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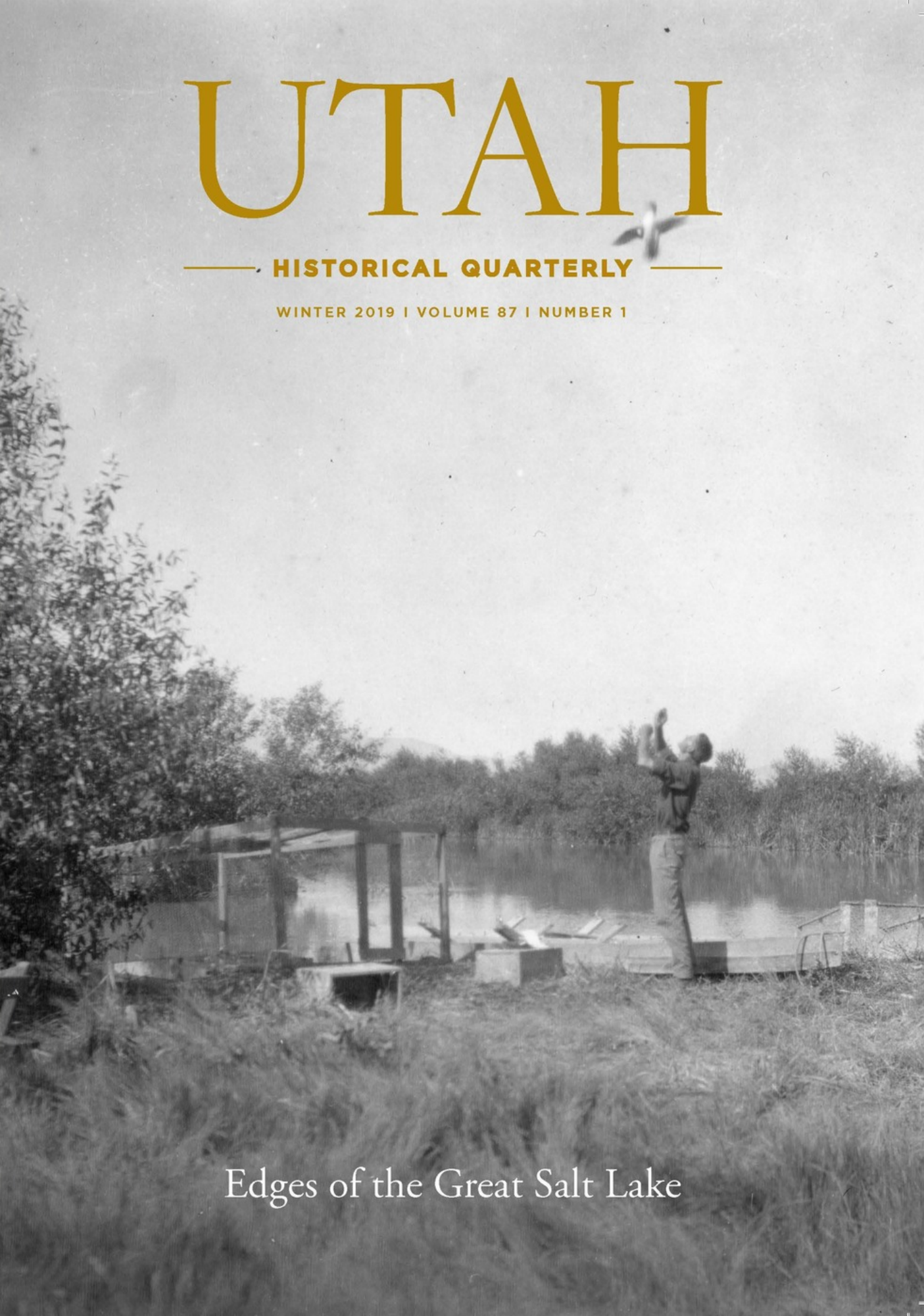

Edges of the Great Salt Lake

UTAH HISTORICAL QUARTERLY

Utah Historical Quarterly (*UHQ*) is Utah's journal of record, published quarterly on behalf of the Utah State Historical Society since 1928. The *UHQ's* mission, from its earliest issues to the present, is to publish articles on all aspects of Utah history, as well as to present Utah in the larger context of the West. Even as *UHQ* continues its commitment to themes traditionally associated with Utah history, it challenges readers and authors to think across state lines to the forces of history, physiography, and culture that link Utah to a host of people, places, experiences, and trends beyond its geopolitical boundaries. *UHQ* seeks a regional approach, reflecting Utah's geographic and cultural position at the crossroads of the West.

UHQ's editorial style emphasizes scholarly credibility and accessible language. Manuscripts dealing with any aspect of Utah history will be considered. Submissions based on allied disciplines—such as archaeology, folklore, or ethnography—are also encouraged, so long as the focus is on the past.

For submission and style guidelines visit history.utah.gov/submissions. Articles and book reviews represent the views of the authors and are not necessarily those of the Utah State Historical Society.

UHQ welcomes letters to the editor. Letters are published occasionally and online. We reserve the right to restrict word count and edit content.

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In 1897, public-spirited Utahns organized the Utah State Historical Society in order to expand public understanding of Utah's past. Today, the Utah Division of State History administers the Society and, as part of its statutory obligations, publishes the *Utah Historical Quarterly* (ISSN 0 042-143X; eISSN 2642-8652), which has collected and preserved Utah's history since 1928. The Division, which is part of the Utah Department of Heritage and Arts, also collects materials related to the history of Utah and makes them available online and in a research library; assists communities, agencies, building owners, and consultants with state and federal processes regarding archaeological and historical resources; administers the ancient human remains program; administers the Utah History Day program; offers extensive online resources; and assists in public policy and the promotion of Utah's rich history.

UHQ is published quarterly in winter, spring, summer, and fall by the University of Illinois Press for the Utah State Historical Society. Members of the Society receive *UHQ* upon payment of annual dues: individual, $30; student and senior (age 65 or older), $25; business, $40; sustaining, $40; patron, $60; sponsor, $100. Visit history.utah.gov/become-a-member to join the Utah State Historical Society and receive your own copy of the journal. Institutional subscriptions are $40 for print or online or $80 for both. To subscribe, see https://www.press.uillinois.edu/journals/uhq/subscription.html.

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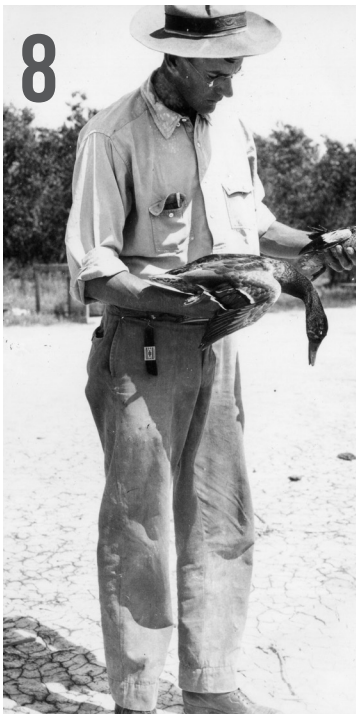

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INTRODUCTION

BY JEFF NICHOLS, GUEST EDITOR

There's a sturdy cliché about the Great Salt Lake: most people think the lake is too much. Too flat, too shallow, too salty, too stinky to love—or even to refrain from fouling. All those characteristics have a basis in truth, of course. The lake bed—the remnant of ancient Lake Bonneville—is indeed very flat, and the deepest part of the lake is only about thirty-four feet. Since the lake is terminal, with no outlet, salts become concentrated; at certain times and places the water is super saturated with salt, at nearly 27 percent by weight, eight or nine times as salty as the ocean. The lake's rotten egg smell results from nutrient-rich treated sewage water that causes algae blooms; we smell the decaying algae.

But despite this, people have loved and cherished the lake for millennia, and people have made many and various uses of it. Native peoples hunted and netted waterfowl and collected eggs in its marshes for at least twelve thousand years. Six generations of Anglo hunters have harvested those marshes, as altered and shrunken as they now may be. Brine shrimpers have built a thriving industry, supplying cysts for shrimp farms and "Sea Monkeys" (a brand name) for odd pets advertised in the back of boys' magazines. Industrial firms extract useful salts from the water and surrounding flats. Sailors cruise the shallow waters. Recreational entrepreneurs built resorts, most famously Saltair, that thrived for years before succumbing to water (or the lack of it), wind, fire, and the public's fickle taste in recreation. People have marveled at the lake's weird beauty, and some of them have fought to defend it from its many dangers.

The edges of the lake are where most of the human action has taken place—the shoreline, the edge between land and water; and the surface, the edge between water and sky. The shallow, nearly flat basin bottom that the lake occupies means that its edges are constantly shifting—expanding in wet years, shrinking in dry ones. That dynamism means that fresh and salt water ebb and flow and mix in ever-changing ways. The plant and animal life those edges support is constantly recharging, advancing, retreating, dying in one place and thriving in another. The lake cannot be fixed but some creatures and some people have succeeded along the edges, while others have had a more difficult go of it.

Great Salt Lake, at historic low levels, 2016. Visible from this image is suburban development along the Wasatch Front, the outline of high lake levels, inlet water flow from lake tributaries, and water differences between the hypersaline north arm and the rest of the lake. *NAIP 2016 aerial imagery, from Utah Automated Geographic Reference Center, 2019.*

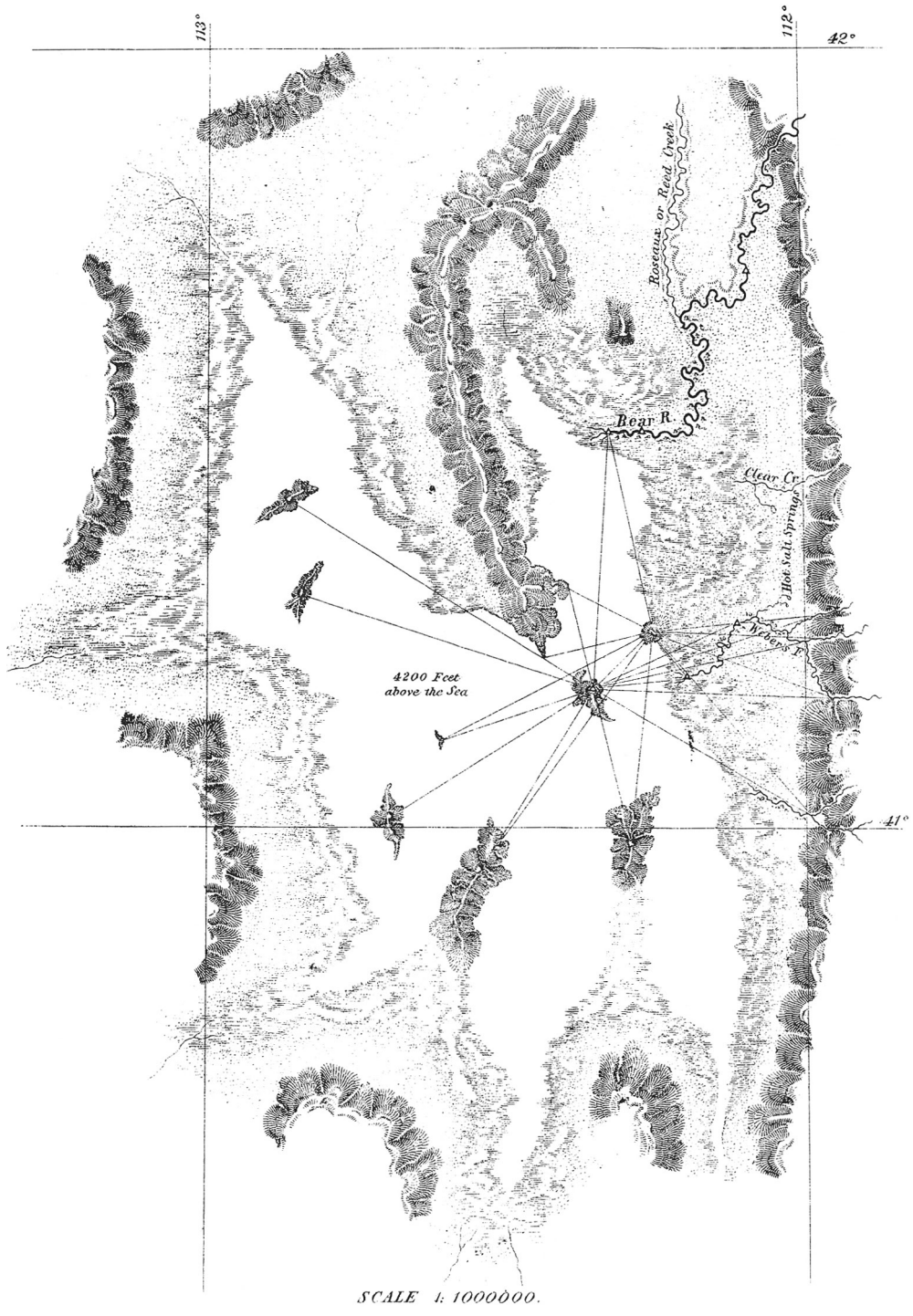
Historians and other writers have paid attention to the lake, although less than it deserves. Dale Morgan published *The Great Salt Lake*, a volume in the Bobbs-Merrill Company's American Lakes series, in 1947. That volume is unavoidably dated, and Morgan indulges in eloquent digressions about his abiding passion, the fur trade. A reader might wonder why Morgan keeps taking them to California. But it still stands as perhaps the single best thing anyone has written about the lake and its place in the larger Great Basin.

The *Utah Historical Quarterly* last devoted an entire issue to the lake in 1988, during a period when several heavy winters resulted in spring runoffs that forcefully reminded neighbors of the lake they sometimes neglected, now lapping at their feet. Articles in that wide-ranging issue included Gary Topping's account of overland trails around the lake, partly inspired by 1980s salvage archaeology mandated by the West Desert Pumping Project, an effort to relieve flooding. The geographer Richard Jackson described the lake and its namesake city as curiosities of intense interest to overland travelers. Brigham Madsen detailed the first in-depth scientific expedition to the lake, led by Howard Stansbury of the Army Corps of Topographical Engineers. Madsen went on to edit Stansbury's report in a magnificent volume, *Exploring the Great Salt Lake: The Stansbury Expedition of 1849–50* (Salt Lake City: University of Utah Press, 1989). David Miller and Anne Eckman edited Seymour Miller's memoir of his family's sheep operation on Fremont Island. Roy Webb rounded out the issue with his profile of Thomas Adams, an engineer who revived the Great Salt Lake Yacht Club, fought valiantly but vainly to restore Saltair, and resisted efforts to dump mine tailings in the lake.

Since that issue, the Great Salt Lake has continued to inspire writers and artists. Terry Tempest Williams reflected on the rising lake levels and the suspicious health problems of women in her family in her elegant, mournful *Refuge: An Unnatural History of Family and Place* (New York: Pantheon, 1991). Dean May (my late lamented mentor) wrote the text and Will South shot the photographs for a beautiful volume, *Images of the Great Salt Lake: January 14–March 31, 1996* (Salt Lake City: Utah Museum of Fine Arts, 1996). J. Wallace Gwynn published two editions of a massive, multidisciplinary volume, *Great Salt Lake: A Scientific, Historical, and Economic Overview* (Salt Lake City: Utah Geological and Mineral Survey, 1980) and *Great Salt Lake: An Overview of Change* (Utah Geological Survey, 2002). Ella Sorensen (writer) and John P. George (photographer) teamed up for *Seductive Beauty of Great Salt Lake: Images of a Lake Unknown* (Salt Lake City: Gibbs Smith, 1998). Marlin Stum (writer) and Dan Miller (photographer) contributed *Visions of Antelope Island and Great Salt Lake* (Logan: Utah State University Press, 1999). Gary Topping edited a fine collection, *Great Salt Lake: An Anthology* (Logan: Utah State University Press, 2002). More recently, my colleague Hikmet Sidney Loe published the eccentric and beautiful *The Spiral Jetty Encyclo: Exploring Robert Smithson's Earthwork through Time and Space* (Salt Lake City: University of Utah Press, 2017), which ostensibly centers on Smithson's iconic land art but also functions as a fascinating primer on all things Great Salt Lake and is reviewed in this issue.

The idea for the issue you hold sprouted from one of many seeds planted by the Great Salt Lake Institute (GSLI) at Westminster College. GSLI's director, biologist Bonnie Baxter, and coordinator, Jaimi Butler, have helped to build an extraordinary network of lake lovers and scholars over the past decade. A small group of people linked to that network gathered at the Bear River Migratory Bird Refuge headquarters in January 2017 to talk about what Refuge director Bob Barrett called the "human side of the lake." We dubbed our informal group the "Wetlands History Initiative Project"—WHIP—and began collecting documents, oral histories, and other lake-related materials. Check out Utah State University's digital oral history archive (a project directed by Randy Williams, a contributor to this volume) at digital.lib.usu.edu/cdm/landingpage/collection/p16944coll46.

This issue concentrates on the lake's edges, in particular the marshes on the eastern and southern shores. Ducks and duck hunters are prominent characters in three articles, a focus that reflects the ecological richness of the marshes, the elaborate hunting culture that has emerged over more than a century, and the



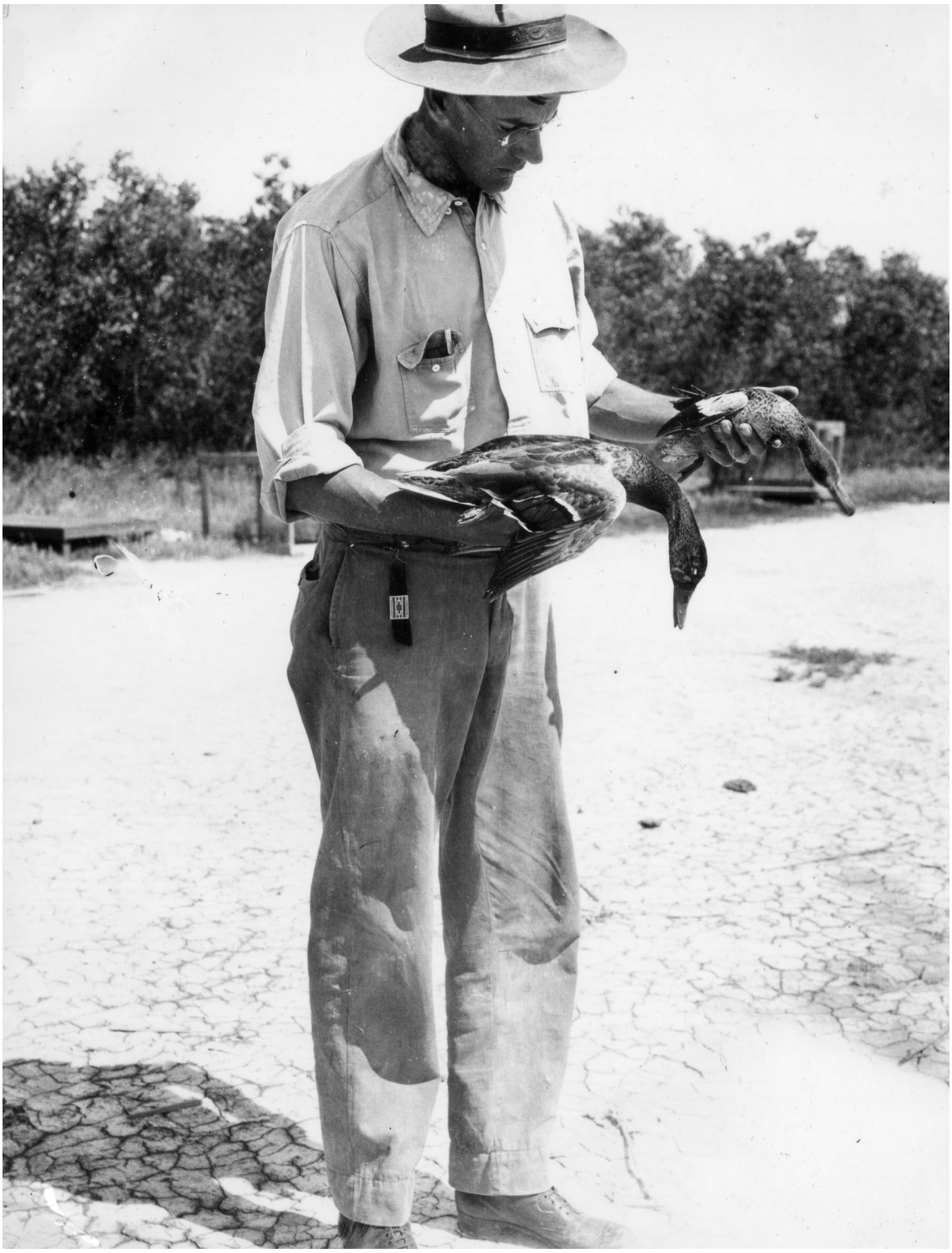
John C. Frémont and Charles Preuss's topographical map of the Great Salt Lake—the first to precisely represent the lake's borders, shoreline, and features. *The map appeared in Frémont's* Report of the Exploring Expedition to the Rocky Mountains in the Year 1842, and to Oregon and North California in the Years 1843–44 *(1845)*.

interests of the members of WHIP. Andrew Hedges opens the issue by describing the pioneering avian biology work of Alexander Wetmore in the Bear River delta before he became one of the great scientific leaders of the twentieth century. Jack Ray details the fascinating world of market and sport duck hunters and their contributions to wetlands conservation. Randy Williams takes an in-depth look at a veteran guide at the most storied of Great Salt Lake duck clubs. Michael McLane explores the warm springs at the southeastern edge of the lake and the recreational complex that once thrived there, now nearly obliterated by industry and transportation infrastructure. Christopher Merritt and Arie Leeflang close our theme by describing some preliminary but promising archeological work on Gunnison Island.

This issue offers, of course, only a narrow and partial look at the lake's edges, and there are any number of other histories still to be told. The many ways that Native peoples used (and continue to use) the wetlands merit particular attention. The historian's task has become particularly relevant in recent decades. The lake is under siege on many fronts: industrial development, agricultural diversion of its tributaries, toxic runoff, habitat destruction, and most importantly climate change, to name only a few. The lake's human past informs its present and will shape its imperiled future. Perhaps we can learn valuable lessons from how people have used, and sometimes abused, the lake. We hope you enjoy these pieces, and we hope that you'll share ideas for future Great Salt Lake history projects. The lake needs you.

EDITORS' NOTE

We are pleased to announce that with this Winter 2019 issue (volume 87), *Utah Historical Quarterly* has entered a publication partnership with University of Illinois Press (UIP). With this partnership, UIP will handle the printing and distribution of the *UHQ*, while the content will remain entirely with the Utah State Historical Society. We apologize for the initial delay this has caused.



Alexander Wetmore at the mouth of the Bear River with mallard and cinnamon teal suffering from botulism, August 14, 1916. *Smithsonian Institution Archives, image # SIA 2015–010594a.*

ALEXANDER WETMORE,

THE BEAR RIVER MARSH, AND THE RISE OF WATERFOWL SCIENCE, 1914–1916

BY ANDREW H. HEDGES

In the fall of 1915, a few days before the opening day of Utah's duck season, two guides were at a small shack on the edge of Utah's Bear River marsh busily preparing for the upcoming hunt. At the end of the day, a "tall thin chap" appeared outside the shack in a car with a large trunk. "[He] told me he was a professor of biology," reported "Jimmy," one of the guides. "I supposed it had something to do with bibles." Jimmy and his companion invited the visitor to dinner, after which they learned that rather than peddling holy writ, their new friend was a government scientist investigating the mysterious deaths of tens of thousands of ducks on the marshes of the Great Salt Lake over the last several years. After everyone had aired their respective views on the matter, the visitor then asked Jimmy if he was aware that lead shot was also lethal to waterfowl. "Yes," Jimmy responded innocently, "I have shot enough ducks to be acquainted with that fact." The response elicited a smile from the scientist, who explained that he meant lead pellets that ducks accidentally ingested while feeding rather than those taken more forcefully from the business end of a hunter's gun. The conversation continued into the evening, and on subsequent days Jimmy visited the biologist's research station nearby.[1]

Jimmy did not know it, but the slim, mild-mannered biologist he met that evening was on his way to becoming a distinguished ornithologist.[2] Born June 18, 1886, in New Freedom, Wisconsin, Alexander Wetmore had been nurturing an interest in birds ever since his mother had given him a copy of Frank M. Chapman's *Handbook of Birds in Eastern North America* at age five. He published his first article, "My Experience With a Red-Headed Woodpecker," at age fourteen, and at nineteen he was working as an assistant at the University of Kansas Museum. By the time Jimmy met him on the Bear River marsh in 1915, the six-foot, three-inch Wetmore was a biologist for the U.S. Biological Survey (forerunner to the Fish and Wildlife Service), having received his bachelor's degree from the University

of Kansas (1912) and having studied birds as an agent with the Biological Survey in the Aleutian Islands and Puerto Rico. Wetmore spent three summers, 1914 to 1916, working as a field biologist on the marshes of the Great Salt Lake while completing his master's degree at George Washington University (1916). Subsequent research trips to South America and the Pacific, as well as more schooling at George Washington (PhD, 1920), honed his skills even further, and in November 1924 he was appointed superintendent of the National Zoo. Four months later, in March 1925, Wetmore was appointed assistant secretary of the Smithsonian Institution. He succeeded Charles Greeley Abbot as the Smithsonian's sixth secretary in 1945. Wetmore held that post until his retirement in 1952.

