birding at the AMWS by increasing awareness of other life forms, ecosystems, and natural cycles, such as the spring bird migration that determines the dates of the Festival. Compassion for other life forms, value of non-market ecosystems, and human wellbeing are reflected through the Godwit Days Festival, and these values contribute to community and participant identities.

Figure 11. A Great Egret flies over the AMWS (Photo by J. Lemke).

CHAPTER VI

CONCLUSION

Based on interviewees' responses, members of the folk group of local birders at the Arcata Marsh and Wildlife Sanctuary contribute to the material, economic, biological, social, and spiritual dimensions of birding activities in context. The AMWS and the birds it supports serve as symbols of local birder identity in line with anthropologist Clifford Geertz's assertion that cultural symbols "are simultaneously 'models of' and 'models for' action in the world" (qtd. in Mechling and Gillespie 8). In each domain of sustainability, the birders at the AMWS influence and are influenced by the birds and the landscape that provide a context for birding, indicating that reciprocity is an integral part of sustainability in human activities that require direct interaction with the natural ecosystems.

The material basis for birding is provided by the Marsh's constructed landscape, which recycles wastewater nutrients, provides a healthy habitat for wildlife, serves as an accessible outdoors area as well as a symbol of community identity, and provides a meeting place for local birders. Familiarity with the Marsh's landscape features, including birds, unites local birders as a folk group, contributes to individual and group identity, and increases birders' awareness of other life forms and the human role in the environment. Birders and other members of the Arcata community help to maintain the health of the landscape, and the landscape continues to provide a material context for birding at the AMWS, signaling a reciprocal exchange between humans and the environment.

The AMWS and the birding activities that take place there provide a foundation for economic activity, attracting tourists year around, especially during the Godwit Days Birding Festival. In return, the economic costs of the material landscape are offset by the Festival, which bolsters the local economy, unites local and touring birders, promotes environmental awareness and protection, and represents the values and identity of local birders and the City of Arcata. (See Appendix E for more on economic valuation of wetlands and birding.)

The birders interviewed demonstrated knowledge of the ecosystem processes, bird behavior and habitat, and human role in the Marsh's system, emphasizing the interconnectedness of humans and other life forms and the need for species diversity. Biological knowledge of the Marsh's ecosystems is crucial to biological sustainability at the AMWS, especially since humans play a critical role in the health and functioning of the landscape. Birders at the Marsh spread awareness and sometimes actively contribute to maintaining the AMWS as a healthy habitat for wildlife and birds, ensuring that the context for birding will continue to exist in the future.

The ongoing tradition of the Christmas Bird Count, as well as the Godwit Days Festival, continue to unite birders socially as a folk group, and the level of cooperation and networking amongst birders helps to sustain group relations, bird and habitat knowledge, and environmental awareness. The AMWS provides a social center for birders, a place to share experiences and stories, and birding resources inclusive for anyone who is interested. In accordance with Toelken's assertions about folk groups, the sense of community identity amongst birders at the AMWS "persists, not because it has a certain number of bodies, but because...members continue to use their shared vernacular

system of reference" (58). As the group of birders at the AMWS expands through shared knowledge and experiences, more people will continue to have a vested interest in sustaining the AMWS landscape.

Not all birders find spiritual meaning in the landscape or the activity of birding, but based on interview responses, shared values about the importance of humans in connection to all other life forms reflects elements of spiritual sustainability as defined by Ben-Eli. When birding does provide a sense of mystery or spiritual meaning, birders' connection to the birds and the landscape deepens, again enhancing incentive to perpetuate the context for birding at the AMWS.

All of the birders interviewed contribute to the overall sustainability of the AMWS, birders as a folk group, and the existence of birds. However, beliefs and behaviors can differ amongst birders, and not all birders in Arcata or elsewhere might be behaving in ways that support the sustainability of birding or the natural environment. Variation in attitude and behavior amongst birders highlights that individual values and actions ultimately determine how sustainable an activity is. If the entire group is not contributing, then generalizations about the sustainability of an activity cannot be made. More extensive research of individual birders' perceptions and activities is needed to draw any blanket conclusions about the sustainability of birding in general.

The interviews and research for this specific study support the notion that birding is sustainable at the Arcata Marsh and Wildlife Sanctuary because the landscape represents an act of reciprocity and members of the birding folk group at the AMWS contribute to a reciprocal and sustainable relationship with the landscape that allows for birding to thrive as an activity. As George explained, "if people didn't appreciate [the

AMWS], if enough people didn't want to have this or care to have this, then it probably wouldn't have happened, so it's a feedback loop…People really wanted this, so they created it and now they maintain it" (Ziminsky). In the context of the Marsh, humans and the environment are linked together in a cyclical relationship based on reciprocity, and the traditions, festivals, practices and beliefs associated with the folkloric activity of birding contribute to the overall sustainability of the activity.