Wetmore continued to research and write even in the face of his administrative responsibilities. By the time of his death in 1978, he had over seven hundred publications to his name, with emphases in avian systematics, migration, distribution, and paleontology. His careful work brought to light the existence of 189 species and subspecies of birds previously unknown to science, including almost 150 fossil taxa. He had also prepared and contributed over 26,000 bird skins and 4,300 skeletal specimens to the Smithsonian, along with 201 clutches of eggs. On several occasions, his skill at identifying birds through bone fragments landed him in court as an expert witness for federal agents prosecuting restaurant owners for illegally offering wild game on their menus. A scholar with a global perspective, Wetmore acquired reading proficiency in ten foreign languages as he pursued his interests around the world. Everywhere he went he made friends, many of whom honored him by naming some of their own discoveries after him—fifty-six new taxa of insects, mollusks, birds, mammals, and amphibians now bear his name, along with a cactus in Argentina, a bridge in Panama, and a glacier in Antarctica. Numerous other awards and honors, along with membership in dozens of scientific organizations across the globe, round out this man's remarkable portfolio, leaving him the uncontested "20th-century doyen of American ornithology."[3]

Against the background of Wetmore's full career, the three summers he spent on the Bear River marsh and other wetlands around the Great Salt Lake while working on his master's degree may appear rather insignificant. In the history of waterfowl science, however, they were anything but inconsequential. Wetmore entered the field at a time when biologists of all stripes, including ornithologists, were still trying to wrap their arms around the sheer diversity of species in the Americas, let alone in other, more remote parts of the world. New forms were being found on a regular basis, and much of the scientific literature of the time reflected the daunting task of identifying, distinguishing, and cataloguing the steady flow of new finds that made their way into the country's museums. Biology in general, and such subfields as ornithology, mammalogy, and entomology especially, consisted largely of collecting, preserving, and describing the physical features of individual specimens rather than trying to understand the species' life history or ecology.[4] Wetmore's own career reflected this orientation to a large extent, as evidenced by the thousands of specimens he collected and the scores of genera, species, and subspecies he described. For three summers on the Bear River marsh, however, he did something different. Rather than picking through the vegetation looking for new species of invertebrates or trying to tease out different subspecies of waterfowl on the basis of subtle differences in coloration or size, Wetmore used the basic scientific tools of observation, hypothesis, and experiment to answer larger questions about waterfowl and their environment. It was a tremendous step forward, and although his conclusions were not always correct, the questions he asked, and the methodology he employed, helped transition the field of ornithology out of its descriptive phase into a more experimental and ecological phase—a phase that continues to produce significant findings today.

While historians have briefly acknowledged the pioneering nature of Wetmore's work in Utah, none has examined in detail and context his work those three summers on the Bear River marsh.[5] This paper is an effort to tell that story more completely. It begins with a review of his primary assignment from the Biological Survey—that is, as he told Jimmy the guide, to determine why hundreds of thousands of ducks, geese, and other water birds were dying

each summer on the marshes of the Great Salt Lake. It then examines the side studies on waterfowl migration, lead poisoning, and ecology that Wetmore inaugurated on his own while in Utah, each of which have proven to be a turning point in our understanding and study of those topics. My purpose in all of this is not only to help us better understand and appreciate the role the Great Salt Lake marshes have played in the history of waterfowl biology but to help us better appreciate the marshes themselves and to glimpse what they might hold for anyone who takes the time to visit them today.

The ducks whose deaths sent Wetmore to Utah to investigate had died of botulism, described in one source as "probably the most infamous disease of waterfowl and likely . . . the most critical disease affecting migratory birds worldwide." The disease is caused by a powerful neurotoxin produced by the type C strain of the bacterium *Clostridium botulinum*, an obligatory anaerobe that can only grow in the absence of oxygen. The toxin leads to muscle paralysis; birds that ingest enough of the toxin either die of respiratory failure or drown when they are not able to lift their heads out of the water.[6] When conditions are unfavorable for growth, the bacteria produce spores that remain viable for years and that can accumulate in incredible numbers in nature—a 2002 study of the Bear River marsh, for example, found as many as one *billion* spores per gram of mud.[7]

Outbreaks of botulism tend to follow multiple paths, all of which can be in play at the same time. In the first, aquatic macroinvertebrates such as mayfly or midge larvae ingest the spores while feeding in the mud. So long as the larvae is alive and utilizing oxygen in its tissues, little if any toxin is produced. Should it die, however, and the "microenvironment" within the miniature carcass transform from an aerobic to an anaerobic one, the spores revive

Botulism-killed ducks lying near the mouth of Weber River, September 4, 1914. *Smithsonian Institution Archives, image # SIA 2015–010536*.

into toxin-producing bacteria. An outbreak of botulism occurs when large numbers of these aquatic invertebrates die—as might happen in late summer, for example, when falling water levels leave large areas of a marsh high and dry—and waterfowl and other birds ingest their toxin-laden remains.[8]

A vicious cycle ensues once birds begin dying of botulism, as their carcasses also serve as an appropriate microenvironment for *C. botulinum* growth. Maggots that feed on those carcasses ingest the toxin the bacteria produce, and any bird that feeds on those maggots ingests the toxin too. Even birds that die from causes unrelated to botulism can serve as a source of botulism poisoning. This occurs when birds ingest *C. botulinum* spores while feeding and still have those spores in their gut at the time of death. Reviving in the anaerobic conditions that develop in the dead bird's carcass, the bacteria multiply and spread throughout the bird's tissues where, as before, they and the toxin they produce are ingested by maggots. In either case, the toxin does not harm the maggots, which allows them to accumulate a significant amount of it over time—enough that a single maggot can amass enough poison to kill an adult duck. With a single duck carcass capable of hosting up to 10,000 maggots, one can easily understand how millions of birds have been affected in some outbreaks in the past.[9]

None of this was known when Wetmore arrived in Utah in the summer of 1914. All he knew was that ever since 1896, when two hunting guides had brought in four hundred dead and dying mallards from the mouth of the Bear River, small but significant numbers of afflicted ducks had been observed on the eastern and northern marshes of the Great Salt Lake during the summer and fall months of various years. No one had been particularly alarmed, however, until the exceptionally dry year of 1910, when the number of affected birds suddenly jumped into the thousands. Dead birds dotted the shallows and mudflats of the Jordan, Weber, and Bear River marshes, and long, stinking windrows of carcasses piled up on the shorelines of bays and ponds. Fearful of the possible health risks eating waterfowl might pose, many hunters stayed home that fall. Conditions improved with the return of higher water later in the fall, only to deteriorate the following summer and autumn. The cycle repeated itself again in 1912 and 1913, with observers on the Bear River marsh tallying 46,723 dead ducks the latter year—less than 20 percent, they estimated, of the total number of birds that had died there over the course of the summer and fall. Workers using pitchforks gathered the dead birds into boats and tubs, and then either buried them in long trenches or cast them into piles and covered them with rushes and mud; some of the resulting mounds were still visible several years later. Meanwhile, at least some hunters had gotten over their squeamishness enough to take to the field again, with some of them even using sick, helpless birds as decoys in front of their blinds.[10]

Contemporary accounts capture the magnitude of the disaster in its early stages, as well as the discussion regarding its cause. On a visit to the Bear River marsh in September 1910, the state fish and game commissioner, the state chemist, and the state food and dairy commissioner counted 750 dead and dying ducks on a plot of ground five steps wide and one hundred sixty steps long. "As far as the eye could reach could be seen only 'a sea of dead ducks,'" Willard Hansen, the food and dairy commissioner, reported to the *Deseret Evening News*. "'We started out to count them before we realized the true conditions . . . but before we had gone far we gave the task up as hopeless.'" The three immediately issued a bulletin forbidding the sale of wild ducks on the Utah markets and advised hunters to defer hunting for several weeks in hopes that conditions would improve with cooler weather.[11] Deviating from his earlier conviction that the birds were dying of a liver infection brought in by birds from Idaho, Fred W. Chambers, the fish and game commissioner, joined the others in raising the possibility that raw sewage in the Jordan River was the culprit. Others concurred, postulating that the birds were dying from typhoid carried in the sewage.[12] Unnamed doctors in the area, however, suspected avian cholera—a diagnosis W. Reid Blair, veterinarian and pathologist with the New York Zoological Society, supported. Other possibilities being considered included some other type of bacterial infection, parasitic nematodes, and pollutants from smelters or sugar factories in the area.[13]

Wetmore spent a total of fourteen and a half months over the course of three consecutive summers in Utah investigating what had become known as the "duck sickness" or "duck malady." He arrived on the scene in early July 1914, by which time sick birds had already been found on some of the marshes that year. His first order of business was simply to get a handle on the scope of the problem. This involved visiting the marshes at the mouths of the Jordan, Weber, and Bear Rivers, as well as the Willard Spur area of Bear River Bay, Promontory Point, and Locomotive Springs to the west of the Promontory range. Having determined by the end of the season that the sick and dying birds in each area were suffering from the same malady, he decided to focus his investigations on one area and visit the others when necessary. The Bear River marsh quickly emerged as the obvious choice for intensive study, not only for the varied conditions it presented and the huge numbers of birds it harbored but also because the Duckville Gun Club, located right at the mouth of the river and not just a little interested in what he might find, had offered to let him live in their clubhouse while he conducted his studies.[14]

Wetmore received help from other quarters as well. The Bear River Club, located a short distance up the river from the Duckville Gun Club, gave him use of their facilities and rented a piece of ground to the Biological Survey, on which a small field laboratory was built for his use. Individual members of the Duckville club helped with collecting birds and other types of fieldwork, while A. P. Bigelow, secretary of the Bear River Club, and Vinson (or Vincent) F. Davis, the club's foreman or superintendent, were good for unspecified types of "aid" and "information of value." Wetmore also enlisted the help of several interested local citizens, at least one of whom, E. M. Sackett of Corinne, carried on a lively correspondence with him for several

Duckville Gun Club, July 20, 1914. Wetmore utilized the club's facilities for much of his research during his time in Utah. *Smithsonian Institution Archives, image # SIA 2015–010533b.*

years after he left Utah. While he does not appear to have coordinated with local academics, he did send specimens and water samples to the Bureau of Animal Industry and the Bureau of Chemistry in Washington, D.C., for analysis, and he was careful to work with the State Fish and Game Commission to obtain permits to shoot and handle birds out of season. Far from being a one-man show, Wetmore enlisted a small army of concerned sportsmen, government scientists and officials, and local residents in his efforts to understand what, precisely, was happening on the marsh.[15]

By the end of the first summer, Wetmore and his helpers had found that the "duck sickness" was affecting more than just ducks. Victims had been found among twenty-seven species of birds in eleven different families—nine species of ducks, ten species of shorebirds, and eight "miscellaneous forms" ranging from grebes to pipits, a passerine that looks more like a sparrow than a water bird. Among ducks, pintails and green-winged teal seemed especially vulnerable, while avocets and stilts were the hardest hit shorebirds. He also learned the general course the disease took, with afflicted birds first losing the ability to fly, then to walk, and finally to breathe. A "severe dysentery" was also present, and autopsies revealed a reddening and hardening of the gut, but no internal lesions were found. Nor did any parasitic nematodes appear to be present.[16]

Wetmore had also received the pathology report from the Bureau of Animal Industry in Washington, D.C. After examining numerous ducks, both living and dead, that manifested signs of the sickness, the bureau had attributed the deaths to "acute poisoning" but ruled out common industrial pollutants like arsenic or sulfuric acid as the causative agent. It had also concluded that the disease was not of bacterial origin, as growth media and healthy birds inoculated with samples taken from affected birds failed to produce any pathogenic cultures.[17]

With this information and data he had gathered on site, Wetmore was confident by the end of his first summer that he was zeroing in on the culprit. "The work of this past summer leads to the conclusion that the mortality results from an alkaline poison," he wrote, "the exact nature of which is still to be determined." Several lines of evidence seemed to support the theory, especially the fact that all the known outbreaks occurred in low-water years when salt concentrations were high, and that a high percentage of affected birds recovered when they had access to fresh water.[18] The theory was fully consistent with the Bureau of Animal Industry's findings and helped explain why the malady seemed largely confined to the arid West, where alkaline conditions were more prevalent than in other parts of the country.

At the end of another two years of fieldwork, Wetmore was able to provide further detail into the scope and progress of the malady and the environmental conditions that seemed to precipitate an outbreak. By fall 1916, the number of species he found affected by the disease had jumped to thirty-six, with members of another sixteen kinds dying under suspicious circumstances. Gulls, terns, and sandpipers, as well as land birds like magpies, swallows, and blackbirds, joined the ducks, geese, and other water birds on the list of susceptible species. On more than one occasion, avocets in the area were nearly exterminated, and even a few muskrats, frogs, and predaceous diving beetles seemed to contract it. Outbreaks continued to occur in marsh lands where salts that had crystalized as water levels dropped went back into solution upon the area being reflooded, often as a result of wind blowing water across the flats. At the same time, efforts to find evidence for bacterial infection, industrial poisoning, or other causative agents continued to turn up nothing.[19]

For Wetmore, the case seemed closed. "It has been established definitely that the duck sickness in Utah is caused by the toxic action of certain soluble salts found in alkali," he confidently reported in July 1918. "Actual experiment" had implicated calcium chloride and magnesium chloride, he wrote, while additional studies suggested that other salts might also be involved. Once he understood the cycle of drought and reflooding that precipitated an outbreak, Wetmore claimed, he "was able in many cases to predict that with certain strong winds sick birds would occur in numbers in certain localities, and after a proper interval to send out and have them brought back in to the laboratory." The problem had reached crisis

proportions beginning in 1910, he believed, because upstream water use on the Bear River had reached the point that not enough water was reaching the marsh in late summer to keep it inundated. Fluctuations in the level of the Great Salt Lake, he suggested, along with "other factors not wholly understood," may have played a role as well.[20]

As already seen, the promising young scientist was as wrong as he could possibly be. In fairness to him, though, some key bits of data on which he relied came from other people—especially the Bureau of Animal Industry's report that ruled out bacteria as a causative agent for the disease. Moreover, even the basic epidemiology of botulism was still half a dozen years away from being worked out by the time Wetmore finished his work in Utah.[21] Indeed, as erroneous as his conclusions were, other scientists in the country—many of whom were his seniors, holding advanced degrees—looked at his data and accepted his results for a number of years. Not until 1932 did researchers finally determine that the duck sickness was botulism poisoning rather than alkali poisoning, and not until 1955 did they propose that the toxin was being produced in the "microenvironment" of dead aquatic invertebrates.[22] Significantly, the primary researcher in 1932, Edwin R. Kalmbach, employed the same methodology that Wetmore had introduced in Utah, with the breakthrough coming more through chance and good luck than any real improvement in the science.[23] Wetmore may not have solved the mystery, but he certainly laid the foundation for those who did.

And finally, while Wetmore failed to find the cause of duck sickness, his observation that fresh water helped afflicted birds recover from the disease constituted a practical "cure" of no small significance. Fully 77 percent of the 1,211 sick birds that were given access to fresh water over the course of his study permanently recovered; if one eliminated those that had almost expired by the time they were collected, the recovery rate jumped to 90 percent. On the basis of those numbers, Wetmore was able to make a number of easily implemented recommendations that saved thousands of birds in the ensuing years—things like employing men to collect sick birds that could be placed in pens with fresh water, or manipulating water levels in marshes during the summer to ensure a good supply of fresh water in flooded areas.[24] While Wetmore made this last recommendation with the idea that it would keep alkali levels low, by happy coincidence it can also help reduce one of the real causes of a botulism outbreak—large die-offs of macroinvertebrates in which *C. botulinum* can grow and produce toxins. Much has been learned about controlling botulism since Wetmore's time, but penning afflicted birds with fresh water and manipulating water levels in marshes continue to be important weapons in wildlife managers' arsenal against the disease.[25]

In an effort to determine whether recovery from "duck sickness" was permanent or not, Wetmore placed aluminum bands on the legs of virtually all of the nine-hundred-plus birds that survived the disease over the course of his three-year study. Each band bore a unique number on one side and an inscription directing its finder to either "Notify U.S. Dept. Agr., Wash., D.C." or "Notify Biological Survey, Washington, D.C." on the other. The hope was that anyone who shot one of the banded birds while hunting or came into possession of one of the bands by some other means would notify Wetmore's employers of when, where, and how the band had been obtained. Wetmore could then use such information to determine how long the bird had lived after recovering from the disease and how healthy it might have been when taken. The scheme worked well; by 1918, information had been received on "about 170" banded birds, most of which had been killed, probably by hunters, "under circumstances that indicated that they had fully recovered" from their earlier brush with death. Particularly noteworthy were four birds that Wetmore had banded in 1914, three of which were shot in 1916 and the fourth in 1917—good evidence that recovery was total and permanent.[26]

While the primary purpose of the banding project was to determine how well birds recovered from the "duck sickness," Wetmore also saw the potential it held for illuminating the birds' migration routes or "lines of flight," as he put it.[27] Banding or otherwise marking individual birds for identification purposes, of course, did not originate with Wetmore. The practice

dates back to at least ancient Rome, and curious naturalists in Europe and America—including John James Audubon—had long been placing wires, threads, and rings on the legs of birds and recording subsequent observations of them. Systematic bird banding, with the intent to elucidate migration routes and patterns, had been proposed in Europe as early as 1866, although no one actually got around to trying it until 1899, when Christian Mortensen of Denmark used bands to study starling migration.[28]

Researchers in America were not far behind. In March 1901, Leon J. Cole, a student at the University of Michigan, read a paper before the Michigan Academy of Science in which he proposed using numbered bands to track the movements of birds—an idea derived, evidently, from the United States Fish Commission's practice of using numbered tags to track the movement of fish. Whether he was influenced by Cole's suggestion is unclear, but the following year, 1902, Paul Bartsch of the Smithsonian Institution began using such numbered bands in a study of black-crowned night herons near Washington, D.C. Other researchers in other parts of the country quickly followed suit, and in December 1909 Cole and others organized the American Bird Banding Association in an effort to oversee the rapidly expanding work.[29]

Banding, then, was an established means of studying bird migration by the time Wetmore began marking waterfowl that had recovered from botulism on the Bear River marsh in 1914. Yet it was still in its infancy—so much so, in fact, that his efforts and methods in Utah made for several improvements and "firsts" in the history of the practice. Most of the early American banders, for example, operated in the eastern United States; Wetmore appears to have been the first researcher to band large numbers of birds in the West.[30] In addition, the vast majority of the birds banded for scientific purposes in the early years were nestlings, as they were much easier to get hold of than adults. Samuel Prentiss Baldwin, who began trapping and banding adult songbirds in 1914, is usually identified as the first researcher to systematically band mature birds, but by his own account it was not until 1915 that he began banding them on a large scale—one year after Wetmore began such work with waterfowl in Utah.[31]

Similarly, most of the nestlings banded during this early period were land birds or wading birds, whose nest-bound young were far easier to capture than the mobile, camouflaged precocial young of waterfowl. Jack Miner, who created his own private waterfowl refuge near Kingsville, Ontario, Canada in 1904, began banding large numbers of waterfowl in 1909, but inscribed scriptural passages instead of identification numbers on his bands—a practice that gives new meaning to the phrase "a wing and a prayer" but that severely limited the scientific value of his work.[32] Wetmore's three-year study in Utah appears to have been the first time in America that large numbers of waterfowl were systematically fitted with numbered bands that allowed researchers to track individual birds.

Banding waterfowl presented Wetmore with special challenges not shared by those who banded land birds. The biggest was simply providing against the wear and tear the bands suffered from constant immersion in brackish water, which left them "badly worn" after a single year and "thin and friable" after two. By 1923, Wetmore had recovered at least one band more than four years old, but he feared that most bands over three years old had probably broken and fallen off. The observation led him to recommend that waterfowl bands be twice as thick as those manufactured for barnyard fowl—a suggestion the Biological Survey, which began overseeing all banding operations in the country in 1920, quickly took to heart.[33]

Banding waterfowl also had distinct advantages. The fact that ducks and geese were hunted meant that the rate of band recovery for waterfowl was significantly higher than the recovery rate for non-game species. Over 17 percent of the ducks and geese Wetmore banded during his three-year study on the Bear River marsh had been recovered by 1923, compared to the 3.9 percent return rate on Baldwin's songbirds. Hunting also increased the likelihood that bands would be recovered in places other than where the bird had been banded originally. Only three of the 1,600 birds that Baldwin banded near Cleveland, Ohio, and Thomasville, Georgia, were found at localities other than where they had been banded; all of the other "returns" were located near the place they had been marked. In contrast, dozens of Wetmore's

Wetmore, left, and an assistant collecting sick ducks at the mouth of Bear River, September 5, 1914. *Smithsonian Institution Archives, image # SIA 2015–010538a.*

birds were taken in areas other than the Bear River marsh, providing researchers with a good idea of the migration routes taken by various species.[34] Indeed, it was the returns from Wetmore's banding operation in Utah, more than any other single factor, that convinced officials of the Biological Survey to take over the nation's banding program.[35]

Under the careful administration of the Biological Survey, thousands of ducks and geese across the country were banded over the course of the ensuing years. After analyzing the returns, Frederick C. Lincoln, who oversaw the operation, proposed in 1935 the existence of four distinct waterfowl "flyways" across North America—four major routes "followed by the same groups of individual birds during successive years" between breeding grounds in the north and wintering grounds in the south.[36] The maps and descriptions Lincoln generated from banding returns showed the Bear River marsh contributing significant numbers of birds to three of the four routes—the Pacific flyway, the Central flyway, and, remarkably, the Atlantic flyway, where large numbers of redheads banded as ducklings on the Bear River delta were turning up in hunters' bags.[37] Based on his own, much more limited data, Wetmore had actually suggested a similar scenario in 1923—one "general line of flight" west to California, a second east to the Great Plains, and a third southward into Arizona and New Mexico.[38] Such findings showing the Bear River marsh's continental significance in the world of waterfowl have had important consequences for a variety of conservation initiatives over the years. In the late 1920s, for example, when sportsmen in California opposed the bill to create the Bear River Migratory Bird Refuge on the grounds that the area was "too small to justify the expenditure of the funds" the project

would require, proponents of the refuge publicized Wetmore's and others' banding records showing how many ducks from Utah traveled to California. The criticism ended, and the bill passed.[39]

In the course of his investigative and banding work, Wetmore came across numerous ducks that seemed to be suffering from a malady other than the one he originally observed. Many of the symptoms, such as paralysis of major muscles and lethargy, were similar to those afflicted with botulism. The main difference, he found, was that the nictitating membrane—a third "eyelid" of sorts shared by most birds—became paralyzed in birds suffering from botulism but not in those afflicted with the other ailment. Autopsies revealed lead pellets in the gizzards of this second group of birds, raising the possibility that the birds were suffering from lead poisoning. Drake mallards and pintails seemed most susceptible to the disease; reports from other areas of the country indicated that fair numbers of canvasbacks and whistling swans were also affected. All four species were known to feed by vigorously rooting through the mud in search of aquatic seeds and tubers; Wetmore surmised that they were accidently ingesting the pellets as they fed in heavily hunted areas, where expended shot from hunters' guns accumulated in the mud.[40]

The possibility that waterfowl might be susceptible to lead poisoning had been suggested as early as 1874, and by 1908 the issue had come to the attention of science.[41] By 1915, however, when Wetmore began to look at the issue, the most anyone had done was raise the possibility; no one had taken the time to address the question experimentally and eliminate other explanations for the birds' symptoms. These included the possibility that rather than poisoning the birds, the lead pellets simply accumulated in the birds' digestive tracts to the point that they prevented digestion—the birds were perhaps dying of malnutrition, that is, rather than from any toxic effects of the lead.[42] Others, similarly, posited that it was the arsenic or some other substance in the lead shot, rather than the lead itself, that was poisoning the birds. Confounding the problem was the fact that biologists with the Biological Survey had found lead shot in the stomachs of numerous ducks that were evidently in perfect health when they were killed.[43] With such possibilities and considerations on the table, the issue appeared almost as thorny as the "duck sickness" itself; the circumstantial evidence for lead poisoning was high, but the case was far from clear cut.

As busy as he was looking into other issues, Wetmore examined the problem thoroughly during his last two summers on the Bear River marsh. Even by today's standards, the care and methodology he employed are a model of caution and deliberation. To eliminate the possibility of unknown factors influencing his results, he used in most of his experiments hand-reared wild mallards that he had captured as ducklings. Control groups were kept in cages similar to the ones that held the experimental birds and fed the same mixture of wheat and barley; the only difference between the two groups was that the experimental birds were also given varying amounts of Number 6 lead shot—a size commonly used by duck hunters—while the controls were not. Where others had described only the most obvious symptoms of afflicted birds, Wetmore made careful notes of the disease's progress and effects at all levels, including its effect on the birds' behavior, muscle control, and nervous, digestive, respiratory, and circulatory systems. He also gave the experimental birds different types of lead—"soft" shot versus "chilled" or hardened shot—to see if that had any effect, and in some cases he used pure or "granulated" lead instead of pellets to eliminate the effects of arsenic and other compounds from the equation.[44]

The results of Wetmore's hard work were conclusive—along with the "duck sickness," birds on the Bear River marsh were also dying of lead poisoning. Granulated lead had the same effect as Number 6 shot, indicating that it was the lead itself, and not some other compound in the pellets, that was responsible for the birds' symptoms. Soft shot was quicker in its effects than chilled shot, but the ultimate results were the same. He also found that ducks with more gravel in their gizzards sickened more quickly than those with less; the reason, he postulated, was that the gravel ground the lead down into pieces small enough to pass into the intestine and do its deadly work.[45]

Wetmore also provided researchers with a good sense of the scope of the problem. A mere six pellets of Number 6 shot were sufficient to cause death in every case. Two or three pellets led to death "in several instances," and one bird died after receiving a single pellet. Others recovered with these lower numbers, but only after several days or weeks of suffering. Birds that came down with the symptoms became ravenously hungry, which apparently resulted in them ingesting even more shot as they searched for food before they died; the autopsies Wetmore performed on wild birds revealed that most had anywhere from fifteen to forty pellets in their gizzards, with an average of just under twenty-five. One bird, a mallard, had ingested a whopping seventy-six pellets before expiring.[46] Impressed with such numbers, Wetmore did his own grubbing around in the mud at two places on the marsh where blinds had been used for twenty or more years, and where, he estimated, "several thousand shells [were] fired" each year. Sifting some ten quarts of mud through a sieve small enough to capture Number 7 shot (one size smaller than Number 6 shot) at twenty-yard intervals, he and an assistant recovered anywhere from one to twenty-two pellets—generally the "soft" variety—as far as 150 yards or more from the blinds. Estimating that at least 75,000 shells, each containing an ounce of lead, were shot each season on the Bear River marsh alone, Wetmore left it up to his readers to calculate how much lead might be threatening the lives of waterfowl both there and in other marshes subject to heavy hunting pressure.[47]

Wetmore had found the cause of this second malady affecting waterfowl on the Bear River marsh, but he had little to offer by way of a cure or preventative measures. About half of a "small number" of ducks treated with magnesium sulfate recovered, but the time it took to administer the treatment was too long for it to be of any practical value. Other possibilities, such as somehow harrowing mud flats and marshes in an effort to sink pellets beyond the reach of feeding birds, or providing ducks with gravel on their feeding grounds in hopes that they would then somehow be less inclined to ingest pellets, seemed equally impractical.[48] In his failure to provide any solutions, though, Wetmore was in good company; later generations of biologists did no better, while the problem got steadily worse. Only with the federal ban on using lead shot for hunting waterfowl, implemented in 1991, has the incidence of lead poisoning in waterfowl finally begun to decline.[49]

Wetmore made one final contribution to the history of waterfowl science during the three summers he spent on the Bear River marsh. At a time when ecology was just emerging as a discipline in its own right, the young scientist published two papers on how the birds he loved interacted with the place he had come to know so well. By looking at such relationships, both papers acknowledged Wetmore's and others' growing realization that one's understanding of the bird in hand is greatly enhanced by a careful look at the two birds in the bush. The "bush," in this case, was the Bear River marsh and the surrounding area, including the Great Salt Lake. As noted previously, his efforts on this front helped others to begin looking at birds through an ecological rather than simply a systematic lens. Just as importantly, they also demonstrated the critical roles the Bear River marsh itself played in the lives of the birds that could be found there. Far from being just a good place to hunt ducks, which was the only thing many people thought it was good for, Wetmore showed that it also served as a nursery, resting ground, feeding area, migration stopover, and sanctuary for millions of birds over the course of any given year.

His first foray into ecology was a short paper offering a corrective to an earlier paper Charles T. Vorhies, a professor at the University of Utah, had written about the brine shrimp and brine flies. Both could be found in prodigious numbers in favored locations around the Great Salt Lake. As an explanation for their abundance, at least in part, Vorhies had written that nothing preyed on either organism—in his words, that both were favored with "an entire absence of enemies" and that "enemies play[ed] no part" in reducing their populations.[50] Wetmore circumspectly disagreed. Over the course of his three summers on the north end of the lake, he wrote, he had seen incredible numbers of birds feeding on both fly larvae and shrimp. Thousands of Wilson's and northern phalaropes utilized them as food during migration, as did large flocks of eared grebes, black-necked

Wetmore and his field laboratory at the mouth of the Bear River, August 6, 1915. *Smithsonian Institution Archives, image # SIA 2015–010563b.*

stilts, and American avocets. Several species of ducks cashed in on the bounty as well, including green-winged teal, American goldeneyes, and lesser scaup. Most impressive were the northern shovelers, which covered the water in "great banks . . . at least two miles long and from one quarter to one half a mile broad." All were feeding on the "enormous numbers" of fly larvae and shrimp that could be found a few miles south of where the Bear River emptied into South Bay, where the daily action of the wind blew salt water from the lake northeast toward the river's mouth. In the face of such data, Wetmore concluded that it was the flies' and shrimps' immense reproductive potential rather than an absence of predators that accounted for their incredible numbers in the lake.[51]

In his second paper, published three and half years later, Wetmore demonstrated an even deeper appreciation for the area's ecology and its importance for waterfowl on a regional scale. By now, banding returns were beginning to give some hint of the marsh's significance for ducks that spent a lot of time *outside* of Utah. In addition, careful observation had revealed the ebb and flow of waterfowl numbers on the marsh during the late summer and fall months. Numbers rose dramatically in late August, Wetmore found, as young birds hatched and raised on wetlands in the surrounding area arrived to stock up on the marsh's abundant food before moving south. These left in early September, only to be replaced with migrants from the north by early October. Species that were never seen on the marsh during the summer months—snow geese, buffleheads, and goldeneyes, for example—were suddenly prevalent, while the cinnamon teal and redheads that had nested there were nowhere to be found. Like their predecessors, the northern migrants feasted on the sago pondweed, bulrush seeds, and other vegetable foods that the marsh produced in such abundance; Wetmore tallied fifty species of plants growing in the area that contributed to one degree or another to waterfowl diets. Various invertebrates, including brine fly larvae and brine shrimp, supplied an important source of protein for many species.[52]

The marsh played other roles in the lives of the continent's waterfowl population. Eleven species of ducks and the Canada goose nested among its channels and bays, including over

1,700 pairs of redheads and eight hundred pairs of cinnamon teal. After running the numbers and allowing for losses, Wetmore calculated that anywhere between 25,000 and 30,000 ducklings fledged on the Bear River marsh during an average summer.[53] He also found that thousands of birds from other areas utilized the marsh during their annual molt, when the loss of their large wing feathers left them flightless for several weeks during the summer. Most of these birds were drakes that had bred elsewhere and then, after the manner of most ducks, left the child-rearing responsibilities to the females; the marsh's abundant cover and food provided them with the safety and calories they needed to survive this period of vulnerability. This was no small consideration in the life histories of several species. Where only about 130 pairs of pintails actually bred on the marsh in the spring of 1916, for example, some three thousand drakes from other places had descended on the area by the middle of June to molt. Given such numbers, Wetmore believed the marsh was even more important as a molting "refuge" than as a duckling factory.[54] Over time, researchers in other areas have come to appreciate the importance of such areas for a variety of species, and studies dealing with the "molt migration," as it is now called, are a regular feature of the literature.[55]

Wetmore packed his bags and left the marsh for good in October 1916, evidently never to return.[56] It had been an important three years, with far reaching consequences. What began as an assignment from the Biological Survey on a single problem had morphed into creative studies on a variety of topics, all of which helped move the science of waterfowl biology forward in important ways. His work contributed to the cause in other ways as well, not the least of which, as others have shown, was the creation of the Bear River Migratory Bird Refuge in 1928.[57] As his occasional references over the ensuing years to "the old time on the Bear River marshes" and the "many exhilarating hours" he spent watching birds there indicate, it had been a good time for him, too.[58] On all fronts, his assignment in Utah appears to have been a match made in heaven, one of those rare combinations in which everyone and everything involved—the man, the birds, the place, and the discipline—came out better for the experience.

Notes

1 Herbert Gardner, *Come Duck Shooting with Me* (New York: Knickerbocker Press, 1917), 119–23. Dating this encounter is problematic. Gardner, who published the story in 1917, reported that Jimmy told it to him three years after it happened. By that reckoning, the latest it could have taken place was 1914, although that would require Gardner to have both written it and published it the year he heard it. Alexander Wetmore, however, did not begin his studies of lead poisoning until 1915; that Jimmy remembered him speaking about his experiments on that issue means that the two men could not have met until that year at the earliest. I have opted to place the encounter in 1915—the closest date to 1914 (that is, a minimum of three years before 1917, as suggested by Gardner's account) that Wetmore could talk about lead poisoning.

2 The following biographical sketch is compiled from John K. Terres, "Smithsonian 'Bird Man': A Biographical Sketch of Alexander Wetmore," *Audubon Magazine* 50 (1948): 160–67; Paul H. Oehser, "In Memoriam: Alexander Wetmore," *The Auk* 97 (July 1980): 608–15; and S. Dillon Ripley and James A. Steed, "Alexander Wetmore, 1886–1978: A Biographical Memoir," *National Academy of Sciences Biographical Memoir* (Washington, D.C.: National Academy of Sciences, 1987), 597–626.

3 Oehser, "In Memoriam," 608.

4 For an excellent overview of this period in ornithology, see Mark V. Barrow, Jr., *A Passion for Birds: American Ornithology after Audubon* (Princeton, NJ: Princeton University Press, 1998).

5 For the most comprehensive treatment to date of Wetmore's time on the Bear River marsh, see Henry M. Reeves, "Alexander Wetmore," in *Flyways: Pioneering Waterfowl Management in North America*, ed. A. S. Hawkins, R. C. Hanson, H. K. Nelson, and H. M. Reeves (Washington, D.C.: United States Department of the Interior, Fish and Wildlife Service, 1984), 75–81. See also Terres, "Smithsonian 'Bird Man,'" 161; Guy A. Baldassarre and Eric G. Bolen, *Waterfowl Ecology and Management*, 2nd ed. (Malabar, FL: Krieger Publishing Company, 2006), 8; Robert M. Wilson, *Seeking Refuge: Birds and Landscapes of the Pacific Flyway* (Seattle: University of Washington Press, 2010), 75–76; and J. Wallace Gwynn, "History of the Bear River Migratory Bird Refuge, Box Elder County, Utah," in *Great Salt Lake: An Overview of Change*, ed. J. Wallace Gwynn (Salt Lake City: Utah Department of Natural Resources, 2002), 381.

6 Baldassarre and Bolen, *Waterfowl Ecology and Management*, 286, 288.

7 John A. Kadlec, "Avian Botulism in Great Salt Lake Marshes: Perspectives and Possible Mechanisms," *Wildlife Society Bulletin* 30 (2002): 987.

8 Baldassarre and Bolen, *Waterfowl Ecology and Management*, 289.

9 Baldassarre and Bolen, 286, 289–90.

10 Alex[ander] Wetmore, *Mortality Among Waterfowl Around Great Salt Lake, Utah*, Bulletin of the U.S. Department of Agriculture No. 217 (Washington, D.C.: Government Printing Office, 1915), 2–3; Alexander Wetmore, *The Duck Sickness in Utah*, United States Department of Agriculture Bulletin No. 672 (Washington, D.C.: Government Printing Office, 1918), 2–5.

11 "Ducks Barred from Utah Tables," *Deseret Evening News*, September 21, 1910, 3.
12 "Ducks by Thousands are Dying of Roup," *Deseret Evening News*, September 10, 1910; "Ducks Barred from Utah Tables," 3; Jack Ray, "Great Salt Lake Duck Club History," unpublished manuscript, 9.
13 "Eastern Expert's Duck Report," *Box Elder News*, October 27, 1910, 6; Wetmore, *Mortality Among Waterfowl*, 5–6.
14 Wetmore, *Mortality Among Waterfowl*, 3; Wetmore, *Duck Sickness in Utah*, 6–7.
15 Wetmore, *Mortality Among Waterfowl*, 5; *Duck Sickness in Utah*, 7; Alexander Wetmore to E. M. Sackett, March 9, 1925, Record Unit 7006, Alexander Wetmore Papers, Smithsonian Institution Archives, Washington, D.C. In addition to Wetmore's letter to Sackett, the Smithsonian houses at least twelve letters from Sackett to Wetmore, ranging in date from January 25, 1917, to March 25, 1925.
16 Wetmore, *Mortality Among Waterfowl*, 4–6.
17 Wetmore, 5.
18 Wetmore, 6–8.
19 Wetmore, *Duck Sickness in Utah*, 12–14.
20 Wetmore, 15, 17. Biologists are still trying to determine the precise conditions that precipitate an outbreak.
21 See J. C. Geiger, E. C. Dickson, and K. F. Meyer, *The Epidemiology of Botulism*, U. S. Public Health Bulletin No. 27 (Washington, D.C.: Government Printing Office, 1922), 1–119.
22 E. R. Kalmbach, "Progress in Western Duck Sickness Studies," *Science* 75 (January 8, 1932): 57–58; J. Frederick Bell, George W. Sciple, A. A. Hubert, "A Microenvironment Concept of the Epizoology of Avian Botulism," *Journal of Wildlife Management* 19 (July 1955): 352–57.
23 Kalmbach ran out of space to refrigerate tissue samples from birds that had died of the disease and was forced to conduct his tests with nonrefrigerated samples. Doing so, he obtained a series of "wholly unexpected" results that suggested botulism might be the cause of the sickness. Further tests by the Bureau of Animal Industry found *C. botulinum* Type C spores in the mud that, when cultured in the lab, produced "a toxin of rather high potency." Researchers were also able to culture *C. botulinum* from the tissues of birds that had died from the sickness, and two years later managed to isolate the toxin in naturally occurring waterfowl food in areas where the disease was manifest. See E. R. Kalmbach, "Western Duck Sickness Produced Experimentally," *Science* 72 (December 26, 1930): 658–60; L. T. Giltner and J. F. Couch, "Western Duck Sickness and Botulism," *Science* 72 (December 26, 1930): 660; and Kalmbach, "Progress in Western Duck Sickness Studies," 57–58.
24 Wetmore, *Mortality Among Waterfowl*, 8–10; Wetmore, *Duck Sickness in Utah*, 20–24.
25 Baldassarre and Bolen, *Waterfowl Ecology and Management*, 290.
26 Wetmore, *Mortality Among Waterfowl*, 10; Wetmore, *Duck Sickness in Utah*, 25. Evidence that Wetmore's ducks fully recovered from botulism continued to accrue long after he left Utah for other projects. The oldest banded bird that had been recorded as of 1933, in fact, was an adult pintail that Wetmore banded on September 16, 1914, and that was shot in California in October 1926. Frederick C. Lincoln, "Bird Banding," in *Fifty Years' Progress of American Ornithology, 1883–1933*, ed. Frank M. Chapman and T. S. Palmer (Lancaster, PA: American Ornithologists' Union, 1933), 86.
27 Wetmore, *Mortality Among Waterfowl*, 10.
28 Harold B. Wood, "The History of Bird Banding," *The Auk* 62 (April 1945): 256–60.
29 Wood, "History of Bird Banding," 260–62; Leon J. Cole, "The Tagging of Wild Birds: Report of Progress in 1909," *The Auk* 28 (April 1910): 167–68; Leon J. Cole, "The Early History of Bird Banding in America," *Wilson Bulletin* 34 (June 1922): 111.
30 Wood, "History of Bird Banding," 260–63.
31 Cole, "The Early History of Bird Banding in America," 112–13; Wood, "The History of Bird Banding," 263; S. Charles Kendeigh, "In Memoriam: Samuel Prentiss Baldwin," *The Auk* 57 (January 1940): 4.
32 Wood, "History of Bird Banding," 261; Baldassarre and Bolen, *Waterfowl Ecology and Management*, 324.
33 Alexander Wetmore, *Migration Records from Wild Ducks and Other Birds Banded in the Salt Lake Valley, Utah*, United States Department of Agriculture Department Bulletin No. 1145 (Washington, D.C.: Government Printing Office, 1923), 2.
34 Wetmore, *Migration Records*, 2–13; Kendeigh, "In Memoriam," 4.
35 Lincoln, "Bird Banding," 69; Terres, "Smithsonian 'Bird Man,'" 161.
36 Frederick C. Lincoln, *The Waterfowl Flyways of North America*, United States Department of Agriculture Circular No. 342 (Washington, D.C.: Government Printing Office, 1935), 3.
37 Lincoln, *Waterfowl Flyways*, 3–9.
38 Wetmore, *Migration Records*, 3. While the Bear River marsh is assigned to the Pacific Flyway for today's management purposes, banding studies show that it continues to serve as an important crossroads for a number of migration patterns. See Bridget E. Olson, Karen Lindsey, and Victoria Hirschboeck, *Bear River Migratory Bird Refuge Habitat Management Plan* (Brigham City, UT: U. S. Department of the Interior, Fish and Wildlife Service, 2004), 4; Vanez T. Wilson and Rachel L. Carson, *Bear River: A National Wildlife Refuge* (Washington, D.C.: U.S. Fish and Wildlife Service, 1950), 12; John A. Kadlec and Loren M. Smith, "The Great Basin Marshes," in *Habitat Management for Migrating and Wintering Waterfowl in North America*, ed. Loren M. Smith, Roger L. Pederson, and Richard M. Kaminski (Lubbock: Texas Tech University Press, 1989), 453.
39 Lincoln, "Bird Banding," 76.
40 Wetmore, *Duck Sickness in Utah*, 9; Alexander Wetmore, *Lead Poisoning in Waterfowl*, United States Department of Agriculture Bulletin No. 793 (Washington, D.C.: Government Printing Office, 1919), 1–4.
41 Frank C. Bellrose, "Lead Poisoning as a Mortality Factor in Waterfowl Populations," *Illinois Natural History Survey Bulletin 27* (May 1959): 238; J. H. Bowles, "Lead Poisoning in Ducks," *The Auk* 25 (July 1908): 312–13; W. L. McAtee, "Lead Poisoning in Ducks," *The Auk* 25 (October 1908): 472.
42 McAtee, "Lead Poisoning in Ducks," 472.
43 Wetmore, *Lead Poisoning in Waterfowl*, 7, 9.
44 Wetmore, 3–9.
45 Wetmore, 8–9.
46 Wetmore, 6–8.
47 Wetmore, 9–10.
48 Wetmore, 11–12.
49 Baldassarre and Bolen, *Waterfowl Ecology and Management*, 299–300.

50 Cha[rle]s. T. Vorhies, "Notes on the Fauna of Great Salt Lake," *American Naturalist* 51, no. 608 (August 1917): 498.

51 Alexander Wetmore, "On the Fauna of Great Salt Lake," *American Naturalist* 51, no. 612 (December 1917): 753–55.

52 Alexander Wetmore, *Wild Ducks and Duck Foods of the Bear River Marshes, Utah*, United States Department of Agriculture Bulletin No. 936 (Washington, D.C.: Government Printing Office, 1921), 9–15

53 Wetmore, *Wild Ducks*, 3–6.

54 Wetmore, 6–8.

55 Baldassarre and Bolen, *Waterfowl Ecology and Management*, 229–31.

56 In April 1929, Wetmore reportedly had an "opportunity to visit the marshbirds on the Bear River Delta" and sent a telegram to the Bear River Club asking permission to stay at the clubhouse for two weeks. It is unknown if he did so. Jay Matt[h]ews, *Bear River Club* (n.p., n.d.), 197–98, Special Collections and Archives, Merrill-Cazier Library, Utah State University, Logan, Utah.

57 See Andrew J. Simek, "Western Duck Sickness: Avian Botulism and Conservation in the Bear River Marsh" (master's thesis, Utah State University, 2015).

58 Wetmore to Sackett, March 9, 1925, Wetmore Papers; Alexander Wetmore et al., *Water, Prey, and Game Birds of North America* (Washington, D.C.; National Geographic Society, 1965), 23.

Photo of Vinson Davis (holding Browning Auto 5 shotgun). Second man is believed to be Ephraim Dunn. The ducks are mostly green wing teal. Year unknown but likely around 1910. *Courtesy of Fred Davis*.

DUCK FEVER:

HUNTING CLUBS AND THE PRESERVATION OF MARSHLANDS ON THE GREAT SALT LAKE

BY JACK RAY

As the plane traversed the eastern margin of the Great Salt Lake, two passengers seated behind me speculated about an odd sight. Passing below them was a collection of cottages clustered along a canal that fed into shallow lakes. A polygamist community, they thought. In reality, they were looking at the legacy of duck hunting's surging popularity in late nineteenth-century Utah: a "duck fever" that eventually protected private marshes and prompted state and federal government action to preserve public marshlands. My fellow passengers saw one of the remaining holdouts against drainage, development, and water diversions. The Great Salt Lake duck clubs, many over a century old, still maintain tens of thousands of acres of one of the world's richest ecosystems.

When the first clubs emerged in the late nineteenth century, westerners were undergoing a transition in how they perceived and used wild game. Initially, in the Great Basin, products of the ecosystem—ducks included—had been used and traded primarily as part of a family economy but quickly became part of a capitalist exchange. Improved transportation networks facilitated the rise of trade, including creating a national market for Great Salt Lake waterfowl. At the same time, a growing class of sportsmen—recreational hunters, many of them from the middle and upper classes—embodied an emerging conservation ethos taking hold across the nation and, with it, new priorities for wildfowl and their habitat. They founded duck clubs and pressed for stricter game laws, cleaner water, and the protection of vast stretches of marshland to maintain adequate bird populations and areas for hunting. The duck fever of these recreational hunters laid bare the tension between the economic exploitation of wildlife and its preservation for aesthetic and recreational purposes. In the end, this produced the salvation, witting or unwitting, of a unique wild realm as big and as ecologically consequential as the Florida Everglades—the creation or preservation

of thousands of acres of wetlands at a time when marshes were considered swamps and the only good swamp was a drained one.[1] To be sure, this history is not one of unbroken success or unwavering commitment. Duck clubs often became the location of choice for development projects and drainage schemes—threats that have become more common and increasingly formidable in our time.

Many people living near the Great Salt Lake think of the lake, if they contemplate it at all, as an attractive nuisance that is more attractive with increasing distance and more of a nuisance the closer one's nose gets to it. But to millions of birds, the lake is worth far more than salt and sunsets. The lake and its marshy shoreline host more bird life than any other saline lake in North America and possibly the entire Western Hemisphere. If it were lost, several bird populations in the western half of North America would risk collapse and the effects would be felt from South America to the Arctic. Other than some brine shrimp and brine fly larvae-eating species such as eared grebes and Wilson's phalaropes, 90 percent of all bird life on the lake eschews its highly saline western two-thirds and concentrates instead on the fertile crescent of freshwater marshes, vegetated mudflats, and adjacent saltwater that curves roughly from Saltair on the south to the Promontory Peninsula on the north. The crescent is adjacent to most of the state's population.