The stories of place, landscape, and interactions with birds in this thesis reveal only a handful of the experiences that unfold every day at the Marsh and around the globe. Members of the birding folk group at the AMWS help to care for birds and the environment, but since birds migrate and spend time in other places, humans in all areas of the globe must recognize and respect the needs of birds, ecosystems, and other wildlife. Protection of the natural environment, and sustainability in each domain, ultimately depends on individual's actions, which collectively impact the world around us. Traditions and folklore that inspire and provide context for expressions of human reciprocity with the natural environment can provide key insight for discussions of "sustainability" locally and worldwide.

APPENDIX A

INTERVIEW QUESTIONS

1. What is your role at the AMWS?
2. How did you first become interested in birding?
3. How much time do you spend birding at the AMWS?
4. What are some of your other interests besides birding?
5. What activities does birding entail?
6. What are the best conditions for birding at the AMWS?
7. Do you teach others about birding? If yes, how so?
8. What knowledge is needed to go birding?
9. How important is knowledge of habitat?
10. What is your most memorable experience at the AMWS?
11. Have you ever participated in a Christmas Bird Count? If so, what was it like?
12. Is there anything different about the AMWS as opposed to other birding spots?
13. What kinds of materials are needed to go birding at the AMWS?
14. What are the economic implications of birding at the Marsh?
15. What kinds of capital (natural, human, monetary) are needed to go birding at the AMWS?
16. What life forms are necessary for birding at the AMWS to continue?
17. Is birding a social activity?
18. Do you consider yourself part of a birding community or social group?
19. Do you find spiritual meaning in birding?
20. Why do you go birding?

21. What values are associated with birding?
22. Have your experiences with birding changed your worldview or how you think about life in general?
23. What are some things you have learned from your birding experiences?
24. What does “sustainability” mean to you?
25. Is there anything else you would like to add?

APPENDIX B

TRANSCRIBED PERSONAL EXPERIENCE STORIES RELATED TO BIRDING

Narrator: Cindy Moyer
Date: Feb. 13, 2011
Time: 1:00PM
Location: AMWS Interpretive Center
Genre: Personal Experience Narratives

I'm there often enough that it's tough to pick one MOST memorable experience. I've already told you about the Peregrine Falcon stealing food (mid-air) from the Red Shouldered Hawk. That might be the most memorable, but then there's the Gull stealing the (still alive) Green-Winged Teal from the Peregrine (and slowing pecking it to death while the Peregrine looked on in frustration), and the day the Otter followed along the path by Butcher's Slough. There have also been some important birding learning moments - my first Avocets (IDed on my own), my first Blue-winged Teal, finding a Ruff, field trip leaders teaching that California Gulls have "corpse-green legs", or that Buffleheads have "bubble-gum pink legs" or that song sparrows sound like "irritating barking little dogs" or that Ruby-crowned Kinglets sound like marbles being clicked together.

Narrator: Jim Clark
Date: Feb. 13, 2011
Time: 2:00PM
Location: AMWS Interpretive Center
Genre: Personal Experience Narratives

The first thing that comes to mind is about a year and a half ago, there were two Peregrine Falcons in the high tension power lines, eating breakfast, each of them had a sandpiper and they were just enjoying and having a nice breakfast, and then watching the

parts they didn't want spiraling down to the ground- the wings, the tail feathers, and all of that, that was really cool. Another occurred during a shorebird identification class that I was at, maybe about 15 years ago, and we were watching shorebirds and along came a, I think it was a Peregrine Falcon, and the Falcon, dove at some shorebirds, directly at our group, cause the shorebirds were directly between us and the group, and that Peregrine pulled out 15 feet over our heads. It was just, it will never happen again, just super impressive. That was really a highlight of my local birding.

Narrator: Jim Clark
Date: Feb. 13, 2011
Time: 2:00PM
Location: AMWS Interpretive Center
Genre: Story of Landscape

We had some discussions about how stumps might provide some cover for burrowing owls up on the Mt. Trashmore. And we thought, yea that's a good idea – perch on the stumps. And then one day, in a week, it was discovered that there were many stumps, old redwood stumps, that had been moved and put on the marsh, and people were very upset about it, the change, and these stumps, they weren't exactly landscaped. It was a bit of a surprise, and the public works director had been on the committee and he said, "well, I've got these stumps, why landfill them when you can put them to a good purpose?" So one day, the marsh was full of stumps. Big stumps. And some are still there. So it was alittle embarrassing, but I don't think… if you mentioned it to anybody, you would always get a smile on their face, cause it was kindof funny. It was just one of those stories that people get rassled a bit about, good intentions, I don't think any harm was done. It was alittle sudden, and it was just one of those little things that connects you with the people and the

place. It's just a fun thing to remember….Frank Klopp put the stumps there, they left a few of them there, and it is unlikely that any owls ever actually used the stumps.

Narrator: Jim Clark
Date: Feb. 13, 2011
Time: 2:00PM
Location: AMWS Interpretive Center
Genre: Personal Experience Narratives

Once I was doing this senior project on a nature trail up in the Six Rivers National forest. So I hiked in the trail and was making notes on what the interpretive features were, and I hiked in alittle further and sat there eating my lunch, and a Wilson's Warbler was perched right next to me, watching me eat lunch, and it was three feet away. I looked at it, it looked at me, that was one of those times when you kindof make that connection. That's what I treasure.

Narrator: Denise Homer
Date: Feb. 18, 2011
Time: 2:00PM
Location: AMWS Interpretive Center
Genre: Personal Experience Narratives

Every day is memorable and full of stories and full of interesting people… It's fantastic to meet people from all over the world, and then, leaving the people aspect aside, I always have stories. So yesterday…was it yesterday? No, it was Wednesday, it was about ten o'clock, and I look up from my desk, which is overlooking the slough, and there on the pilings was a silhouette, and I'm going, 'That's a Green Heron silhouette!' The Green Heron is kind of an unusual bird, and I typed it into ebird awhile back when I had seen one, and they were like, 'Are you sure?' And I'm like, 'Yes, trust me, I know what I'm doing, I'm sure I saw a Green Heron.' So I got out my binoculars and – this is a bird that's not out in the open, it's a shy bird. A lot of people have never seen it. And I

thought, ‘Am I going to be able to get my binoculars out before it flies? Probably not.’ But I’m trying, and of course [the binocular strap] is catching on some book in my backpack, but I finally get them out. I’m like, ‘It really is a Green Heron!’ And I thought, ‘Well, can I get the scope on it?’(It’s like, yea, you’re kind of dreaming but I had to try.) So I got the scope set up and [the Green Heron] just stayed. And then when I tried to zoom in on it I’m like, ‘I think I’m on the right piling…’ There are a lot of them out there. And I looked up, and it was like, ‘No, it’s gone.’ But, you know, it was just amazing to get to see it. The bizarre thing was that when I came back from lunch, it was in the slough, and there’s a little piece of the trail that goes over the slough, and so I flushed it out and it flew up the slough, and I didn’t even know it was there. I was like, ‘There’s a Green Heron again!’ Isn’t that interesting…then when I left at five o’clock, I was walking back down the path, and there it was, and the tide had gone out, and it was just standing there in the mud just a few feet from me, and for a minute we just looked at each other, and then it flew away again ‘cause it’s pretty shy. I thought, ‘What an odd day. A Green Heron three times. What does that mean?’ And every day for me is like that.

Narrator: Denise Homer
Date: Feb. 18, 2011
Time: 2:00PM
Location: AMWS Interpretive Center
Genre: Story of Human Behavior

Someone reported to me that they were leading the Saturday walk and they came upon Mt. Trashmore, and there was a man up there, and he had chickens he had gotten at Safeway – cooked chickens. He was… putting them out for a fox that was coming around, because he was convinced that the fox would eat the ducks, so he thought, “Well,

to prevent that from happening, I'll go to Safeway and get chickens and feed the fox." So sometimes there's this sort of disconnect about how nature works, and what is good intervention and what isn't good intervention. The fox was just having a very nice chicken dinner regularly… people sometimes erroneously have a park-like mentality, and so people want to come and feed the ducks bread. And it's kind of like – no, we want them to stay wild, and learn to fend for themselves and continue to fend for themselves, and that's not appropriate.

Narrator: Jean Santi
Date: Feb. 19, 2011
Time: 3:00PM
Location: AMWS Interpretive Center
Genre: Personal Experience Narratives

I've had a lot of good experiences here at the Marsh. I think, today we saw that bird, the American Bittern, which is a very difficult bird to see, and you don't see it much. And last week, I was on that same marsh – Allen Marsh – and I was practicing [for the tour]. I was walking along and practicing to myself, and I saw in the corner of my eye, a bird fly up and land. And I stopped and I could see that it was a bittern, and it was in the cattails. But, I had my binoculars, I could see it clearly, I knew what it was clearly, and I was looking at it, and I took my binoculars down and there was another bittern right in front of me. I mean, literally, seven feet from me in the green standing in the Marsh. And I thought to myself, 'That wasn't the bittern I was looking at was it?' And so then I looked again, and in fact there were two bittern right there. Absolutely amazing. It was really a wonderful experience, you know. Really serendipitous.