In the mid-nineteenth century, when pioneers settled along the Wasatch Front, the lands lining the Great Salt Lake were more wet and watery than most people now recognize. The edge of the lake was dotted with smaller lakes, hot springs, playas, and sloughs that extended at least to 2700 South and east to Hot Spring Lake at Beck Street.[2] These included a number of sizeable but shallow lakes, often surrounded by marshes, that collectively encompassed several thousand acres of waterfowl habitat. Aside from Decker Lake, those lakes and sloughs are long since lost to memory, drained and buried under refineries, rail yards, airport runways, highways, and other development.[3]

Early visitors to the Great Salt Lake noted its abundant bird life, but few published sources mention waterfowl hunting before 1870. In 1868, the *Deseret News* noted that at the mouth of the Bear River, "for those who desire 'sport', in hunting, there are numerous flocks of wild duck, on the river, and other game convenient."[4] During the 1870s, some hunters sold their excess ducks in city markets as a way of financing their pastime, although there were some serious market hunters such as Ethan Petit who lived on the lower Jordan River. The *Salt Lake Herald* in 1873 reported hunters placing "little booths" (duck blinds) "on the shores of the many sloughs and lakes southwest and northwest of the city, and the hundreds of mallards, teal and wild geese displayed about town, and to be found on the restaurant tables, are excellent evidence that that class of game is abundant."[5] Duck was a preferred addition to local tables. As the *Herald* noted in 1904, "After duck season opens there is not much of a demand for chickens."[6] Each passing year found increasing enthusiasm for duck hunting as the number of hunters swelled. As the *Herald* observed, "duck fever is contagious."[7]

Notwithstanding this fervor, tensions began to manifest themselves between many duck hunters who valued the beauty and bounty of the marshes and those who sought to develop the marshlands in the name of "progress." The wetlands prized by duck hunters were targeted as prime land to be drained for farming and other uses. In 1887, the *Tribune* lamented the drainage of Midwestern marshlands that "have destroyed some of the best duck shooting grounds in the world."[8] Some people in Salt Lake City advocated draining the valley's marshlands. One of the first targets was Hot Spring Lake, a popular duck hunting spot. The *Tribune* described it in 1888 as a "nasty marsh," a "plague spot," and "a great menace to the city's health" whose drainage would create several thousand fertile acres in the surrounding area.[9] Plans to dredge Hot Spring Lake resurfaced a few years later, with the intent to use it as an irrigation reservoir.[10] In 1915, Salt Lake City drained the lake in the name of public health.[11]

Poor soil made the lands in the northwest quarter of the valley only marginally suitable for most farming, and consequently these lands were often not patented under the Desert Land Act until a later date.[12] Large-scale drainage

schemes kept reappearing, with the object of reclaiming marshlands.[13] In 1910, a plan arose that would drain all wetlands in the valley, including Church Farm Lake, Williams Lake, Hot Spring Lake, Black Sloughs, and other areas. In the place of wetlands, home to waterfowl and used by hunters, would stand "fine houses." Thus, "barren wastes" would be converted to productive farmland.[14] In the end, the marginal economic value of some of these lands may have helped protect them and also make landowners more amenable to alternate uses such as duck hunting.

In contrast to the views of those who would drain wetlands, many duck hunters were moved by the natural spectacle of the marsh and valued the recreation it provided. Noted local artists such as Samuel Jepperson catered to this aesthetic by painting scenes of duck hunting on Utah's marshes.[15] The Utah Palace Exposition Car was decorated with scenes of Utah, including one of duck hunting.[16] Some commentators recognized that the marshes also provided an economic return, both of ducks sold on the market and, later, through the money spent by duck clubs and duck hunters. The *Herald* decried those violating the duck laws and observed that "Utah's annual duck crop as a commercial commodity is worth several hundred thousand dollars in food and several million dollars in fun. It is the only crop that needs no tending and that grows best when alone." The *Herald* author then noted, with some amazement, that an enormous flock of ducks lifting from Bear River Bay sounded like six trains even from two miles.[17]

Duck hunting was big business by the late nineteenth century. Each year, just before the season opened, Salt Lake City's streets were overrun by men in hunting coats. Sporting goods stores sold out of guns and ammunition. The roads to the south shore marshes were clogged with hunters. On the night before opening day, numerous campfires could be seen burning in the marshes from 2700 South towards the Great Salt Lake. Similarly, the Ogden train station saw hunters arriving from across the country for transit to Corinne, and luxury private rail cars became a common sight in the fall. In 1904, the *Herald* declared that "duck hunting could properly be called the national sport of Utah."[18] A reporter described a typical opening day scene:

> From high on the Bailey Lake clubhouse, the sight for miles around resembled the fringe of an approaching prairie fire; the sound the bombardment of a fortress. In the far distance the twinkle of the city electric lights formed a strange contrast with the bright red flames of the quick firing pump gun. The whole country, from Murray on the south to the mouth of the Jordan river on the north, was fairly alive with the blaze and roar of thousands of guns in the hands of an army of hunters bent upon the destruction of ducks. . . . The flats immediately surrounding Williams Lake looked like a large picnic ground. . . . At 3 o'clock yesterday morning, the road from the city to Williams, Bailey's and the Black Sloughs looked like a parade of some kind. As one passed along the road, hundreds of hunters could be seen standing around the lowlands waiting for daybreak.[19]

With ever-increasing numbers of hunters flocking to the marshes, naturally, individuals banded together to acquire areas of exclusive access. This led to the formation of duck clubs, mostly concentrated on the north and south ends of the lake. In 1884, Salt Lake City hunters established the first known Utah duck club, the Salt Lake Sportsman's Club, on Utah Lake near Provo Bay.[20] The club apparently did not control any property but simply provided lodging and boats to its members. Conversely, farmers and others along the Great Salt Lake who owned marshland or playas that could be dammed realized they could establish a lodge or duck camp catering to hunters from outside the area and charge a fee for access, lodging, transportation, and boat rental. Camps tended to form in areas removed from the population centers, like Bear River Bay. In areas close to Salt Lake City, the property owner charged a daily use fee. Hunters then realized that, better yet, they could simply buy or lease their own land.

The town of Corinne, with its proximity to the Bear River Bay wetlands, saw most of the lake's market hunting-related traffic. The *Brigham City*

Davis Duck Camp on the Bear River, ca. 1900. *Courtesy of Fred and Gordon Davis, grandsons of Vinson Davis.*

Bugler in 1891 reported that "Corinne is booming; the duck season has opened. It was said of Corinne that she lived on ducks one-half the year and glorious expectations the other half."[21] Corinne also attracted a growing contingent of recreational hunters, first from Utah, then across the West and the nation. One 1894 newspaper reported, "duck shooting will soon be in order and Corinthians are making preparations to enjoy the sport. . . . [H]unting parties coming to Corinne will have the best kind of treatment and accommodation."[22] The paper declared that the ducks that year were "fat as little pigs."[23]

Among the state's duck hunters, Vinson ("Vince") Davis stood apart and exemplified the shifting nature of duck hunting. He was originally a prolific market hunter whose family homesteaded land in the Bear River Bay area. Over time, Davis developed a reputation as a crack shot and a reliable, straight-dealing person. He came to wide notice in 1894 when he shot 4,000 ducks in the first five weeks of the season. In 1900, Davis shot 1,021 ducks in a five-day period.[24] For years, he was considered "the best wing shot in Utah."[25]

The life of a market hunter was arduous. The day started early with what was often a difficult journey across shallow mud flats to the shooting grounds. Oars often became simply poles for pushing the boat over mud. Longer push poles were sometimes used, or the hunter knelt on one knee and used his other foot to kick the boat forward. Upon arriving at the hunting site, the hunter cut reeds to build a blind and used a spade to turn over dozens of mounds of mud in the two-inch deep water that would act as decoys, usually called simply "muds." He spent the day fighting off clouds of mosquitoes early in the season or suffering through bitter cold winds later in the season. After a long day, he made the return trip in a boat laden with ducks. He turned the bag over to his team of duck pickers (often female relatives), who spent the rest of the day or night picking ducks by hand.[26] In order to save on expenses, the hunter was typically up much of the night reloading hundreds of brass shotgun shells.[27]

Davis quickly recognized that recreational hunters were a market of a different kind. Around 1890, he built a duck camp for other hunters to hunt on his property and other land where the Bear River fans out across Bear River Bay. Like Davis, most of the early hunting guides were former market hunters. While the activities were similar, guiding was not as

Duck blind with mud daub decoys on Bear River Bay 1914. *Courtesy of Randy Iverson.*

demanding and could pay better. As one guide at the Duckville club explained, "I come down here shooting a little and guiding a good deal. There's good money and lots of fun in guiding." Rather than being out all day to maximize a bag, the guide and his sport often started out around 9:00 a.m. and returned about 4:00 p.m.[28] The guide still had to row, push pole, or kick the boat through mud. He usually built a blind around the boat by placing willows around the center portion and weaving tule grass through the willows.[29] Alternatively, he might dig a sink box into the mud. After preparing the blind, the guide made "muds."[30] As the hunter shot ducks, the guide placed them on top of the daubs or set them on the outside edge of the daubs propped up with small stakes. Once the sport was situated, the guide could relax or even nap before rowing (or shoving) the sport back in time for dinner.[31] There was no need to stay up all night reloading shells as members brought their own store-bought ammunition.

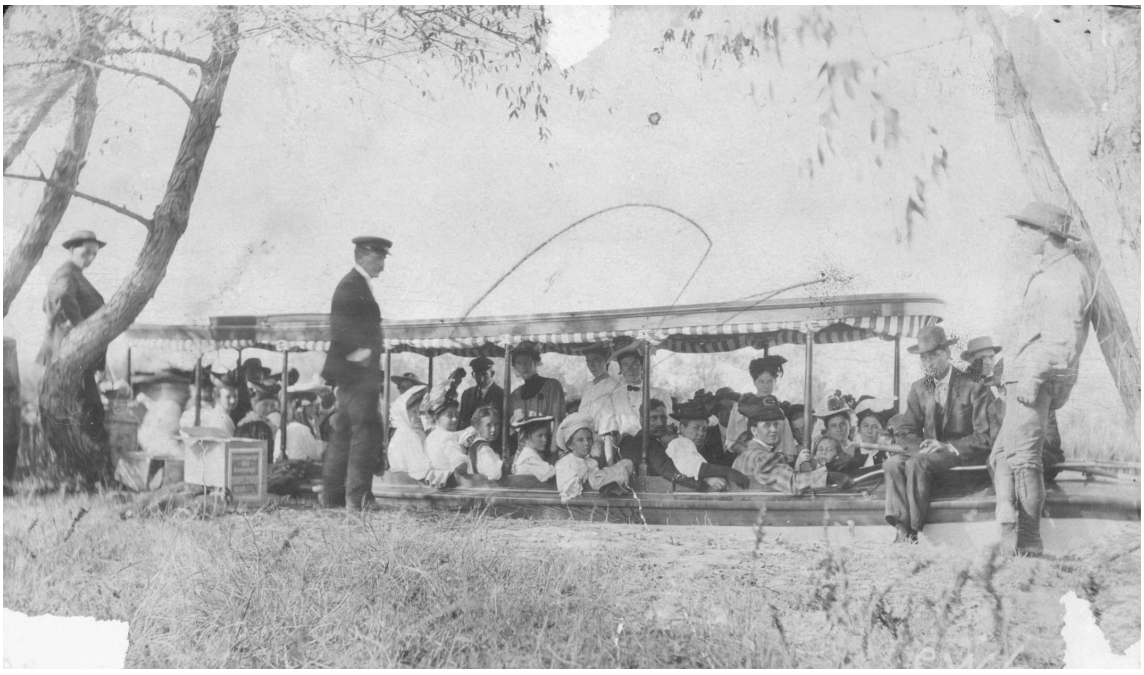
Vinson Davis promoted his hunting camp with an advertising letter, addressed from "the center of the greatest duck-shooting swamps of the West and probably the World." The camp's rate was $2.00 per day that included board, lodging, and boats, plus $1.75 for the round trip from Corinne to the camp. If anyone questioned just how good the hunting was, Davis listed his daily bag for fifty-one days totaling 4,220 ducks.[32]

The Davis Duck Camp gained increasing national attention as happy customers spread the word. William C. Daniels, a retail magnate from Denver, came duck hunting in 1899 and penned a wonder-struck account of his descent down the Bear River.

> With a flying machine the distance from Corinne to Vince Davis' camp would not be over ten miles across a country as flat as a polo field, but the Bear River is as frisky as a kitten chasing its tail and travels nearly thirty miles to get ten. You box the compass a dozen times in two-hours-and-a-half's voyage and you are sorry—at least we were—when it's over. The eastern wall of mountains swings now to the right, now to the left, now in front, now behind in a solemn saraband as the river twists and turns. The launch throbs us on and on and at last sweeps round, serious and stately as any ocean liner, to the landing where the Lord of the Manor of Duckville, Vince Davis himself, stands ready to welcome us.[33]

Of the "Duke of Duckville," Daniels said "a nicer nobleman of sport I never met anywhere."[34] The surrounding marshes were "covered over, so to speak, with a veneer of from one to three inches of water. . . . Theoretically, a man might wade across any of these lakes but practically it would kill him off before he had gone half a mile." The work of crossing these areas even in a boat was "exceedingly hard."[35] Daniels shot seventy-two ducks a day on average during a sixteen-day trip. If you believe in the prayer "lead us not into temptation," Daniels advised, stay away from Duckville.[36]

Within a year of Daniel's visit, a group of industrialists, bankers, and politicians from Denver and elsewhere entered into an agreement with Vinson Davis to purchase 2,000 acres of his land for $6,000 in order to establish the Bear River Duck Club.[37] The *Salt Lake Herald* marked the sale as "a new era in duck shooting in the state."[38] Articles in national magazines and entire books rhapsodized about the amazing Bear River Bay and its flagship duck club. The charter Bear River Club membership gilded the lily in creating arguably the most modern and comfortable accommodation in the entire state, possibly inspired by the ornate East Coast duck club lodges in places such as Chesapeake Bay.[39]



Club launch at Corinne on the Bear River 1914. Possibly taking local residents on an excursion. *Courtesy of Randy Iverson.*

Although remote, the club boasted steam heat, hot and cold water in every room, an electric plant, five hundred tons of ice, telephone services, and other amenities.[40] A thirty-foot long canopy-covered launch ferried members and their guests from Corinne to the club.

The club was also a workplace for many locals. Resident on site were the manager, a steward, guides, a team of duck pickers, housemaids, chefs, and waitresses. Gwen Rader, a daughter of Vinson Davis, was recruited into duck picking in 1918 as a twelve-year-old when her school closed due to the influenza epidemic. She picked as many as five thousand ducks a year for most of her life.[41] "When I first picked ducks, they paid three cents. In picking ducks, I could earn three dollars a day. I was just young and I thought that was real good. So I've been a duck picker all my life." The fee went to seven cents, then ten, then twenty. Early in the season, the many pinfeathers made picking time consuming. Gwen hated picking diving ducks like canvasbacks because it took three times as long.[42] She once picked seventy-five canvasbacks in one day and felt as if her arms couldn't take any more. As a result, the pickers often set the canvasbacks aside, not wanting to pluck them. When her father saw this, he convinced the club to pay a dime for divers while other ducks were three cents.[43] The pickers picked all day long and then trimmed and cleaned the birds at night. They put the picked ducks in a large trough and poured river water over them, then hung the ducks on racks to drain. Vinson Davis woke at 4:00 a.m. to pack the ducks for shipping, and sometimes shipped as many as seven hundred ducks to buyers such as the Royal Café in Salt Lake City.[44]

After the hard work of rowing, poling, and pushing boats over miles of mud and marsh or after picking hundreds of ducks and preparing them for shipping, the staffs of the different clubs sometimes gathered for dances and other social functions. These dances made an impression on Einar Larsen, the son of a market hunter and guide, who worked at the clubs as a child.

> It was during the time when the guides and their girlfriends and their mothers and fathers and all of them danced in the guide house. They threw the furniture out and spent the night dancing. Somebody played the

> harmonica and one fellow played the violin. I think they had an old piano out there and one of those, what do you call those music boxes, an accordion. . . . It was about time to break up the party. It was getting way late and they had to wake up early to take the men out shooting. They were going back to their different clubhouses and guide houses where they lived. They were loading one boat and the fellow that had the violin had put the violin in this boat and somehow or other the boat capsized. Everybody was hollering 'save the women, save the women, get the boat turned out, help them out of there.' And the man that owned the violin said 'To hell with the women, save the violin.' I think eventually they found the violin and he was happy.[45]

The reputation of the area and the club quickly spread, attracting wealthy members. Although heavily weighted towards out-of-state members, the club was careful from the beginning to include influential Utahns, including S. W. Eccles and Senator Thomas Kearns.[46] Salt Lake and Ogden newspapers often reported on the magnates, tycoons, politicians, industrialists, and glitterati who came to Bear River Bay.[47] The prominent visitors and whirlwind of activity became a source of fascination for residents of Corinne and Brigham City. Private rail cars, imported chefs, fancy lodging, and the special boats for ferrying the well-heeled to and from the clubs all drew attention. Lois Harlin, at the turn of the century a small girl living in Corinne, later recalled the excitement of people coming from across the country and steamer trunks covered with stickers from European countries. "My goodness, that was a busy place in the fall. . . . There were so many people around the depot." Harlin was excited when her father, a shipping agent for the railroad, would occasionally get a box of oven-ready teal.[48]

Even at the creation of the new club, however, some Utahns recognized that it would likely result in the exclusion of many local sportsmen who had previously hunted at the Davis Duck Camp and that the nascent push to ban market hunting would deprive people who enjoyed eating duck but not hunting them. The *Salt Lake Tribune* noted with a mixture of sadness and resignation that "the finest duck shooting grounds in the West have come under the control of this club."[49] For others, the Bear River Club's intention to prohibit market hunting and egg collecting on its property and support for the newly enacted forty duck daily limit was a welcome change—one that would facilitate preservation of the marshlands.

Other sportsmen saw the success of the Bear River Club and bought or leased land to ensure they had a place to hunt. This led to the formation of several clubs, such as Duckville, the Provo Club, and the Cache Valley Club at the mouth of the Bear River and the Chesapeake Duck Club further north.[50] Some of these clubs had relatively limited land holdings of up to a few hundred acres while others encompassed thousands of acres. The smaller clubs were mainly clubhouses and boat houses located at access points to the portions of Bear River Bay that were not in private hands.

As at the Bear River Club, these clubs attracted members among the elites. One new club sold all of its memberships in four days to prominent Utah businessmen, professionals, and politicians.[51] Duckville Duck Club was originally the haunt of a mix of Salt Lake businessmen and later also of movie stars and other wealthy out-of-state hunters.

These clubs were often viewed as a benefit to wildfowl and to standards of sporting behavior; however, their motives should not be overstated. Raye Ringholz, in her Duckville history, wrote that the club was not exactly created as "a civic-minded conservation project . . . but, certainly, they organized for the purpose of protecting certain areas to guarantee continuation of their own hunting and that of their guests for years to come."[52] Notwithstanding the proliferation of clubs in the region, much of Bear River Bay itself remained public land that, by the 1920s, would become the focus of efforts to establish a refuge for the benefit of wildfowl and those who hunted them. In the meantime, the bay continued to be the gold standard for duck hunting. It was variously referred to as the "Paradise of Duck-dom," "duck Elysium," and "a veritable Valhalla for ducks."[53] Van Campen Heilner, a well-known sporting

author of the era, gushed about the experience of duck hunting on Bear River Bay in the 1920s:

> The Bear River marshes contain approximately four hundred square miles of the most wonderful duck shooting grounds in the world. Here for untold centuries the wildfowl have come each year by the million. This is no exaggeration for I saw them myself; rafts of ducks that made the vast shoals of geese off Ocracoke seem puny in comparison. I have seen ducks rise on the Bear in clouds like swarming bees that truly darkened the sun, geese in legions, white brant by the thousands; honking, quacking armies of wildfowl flying in wedge shaped phalanxes down the years of my memories that are always before me when I close my eyes. It is one of the great marshes of all time. . . . Like floating islands sat the ducks, miles upon miles of them, thousands and thousands of acres of waterfowl. Not alone was the water jammed solid with them, so was the air. . . . On sped the Mud Queen and great rafts, islands, of fowl arose with deafening roar of wings to give us way. No matter where I looked—ducks—ducks—ducks. The water, the sky, the horizon was full of them. . . . On and on through the night they would be coming, rank after rank, squadron after squadron, until the last of that vast host had satisfied the instinctive urge which had driven them relentlessly on over leagues of land and sea. They had reached their Promised Land.[54]

Vince Davis predicted correctly that the market era would give way to an increasing demand for the type of recreational experience that Mr. Van Heilner described. As explained below, this was a gradual but hotly debated transition with each side claiming the moral high ground. The club that grew from his duck camp eventually became the largest club on the Great Salt Lake and is today one of the last extant Grand Dame duck clubs in the nation.

Davis once started a poem to his wife Melissa in 1906 with the stanza:

> I am sitting at the door of the cabin
> painted Brown

Mud Queen-style boat, ca. 1920s. These boats were developed by duck hunters in 1910 to traverse the large expanses of extremely shallow water in the Great Salt Lake. Invented at Duckville and the Bear River Club, they sported a Model A engine and metal paddle wheels that would propel a boat over the thin "veneer of water" but would splutter and flounder when its paddles could not grab mud. They were eventually displaced by airboats a few decades later. *Special Collections and Archives, Merrill-Cazier Library, Utah State University, photo no. SCAP0020Bx001–017.*

On the Banks of the Old Bear River in
the little duckville town
And my thoughts are now of you of
days long gone before
When your sweet face used to greet
me at this little cabin door.[55]

Davis continued to occupy that cabin and care for his "little duckville town" and surrounding area for twenty-two more years. He died suddenly of an apparent heart attack at the Bear River Club on August 2, 1928.[56] Many of his children continued to be involved in the duck hunting business as club managers or duck pickers. By the time of his death, nearly a hundred thousand acres of Bear River Bay were protected in duck clubs and state and federally managed areas.

Meanwhile, on the south shore of the Great Salt Lake, a duck hunter had composed his own marsh poetry:

Ship me somewhere west of Jordan,
where the festive ducklets play;
Stake me to a cold ham sandwich, for
I haven't long to stay.
Summon forth my trusty spaniel; load
my double-barreled gun,
For the shooting season opens with
the rising of the sun.
Don't forget the ammunition; bring
along a shot of booze;
Lay me out a pair of leggings, also
bring my wading shoes.
Tell the missus not to worry, I'll be
back in time for lunch
With a bag of feathered beauties, else
I've had a damned poor hunch.[57]

The same forces and motivations that led to the creation of clubs in the Bear River area led to the propagation of clubs on the south shore of the lake close to Salt Lake City. The south shore clubs drew a more economically diverse membership and one that was almost exclusively local, but the end result of club creation was much the same.

One of the first attempts to establish a duck club on the south shore of the Great Salt Lake came in 1892 when a group of hunters proposed to build a bunkhouse near the mouth of the Jordan River and to form the Jordan River Duck Club.[58] It is unclear what came of this; however, on September 17, 1898, the New State Gun Club incorporated and acquired 1,200 acres of land in the same general area. Members built a clubhouse to accommodate twenty-five people.[59] Spurred by annually increasing fervor, the formation of the first club opened the gates to a south shore land rush that saw dozens of clubs form on thousands of acres over the next fifteen years.

The *Tribune* noted, just before the 1901 season was set to open, that "owing to the organization of many gun clubs for shooting ducks, the man who does not belong to such a club will find it very hard to secure any shooting at all the present season.[60] According to the *Herald*, the unattached hunter would be relegated to the Jordan River, Surplus Canal, and smaller wetlands. Club formation did not cool the increasing heat of duck fever as sales of guns and ammunition were greater than ever. The *Herald* also reported that duck clubs benefited wildlife by improving and greatly expanding habitat, enforcing game laws, and protecting nesting birds.