Narrator: Ken Burton
Date: Feb. 20, 2011
Time: 9:00AM
Location: Arcata, CA
Genre: Personal Experience Narratives

Well, I did meet my last girlfriend there. We're not together anymore, but I look back on that fondly. It was a birding trip and that trip in itself was maybe one of my best birding experiences there even regardless of this woman. We were there at just the right time of day at just the right time of year. And this group of people was mostly from inland where they don't have coastal environments, and the trip was sort of focused on shorebirds. So we just hit it perfectly. There were shorebirds just pouring back and forth over the levees right in front of us and right at our feet to look at. These people were so appreciative because they just don't get to see them like that back home. The weather was great and it all just fell together, and it was the start of a twenty-four hour birding trip focused on shorebirds that just was a really great trip overall, and resulted in this relationship. So, since you put me on the spot, that's what popped up as the best experience there. It was an Audubon trip and our chapter invited all the neighboring chapters to join us for this thing, it was my idea, and I led the trip and blah blah blah. So that's what that was about, it was a mix of people from the area and our local people and that was fun.

Narrator: George Ziminsky
Date: Feb. 20, 2011
Time: 1:00PM
Location: AMWS Interpretive Center
Genre: Personal Experience Narratives

Probably, I've seen some really, really nice sunsets here, and often at the high tide when the shorebirds can't be out on the mudflats and they're all congregating on the Klopp

Lake. Have you seen that yet, when the tight flocks are moving around? Yea. Probably, to be standing out along Klopp Lake and have all that going on , and to have birds either coming or going off the bay and they just come at you and just part. And to actually hear the wind on their feathers, you that whoo whoo – probably that, which I've experienced a few dozen times. So to pick one of those out. I think. So I live so close that when I was a student and working, my schedule is pretty flexible, so I used to almost always time it perfectly so I could be walking around Klopp Lake and watch the sunset. I would be walking to the west right at sunset. I probably was able to do that about five days a week for about ten or fifteen years. If I was around, I was always able to come out here. So, just seeing the sunsets out here is really a…probably one of my favorite things. You know, it's a good way to cap off the day, to be out here and just be like ok, you know…I've been very fortunate in how much time I've been able to spend out here, and I've been out here to see some of the nicest things out here on a regular basis."

APPENDIX C

ARCATA MARSH AND WILDLIFE SANCTUARY TIMELINE

1949 – First wastewater treatment plant releases sewage into the Arcata Bay.
1957 – Oxidation ponds constructed.
1966 – Chlorination added to water treatment system.
1969 – Lumber mills closed.
1969 – Dr. George Allen began a wastewater aquaculture project to raise Pacific Salmon and Cutthroat Trout.
1970 – Parking lot and boat ramp constructed on I Street.
1974 – State policy prohibits the release of wastewater into the Bay unless "enhancement" can be proven.
1975 – A new conventional treatment plant proposed at the cost of $25 million.
1976 – Extensive cleanup of abandoned mills, the Log Pond, and surrounding area.
1978 – Arcata citizens support plans for an integrated treatment plant that uses natural ecosystem functions.
1979 – Arcata is given two years to study and prove that wastewater treated in conjunction with a wetland "enhances" the waters of the Bay.
1979 – Arcata Marsh and Wildlife Sanctuary Task Force formed.
1981 – First 75 acres of the Arcata Marsh and Wildlife Sanctuary are completed.
1983 – State allowed Arcata to use the marsh in conjunction with wastewater treatment.
1985 – Restoration begins.
1986 – Butcher's Slough Restoration completed.
1987 – Arcata received the Innovations in Government Award from Ford Foundation/Harvard University Kennedy School of Government and $100,000 to build the Arcata Marsh Interpretive Center.
1989 – Friends of the Arcata Marsh (FOAM) raised an additional $56,000 for the Marsh.
1993 – Arcata Marsh Interpretive Center opened.
1998 – the City of Arcata expands the AMWS by 75 acres.
2003 – Butcher's Slough Enhancement Project completed.
2007 – McDaniel's Slough Project enhanced and restored 250 more acres of former wetlands.

(Adapted from Anderson "History" 2011 and Branch 2000)

APPENDIX D

EBIRD CHECKLIST (2/12/2011)

Location

Arcata Marsh and Wildlife Sanctuary, Humboldt, US-CA

Date & Effort

Edit Date & Effort

Observation type:	Traveling Count		
Observation date:	2/12/11	Distance covered:	1.0 mile(s)
Start time:	8:40 AM	Area covered:	N/A
Duration:	2 hour(s) 30 minute(s)		
Number of people in party:	16		
Shared with:	Jim Jim, Guy Smith		
Comments:	N/A		

Species

Add Species | Edit Species

Are you submitting a complete checklist of the birds you were able to identify to the best of your ability? Yes

4	Canada Goose
1	Wood Duck
6	Gadwall
2	American Wigeon
7	Mallard
6	Cinnamon Teal
3	Northern Shoveler
15	Green-winged Teal
2	Greater Scaup