> The duck club is the new feature in duck shooting in Utah. . . . Limited by law to forty birds in one day and limited to his shooting ground, the hunter is not able to slaughter the birds as in the past. The unattached hunter, that is, one who is not a member of one of the numerous duck clubs around the state, is prone to object to the duck club, claiming that it shuts him off from the best feeding grounds in the state. Old hunters and the true sportsmen, however, welcome the advent of the duck club as a protection to the birds. These clubs they say, help the game warden in enforcing the limit of bags, and many of them allow shooting upon their grounds but two days out of each week. . . . All this . . . helps to make this state an ideal one for duck shooting, and in the opinion of many old-timers Utah will be a great rendezvous for ducks for years to come.[61]

The area extending south of the lake shoreline contained some fairly permanent but shallow lakes and marshes as well as many playas

and flats that were generally dry. At times, a spring or water flow filled some of these basins. To maximize the habitat on their property, many clubs constructed dikes and dams and acquired water rights. Many clubs placed long low dikes across flats, dug channels, or dammed playas. This preserved, created, or stabilized thousands of acres of habitat on the clubs' property. In 1901, the Black Sloughs Club built dams on its property to fill otherwise dry basins.[62] The New State Club began the construction of dikes and canals in 1902.[63] Other south shore clubs followed suit.[64] Dike construction also occurred in the Bear River area. The Bear River Club eventually constructed miles of dikes to stabilize or deepen water levels or flood significant additional acreage. As the *Salt Lake Tribune* observed in 1909, "But for the many duck clubs of today it would be impossible to go out and shoot half a dozen ducks in a day. The clubs have converted thousands of acres into excellent feeding grounds, and the result is quite apparent."[65] This water engineering also became essential to preserve and create wetlands in the face of deliberate wetland drainage and ever-increasing diversion of water in the Great Salt Lake's main tributaries for agricultural and other purposes. Early on, the Bear River Club fought to ensure adequate water when facing a shortage due to agricultural diversions.[66]

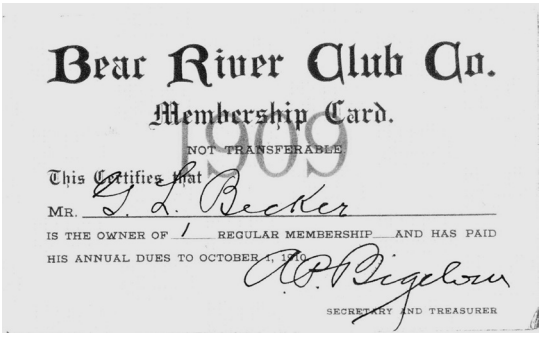
While the members of the Bear River Club enjoyed elegance and every modern convenience, most other clubs' accommodations were bare in comparison. The Black Sloughs clubhouse was a spartan wooden structure that included bunks for fifty-six people.[67] The Bailey Lake clubhouse was a farmhouse.[68] This was common on the south shore as many clubs were on property leased or purchased from farms.[69] Photos of the early south shore clubhouses usually show simple wooden structures adorned only with a ladder to a rooftop lookout. At some clubs, members built their own small one or two room cabins and boathouses as places to store gear and boats out of the weather, spend the night and stay warm. These were austere and usually lacked plumbing or electricity.[70]

The proliferation of clubs began to generate an outcry from those who could not or did not want to join even if they had previously paid for access. "A great wail was set up by the hunters at the beginning of the season on account of all the good shooting grounds being controlled by the numerous duck clubs that sprang into existence."[71] The Surplus Canal, Jordan River, Williams Lake, and other ephemeral lakes to the west were still open to the public (sometimes for a fee) but crowded.[72] There was a hunter every ten feet on the Surplus Canal.[73] The *Tribune* noted that "There are a great many sloughs along the Saltair tracks and either end of the large Williams Lake will afford just as good shooting as can be found on any club."[74] Indeed, passengers on the train to Saltair were amazed at the "vast hordes" of waterfowl on Williams Lake.[75]

While a trip to a north shore club might involve a private Pullman and canopied launch, a trip to a south shore club likely involved a wagon, buggy, bicycle, or, later, the "red devil" auto.[76] The *Deseret Evening News* described a trip to the New State in 1907 that would have been typical for a south shore duck club. The hunter took a train to Woods Cross where a stage met him for the ride to the club. He approached the

> little light off in the darkness where kind words and a warm supper are waiting in a cozy clubhouse. . . . Dawn of Saturday finds the hunter pushing a small boat. . . . As the morning light begins he is located on the edge of some lagoon of which there are several, with rushes built around his boat and his decoys sitting in the open water. . . . [He] tries for the swift flying mallard . . . and they come tumbling down among his decoys. . . . The rule [about which ducks are edible] does not hold here as there are no varieties that are not edible. Many a hunter kills 22 large ducks for his friends and three teal for his own home knowing well that the little fellows make the daintiest table fare. . . . The matter of protecting hunting that it may be a recreation . . . rather than a means of securing a livelihood . . . was a thing undertaken none too soon.[77]

Thinly veiled social distinctions began to play out. While some clubs, such as the Bear River


Bear River Club Co.
Membership Card.
1909
NOT TRANSFERABLE
This Certifies that
MR. G. L. Becker
IS THE OWNER OF 1 REGULAR MEMBERSHIP AND HAS PAID
HIS ANNUAL DUES TO OCTOBER 1, 1910
A. P. Bigelow
SECRETARY AND TREASURER

Bear River Duck Club membership card of Gustav Becker, signed by Archibald Bigelow. Gustav Becker was a leading Ogden brewer, and Bigelow an Ogden banker and businessman. Along with John Browning, the highly influential gun designer, and his brother Matthew, all avid duck hunters, they were sometimes called "the Four B's." *Courtesy of Mickey and Liz Roach collection.*

Club, catered to the very well heeled, most clubs had a membership much closer to the middle class. As a reporter visiting the Black Sloughs Club noted in 1902, the membership is "composed of business men in nearly every walk of life."[78] Still, the clubs limited access and advocated for laws that would curtail spring seasons, outlaw certain hunting methods, and ban the sale of game on the market.

Often this argument was couched in terms between a "true sportsmen" and a "mere pot hunter." One paper excoriated the pot hunter as "worse than the poacher," the "hyena of the sporting world."[79] In response, the *Herald* noted that the so-called pot hunter killed ducks to feed his family even though an element of sport and relaxation entered into it. "Every man who goes out with a gun is a pot hunter. . . . The toothsome teal, the juicy mallard, the redhead and the sprigtail, each after its kind, makes powerful good filling for an empty inside." The editorial even acknowledged that the market hunter had his use. Without him, the population that didn't go to the sloughs "would go duckless through the season. As it is, for 25 cents—and almost anybody can raise that sum—the poor stay-at-home can enjoy the supreme test of the quack-quack pudding, which, as has doubtless been surmised, is in the eating."[80]

As early as 1880, signs of friction between market hunters and sportsmen had begun to appear. While market hunters wanted to maximize their take, some recreational hunters started to advocate for the passage of laws "for the consistent preservation of game," including limits on spring hunting.[81] Sentiment turned steadily against the market hunter. The game commissioner lamented the market hunters' "inordinate slaughter" of ducks, which he believed was decimating bird numbers.[82] As years passed, he continued to complain that too many ducks were being shot and proposed bans on market hunting and the spring season.[83] Although Utah had adopted regulations that prohibited shipment of game out of state in 1899, the law was routinely ignored for years.[84] However, it was the first step towards the eventual abolition of market hunting.

The fight over market hunting became a significant issue in the state legislature in the first decades of the twentieth century. Political forces protecting market hunting included those that benefited from the market such as restaurants and hotels.[85] While duck hunting legislators generally opposed market hunting, other legislators preferred the market hunter to "the 'mere dudes' who want to dress up and go forth in the sloughs to lord it over the game that make their home there."[86] In 1915, at a national meeting, Utah's game commissioner demanded an end to the duck market, as it propagates "the most undesirable of all gunners: the pot hunter."[87] The *Logan Republic* compared the noble instinct of the "genuine sportsman" for whom time in the outdoors is a tonic and exhilarating with the pot hunter who is not only "the real enemy of game" but a man "of roving instincts and vagrant habits."[88] Notwithstanding the dim reputation of market hunters, the papers continued to remind Utahns to order wild ducks ahead of time from the market to ensure they would not be without.[89]

As with market hunting, spring shooting fell into disrepute. Hunters began circulating petitions to abolish spring shooting, which the *Herald* called "a relic of barbarism."[90] The Bear River Club was one of the leading voices in this effort. The *Ogden Daily Standard* reported that "this great club, always leading the sentiment in conserving the state game, and always foremost for better preservative game laws, will not permit its members to shoot [in the spring] on

its grounds."[91] Even a seasoned market hunter like Vince Davis began to have misgivings about spring shooting. In February 1904, he went spring shooting but then "did not go shooting again for some times as the birds were not fit for use. Spring shooting should not be allowed as the birds are preparing to nest."[92] The state legislature ended spring shooting in 1905.

More regulations followed. In 1907, Utah reduced the daily limit to twenty-five.[93] Two years later, hunters pushed for legislation to reduce the total possession limit to twenty-five birds.[94] This was designed to prevent hunters or clubs from circumventing the daily limit by claiming that the ducks were shot over several days. It was also intended to prevent a person or club from aggregating ducks from several hunters to resell to the market. If properly enforced, this promised to end what was left of market hunting. Governor Spry, a duck hunter himself, signed the bill in March 1909.[95]

The end of legal market hunting throughout the nation came with adoption of the federal Migratory Bird Treaty Act in 1916 and enactment of related legislation in 1918 banning market hunting. Some observers outside the duck hunting community apparently assumed that club members were very sensitive to economic constraints. As a result, they speculated that the end of market hunting spelled doom for many clubs and unemployment for their staffs as members would presumably no longer hunt if they could not sell their excess ducks on the market.[96]

Along with public hunting access, botulism proved to be an important trigger for the acquisition and development of public marshes and helped bring national support to a preservation effort that Utah was already actively pursuing. Although it took several decades to determine the cause of "duck disease" or "duck malady," local observers believed that it posed a threat to waterfowl and waterfowling. The first major recorded outbreak was in September 1910, resulting in a flurry of investigation and finger pointing. The state temporarily banned ducks from the market and most clubs postponed their season.

In response to the 1910 outbreak, the New State club appointed a committee to take action against Salt Lake City to protect its water and to stop the dumping of sewage into the Jordan River, which many people blamed for the duck deaths.[97] Duck hunters pushed legislation to prevent the discharge of sewage into streams. A bill to remedy the sewage issue failed as the salt industry and Saltair feared that it would send sewage closer to their facilities.[98] Representatives of the clubs met with city officials.[99] In the end, the New State Duck Club granted an easement to Salt Lake City to run sewage past the western side of its property to the Great Salt Lake but far from Saltair.[100] By fall, the city was moving forward to drain sewage directly into the lake bypassing the lower stretch of the Jordan River.[101]

Most people in the late nineteenth and early twentieth centuries viewed the marshes and the waterfowl that inhabited them in more or less utilitarian terms. While this is clearest in

Duck pickers holding Canada geese at the Bear River Duck Club, 1914. Local women, often related to male guides, worked in many capacities at the clubs. *Courtesy of Randy Iverson.*

the case of the market hunter, it also applied to the "sportsman" as well. Duck hunters viewed time in the marsh as an important tonic for the world-weary working man (women hunted too but were rarely written about), while also providing delicious food for the family. Hunters valued marshes for the ducks they produced and the perceived restorative effects of time afield and not overtly because of notions of ecological stability, biodiversity, or other concepts that might be considered important today. Given that, it is not surprising that when Utah chose to become actively engaged in preserving wetlands around the Great Salt Lake, it did so with the intent that individuals would have a place to experience nature as a duck hunter. The state made this motive clear when it named its first public marsh the "Public Shooting Grounds."[102]

In 1911, the state began openly discussing the need to acquire land for unattached hunters. Game commissioner Chambers asked the state to acquire five thousand acres.[103] The law to permit acquisition of a public shooting ground passed the legislature in 1913, though funds were not appropriated. Finally, in 1920, proponents made concrete progress towards providing "good public shooting grounds" for Utah's sportsmen. The Box Elder Fish and Game Protective Association pushed for setting aside all of the publicly owned part of Bear River Bay as a public shooting domain and game preserve. Other sportsmen suggested a location south and west of the Black Sloughs in Salt Lake County where land could be ditched and diked.[104]

Governor Mabey, a waterfowler who had been involved in the sewage legislation as a legislator, advocated the acquisition of a public shooting ground and supported the Federal Public Shooting Ground and Bird Refuge Act that provided federal protection and a funding mechanism for particularly valuable wetlands.[105] Game Commissioner D. H. Madsen also promoted the idea of a public shooting ground in Bear River Bay. In a 1921 address in New York, he noted that "duck marshes" were too valuable to be wasted by "questionable enterprises" such as drainage schemes and that the area should be set aside as "a public shooting and nesting ground for all time." Governor Mabey, who was in attendance, declared that "It is the plan for the fish and game department of Utah to cooperate with the federal government to cause to be set aside and maintained as a public shooting ground and nesting ground for wild fowl all the lands in the Bear River Bay not now owned by private citizens, including all unsurveyed government and state lands."[106]

While the state pursued a project for Bear River Bay that the federal government would finance, it also created a state-owned public shooting ground west of Corinne in 1926. Engineers constructed dikes and acquired water rights to ensure flooded habitat on the new 12,000-acre area officially named the "Public Shooting Grounds." The warden told hunters, "the department wants you to feel that the public shooting ground is your private club."[107] Eight hundred hunters registered there for opening day.[108]

In 1925, Commissioner Madsen spoke at a meeting in New York again advocating the establishment of a refuge in Bear River Bay. He stated that destruction of the bay would adversely affect duck hunting in eleven western states. "There are at least 200 square miles . . . in Bear River Bay that could be developed and maintained at a reasonable cost, not for the purpose of furnishing shooting for Utah sportsmen, but primarily for the purpose of providing resting, feeding and breeding grounds for migratory wildfowl upon which at least eleven western states are dependent." The conference passed a resolution of agreement.[109] Utah Senator William King criticized the bill to establish the refuge as usurping Utah's rights and complained that ammo and gun companies propagandized in support of it.[110] While Utah politicians initially supported a Bear River Bay refuge, they became far more cautious when they saw the impending contours of federal control. In 1928, an act of Congress established a 65,000-acre Bear River Migratory Bird Refuge; the refuge is now nearly 75,000 acres.

Utahns believed that by turning over state land and supporting the refuge, they were getting a public hunting area in addition to preserving waterfowl populations.[111] The refuge's enabling legislation anticipated that much of it would remain open to hunting: "at no time shall less than

60 per centum of the total acreage of the said refuge be maintained as an inviolate sanctuary for such migratory birds."[112] So, controversy arose when the federal government proposed closing the entire refuge to hunting almost as soon as the dikes were completed. The state felt betrayed, Utah senators protested, and the game commissioner alleged that "the government's actions violated a previous agreement. He said the state conferred the Bear River properties to the government with the understanding that a certain portion should be left open as a public shooting ground."[113] The federal government relented and opened approximately 20 percent of the refuge to hunting.[114]

The continued popularity of duck hunting generally and the Public Shooting Grounds specifically sustained the momentum for more acquisitions and marsh development. When the economy crashed in the Great Depression, several of these sites became work projects. Among others, the state acquired 12,000 acres at Locomotive Springs as a public shooting area in 1931; 4,000 acres (expanded to 12,000 acres) at Farmington Bay in 1935; 13,000 acres (expanded to 18,000 acres) at Ogden Bay in 1937; 4,700 acres at Clear Lake in 1936; 2,300 acres at Howard Slough in 1958; 5,500 acres at Salt Creek in 1961; and 1,440 acres at Timpie Springs in 1961.[115] As this article is going to press, the Utah Legislature passed HB 265, sponsored by Representative Casey Snider, establishing a 13,900 acre waterfowl management area in the Willard Spur part of Bear River Bay.

One early author grasped the long-term significance of the state's efforts to preserve wetlands:

> Utah should rejoice that there is a public shooting ground covering thousands of dyked-off acres of swamp and lake on the north shores of Great Salt Lake in the path of the greatest flight of ducks on the American continent. When the federal government takes hold of the problem of conserving the wild game birds and begins to develop the possibilities of that district including much of the northern arm of Great Salt Lake, Utah will have the best duck hunting grounds in the world. Thirty years from now when population pushes back the wilds and leaves few natural playgrounds for the American people, those duck grounds will be of inestimable value.[116]

That prediction has come true. Aside from their incalculable ecological value, they also continue to be of great economic value as "duck fever" on the Great Salt Lake now generates an annual economic benefit of over ninety-seven million dollars.[117] Over the intervening century since duck fever took hold, the duck clubs have followed many paths. Many remain extant and ecologically vibrant despite varied pressures and challenges. A few were sold or donated to nongovernmental organizations or government refuges. Some have fallen to a tightening noose of surrounding development or dewatering. The floods of the 1980s posed serious challenges as duck clubs disappeared under several feet of water. Duckville remained active until the 1980s floods raised the Great Salt Lake. During the winter, the water froze and was pushed by winds. Notwithstanding barrier walls, its impressive clubhouse was destroyed by the shifting ice. Duckville sold its land to the federal bird refuge.[118] The Bear River Club also built barriers against the rising water and shifting ice to protect its historic clubhouse. Fortunately, its efforts succeeded and, though significant restoration was needed, the clubhouse still stands.[119] Although many thought the duck clubs would never recover, most clubs rebuilt their dikes and canals quickly, and the marshes were renewed sooner than expected.

Utah has lost at least 30 percent of its wetlands to drainage since 1847, though it has fared better than many states.[120] It is at imminent risk of losing thousands of acres more around the Great Salt Lake to water diversions, drainage, industrial and residential development, and invasive plants such as phragmites. The centenarian south shore duck clubs in particular are under the lengthening shadow of encroaching development, airport expansion and other threats. If dewatering or development renders these areas ecologically dysfunctional, the southern half of the Great Salt Lake ecosystem would be irretrievably truncated and lost to nature.

Duck fever led hunting clubs to acquire tens of thousands of acres around the Great Salt Lake for its wildlife value. Of this, about 40,000 acres are still actively maintained by duck clubs

The Duckville Duck Club clubhouse destroyed by shifting ice when the Great Salt Lake rose to record levels in the 1980s. *Special Collections and Archives, Merrill-Cazier Library, Utah State University photo no. DNO-0025-WHP-ShaferG-P001_Front*.

or NGO's on former duck club land. Duck fever also persuaded Utah and the federal government to preserve another 140,000 acres on the Great Salt Lake as state and federal waterfowl areas. All of these areas host the millions of birds that annually pass through the Great Salt Lake. As a result, most of what is left of the fertile crescent around the Great Salt Lake now ends at the gates of the public areas and Utah's century old duck clubs, the last bastions of the Paradise of Duck-dom.

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Web Extra

See ushs.utah.gov for a description of lost wetlands and lakes in the Salt Lake Valley. We also include information about duck as dinner fare and a recipe for duck plum.

Notes

1 Only a few writers have addressed the history of waterfowl and duck hunting on the Great Salt Lake. See Noland Nelson, *Waterfowl Hunting in Utah* (Salt Lake City: Utah State Fish and Game, 1966); and Scott O'Mack, et al., *A Historic Farmstead Site near Salt Lake City*, vol. 4 of *Data Recovery Along the UNEV Pipeline Project Route: Utah Segment—Davis, Salt Lake, Tooele, Juab, Millard, Beaver, Iron, and Washington Counties*, ed. John C. Ravesloot, et al., Technical Report No. 2011–29 (Tucson, AZ: William Self Associates, 2011). Duckville, New State, Rudy, and Bear River are among the clubs that have produced their own informal, unpublished histories.

2 A playa is a shallow basin, dry most of the year or even for years. Although important as habitat even in normal years, as the lake expands, the lower marshes are submerged and the playas may become new fringe wetlands.

3 For a description of these lost lakes and water bodies, see this article's web extras at ushs.utah.gov. See also Michael McLane's article in this issue.

4 *Deseret News*, December 2, 1868.

5 *Salt Lake Herald*, November 30, 1873.

6 *Salt Lake Herald*, October 1, 1904. A discussion of wild duck as table fare is in appendix B of this article's web extras at ushs.utah.gov.

7 *Salt Lake Herald*, September 22, 1892.

8 *Salt Lake Tribune*, December 10, 1887.

9 *Salt Lake Tribune*, April 14, 1888, and February 20, 1910. A different view of the lake is suggested in other reports: "The spring lake abounds in wild ducks and geese." *Salt Lake Democrat*, September 29, 1886.

10 *Salt Lake Tribune*, March 29, 1895.

11 *Salt Lake Tribune*, July 20, 1915.

12 O'Mack, et al., *A Historic Farmstead Site near Salt Lake City*.

13 *Salt Lake Tribune*, August 20, 1899.

14 *Salt Lake Tribune*, February 20, 1910.

15 *Provo Dispatch*, February 28, 1891.

16 *Salt Lake Herald*, June 2, 1888.

17 *Salt Lake Herald*, August 18, 1891.

18 *Salt Lake Herald*, September 25, 1904.

19 *Salt Lake Herald*, October 2, 1904. The Bailey Lake clubhouse was recently excavated; see O'Mack, et al., *A Historic Farmstead Site near Salt Lake City*.

20 *Salt Lake Herald*, November 2, 1884. The fact that Salt Lake sportsmen traveled to Utah Lake suggests the quantity of waterfowl on Utah Lake. The pre-carp quality of Utah Lake is reflected in a hunting and fishing trip in the early 1870s, likely November, recorded by Wilford Woodruff. Along with a friend, he reported catching 150 ducks, eight geese and "a ton of fish." He may have used the word "ton" almost literally as he would often fish the lake in the 1860s and 1870s with men using nets who would catch hundreds of pounds of trout. It was, he reported, "the best place for fishing trout I ever [saw]." Fred E. Woods and Phil Murdock, "I Dreamed of Ketching Fish: The Outdoor Life of Wilford Woodruff," *BYU Studies* 37, no. 4 (1998): 24, 30.

21 *Brigham City (UT) Bugler*, September 12, 1891. Even by this early date, Corinne had an established reputation as "a paradise for hunters." *Salt Lake Tribune*, December 18, 1874.

22 *Brigham City (UT) Bugler*, September 29, 1894. See also David Moore Lindsay, *Camp Fire Reminiscences or Tales of Hunting and Fishing in Canada and the West* (Boston: Dana Estes & Company, 1912), 87.

23 *Brigham City (UT) Bugler*, October 6, 1894.

24 *Salt Lake Tribune*, October 9, 1900. Davis objected to shooting birds simply to demonstrate one's shooting prowess. At a live bird shooting contest, he killed all twenty-seven birds he shot at but wrote in his journal, "it looked very cruel to me to shoot the birds just for to show the skill of the shooter." Vinson F. Davis Diary, December 27, 1905, Collection of Gordon Davis (hereafter Davis diary).

25 *Brigham City (UT) Bugler*, December 29, 1894.

26 Duck pickers could also be future relatives. English immigrant Arthur Saunders arrived in Utah in 1886 and became a market hunter in the 1890s. He supplied the Salt Lake markets with up to eight hundred ducks a week and married Annie Baldwin, a member of the family that he contracted with to pick ducks. Smitten with Arthur, she once stuffed duck feathers in his mouth and told him they were going to get married. *Murray Eagle*, September 8, 1955; "Life History of Arthur Thompson Saunders," August 12, 1955, collection of Leslie Stauffer; Leslie Stauffer, interview by John Ray, November 26, 2018.

27 Oral History of Einar Larsen, by Carmen Anderson, July 26, 1972, Stewart Library, Weber State College, Ogden, Utah (hereafter Larsen, oral history); Davis diary, March 25, 1899. Other market hunters, such as brothers Earl and Perry Burnham, shot ducks by moonlight, slept under their wagon until dawn, and then gathered the ducks into the wagon. After milking the cows at their family's farm, they spent the day picking ducks and then taking them to a market in Salt Lake City. They later stopped moonlight shooting as they felt it was wasteful. Don Burnham Oral History, by John Ray, February 15, 2018, American West Center and Marriott Library Special Collections, University of Utah.

28 Herbert Gardner, *Come Duck Shooting with Me* (New York: Knickerbocker Press, 1917), 28, 29, 36, 43.

29 Raye C. Ringholz, *Duckville History* (n.p., ca. 1980).

30 While some wooden decoys were used, their wide use on the north shore apparently came a few years later. One author noted that the added weight of wooden decoys burdened the boat "where every ounce counts in the mud." Ringholz, *Duckville History*, 15. These daubs continued to be used into the 1940s. Oral History of Stephen Denkers, by John Ray, February 22, 2018, American West Center and Marriott Library Special Collections, University of Utah.

31 For a description of a difficult return trip, see Davis diary, October 6, 1903, when a strong north wind "[b]lew all the water to the other shore and left only the mud for us to push the boat over. I and Tarvel had to walk and pull the boat [holding the sport and 120 big ducks] 2 miles."

32 A copy of this advertisement is contained in the papers of Raye C. Ringholz, Special Collections, J. Willard Marriott Library, University of Utah, Salt Lake City, Utah.

33 Tulies-Tulles, Outdoor Life, December 1900 and January 1901, as quoted in Ringholz, *Duckville History*.

34 *Deseret News*, November 10, 1900. Market hunters may have had a reputation that waned more than it waxed, but Vinson always got good press. A visitor to the Bear River Club described him as "probably the best duckshot in the country and a most famous sportsman. He is rather short, stockily built, hard as nails, quiet to a degree and has a wonderful knowledge of the aquatic birds of the Bear River region. Practically all his life has been spent right where he lives just below the clubhouse. He neither drinks, swears, nor uses tobacco, which may account for his marvelous accuracy with a shotgun and his phenomenal strength and endurance." *Salt Lake Herald*, November 29, 1903.

35 The *Salt Lake Herald*, on October 28, 1900, reported that "A number of special boats have been built and are so constructed on the bottom that they will slide over the surface of the mud and water."

36 Daniels did not seem impeded by any notion of self-restraint. Utah instituted a forty-duck bag daily limit the following year. With time, adherence to the daily limit came to be a badge of honor among many hunters in the area. See Lindsay, *Camp Fire Reminiscences*, 81. This sentiment was taking hold nationally. Grover Cleveland, a duck hunter, wrote in 1906 that it is "disgraceful to kill duck for the purpose of boasting a big bag. . . . Those who hunt ducks with no better motives . . . merit the contempt of the present generation and the curses of generations yet to come." Cleveland, *Fishing and Shooting Sketches* (Outing Publishing Company, 1906), as quoted in Ralph Eshelman and Patricia Russell, *Historic Context Study of Waterfowl Hunting Camps and Related Properties within Assateague Island National Seashore, Maryland and Virginia* (July 21, 2004), 46.

37 Davis diary, March 15, 1901, and April 29, 1901. The Bear River Club also acquired land from Union Pacific, for instance, and continued to preserve more over the following years. See *Salt Lake Tribune*, March 13, 1901; *Salt Lake Herald*, September 20, 1902. The club is now approximately 12,000 acres. Davis remained as manager but struggled financially as he worked on his farm while managing the duck camp and doing some market hunting.

38 *Salt Lake Herald*, March 17, 1901.

39 For more on East Coast duck clubs, see Eshelman and Russell, *Waterfowl Hunting Camps*, 22–23. See also *Ogden Daily Standard*, September 13, 1901; and *Salt Lake Tribune*, November 26, 1901.

40 *Deseret Evening News*, April 23, 1901; *Ogden Daily Standard*, September 16, 1901.
41 Oral History of Gwenith Rader, by Carmen Anderson, July 12, 1972, Stewart Library, Weber State College, Ogden, Utah (hereafter Rader, oral history). This is not an extraordinary number. At the Knudson duck camp close to the Bear River Club, Mrs. Knudson and her daughter picked 13,134 ducks during 1899, according to their journal. Knudson journal, p. 194, Brigham City Museum of Art and History Collections, Brigham City, Utah.
42 Rader, oral history. Ducks are commonly divided into two categories: diving ducks and puddle ducks. Puddle ducks (e.g., mallard, pintail, and teal) feed in shallower water, while diving ducks (e.g., canvasback, scaup and goldeneye) tend to prefer deeper water. The latter have denser feathers that are harder to pluck.
43 Rader, oral history. One author noted that pickers received fifteen cents for divers due to the dense down, while only receiving three cents for puddle ducks. Gardner, *Come Duck Shooting with Me*, 80.
44 Davis diary, November 25–December 5, 1907.
45 Larsen, oral history. Vinson Davis played both the accordion and violin; however, it is not known whether he was at this dance, though he mentions such duck camp dances in his diary. See, for example, Davis diary, November 11, 1905, and October 12, 1908.
46 *Deseret Evening News*, April 23, 1901.
47 See, for example, *Ogden Daily Standard*, November 19, 1913.
48 Oral History of Lois Harlin, by Teddy Griffith, August 21, 1971, Stewart Library, Weber State College.
49 *Salt Lake Tribune*, April 21, 1901.
50 I have not attempted, on either the north or south shores, to exhaustively list the dozens of clubs that sprang up. Some were short lived, some were lost to development, and some have persisted to the present.
51 *Salt Lake Herald*, January 10, 1902.
52 Ringholz, *Duckville History*, 21–22.
53 *Salt Lake Herald*, November 29, 1903, and December 18, 1904; Van Campen Heilner, "Deseret Ducks," in *A Book on Duck Shooting* (Philadelphia: The Penn Publishing Company, 1939).
54 Heilner, "Deseret Ducks."
55 Poem dated July 20, 1906, from collection of Fred Davis. Melissa Davis, with her young children, sometimes stayed with Vince at the club for extended times. See, for example, Davis diary, October 1, 1903.
56 *Salt Lake Telegram*, August 3, 1928.
57 *Salt Lake Tribune*, September 30, 1904.
58 *Salt Lake Times*, September 17, 1892.
59 Owen Kent Covey and Harold B. Stafford, *New State Recollections and New State 100-Year Chronology, 1896–1996* (n.p., 1996), 34; *Deseret News*, September 20, 1898. The New State eventually expanded to over 3,000 acres and nearly 100 members.
60 *Salt Lake Tribune*, September 8, 1901. The same phenomenon occurred on Chesapeake Bay. "Almost every foot of available land bordering on the waters where the ducks feed is either in possession of some sportsman, who uses it for his own shooting, or is owned by a ducking club." "Maryland Ducking Clubs," *Forest and Stream*, November 28, 1889, as quoted in Eshelman and Russell, *Waterfowl Hunting Camps*, 10.
61 *Salt Lake Herald*, October 1, 1901.
62 *Salt Lake Herald*, September 29, 1901.
63 *Davis Clipper*, September 5, 1902; *Salt Lake Herald*, September 21, 1902.
64 The initial diking efforts were blamed for exacerbating flooding in high water years. In 1907, this led to Salt Lake City dynamiting several dikes. *Ogden Daily Standard*, March 8, 1907. Sometimes the creation of lakes and ponds was the unintended consequence of Salt Lake City's flood control efforts. Construction of the Surplus Canal west of Salt Lake City was initially stopped at the eastern edge of property owned by the Auerbachs, west of the current Salt Lake International Airport. This caused it to flood a sizeable depression on the property making the Bailey Lake Duck Club possible. O'Mack, et al., *A Historic Farmstead Site*, 33.
65 *Salt Lake Tribune*, January 1, 1909. As with many news reports, the "half a dozen ducks" is a bit of hyperbole but does reflect the role of clubs in markedly increasing and maintaining habitat.
66 Davis diary, April 11, 1906.
67 *Salt Lake Herald*, September 29, 1901.
68 O'Mack, et al., *A Historic Farmstead Site*.
69 O'Mack, et al. At least one south shore club, the Ambassador, continues to use a historic farmstead as its clubhouse. The same wide spectrum of accommodations developed in other popular waterfowling areas in the nation. Eshelman and Russell, *Waterfowl Hunting Camps*, 21–22.
70 Covey and Stafford, *New State Recollections*, 4.
71 *Salt Lake Herald*, January 12, 1902.
72 *Intermountain Rep*, September 29, 1907.
73 *Salt Lake Telegram*, October 1, 1907.
74 *Salt Lake Tribune*, September 27, 1909.
75 *Salt Lake Telegram*, August 30, 1905. Now extinct, Williams Lake was at approximately North Temple, where the airport now sits.
76 *Deseret Evening News*, October 1, 1904; *Salt Lake Herald*, September 25, 1904.
77 *Deseret Evening News*, December 14, 1907.
78 *Salt Lake Telegram*, November 1, 1902.
79 *Salt Lake Telegram*, October 17, 1902.
80 *Salt Lake Herald*, October 19, 1902. Just a year earlier, the Tribune had taken the opposite editorial position when it criticized the "pot hunter" who shot as many ducks as possible to sell on the market. *Salt Lake Tribune*, November 10, 1901.
81 *Salt Lake Herald*, January 18, 1880.
82 *Salt Lake Tribune*, December 31, 1899. While many assume that market hunting severely diminished duck populations, the numbers in Utah do not necessarily support the contention. Vince Davis estimated that 200,000 ducks were taken annually from Utah marshes just before 1900. See Nelson, *Waterfowl Hunting in Utah*, 22. The state commonly exceeded that annual number of harvested ducks long after market hunting was banned. For instance, during the 1975–1976 season, Utah hunters were reported to have harvested 433,000 ducks. Edwin V. Rawley, *The Layton-Kaysville Marshes: A Great Salt Lake Wildlife Report* (Salt Lake City: State of Utah Department of Department of Natural Resources, Division of Wildlife Resources, 1976), available at Utah Government Digital Library, digitallibrary.utah.gov.
83 *Salt Lake Tribune*, January 1, 1905; *Salt Lake Telegram*, January 1, 1905.
84 *Deseret Evening News*, March 11, 1899. Fulton Market in Salt Lake City, sometimes supplied by the Burnham

brothers, was fined as late as 1916 for shipping ducks out of state that were not labeled as waterfowl. *Davis Clipper*, December 8, 1916.

85 *Deseret Evening News*, December 30, 1905; *Davis Clipper*, February 12, 1909; *Salt Lake Tribune*, September 18, 1909.

86 *Deseret Evening News*, January 16, 1907.

87 *Salt Lake Telegram*, September 19, 1915.

88 *Logan Rep*, October 12, 1915.

89 *Salt Lake Telegram*, October 1, 1915.

90 *Salt Lake Herald*, February 10, 1907. This is interesting terminology to use in Utah in this era when the polygamy debate had barely subsided.

91 *Ogden Daily Standard*, February 13, 1904. The Bear River Club also endeavored to end the local practice of gathering eggs. Native Americans had gathered eggs for centuries, and local farmers carried off "wagon-loads" in the spring. *Salt Lake Tribune*, December 15, 1901. Vinson Davis, as local game warden, watched the marsh with field glasses from his home and arrested those found gathering eggs. Davis diary, May 12, 1901, and June 21, 1903.

92 Davis diary, February 15, 1904.

93 *Salt Lake Tribune*, March 30, 1907.

94 *Salt Lake Herald*, January 28, 1909.

95 *Intermountain Rep*., March 18, 1909.

96 *Salt Lake Tribune*, August 26, 1918.

97 Covey and Stafford, *New State Recollections*, 41.

98 *Salt Lake Telegram*, March 4, 1911.

99 *Salt Lake Tribune*, March 31, 1911.

100 Covey and Stafford, *New State Recollections*, 43–44. Some clubs pursued litigation to stop sewage; see *Salt Lake Telegram*, July 29, 1922; Covey and Stafford, *New State Recollections*, 49; and *Davis Clipper*, November 3, 1922.

101 *Salt Lake Tribune*, October 30, 1911.

102 Utah claims this is the first preserve of its kind in the nation.

103 *Salt Lake Herald-Republican*, December 31, 1911.

104 *Salt Lake Tribune*, April 6, 1913; *Ogden Daily Standard*, February 4, 1920; *Box Elder News*, September 28, 1920; *Salt Lake Telegram*, November 14, 1920.

105 *Salt Lake Telegram*, June 30, 1921.

106 *Salt Lake Telegram*, December 22, 1921.

107 *Box Elder News*, September 28, 1926.

108 *Ogden Standard Examiner*, October 4, 1926.

109 *Box Elder News*, December 11, 1925. See also *Box Elder News*, October 29, 1926.

110 *Ogden Standard Examiner*, May 15, 1926. Senator King introduced a bill that would have set aside 100,000 acres in Bear River Bay though with fewer restrictions. Andrew Simek, "Western Duck Sickness: Avian Botulism and Conservation in the Bear River Marsh, 1910–1933" (master's thesis, Utah State University, 2015), 106.

111 The refuge's creation led to the acquisition of the Provo Club and Cache Club. Scrapbook No. 2 of Vanez Wilson, Bear River Watershed Historical Digital Collection, Mountain West Digital Collection, digital.lib.usu.edu/cdm/landingpage/collection/Bear.

112 An Act to Establish the Bear River Migratory Bird Refuge, Pub. L. No. 304, Stat. 3194 (1928).

113 *Provo Evening Herald*, August 27, 1931.

114 *Salt Lake Telegram*, December 31, 1931. In "Western Duck Sickness," Andrew Simek explains the history of the creation of the Bear River Migratory Bird Refuge in greater detail, particularly the influence of national sporting and conservation organizations and the development of a progressive conservation ethos. The dispute over the percent of the refuge to open to hunting has simmered ever since as the acreage fluctuated. In 2018, the U.S. Fish and Wildlife Service announced that it was opening an additional 13,000 acres to hunting bringing the total over 30 percent.

115 *Salt Lake Telegram*, June 27, 1931; *Davis Clipper*, January 9, 1931; *Salt Lake Telegram*, April 17, 1931; *Salt Lake Telegram*, December 16, 1939; *Millard County Chronicle*, February 21, 1935.

116 *Ogden Standard Examiner*, October 5, 1926.

117 John Duffield, C. Neher, and D. Patterson, *Utah Waterfowl Hunting 2011 Hunter Survey, Hunter Attitudes and Economic Benefits* (Missoula, MT: Bioeconomics, Inc., September 2011).

118 Tony Hewlett Oral History, by John Ray, September 18, 2017, American West Center and Special Collections, Marriott Library, University of Utah.

119 Gordon Shafer, interview by John Ray, March 2, 2017.

120 California has lost over 90 percent, Maryland 73 percent, and other states such as Illinois, Indiana, and Iowa have lost similarly high percentages. T. E. Dahl, *Wetlands Losses in the United States 1780's to 1980's* (Washington, D.C.: U.S. Department of the Interior, Fish and Wildlife Service, 1990).

Craig Dangerfield (standing) and Larry Dea, in the airboat that Dangerfield custom-built, on her maiden voyage at the Farmington Bay Wetlands, March 3, 2018. *Photograph by Randy Williams, used with permission.*

M. CRAIG DANGERFIELD, DUCK GUIDE:

THE INTERSECTION OF PERSONAL NARRATIVE AND GREAT SALT LAKE WETLANDS HISTORY

BY RANDY WILLIAMS

I got my first exposure to waterfowl when I was very young living in Garfield, Utah. Kennecott Copper Company owned the town. Some of the marshes of the Great Salt Lake were very near. The Company provided recreation for all their employees. Included was a huge clubhouse with a bowling alley, boxing ring, theatre, and further east was the Copper Club golf course, and east of that was the Kennecott Duck Club. The Duck Club took in all the land between 2100 South to 3100 South and from about 4000 West to 5600 West. It was a series of ponds and canals that provided hunting, fishing, and water skiing for the employees and a whole world of discovery for their children. I caught my first limit of rainbow trout there.[1]

M. Craig Dangerfield has a sixty-plus-year history with the Great Salt Lake marshes. Today he is a guide for the prestigious Bear River Duck Club, locally known as the Millionaire Club, founded in 1901. The club is near Brigham City and Corrine, in Box Elder County, Utah, in the immense wetlands of the Great Salt Lake.[2] Awash with waterfowl, the area was first used as hunting grounds by indigenous peoples, most recently the Northwestern Band of the Shoshone, and has continued to be popular among local hunters and the titans of industry in search of duck—teal, mallard, widgeon, gadwall, pintail—and geese—Canada and snow.

Duck clubs dot the Great Salt Lake wetlands. Many are small, locally owned clubs that host locals, mostly men—although women also participate.[3] The toniest clubs, however, boast men-only members from

corporate, political, entertainment, and other prestigious and wealthy sectors. The wealthy, powerful duck club members juxtaposed with the rural, mostly Latter-day Saint, community members create an interesting, complex, and sometimes contentious setting.[4]

In 2017, four Utah universities began collecting oral histories, photographs, and material culture to document the fascinating history of the Great Salt Lake wetlands and the people who work and play along its shores and marshes.[5] During Utah State University's collecting day on May 6, 2017, my colleagues and I conducted interviews with longtime residents at the Bear River Migratory Bird Refuge at the northern reaches of the wetlands near Brigham City, Utah. This community comprises skilled hunters and expert guides, and during the interviews two narrator types emerged. One type were *history bearers*, who actively bear the tradition through remembrances. Included in this group are Reese Beeton, Mark Christensen, Fred Davis, Hal Reeder, Jack Ray, and Gordon Shafer.[6] These men shared stories of their past experiences on the wetlands, what the folklorist Frank DeCaro calls "finished narratives."[7] They relayed stories of duck hunting, childhood experiences at a duck club, working at the Bear River Migratory Bird Refuge, market hunting, plucking birds, and managing the Bear River Duck Club. Their stories reflected their keen interest in preserving the rich history and heritage of the wetlands.

Craig Dangerfield, a thirty-year veteran duck club guide and an engaging storyteller, belongs to the second narrator type, the active *tradition bearer*, or community scholar, who actively engages in the tradition. While he is also interested in documenting the history of the wetlands, Dangerfield peppered his interview with stories and descriptions of his current work, equipment, and interactions with clients. As a tradition bearer, Dangerfield tells stories that speak less to the past and more to the living tradition. Thus, when *Utah Historical Quarterly* proposed devoting a special issue to the history and heritage of the Great Salt Lake wetlands, I knew I wanted to concentrate on Dangerfield's experiences as a modern-day master duck-hunting guide.

As a master guide, Dangerfield is part of a culture of outdoorsmen/women dedicated to the active tradition and meaning of the hunt. Characterizing himself as a "long and shaggy" conservation activist and traditional bow hunter, David Peterson claims to have known "no better philosophy teacher than hunting."[8] If approached with an open mind, hunting can "broaden and deepen personal insights about life and death and the interplay between the two."[9] The game, Peterson writes, "remains sacred," and hunting "a determined effort to reconnect as honestly and humbly as possible to our innate human/animal wildness, which *is* the human soul."[10] For many, this may seem contradictory. Yet, hunting expresses some communities' cultural mores, worldviews, and passions for land, animals, and fowl, including conservation. In his search for a moral imperative, Joshua Duclos addresses the philosophical disconnect between hunters and nonhunters:

> Hunters see the act of stalking and killing deer, ducks, moose and other quarry as humane, necessary and natural, and thus as ethical. Critics respond that hunting is a cruel and useless act that one should be ashamed to carry out. . . . As a student of philosophy and ethics, I think philosophy can help us clarify, systematize and evaluate the arguments on both sides.[11]

To this end, specialty associations—such as Ducks Unlimited, formed in 1927, and Sportsman's Alliance, a lobbying organization founded to protect Ohio's trapping community from outside threats during the 1970s—have grown up around these familial and group attitudes about animal and fowl harvesting. In contrast, the Audubon Society, formed in 1905, and the Sierra Club, formed thirteen years earlier, both organized around land, animal, and fowl protection. The debate over hunting includes conversations about animal rights and ethics. One's position on the spectrum, however, from no hunting to full access hunting, reflects strong emotional ties to person/community, attitudes, and stereotypes, as it often does in social disputes.

"Hunting and philosophy? C'mon, don't be ridiculous. The combination is almost an oxymoron!" remarks philosopher and hunter Nathan Kowalsky.[12] Yet, that is exactly what he and the authors in *Hunting—Philosophy for*

Everyone: In Search of the Wild Life explore. In his review of the volume, Ty Raterman explains how the author "tries to make it clear that hunting genuinely merits serious philosophical attention" and "connects with questions about human nature—and nature more generally—the likes of which have long engaged philosophers."[13]

A nonhunter, I am the daughter of an accomplished hunter and angler who, like Dangerfield, garnered his skills over a lifetime in the hills and on rivers pursuing chukars, elk, deer, and cutthroat trout. I have seen firsthand the deep meanings my father associates with the hunt; for him it is a way of life, not a sport. For many like Dangerfield, my dad, and Peterson, the philosophy of hunting is an immersive experience that speaks to their deep connections and appreciation for that which they hunt.

As a folklorist, I study and collaborate with tradition bearers in work settings.[14] Using ethnographic documentation skills, I collect stories to document work culture and history, emphasizing context, text, group dynamics, function, and, of course, performance—think the observable (perhaps not always understood) expressions of a group, like commands of a hunter to his/her dog.[15] During his interview, Dangerfield's twin skills of expert guide and gifted storyteller were immediately evident to my collecting partner, the historian Jeff Nichols, and me. Although he vividly brought two outsiders into the storied world of duck clubs and hunts, Dangerfield most masterfully crafts stories that resonate with *insiders*—local hunters and duck club members. He walks a fine line of honoring the privacy requirements of his clients and employer (the Millionaire Club is not interested in publicity), his love for the sport, and a desire to document the experience that has captivated his life since his youth.

Dangerfield's love of hunting began in 1962 during a New Year's rabbit hunt west of Salt Lake City, just north of the Kennecott dike. The ritual involved both his immediate and extended family, where his mom and aunts provided the ceremonial chili and hot chocolate. "I was 12 and my brother Scott was 15," he recalled.

> I was using a single-shot Winchester model 37 shotgun (16 gauge, it was my uncle's), and my brother had a .22 rifle. As we walked north there just wasn't many rabbits . . . and the sagebrush started getting shallower, and farther apart. And pretty soon there was just nothing left. There was crusty snow on the ground. And my brother and I (everybody else had gone back to eat and get warm) . . . just kept walking north [towards Antelope Island] and it started getting a little bit marshy looking.
>
> We just had leather boots on, you know, not waterproof or anything. But we were just kind of standing there and this flock of birds. [laughing] I don't know how to describe it. But there was this flock of birds in the sky. The sky was gray, it was going to storm, and there was just a whole bunch of birds coming our way. I asked my brother "What are those?" And he says, "They're ducks."
>
> I ask, "Can we hunt ducks?" And he says, "Well let's see: you're 12, you have a license, you don't need a duck stamp until you're 16. Yes, you can."
>
> At that point, I just held that barrel in the middle of this flock and I shot. A lone mallard came out just sailing, and glided for (it felt like two and a half miles) it was probably 200 yards though, into the marshy part. I don't know, my heart was just pounding; I'd never seen anything like it. I ran a direct line to where it fell. I tracked it. I got into the snow where I thought it went down and I could see these little duck footprints in the snow. I'm muddy and wet now. And there was some alkali bulrush there that the bird had hid in there. I picked it up, and I just – oh, I can't describe what I felt, you know? It wasn't like, "I killed this, yay," and everything. It was like this was given to me.
>
> I took it home, I studied it for a few days before I even cleaned it. I cooked and ate it, and I just felt like I was part of that marsh, I really did. I just

> felt some switch went on inside; I can't describe it. It's very weird, but it doesn't happen to everybody, but it really did me.[16]

Dangerfield's childhood experiences, no doubt, instilled in him a passion for the hunt and a respect for the prey. It also contributed to his later vocation as a duck guide and situated him within the guide's tradition.

After the Civil War, hunting guides began to emerge in the United States as important navigators for urban dwellers who no longer knew the rules or had the skills necessary to hunt successfully. Before the war, according to the folklorist Mary Hufford, hunting was a rural pastime that provided food. After the war, with the nation's move towards industrialization and urbanization, there was a "detachment of civilization from nature and the separation of livelihoods from the land."[17] For many, this detachment meant the loss of easy access to fresh game and, inevitably, valuable hunting skills. As the frontier closed, hunting associations lobbied for controlled access to prime hunting grounds to "protect" the land from local market hunters. This shift removed "local control" of hunting grounds and pitted "backwoodsmen and farmers, who deemed hunting necessary to their way of life, against urban, elite men of means, for whom hunting offered a form of respite from the modernizing world."[18] The historian Karl Jacoby writes that the nascent U.S. natural resource policies of the late 1800s and early 1900s made way for "environmental quality at the expense of social justice."[19] Jacoby suggests that the "hidden history of conservation" is, in part, a "story of metropolitan elites imposing their ideas about nature and the public interest on rural places and people."[20]

Interestingly, and a bit ironically, these shifts gave rise to the need for local guides to shepherd outsiders on the land with their practical skills and local knowledge.[21] The historian Annie Gilbert Coleman considered the role of a river guide during the rise of leisure in the early part of the twentieth century. She describes how for-hire guides provided the paying outsider "access to wild places" and "taught them how to behave there."[22] These protocols held true for duck guides as well.