30	Bufflehead
35	Ruddy Duck
1	Pied-billed Grebe
1	Eared Grebe
2	Double-crested Cormorant
2	Great Blue Heron
6	Great Egret
1	Snowy Egret
3	Turkey Vulture
1	Osprey
1	White-tailed Kite
2	Northern Harrier
1	Red-tailed Hawk
120	American Coot
50	American Avocet
4	Greater Yellowlegs
10	Willet
4	Marbled Godwit
200	Least Sandpiper
23	Long-billed Dowitcher

12	Western Gull
4	Forster's Tern
1	Black Phoebe
5	Common Raven
2	Black-capped Chickadee
7	Marsh Wren
2	Ruby-crowned Kinglet
3	American Robin
6	European Starling
8	Yellow-rumped Warbler (Myrtle)
1	Townsend's Warbler
3	Palm Warbler (Western)
7	Song Sparrow
1	Golden-crowned Sparrow
3	Red-winged Blackbird
3	Brewer's Blackbird
2	Lesser Goldfinch

Total species reported: 46

Add Species | Edit Species

« back to observation list

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The following species were mentioned in the interviews:

Peregrine Falcon (5), Ducks (3), Brown Shrike (3), shorebirds (3), owls (2), geese (2), Thrush (2), Robin (2), Bufflehead, Townsend Warbler, Varied Thrush, Pacific Wren, Wilson's Warbler, White Crest Sparrow, House Sparrow, Spotted Towhee, Green Shank, Song Sparrow, Black Capped Chickadee, Chestnut-backed Chickadee, Green Heron, Gold-crowned Sparrow, Great Egret, Black Bellied Plover, Golden Plover, Avocet, American Bittern, Willet, Sandhill Cranes, eagle, Pyrhuxlia, grebes, Mot Mot, Loggerhead Shrike, wren, Raven, crow, Mockingbird, Wood Peewee, Cardinal, gulls, Merlin.

APPENDIX E

ECONOMIC VALUATION OF WETLANDS AND BIRDING

The word “economics” refers to the allocation of scarce resources over time, whether these resources are monetary or natural resources like oil, water, timber and the ecosystems that support them. There are several ways in which scarce resources can be allocated in society, so economists specialize in helping people decide which allocation decision would be best for the most people. For example, if someone is trying to decide whether or not to plant a garden in their backyard, they might make a list of the pros and cons of each decision. Whichever decision yielded more pros would most likely be the best choice. In economics, these pros are called benefits and cons are called costs. The most efficient or optimal allocation of scarce resources can be determined by comparing the benefits and costs of each possible decision.

In terms of natural resources and environmental quality, such as the decision of whether to preserve or convert a wetland to other uses, dollar amounts are assigned to the ecosystem and its components so that it can be reasonably compared to the value of other possible land uses. In the past, resource use and land use decisions were made solely for the perceived benefit of humans. Wetlands, forests and other ecosystems have often been given monetary values that do not accurately reflect the benefits that such an ecosystem brings to human society, because “the public is often ill-informed about the indirect role of ecosystems in maintaining processes beneficial to man, such as maintaining atmospheric and aquatic quality, controlling floods, and maintaining a genetic library (Norton, 1986)” (vanVuuren and Roy 303). Wetland ecosystems in particular have historically been drained and degraded because people did not realize how much they

were actually benefiting from having a wetland nearby. As late as the mid 1900s, "wetlands were often perceived as unhealthy, dismal places that were impediments to economic development" (Boyer and Polasky 744). Perhaps if people realize the actual functioning, services and value of wetlands, they might respect the ecosystems more. In order to assign a reasonable monetary value to the services of an ecosystem, one must fully understand how ecosystem processes function (Wilson and Carpenter 779-781).

The Buckminster Fuller Sustainability Institute argues that past and current methods of economic decision-making are not sustainable, because many natural resources are not valued to their full extent, and resource depletion and pollution are often not taken into account in most economic valuation models (Ben Eli 4). After all, making decisions based on human values and what is best for society is a bit anthropogenic, especially since humans are not the only living things that would reap the benefits or pay the costs of an allocation decision. It might be valuable and beneficial to humans to cut down a whole forest for timber, but the plants and animals reliant on the forest for food and shelter would bear costs that go unaccounted for in human-based economic models. It is important for humans to consider the effects of their decisions on other living creatures and ecosystems because no matter what, "…human economies will always be a product of the ecosystem within which they exist" (Meiklejohn 14).

While it is true that many economic decisions in the past have undervalued natural resources, over the past several decades environmental economists have been working to find appropriate values for natural resources and environmental quality so that they can be fully considered in economic decision-making. Although economist do cost/benefit analysis in monetary terms, "the point of valuation...is not to think in money

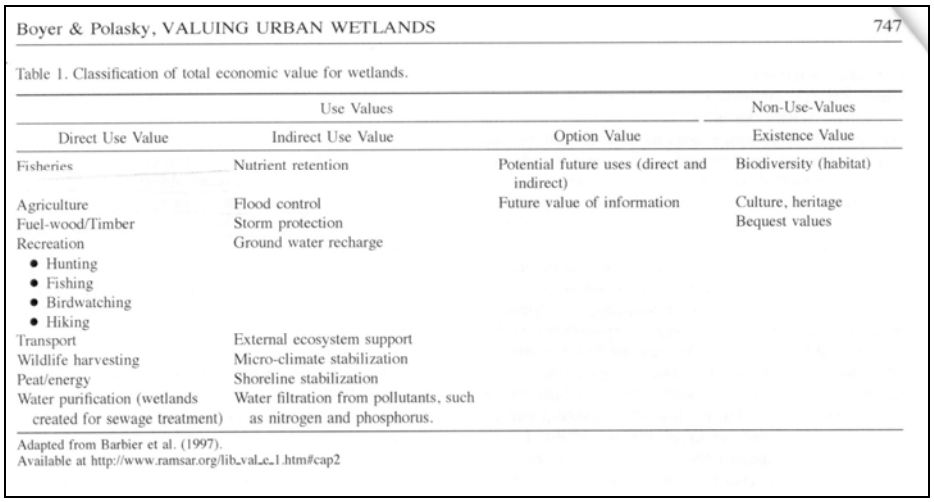
or market terms but to frame choices and make clear the tradeoffs between alternative outcomes" (Boyer and Polasky 746). Several economic studies have been done to find out how much various ecosystems should be valued in order to fully reflect their services and worth. In 1997, Ecological Economist Robert Costanza, and several other researchers put the results from all these different studies together in order to find a reasonable estimate for the value of all the world's ecosystems combined, resulting in an average value of $33 trillion U.S. dollars per year. Costanza et al. argues that ecosystems actually provide services that humans would otherwise have to pay for, if such substitutes exhisted, such as climate regulation, water supply, erosion control, waste treatment and pollination to name a few, and so ecosystems should be given proper numerical value to reflect the true value of these services (254). Human life is not sustainable without ecosystem services, and neglecting to fully weigh the benefits of environmental resources and quality in policy and land use decisions "may ultimately compromise the sustainability of humans in the biosphere" (Costanza et al. 253).

Non-market Valuation, Past Studies, and Benefits Transfer

It can be difficult to assign dollar values to natural resources, animals and ecosystems because they are not bought and sold in a consumer market. In these instances, methods of non-market valuation are required. Several economists have tried to help reveal how much wetlands and their related qualities, including birds, are worth, by using such methods as Travel-Cost Analysis, Hedonic Property Valuation, and Contingent Valuation.

Contingent Valuation methods are similar to surveys that ask people to state their preference concerning how much money they would be willing to pay to preserve a

certain resource, or how much money they would accept in exchange for the loss of a resource or benefit: “Simply put, economic value is the amount of money a person is willing to give up in order to get a thing [Willingness to Pay/WTP], or the amount of money required to give up that thing [Willingness to Accept/WTA]” (Wilson and Carpenter 773). People’s stated preferences for preserving an area usually depend on whether or not they actually use the area, plan on using the area in the future, or simply find value in the fact that the place exists, even if they do not plan on going there. People who actively use an area have use values and are often willing to pay more to preserve the area, but people who find an area to have non-use values, such as option[1] or existence[2] value, would also be willing to pay more (Stevens, Benin, and Larson 226).



Boyer & Polasky, VALUING URBAN WETLANDS 747

Table 1. Classification of total economic value for wetlands.

Use Values			Non-Use-Values
Direct Use Value	Indirect Use Value	Option Value	Existence Value
Fisheries	Nutrient retention	Potential future uses (direct and indirect)	Biodiversity (habitat)
Agriculture	Flood control	Future value of information	Culture, heritage
Fuel-wood/Timber	Storm protection		Bequest values
Recreation	Ground water recharge		
• Hunting			
• Fishing			
• Birdwatching			
• Hiking			
Transport	External ecosystem support		
Wildlife harvesting	Micro-climate stabilization		
Peat/energy	Shoreline stabilization		
Water purification (wetlands created for sewage treatment)	Water filtration from pollutants, such as nitrogen and phosphorus.		

Adapted from Barbier et al. (1997).
Available at http://www.ramsar.org/lib_val_e_1.htm#cap2

(Boyer and Polasky 2004, 747)

[1] Option value is the amount of money one would be willing to pay to preserve an area so that the option to use the area in the future is still present, even if they have never used the area before (Wilson and Carpenter 774).

[2] Existence value is the amount of money one would be willing to pay to preserve an area simply so that it exists, even if they never have and never plan to use the area (Gren et al. 58).