Northern Utah experienced its heyday of duck hunting in the early 1900s, when it was said "duck hunting could properly be called the national sport of Utah."[23] Along with the growth of duck hunting came an increase of duck clubs and the need for more land and water rights, along with skilled guides to assist less experienced hunters. Dangerfield descends from a long line of guides who have historically navigated the Salt Lake marshes.

For Dangerfield, guiding for the Bear River Duck Club is a dream come true. He recounted the circumstances under which he obtained the employment that became his life's passion. He was gunning at a dog trial south of Willard Bay when he met Gordon Shafer, manager of the Bear River Duck Club:

> After the trials, I went up to him. And I says, "Are you ever looking for guides?" he says, "I am right now." I said, "Well what do you got to do?" he says, "You've got to have your own dog (well-trained dog), you've got to have your own decoys. You've got to be a good shot." He says, "I've watched you shooting out there," he says, "that's [laughs] not a problem." (A compliment, I felt.) I asked, "What else?" He says, "You've got to learn the marsh." I says, "How do I do it?" Because there's over 13,000 acres up there. I asked, "How do I accomplish that?" And he says, "Just come on up and I'll show it to you." I went up immediately and he showed me all around. I took several notes.
>
> And so, I got that job 28 years ago. I was old [laughing] when I got it and I'm too old now, but I don't feel it. It's an opportunity for me to be on one of the most famous marshes in the whole United States, and hunt with some very interesting people, and also be paid to do that [laughs]. And they even furnish the ammunition for you.
>
> I mean, again, don't take me as a duck slaughterer or a killer, or anything else. I enjoy the marsh. I love the smell of the marsh. I love the sounds of the marsh. And quite often I don't always

> feel a need to shoot, but I enjoy letting the client have a quality experience that he will remember.[24]

Dangerfield explained that the club members are "all high-profile men who have shaped America with their various means and ways."[25] The club is exclusive. Owing to this, the Bear River Duck Club (and others) has long generated controversy, in the words of Kyle Carter, "over the private duck clubs leaving nowhere for the public to hunt."[26] During the early years, duck clubs and government agencies worked to cultivate and protect the health of the wetlands and the waterfowl. In the 1920s, "due to the loss of marshes and huge bird die-offs from botulism," locals and duck club members campaigned to protect the valuable resource, and in 1928, Congress created the Bear River Migratory Bird Refuge as a "suitable refuge and feeding and breeding grounds for migratory waterfowl."[27] Dangerfield believes that hunting is a valuable "right and heritage" because those involved make the preservation of habitat and animal health a priority. As he remarked in the interview,

> Hunters are the ones who finance and show up for volunteer work for the improvements for our wildlife. Duck hunters are required to purchase a $25 Federal Duck Stamp and hunting licenses each year to help the habitat. It should be noted that birdwatchers, activists, and photographers are not required to purchase anything for their recreation but use all the resources and byways created by the hunter. During the Dust Bowl of the 30s, when all the prairie potholes dried up and waterfowl nesting was at an all-time low, it was the hunters, not the government, that decided to put limits on birds and restrictions on species and seasons. It was those men who created organizations like Ducks Unlimited to purchase wetlands and water rights and create many more wetlands that benefit all types of wildlife throughout the U.S. and Canada. The first Federal Duck Stamp was created in 1934. They sold for $1 but every penny was, and still is, used on waterfowl alone.[28]

Matt Brown removing old nesting material from a duck/goose nesting platform, Farmington Bay Wetlands, March 3, 2018. *Photograph by Randy Williams, used with permission.*

Regardless of who controls the wetlands (refuge, state, club, or local), waterway and waterfowl management is serious business in Utah, especially to hunters.[29] "The Great Salt Lake," claims the Ducks Unlimited website, "is arguably the most important waterfowl hotspot in the Intermountain West. There are 35 species of waterfowl numbering between 3 and 4 million that annually utilize its diverse wetland ecosystem for migration and breeding."[30] The business of managing and providing—or limiting—access to this unique place can be a heated political topic for folks on all sides of the duck blind. Square in the middle of this amalgam of history and politics is the informed guide.

Duck guides assist hunters with entry to the wetlands and hunting folkways. Possessing a deep skillset of wetland and waterfowl culture, guides make duck hunts successful and safe. Guides manage a hunt, personalities, club politics and regulations, sport etiquette, and individual members' needs: no small order. Guides must have expert interpersonal skills

for contending with a wide range of client skill levels, from the highly skilled to beginners who may have a desire to excel but feel that mastery of a hunt is "insurmountable."[31] In addition, guides must be experts in using the gear and tools of their craft.

Folklorist Bob McCarl writes that a hallmark of a skilled expert is the understanding and use of the right gear.[32] From equipment naming and use to the development of gear and specialized tools, the expert tradition bearer knows the tools of the trade.[33] For duck guides, this includes decoys, blinds, boats, clothing, guns, and especially his bird dog, which functions as a tool, yes, but more as a partner.

Dangerfield shared that just weeks before the duck hunt season a few years ago, his strong hunting dog Gus, a seven-year-old Labrador, died from cancer. Along with grieving for his dog, he was frantic to replace Gus. He called around Utah, Colorado, and Idaho, looking for a new dog. Fellow guide Cleve Burr told him of a dog trainer in Heber City, Utah, that had some dogs with an "interesting story behind them."[34] Dangerfield explains:

> These dogs were trained to be bomb-sniffing dogs in Iraq (for the Armed Services). They were taught to go on hand signals. . . . Well it soon became evident to the enemy what these dogs were doing. And these dogs became the favorite target of the snipers. So, they ended that program. . . . Abby had not quite graduated from the program; she was about 85% along when they terminated the contract.
>
> We [wife Julie and Craig] just flew [in our vehicle] up to Heber City. And he got the dogs out. He had about eight acres where he'd just placed all of these dummies and bumpers. Of course, the female dog went through the drill, so perfectly. But in the middle of this field he [the trainer] would just point, and the dog would run quarter of a mile and bring back a dummy. His last command was that she return to her kennel. She did not question him, although she was having fun. She ran for 150 yards straight back to her house and waited. We both just fell in love with [Abby].
>
> Her first duck hunt was a learning experience. I took my grandson out and it was on the youth day, two weeks before the general season. Dylan shot a duck and Abby didn't know what to do; she'd never seen a duck before. She was used to bombs. So, I had to get out of the boat and walk over to the duck and show her. She said, "Oh, so you want these huh?"
>
> "Yeah."
>
> And the next duck she got more excited; and then the third duck she just piled out of the boat and swam to where she had last marked it going into some cattails. She used her nose and found the duck. And now she just explodes out of the blind when sent, doesn't matter if it's a small teal or a large goose or even a swan. She'll find it and bring it to you, but she still has all the manners of a seeing eye dog in the duck blind; she's amazing. I've never had a dog quite like her.

During the interview Abby lay contented at Dangerfield's feet, exemplifying the important bond between master and dog. As Dangerfield noted, a trained retriever is a requirement for all Bear River Duck Club guides. However, more than that, he relies on Abby to successfully perform as a guide.

A guide must also be an expert in the verbal arts, for both instruction and solidarity. Dangerfield told us a cautionary tale in the tradition of a numbskull story (or Jack Tale—think Jack and the Beanstalk). This "tale type" centers around a nice but naïve numbskull, who performs work and life tasks by making seemingly odd choices; but with persistence, ingenuity, some luck, and often the help of a kind stranger, everything usually comes out successfully in the end.[35] The occupational versions of these stories are told in closed, intimate work settings and workmate get-togethers (think the bar after work, the teachers' lounge during lunch, or on a duck hunt). They illustrate to members—in this case guides and possibly club

members—the ingenuity of the "Jack" as well as what *not* to do. And, the stories are funny. Dangerfield shared a story about three old hunters who mixed too much alcohol with truck troubles to create a hysterical, instructive tale:

> So [laughing] I had a friend who had an airboat; his was airboat number one, which was really quite prestigious, you know? Mine was like number 394. . . . It was the last day of the season, so he had to take his boat home that day. He had a couple of friends with him. They went out and hunted. They had taken extra gas, and they all had warm clothes (last of season, you know, January). They [laughs] hitched the boat up to this International truck and drove out east on 12th Street in Ogden [Utah]. Shortly after they started heading south on the freeway the fuel pump in the International went out; just completely went out. There's three of them, and they were pretty buzzed at this point, I guess.
>
> "What do we do? What do we do? We're stuck we cannot get this truck fixed tonight." They [had] to drive to Sandy, Utah. "What do we do?" And they came up with the idea:
>
> "We brought gas for the boat, we've got gas in the Travelall; we've got all the fuel we need, we just don't have a motor. But the boat's got a motor, it's hooked up and wired to the truck, we've got the warm clothing – we'll take shifts."
>
> They put the truck in neutral, "somebody just steer the truck, somebody else go back and fire up and regulate the boat, and then we'll rotate shifts." And so they would steer the truck, pushed from the boat behind. He just had a 125 horsepower, four-cylinder aircraft engine pushing it. And [making engine sounds] [laughs] all the way home.
>
> They finally got pulled over in Bountiful [Utah]; and the police were just beside themselves. They had heard complaints all the way from Ogden to Bountiful [about 35 miles] about a low-flying aircraft that was flying over the freeway. The officer says, "Where do you think you are going?"
>
> They says, "Oh, we're just going to Sandy." He says, "No, you're not. Shut that thing off, we're calling your wives to come get you." They never got, you know, issued a citation or anything.[36]

At the end of the story, Nichols and I were crying from laughter. In addition to being entertaining, this story is part of Dangerfield's guide toolkit because it illustrates the hunters' ingenuity (use of the boat's motor) and assistance received from others (police curtail the event but do not issue a ticket), as well as an object lesson in what *not* to do. All of these qualities are important for a guide who takes paying clients out on wetlands where they could encounter great shifts in weather, breakdowns, and health concerns.

Preparedness and the ability to act quickly are important skills for a guide who may face many unknowns. Dangerfield spoke about health concerns with the aging club members, noting that all of the guides must have CPR certification. Thus, along with numbskull stories, people involved in dangerous and stressful occupations often tell jokes and anecdotes that may seem a bit dark to outsiders, but which skillfully work as release valves for the stressful realities of the job. Craig shared a joke that illustrates this point while also telling us about his early years at the club. His ability to share the history about his duck club and guiding, but also take us deeply into the craft of a duck guide's reality, was masterful:

> Well typically they've got around 40 memberships at the Bear River Duck Club. Now bear in mind, most members have to have two memberships in order to bring a guest. So really, on the Friday before the opening, the first Friday in October of every year, they have their big dinner meeting out here. It's the most you'll ever see of them; they'll all come, and they do their voting, and business, and elections, and everything.

> And then they'll hunt on the opening day. There might be around 23 members show up that day. So with 23 members they'll probably have around 28 guides. Some of the members are getting old and they'll ask for two guides to help them. This is the perfect time to train a rookie.
>
> The first gentleman I ever took out was 93 years old [laughs]. I shouldn't say this, but one of the seasoned guides . . . pulled me aside and he says [laughs], "Now do you know what to do if this guy has a heart attack or a stroke?"
>
> I said, "I've done CPR and first aid." He said, "No, you roll him over and get your tip."
>
> [Laughter]
>
> That's not the way it is done, but it kind of broke the ice. We must be licensed and certified, and anyone who isn't trained, cannot guide.[37]

The humor viscerally, and a bit irreverently, highlights a real fear—safety of a client while hunting. Along with their client's well-being, guides are also deeply concerned about the viability of the sport. "Decades of decline in the number of hunters in the United States have made hunter recruitment and retention a high priority within the North American wildlife management community."[38] Researchers, as well as guides and club managers, are working to understand the "dynamic factors that influence the sociocultural environment," or "social habitat" for hunting.[39] Dangerfield spoke to this concern. He told us that the average age of the duck hunter today is fifty-eight, noting kids today are not exposed to duck hunting in the way that he was as a youth. Speaking about the youth hunt that the Utah Division of Wildlife hosts each year, he lamented:

> I've taken neighbor kids whose dads might not hunt. I've taken friends' kids. I've taken relatives; I've taken my grandson. I'll take anybody on this youth hunt because they get to experience that. Everything that I worked hard to get: the boats, the decoys, they get to appreciate that. It is absolutely my favorite hunt; and we might get a duck, or we might not. I mean, my grandson got his first goose last year, and I was so excited because it took me until I was 18 to get a goose and he got one his, you know, second year hunting using my 20 gauge. Abby went out and got the goose, brought it back to the boat; and I am just, "Wow, congratulations!" And, he was like, "yah." You know? I couldn't contain my excitement, but he was barely impressed.
>
> But what we found, I've sat on several councils with the fish and game, and everything else. And we're trying to get more people involved in this and we can't. And you know why? Because we're not teaching them anything.
>
> I'll take this boat that I've spent part of my life building and throw a youth in there and take them out to a fine place and set them all up, and all the decoys. And then they'll shoot, but then tomorrow, ask them if they could go duck hunting by themselves, they don't know how.
>
> We used to walk out with leaky boots and as many decoys as we could carry. We would walk into a place and get infested with malaria, you know [laughs], the mosquitoes; and sit on a muskrat house. And find out that that was no good and then move over here, and I mean in the same day, to come home with a duck. We're doing a horrible job of teaching them how to do it because we're spoiling them with all our fancy equipment: we're giving them the easy way. It's just a legacy that I see going away; I really do.[40]

This legacy is very important for Dangerfield. When asked via email why the world needs more hunters—adult or youth—he elaborated:

> I am not saying more hunters are needed, as much as I would like the world to have a better understanding

Craig Dangerfield (4th from left) in front of his airboat that he custom-built, at the Utah Airboat Association Annual Goose and Duck Nesting Project day at Farmington Bay Waterfowl Management Area, with friends, l to r: Larry Dea, Matt Brown, Kerry McCloud, Dangerfield, author, Flint McCloud, and Glenn Bronson, March 3, 2018. *Photograph by Terry Williams, used with permission.*

> of the conservation reasons for hunting. For too long now, children have been told the Bambi stories in school and the hunter is always the bad guy. Now with all the school violence and shootings, it seems like it supports what they have been taught. These acts are not committed by hunters![41]

For Dangerfield, hunting provides quality family time in nature and transmits valuable life lessons, including survival skills, the understanding of where food really comes from, appreciation of wildlife and non-chemically altered meat, and gun safety and responsibility.[42] Dangerfield laments that these lessons, which he learned in his youth, are being lost.

Traditionally, expert outdoorsmen and women pass their skills on to younger hunting partners. With the decline in youth hunting, the relationships between expert guides and the enthusiastic duck club members takes on special meaning. I asked Craig what the rapport was like between himself and the clients. He told us a story that illustrates the power relationships between member and guide:

> When I was a new guide, I felt a little intimidated, like I needed to behave as a butler or something, but I learned that when you share a blind with anyone, that you become a team and share a common goal. I have had many members tell me that they simply want to hunt with me. They don't expect anything more.
>
> For many of my early years there, I was the requested guide for the most

> senior member of the club. He liked to suggest what to do and I would simply honor that, although it meant picking up and moving around several times a day. I expressed my concerns to the manager, Gary Slot, and he told me basically, that I was the guide and the gentleman would need to do things my way for a change. I told this man "Today, we're going to have to do things a little different." I just wanted him to know that I would be making a few decisions today and not necessarily to his liking. He says, "Well I don't like that. I don't like that at all."
>
> I said, "I'm sorry Mister B, that's just the way it is." He said, "Well I still don't like it." We went and hunted, had a great shoot, and at the end of the day we came in. He gave me my tip. I says, "Thank you Mr. B." He says "My friends call me Bob." Bob and I hunted together a lot after that and I enjoyed it a lot more.
>
> After that day, we did things my way. It was like if you had the guts to stand up to this man, he respected you more. Please don't get me wrong, he's the only one that I ever felt intimidated by at all. These other people are just wonderful, they're just like you and I and they like to be treated that way.[43]

Writing about personal experience narratives, folklorist Sandra Dolby posits, "Perhaps the most telling function is that they invite intimacy, a chance for the teller and the listener to know each other better."[44] In an activity that can be dangerous, knowing the other person in a boat or blind is vital for authority, personal responsibility, and reciprocity of risk and safety. These stories are more than entertaining, they are insightful and useful tools for a guide. They also show the bonds that are created out of a shared experience. Dangerfield explained that when you are in a blind with a client, if the birds aren't flying, there is a lot of time to talk:

> I've learned a lot from U.S. Ambassadors, CEO's, Hollywood movie stars, ranchers, and hardworking men that make things happen. We just talk about everything.
>
> I love the geography, and I'll point out the Lake Bonneville shorelines. I had one [hunter]. . . . He wasn't real confident with his shooting abilities, I'll just say that. His father was a member there, years ago, and of course he passed the membership down to his son. But he just didn't like the bang-bang part of it as much—loved the association. I had him out hunting pheasants on the Corinne side and we're talking about the geography. I says, "Yeah, so this is where Lake Bonneville was, and the Shoshone Indians came down here, and they would hunt waterfowl here and rabbits there, and everything." Then I says, "That passage right there through the mountains is Promontory Summit, where the trains met, and the Golden Spike was driven."
>
> He says, "The trains? Where the trains met?" [Laughs] He says, "Can we go there?" So we picked up and spent the whole day at the Golden Spike Historical Site. The Jupiter and the 119 trains weren't on display, they were in the winter storage building. So, he says, "Can we go there? Can we go there?" This was like a six-year-old kid on Christmas morning. We went and got the ranger to take us in to see the trains, and they let him inside the cab. He was pulling knobs and touching gauges, and twisting things. I've never seen a man so happy, and he was about 70 years old.
>
> We went back to the national historic site, the building there, where they sell the souvenirs; he bought every book they sold. We sat down and watched every movie they played, and spent the whole day talking about trains. When he comes back (it's harder for him now), but when he comes back he always asks for me. We'll talk about trains. I've got him to shoot a few ducks, but it's not his favorite thing: he loves the nostalgia and the history.[45]

As Coleman posits, Craig Dangerfield provides the members of the Bear River Duck Club "access to wild places" and teaches "them how to behave there."[46] He mastered the necessary skills through a lifetime of practiced effort, which he shares with duck club clients and the youth he mentors. Understanding the history of Great Salt Lake duck clubs includes understanding the role of the guide. Craig Dangerfield's personal work narratives show us a glimpse into the modern-day workings of a premiere duck club on the Great Salt Lake marshes. Dangerfield's eloquent, funny, masterful stories reflect an important part of Utah history that is lived by and taught to a lucky few.

Notes

The author wishes to thank Craig Dangerfield for his generous help with this article. Thanks also goes to Robert Parson, Carrie Reed, Thomas Reed, and Flora Shrode for editorial support.

1 M. Craig Dangerfield, interview by Randy Williams and Jeff Nichols, May 6, 2017, 2, The Great Salt Lake Wetlands History Project, 2017–2018 (hereafter Project), Utah State University Libraries, Special Collections & Archives, Logan, Utah. An audio recording and transcript of the interview are available at digital.lib.usu.edu/cdm/search/collection/p16944coll46/searchterm/Dangerfield/field/all/mode/all/conn/and/order/title/ad/asc. Subsequent references are to the transcript.

2 The club borders the Bear River Migratory Bird Refuge to the south, the public shooting grounds to the west, Salt Creek Waterfowl Management Area to the north, and the Chesapeake Club to the east.

3 On the rise of female involvement in hunting, see Diane Humphrey Luck, "Becoming an Outdoors-Woman: Serenity Outdoors," in *Wild Games: Hunting and Fishing Traditions in North America*, ed. Dennis Cutchins and Eric A. Eliason (Knoxville: University of Tennessee Press, 2009), 181–91.

4 To learn more about the class issues and concerns of duck hunters and duck clubs along the Great Salt Lake wetlands, see Jack Ray's article in this issue.

5 The Great Salt Lake Wetlands History Project, 2017–2018, is a joint effort of Utah State University, Weber State University, Westminster College, and the University of Utah.

6 Project, available online at digital.lib.usu.edu/cdm/landingpage/collection/p16944coll46. Fred Davis's interview was collected at his home at a later date.

7 Frank DeCaro, *Stories of Our Lives* (Logan: Utah State University Press, 2013), x.

8 David Peterson, "Foreword: Hunting as Philosopher Professor," in *Hunting—Philosophy for Everyone: In Search of the Wild Life*, ed. Nathan Kowalsky (Malden, MA: Wiley-Blackwell, 2010), xii.

9 Peterson, "Foreword."

10 Peterson, xiv.

11 Joshua Duclos, "Is Hunting Moral? A Philosopher Unpacks the Question," *The Conversation*, January 4, 2017, accessed May 19, 2018, theconversation.com/is-hunting-moral-a-philosopher-unpacks-the-question-68645.

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13 Ty Raterman, review of *Hunting—Philosophy for Everyone: In Search of the Wild Life*, by Nathan Kowlasky, ed., *Environmental Ethics* 34, no. 3 (2012): 325–28.

14 The investigation into work culture (occupational folklore) is the study of "expressive culture of the workplace, with special emphasis upon informally learned narrative, skills, and ritual used to determine status and membership in the work group." See Robert McCarl, "Occupational Folklore," in *American Folklore: An Encyclopedia*, ed. Jan Harold Brunvand (New York: Garland Publishing, 1996), 519–20.

15 On the forms and function of oral tradition in folk groups, see Barre Toelken, *The Dynamics of Folklore* (Logan: Utah State University Press, 1996); Richard Bauman, *Folklore, Cultural Performances, and Popular Entertainments: A Communications-centered Handbook* (New York: Oxford University Press, 1992); and Toelken, Randy Williams, and Lynne McNeill, "Guide to Collecting Folklore at USU" (Logan, Utah, 2017), archives.usu.edu/folklo/guide/iform2.php.

16 Dangerfield, interview, 5–6.

17 Mary Hufford, "Hunting," in *American Folklore*, 379.

18 Hufford, "Hunting." See also Edward Ives, *George Magoon and the Down East Game War* (Urbana: University of Illinois Press, 1988). Ives's work provides an intimate look at how hunting regulations affected the history and folklore of hunting and guiding in Maine.

19 Karl Jacoby, *Crimes Against Nature: Squatters, Poachers, Thieves, and the Hidden History of American Conservation* (Berkeley: University of California Press, 2003), 6.

20 Mark David Spence, review of *Crimes Against Nature: Squatters, Poachers, Thieves, and the Hidden History of American Conservation*, by Karl Jacoby, *Journal of Social History* 35, no. 4 (Summer 2002): 1035.

21 Hufford, "Hunting," 379.

22 Annie Gilbert Coleman, "The Rise of the House of Leisure: Outdoor Guides, Practical Knowledge, and Industrialization," *Western Historical Quarterly* 42, no. 4 (Winter 2011): 438.

23 Kyle Carter, "High Dollar Ducks," ESPN, November 17, 2010, accessed March 24, 2018, espn.com/outdoors/hunting/news/story?page=duck_trek_UT_High_Dollar_Ducks.

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25 Dangerfield, interview, 11.

26 Carter, "High Dollar Ducks."

27 U.S. Fish and Wildlife Service, Bear River Migratory Bird Refuge, Utah, "About the Refuge," December 1, 2017, fws.gov/Refuge/Bear_River_Migratory_Bird_Refuge/about.html.

28 Craig Dangerfield, email to the author, March 17, 2018. See also U.S. Fish & Wildlife Service, "History of the Federal Duck Stamp: Conserving Habitat for Bird and People," accessed March 25, 2018, fws.gov/birds/get-involved/duck-stamp/history-of-the-federal-duck-stamp.php. Dangerfield invited my husband, Terry Williams, and me to join him and his friends at the Utah Airboat Association Annual Goose and Duck Nesting Project day on May 3, 2018, at the Farmington Bay [Utah] Waterfowl Management Area. Working

with three boats, Dangerfield and his peers refreshed the grass in a dozen nesting platforms. Photos from this event appear in this article.