Hedonic Property Valuation methods look the ways in which property values are effected by proximity to certain environmental resources, ecosystems, or degraded landscapes. Several studies of this type have been conducted to approximate the value that people put on wetlands, and results conclude that "property owners value proximity to wetlands in urban areas" especially (Boyer and Polasky 744). Travel Cost Analysis is another method that looks at the amount of money that people spend to travel to an area, landscape, or ecosystem, in order to determine the value of the destination in question. For example, birders often travel to different locations, like the AMWS, in order to see new species, which inevitably requires money spent on food, lodging, and other travel related expenses. Benefits transfer can be used to approximate the value of birding at the AMWS, by looking at previous studies that have been done at similar sites across the country.

The Value of Wetlands

Wetland ecosystems like the AMWS are resources that are not typically bought and sold, and they offer more benefits to society than most people realize. Wetlands do not have a direct market value; there is no blanket number for how much a wetland is worth, which is one reason why they have been drained and degraded throughout history (Gren et al. 70-71). Among the several benefits and services that wetlands offer are "water purification, filtration, retention of nutrients, flood control, ground-water recharge, and providing habitat for a variety of species," as well as "recreational and aesthetic" benefits (Boyer and Polasky 744). Wetlands are thus multifunctional and “can be considered as very valuable capital assets” (Gren et al. 55). Coastal wetlands in particular

are beneficial to society in terms of providing a place for recreation, amenities, a commercial harvest of fish or seafood, tertiary waste treatment, and “buffers to populated areas against coastal storms” (Farber 1987, 143). Wetlands are valuable to all of the creatures and plants thriving inside the ecosystem, and they filter and clean water and air, which is beneficial to the other ecosystems around a wetland (Gren et al. 58).

Past studies on wetlands valuation show that wetlands seem to be valued more in areas where wetland ecosystems are scarce (Lupi et al. 1991). This means wetlands must be pretty valuable by now, because over half of the world’s wetland ecosystems have disappeared since 1900, and as of 1994, about 54 percent (87 million hectares) of wetlands in the United States are gone (Barbier 155). A Hedonic Property Valuation study done in 1998 in Portland, Oregon found that property is worth more when located closer to a wetland or when the size of a nearby wetland increases (Mahan, Polasky and Adams 2000). A Contingent Valuation study done in New England in the mid nineties revealed that people are willing to pay more to keep wetlands that contain rare species, and over all wetlands were estimated to be worth $242 - $313 million dollars per year (Stevens, Benin and Larson 226). Another 1998 study showed that more educated people with higher incomes are often willing to pay more for wetland preservation (Blomquist and Whitehead 1998). A 2002 survey about salt marsh restoration showed that on average, people are more willing to pay for the restoration of larger salt marshes that "improve bird, fish, and shellfish habitat; control mosquitoes; provide public access; and result in lower household cost" (Johnston et al. 1368). A study done in Canada showed that the “social net benefits from preservation [of wetlands] exceed those from conversion [of wetlands to other uses]” (vanVuuren and Roy 289). These social benefits

were stated as: hunting both inside and outside the marsh, aesthetic appreciation and scientific knowledge, option use value, water quality improvement, shoreline protection, and muskrat trapping, while the social costs of preserving the marsh were: expenditures of hunters, expenditures by visitors, cost of management and maintenance, and trapping costs (vanVuuren and Roy 292). Over all, past studies on wetland valuation show that:

> The value of wetlands depends on the circumstances and the services provided. Wetlands that provide flood control near urban areas, water filtration near sources of urban drinking water, bird watching or other wildlife watching opportunities near urban centers, nursery grounds for commercial or sport fisheries, or habitat for endangered species are likely to be quite valuable. (Boyer and Polasky 753)

A Hedonic Property Valuation study could be applied to the AMWS by comparing property values in Arcata when the area was a landfill, as opposed to property values after the area was converted back to a marsh. The construction of the AMWS would no doubt show an increase in the market value of surrounding property, and it would also show an increase in the wellbeing of the surrounding ecosystems. Constructed wetlands like the AMWS, have been shown to work just as well as natural wetlands in cleaning and controlling water pollution as well as providing a habitat for wildlife (MacDonald, Bergstrom and Houston 259-260). Constructed wetlands are valuable because they create, or recreate, helpful ecosystem functions that would otherwise not be there. The "…benefits provided by constructed wetlands may make it an increasingly appealing and valuable technology in the face of growing environmental awareness and concern over such issues as natural wetland loss" (MacDonald, Bergstrom and Houston 266). As a constructed, coastal wetland, the AMWS shares all of these benefits.

The Value of Birds and Birding

Birds that live in wetlands have value to human society and other life forms as well. “Migratory water fowl (and other wetland dependent species) are an international, fugitive and open access resource with value in hunting and viewing…” (Porter and van Kooten 403). In fact, “waterfowl and wetlands are intimately intertwined” (Wandschneider 437). Both wetlands and the birds dependent on them are open-access resources, open to exploitation (Wandschneider 437). In the past, wetlands were viewed as wastelands, and ducks were believed to be too abundant to ever run out, so their value was low (Wandschneider 437). With the extinction and endangerment of several bird species in the past century, people have realized now that birds are not an inexhaustible resource, and they are necessary and valuable to the food chain if nothing else.

Birding has proved to be a multi-billion dollar business nation and worldwide, and studies show that birders actually tend to spend five times more money than hunters (Clark 2011). Annually, birding brings “between five and nine billion dollars into the economy nationwide” (Chadwick 19). Past studies on the value of birds and birding activities reveal that birding is definitely a use value (Gren et al. 58), although birding is a non-extractive (La Rouche 2001) and non-consumptive activity (Boyer and Polasky 747). A study done in California in 1991 revealed that on average, California households are willing to pay $154 per year to prevent a decrease in wetland acreage, and they are willing to pay $254 per year to increase wetland acreage and bird population by 40% (Loomis, Hanemann, Kanninen, and Wegge 1991). A contingent valuation study conducted from 1996-2001 investigated the expenditures and birders’ willingness to pay, by surveying birders in Nebraska, Texas, New Jersey, and California (Eubanks, Stoll and

Ditton 2004). The study found that out of 1716 respondents, birders spend an average of $500 per out-of state birding trip and $432 for in-state, equipment was valued between $996-$4023 per person, and the net value of a birding trip in general came to $163 per person per trip, $50 per person per day of a trip, and $434 per person per year (Eubanks, Stoll, and Ditton 2004). A 2001 contingent valuation survey of wildlife watchers in the United States, 84% of which are birders, indicated that on average, birders spend $257 per year in their own state of residence, and $488 per year on traveling outside their own state (La Rouche 2001). A study of birder's willingness to pay at Nebraska's Platte River spring migration of sandhill cranes revealed that birders are willing to "bear the costs of resource conservation" related to protecting the sandhill crane and their habitats, and declines in species population were "viewed as a diminishment in value" (Stoll, Ditton, and Eubanks 2006, 241). A study done in 2008 to determine the value of migratory shorebirds to the recreational birders on the Delaware Bay concluded that birders spent up to $108 per person on an average birding trip to the Bay, and that on average birders own about $4000 worth of birding equipment per household (Edwards, Parsons, and Myers 2010).

Another valuation approach that can be applied to birding looks at the recreational effects of habitat and nutrient loss, using a mathematical Recreational Valuation model:

$$RECWTP(M) = WTP(M) \times a(M) \times POP(M)$$

M = Acres/Quality of Marsh

RECWTP = Annual Total Willingness to Pay

WTP = Willingness to Pay per person, depends on “quality of experience, such as fish caught and aesthetics, as well as recreational preferences and incomes”

POP = Total Population from which Wetlands Recreation is drawn

a(M) = Recreational Usage Rate

(Farber 1996, 95)

Birding is often considered a productive activity because it "generates revenue and supports interstate travel and tourism" when birders flock to places where rare or yet unseen species can be spotted (Kubasek 365). A Travel Cost Analysis or Recreational Valuation model can definitely be applied to birding at the AMWS. Birders in general actually bring in quite a bit of money to birding destinations, and the AMWS is no different. The area provides such an ideal habitat for so many different birds that people come from all over to visit, thus stimulating Arcata's economy.

APPENDIX F

CODED RESPONSES

1) Birder's Role at the AMWS (who)
2) Definition of Birding (what)
3) Best Birding Conditions (when, where)
4) Landscape, Place and Location (where)
5) Why Bird? (why)
6) Knowledge Needed (how)
7) Christmas Bird Count (how)
8) Materials Needed (how – material domain)
9) Economic Implications (how – economic domain)
10) Birding-Related Travel and Tourism (how – economic domain)
11) Human Role in the AMWS Ecosystem (how – biological domain)
12) Birds Species Mentioned (biological domain)
13) Food Chain References (biological domain)
14) Endangered or Rare Birds Mentioned (biological domain)
15) Birding as a Rite of Passage (how – social domain)
16) Social Influence in Birding (how – social domain)
17) Arcata Community (how – social domain)
18) Birding Community (how – social domain)
19) Technology and Birding (how – social)
20) Closeness/Proximity to Birds (social and spiritual)
21) Humans are part of nature (biological and spiritual)

22) Spiritual Implications (how – spiritual domain)

23) Values Associated with Birding (how – economic and spiritual)

24) Mysterious Things about Birds (spiritual)

25) Definition of Sustainability (sustainability)

24) Personal Experience Stories (experience)

25) Has Birding Changed You? (experience)

26) Bird Sounds (additional topic of interest)

27) Hunting vs. Birding (additional topic of interest)

28) Special Topics (additional topic of interest)

Folkloric Themes

1) Folk Group in relation to place, landscape, and town
2) Folk belief and behavior
3) Festivals
4) Traditions

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