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33 Robert McCarl, "Lessons of Work and Workers," *Western Folklore* 65, no. 1/2 (2006): 13–29; McCarl, "Occupational Folklore" in *Folk Groups and Folklore Genres: An Introduction*, ed. Elliot Oring (Logan: Utah State University Press, 1986), 71–90.

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38 Lincoln R. Larson et al., "Exploring the Social Habitat for Hunting: Toward a Comprehensive Framework for Understanding Hunter Recruitment and Retention," *Human Dimensions of Wildlife: An International Journal* 19, no. 2 (2014): 105, accessed May 31, 2018, doi.org/10.1080/10871209.2014.850126.

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40 Dangerfield, interview, 23–24.

41 Dangerfield, email to the author, February 2018.

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43 Dangerfield, interview, 12–14.

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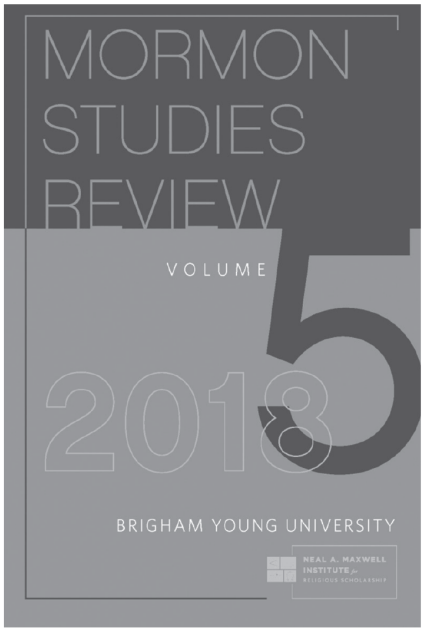

MORMON STUDIES REVIEW

Editor-in-chief: J. Spencer Fluhman
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Since 1989, the *Mormon Studies Review* published review essays to help serious readers make informed choices and judgments about books and other publications on topics related to the Latter-day Saint religious tradition. These publications, originally produced by the Foundation for Ancient Research and Mormon Studies (FARMS), included substantial freestanding essays that made further contributions to the field of Mormon studies. The journal was originally called *Review of Books on the Book of Mormon* beginning in 1989, then *FARMS Review of Books in 1996*, followed by *The FARMS Review* in 2003. In 2011 the journal was renamed Mormon Studies Review.

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Diving Board and deep plunge at Beck's Hot Springs. In addition to the deep plunge, the resort had a large private pool and a dozen smaller pools used by swimmers and soakers. *Utah State Historical Society, photo no. 26473.*

TAKING THE WATERS:

LOST LEISURE ON SALT LAKE CITY'S BECK STREET

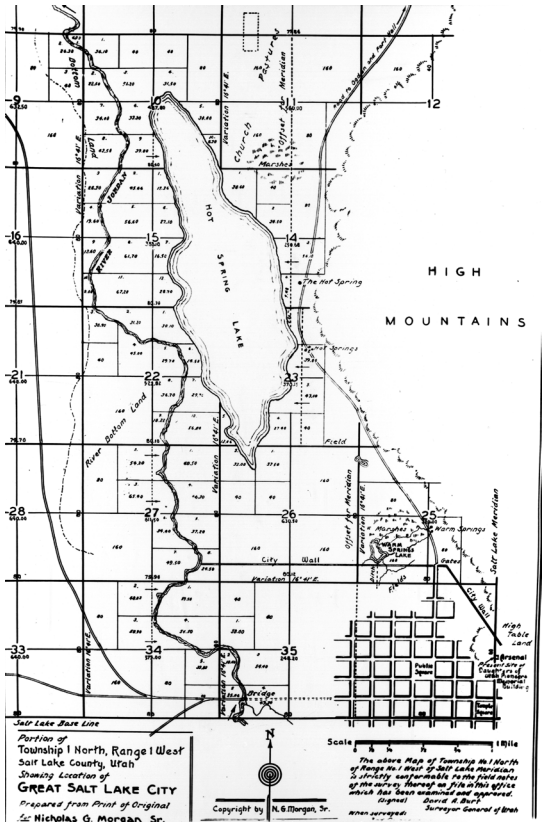
BY MICHAEL MCLANE

As the redevelopment and gentrification of the Marmalade and Capitol Hill neighborhoods progress, a largely forgotten area of Salt Lake City has come back into focus. Bike lanes, bus stops, and sidewalks have appeared along stretches of Beck Street, a place long inhospitable to those not driving semis or dump trucks. At Beck's southern terminus, the old Wasatch Warm Springs Plunge building has become the center of a concerted effort by the Warm Springs Alliance and other groups to reclaim the building as a community space and revitalize the surrounding green space to better reflect its history prior to the encroachment of its industrial neighbors. Many people are surprised to discover that a neighborhood—Swedetown—exists in the midst of what some call Refinery Row and has been there for nearly the entire history of the city, with a rich history all its own.

Unless you happen to be employed in one of the various industries along Beck Street, it has been easy to forget this three-mile stretch between 800 North and the Salt Lake County–Davis County line (with east–west boundaries between the foot of the Wasatch Mountains and the railroad lines that create the transit corridor into Salt Lake City). Given the labyrinth of refineries, scrap yards, and aggregate industries that now line Beck, it is difficult to believe that this area sat on the edge of what was once a landscape defined by the presence of water stretching from the shores of the Great Salt Lake to hot springs seeping from hillsides at the base of the Wasatch Mountains. Nineteenth- and early twentieth-century Utahns considered it part of a recreational wonderland. Many of the springs, lakes, and sloughs enjoyed by urban dwellers along the Wasatch Front have since been drained, filled in, or run underground in a complex infrastructure designed to make way for industrial development. Drivers on Interstate 15—which, beginning in the late 1950s, would be the final catalyst in the demise of recreation along Beck and lead to the obsolescence of much of the mom-and-pop charm along that part of US Route

89—might detect a whiff of sulphur from time to time and chalk it up to industry. However, most of the springs along Beck Street are still there, making their way through culverts and canals down to the Jordan and the Great Salt Lake, and a few are still exposed, such as Warm Springs and Hobo Springs just north of the Warm Springs Wasatch Plunge building. These are faint traces of the hydrological, recreational, and cultural ecosystem that the area around Beck Street used to represent, and they are an indication of just how much power industrial interests were able to exert when recreational interests shifted from the Great Salt Lake and the waters that fed it to the mountains adjacent to the city. The historian Jared Farmer has traced this shift and the implications it had for the Wasatch Front's hydrological features.[1] When combined with increasing medical knowledge and concerns over waterborne illness, this shift away from the lakeside and springs resorts led to the long-term neglect and near-total disappearance of lakes and springs in north Salt Lake County.

Despite common perception of the Wasatch Front as an arid or semi-arid environment, the Köppen climate classification identifies north Salt Lake Valley as warm and temperate, with significant rainfall—more oasis on the edge of the Great Basin than desert.[2] Seven primary watershed creeks poured off the Wasatch and, with the Jordan River, fed lakes and lakelets throughout the valley or emptied into the Great Salt Lake. Additional water sources existed north of Ensign Peak and likewise fed into the lake. Amongst the waters in the valley was a complex of hot springs at the foot of the Wasatch, starting just north of Ensign Peak and continuing north to what is now the county line. Early settlers documented four dozen or so springs and seeps. Most of them drained into a large body of water that would later be known as Hot Spring Lake, a substantial lake with a shoreline between four and five miles in circumference that subsequently drained into the Jordan River before the river's comingling with the Great Salt Lake. Collectively, these features constitute the Wasatch Springs Fault geothermal area. The fault lines where the Wasatch range slips past the valley floor concentrate in the area of the city between Ensign Peak and Red Butte Canyon; and two major fault zones,



Portion of a map showing Warm Springs Lake and the larger Hot Spring Lake. Numerous springs flowed into Hot Spring Lake, a waterbody hydrologically connected to the Jordan River and the Great Salt Lake. This map was produced as part of a survey undertaken by David H. Burr, who established his office in Salt Lake City in 1855. *Map by Nichols G. Morgan, Sr. Utah State Historical Society, photo no. 21484.*

the Wasatch Fault zone and the East Great Salt Lake Fault zone, abut north of the spur of Ensign Peak near the Beck Street geothermal region.

Without these fault zones, the Beck Street area would lack much of its geological character, either elevated or subterranean. Both the Warm Springs fault and the Hobo fault are associated with nearby springs that share their names with segments of the Wasatch fault zone, which acts as a boundary between Salt Lake Valley and the Wasatch Range. Warm and hot spring activity nearly always occurs at intersections that are perpendicular to the fault zone.[3] As Bill Fiero describes in his study of Great Basin geology, this friction accounts for the widespread hot and warm spring activity in the area as

"groundwater emerges from the subterranean passages through which it has moved for thousands of years . . . it seeps to depths where it is heated by geothermal energy . . . [returning] along deep fault systems which intersect the slowly seeping waters."[4]

This abundant geothermal activity did not go unnoticed by early settlers. The first white explorer to describe the geothermal area was Edwin Bryant, who was part of William Russell's emigrant group that created the Hastings Cutoff in 1846. He described both the Hot Spring Lake and Warm Springs sites in less than glowing terms, calling the water "of most of them bitter and nauseous."[5]

Erastus Snow was the first of the Latter-day Saint settlers to discover the springs on July 22, 1847. Four days later, Snow returned with Brigham Young, William Clayton, Thomas Bullock, and others to explore Warm Springs, as well as Hot Spring Lake. While the scalding waters of the northern springs were unusable without a means of controlling temperature—their initial readings indicated the waters of what would later be named Beck's Hot Spring to be 126 degrees Fahrenheit—Warm Springs, the spring nearest to Ensign Peak, measured a comfortable 109 degrees. These early visitors reported that they "bathed in the warm springs [and] found it very pleasant and refreshing."[6]

Another member of this party, Thomas Bullock, was less impressed by the springs on his first visit, noting that "it was very warm, & smelt very bad. After washing we returned to camp, when I had a sweating."[7] It did not take Bullock long to change his mind on Warm Springs once Young consented to letting him reshape the site. An entry in Bullock's journal a short while later stated, "north of the Temple Block is a sulpher spring which I dug out and made into a beautiful place. My fingers rooted out the stones, and a couple of brethren afterwards assisted me with spades to dig out a place, about sixteen feet square, to bathe in . . . those who once bath there want to go again."[8] Bullock was also the first to describe both the purported healing properties of the springs and to invoke Biblical imagery in describing them when he wrote, "These springs, like the Pool of Siloam, heal all who bathe, no matter what their complaints. The air is very salubrious, and with these warm springs, I can truly say we have found a healthy country."[9]

Others wrote about the springs in far more poetic terms. Among them was the famed Richard Burton, who began his 1860 description of entering the valley with a reference to Hot Spring Lake:

> Northward, curls of vapor ascending from a gleaming sheet—the Lake of the Hot Springs—set in a bezel of emerald green, and bordered by another lake-bench upon which the glooms of evening were rapidly gathering, hung like a veil of gauze around the waist of the mountains. Southward for twenty-five miles stretched the length of the valley, with the little river winding its way like a silver thread in a brocade of green and gold. The view in this direction was closed by "Mountain Point," another formation of terraced range, which forms the water-gate of Jordan, and which conceals and separates the fresh water that feeds the Salt Lake—the Sea of Tiberias from the Dead Sea.[10]

Although Burton wrote well after the arrival of the Latter-day Saints, his description indicates the hydrological nature of the valley's ecosystem, how much the waters mattered to early settlers, and how water acted as the framework for their new home. Edward William Tullidge's later account of the spring is likewise complimentary, calling it "probably the most wonderful spring in the world" and the "essence of mineral water itself." Tullidge simultaneously predicted a more widespread popularity for the springs, expressing no doubt that it would be a place "constantly crowded with visitors" where "invalids from all parts of the world will find, for a while, a restful home."[11]

Medical geography—the belief that particular places, especially hot springs and other bodies of water, had healing powers—was popular in the nineteenth century. The parallels between Christianity's emphasis on baptism and the popularity of springs during American settlement and western migration account for part of this popularity. Medical geography sites were often one of two types: "natural" healing places

and the more sanctified ground of socialized healing spaces ties to religious systems.[12] In some circumstances, these two categories overlapped, as was the case with Warm Springs and the bathhouses associated with the site.

Hot springs were places of physical healing as well as socializing and relaxation. The writer John Brinckerhoff Jackson described such beliefs as "an essential part of the classical doctrine of nature: the restoration of the balance among the four humors by means of absorbing one of the elements."[13] Such sites soon became commercialized. In Hot Springs, South Dakota, "a town founded by entrepreneurs to sell a community called 'health,'" mineral springs formed the core of civic creation.[14] This, too, would become a critical component of Warm Springs, as Great Salt Lake City welcomed travelers from around the world.

It did not take long for reports of the qualities of Warm Springs to draw visitors. Bullock reported that Dr. Willard Richards recommended hot mineral springs for their health benefits and that "every person who was sick that bathed in [Warm Springs] recovered."[15] Such claims increased traffic to the site, so Bullock and others dug out significant portions of the springs to make a larger bathing area that could accommodate about a dozen bathers at a time. Its increasing popularity led local leaders to create a bathing schedule that allowed women to visit the springs on Tuesdays and Fridays, while men were welcome the other days of the week, a situation likely necessitated for modesty's sake because there were no dressing facilities on-site and most bathed nude anyway.[16]

By no means were the Latter-day Saints the first to use the springs. Both Ute and Shoshone Indians wintered in the area and viewed the springs as sacred sites. They were present at the springs during the harsh winter of 1847, a few months after Brigham Young's party arrived. While Mormon pioneers had encountered various tribes crossing the plains and trekking through the ranges of Wyoming and Utah, this wintering arrangement was likely the first time the groups lived in such close proximity. There is little evidence to suggest that the results were anything other than peaceful and mundane. They would encounter one another rather uneventfully over the next winter as well, until a measles outbreak among the new arrivals spread rapidly throughout the Ute and Shoshone camps. A freighted account from one settler recalled that the Indians "would rush past our cabin howling and screaming—run and jump into the warm springs & then take cold and die . . . at all times of day or night their howls or mournings rent the air."[17] Mass graves were dug for the victims. The shared belief in the healing power of the springs was shattered by the outbreak and the bands did not return the following winter or any thereafter.

Although the outbreak of disease shifted indigenous perspectives on the springs, the notion of the site as sacred was not isolated to the Utes and Shoshones. In addition to, and likely as a result of, the belief in the healing powers of the waters, the Latter-day Saints quickly began using the site as a place for baptism and rebaptism. Many converts to the religion were baptized in places such as Nauvoo, Illinois, and Independence, Missouri, or in the European countries from which they emigrated. Despite this, many felt compelled to be rebaptized upon their arrival in the valley as a means of confirming their entry into Zion, as a matter of assimilation, of reasserting both their faith and group identity.[18] Rebaptism symbolized a fresh start, free of all the travails of international emigration and a long, cross-continental trek. The springs bubbling out of the mountains provided an obvious place for these rites. Baptism, bathing, and other activities in the springs would come to be known by the faithful as "taking the waters," a phrase as sincere in its original intent as it is ironic with its present colonial and environmental undertones.[19]

Aside from the Temple Block, Warm Springs became the site of one of the earliest city planning projects for the small settlement. The recently appointed road-master, Daniel Spencer, was authorized at an 1848 meeting to collect property taxes from residents in order to pay for a number of public improvements, including a bathhouse at Warm Springs. The bathhouse project was intended to improve the community but also to keep Young's followers occupied and cooperating with one another.[20]

It took a little under two years to raise the necessary funds to build the bathhouse, during which the settlement became decidedly less

Warm Springs Bath House with mule-driven "railroad" service to and from the city center, 1850s. This service would be replaced later by the Great Salt Lake Hot Springs Railroad as other leisure resorts were built along the Great Salt Lake and the Wasatch foothills. *Utah State Historical Society, photo no. 6358*.

isolated from the outside world.[21] The California Gold Rush was on, and those hoping to strike it rich routinely made their way through Great Salt Lake City. So, too, did agents of the federal government and military. The springs and their environs were a popular stop for members of the United States Geological Survey (USGS), whose accounts of the area contributed to their growing fame.

While Young often willingly helped these various parties and was pleased to show off his settlement, he remained wary of both non-Mormons and the federal government. However, it did not take long for Young and others to realize that springs so near the city could provide an economic boon. Within a few weeks of the November 1850 dedication of the bathhouse grounds, Young indicated in his territorial governor's message that the bathhouse should act as a source of revenue for the city.[22]

A year prior to the dedication of Warm Springs, Young had appointed James Hendricks as bishop of the nineteenth ward, which included the Warm Springs area. As part of his duties, Hendricks was commissioned to oversee the operation at the bathhouse. The original bathhouse sat approximately where Reed Avenue meets 300 West. On July 1, 1850, the *Deseret News* ran the headline "THE BATH HOUSE is now open for the accommodation of gentlemen." Despite the copy, the facility welcomed women as well and provided at least one inner specifically for their use.[23] In an indication of the venture's early economic struggles, Hendricks's ward lacked the funds to build both the bathhouse and a chapel for church services, so they used the bathhouse for church services for the congregation's first few years. In addition to the large public pools and private baths, the building also contained a large meeting space for social gatherings.[24]

Young, Hendricks, and others recognized that the hot springs could serve as both an economic advantage for the territory and a means to make their people seem less alien to the rest of the country. Following his USGS survey of the Great Salt Lake, Howard Stansbury wintered in

Salt Lake City, explored the northern borders of the city, and seemed taken with the geothermal area:

> A warm spring issues from the base of the mountain, the water of which has been conducted by pipes into a commodious bathing-house; while, at the western point of the same spur, about three miles distant, another spring flows in a bold stream from beneath a perpendicular rock with a temperature too high to admit the insertion of the hand, (128° Fahr.). At the base of the hill it forms a little lake, which in the autumn and winter is covered with large flocks of waterfowl, attracted by the genial temperature of the water.[25]

The Latter-day Saints knew their culture intrigued outsiders, and a resort open to the curious would certainly add to this appeal. Travelers who told of Young's "Kingdom of Deseret" often ascribed to it an "Asiatic" quality that was reinforced both by the idiolect of the Mormons, whose use of words such as *Zion* and *Jordan* figured prominently into their geography and mythos. Media accounts emphasized what the historian Paul Reeve calls the "orientalization of Mormons [with] depictions of Mormon households as exotic Turkish 'harems' with women secluded in seraglios."[26] Railroad guide books and other tourist materials did not fail to capitalize on such exoticism. Great Salt Lake City was a curious place with a curious people and an enormous inland sea similar to the Dead Sea. Taking up this metaphor, Burton wrote of the confluence of the fresh and salt water as similar to that of the Middle East in that "[t]hese springs, together with the fresh-water lake and the Jordan, are held to be more purifying than Abana and Pharphar, rivers of Damascus." As the historian Jared Farmer puts it, "Where else could you find a mysterious religious capital alongside a sulfurous warm spring and briny inland sea?"[27]

As the bathhouse grew in popularity, hotels and other services opened nearby to accommodate travelers lured to its waters. Although Mormons owned all the early businesses in the area, the location of the resort and its amenities did provide a convenient distance between such visitors and the main settlement of Salt Lake City. The proprietors did not fail to cater to the tastes of outsiders, with one hotel even holding a liquor license, the only one in the city at the time.[28]

Meanwhile, James Hendricks found his role as caretaker of the bathhouse to be a difficult one. By the fall of 1855, Hendricks left the resort, turning over the bathhouse and its accommodations to A. H. Raleigh and Golding Tannery, its first private owner. While the owners of the tannery ceased offering rooms for rent, they continued to offer bathing services. Even these reduced amenities quickly fell into disrepair, and by 1859, the property had changed hands once again. However, the tannery's tenure on the site illustrates one of the earliest examples of industrial and multipurpose sites in the area, a trend that would eventually change the character of the springs and the surrounding land. The tannery's presence next to a public bath seems absurd given the toxic chemicals—such as lead, arsenic, and chromium—used in the tanning process. It seems unlikely that the medicinal and spiritual properties of the springs could overpower the stench of animal hides being chemically burned a short distance away. This juxtaposition remains as refineries that surround the site now pay a kind of homage to these early missteps, subjecting the area to chemicals less odorous, but no less toxic.

In 1859, in what appears to be an early public-private partnership, the city council turned the property over to John Tobin, who was commissioned to build a new bathhouse and make general improvements to the site. For his part, Tobin advertised free use of the springs to "emigrants intending to be permanent settlers, on their arrival . . . [to] enjoy the benefits of the Warm Springs this season; excellent for cleansing the dust and alkali of long road from the eastern states."[29]

Over the next decade, a new bathhouse was built a short distance north of the original along with other new facilities. With the new facility came a new push to bring greater numbers of visitors to the springs. In 1865, the Salt Lake Railroad was established, providing mule-driven street cars to the city. Its first line offered pleasure seekers a direct route to and from the municipal baths.[30] The springs and their facilities would be featured prominently in travel

Beck's Hot Springs looking west from the Wasatch foothills. Hot Spring Lake is in the background, and signs for accommodations and beer can be made out on buildings. Tracks for the Great Salt Lake Hot Springs Railroad can be seen in front of the hotel and springs building. *Photograph by C. R. Savage. Utah State Historical Society, photo no. 6157.*

guides published by the Union Pacific following the completion of the transcontinental railroad. One of the more popular guides, *Crofutt's Trans-Continental Tourist's Guide*, offered the "celebrated springs" up as a preferred stop for those in the city.[31]

Resorts continued to be a focal point of transit lines in the valley and along the Wasatch Front and, for a time, the springs remained a major stop for them. As the name suggests, the Great Salt Lake and Hot Springs Railway (this time a locomotive railway) started in 1891 with service to Saltair and Garfield—the palatial resorts along the coast of the Great Salt Lake. The railroad was then built out in stages to Warm Springs, Beck's Hot Springs, Bountiful's Eden Park, and finally to the new Lagoon resort in Farmington.[32]

While Warm Springs might be the most-remembered Beck Street resort today, largely because of the Wasatch Warm Springs Plunge building that still occupies the site, it was by no means the only such facility built on the area's thermal activity or along the Wasatch Front at large. The street's namesake, John Beck, already owned a hot springs resort on Utah Lake known as Saratoga Springs when he purchased property on Hot Spring Lake in 1885 with proceeds from his Bullion-Beck mine. The lake did not have a "reputation for healing," but Beck went ahead with advertising and improvements anyhow.[33]

The property contained not only Hot Spring Lake but also the largest and hottest of the springs north of Salt Lake City. The west end of the lake had a small stream that joined to the Jordan River, which then flowed for a short distance until it met the Great Salt Lake. As such, Beck's property provided an ideal spot much of the year for boating, and one could navigate the channel and river in even moderately sized boats, sailing from the resort out to the Great Salt Lake and back with ease.

Beck quickly developed the property into a large resort called Beck's Hot Springs that he advertised as the "coming sanitarium of the West." The grounds featured a deep plunge that was thirty by seventy-five feet, a "private"

plunge of forty by eighty feet, and twelve private baths measuring ten by ten feet, which included furnished dressing rooms.[34] However, Beck wanted the resort to offer a wide range of entertainments, so the grounds had hotel rooms and private cottages, wide lawns and shaded picnic areas, and covered patios with dance floors and billiard tables. The resort was popular with touring families and people who were ill or injured, and expansion was soon necessary.

In September 1898, a fire erupted on the grounds of Beck's Hot Springs and destroyed much of the hotel and the areas around the pools. Beck never rebuilt the hotel and resort. He had borrowed heavily on the property and, although he continued to operate the plunge for a short time, a series of proprietors would take his place over the next several years.[35] In 1907, James Breen, a hotelier from Butte, Montana, and Fred Wey purchased the property, including Hot Spring Lake and nearly one hundred additional acres.[36]

The deeds were transferred at least twice more prior to 1915, when J. W. Mellen purchased the property. The spa and bathing facilities continued to be popular with residents and tourists alike, yet the resort faced a string of financial struggles and a second fire in 1924, which destroyed most of the structures. Mellen used insurance money to rebuild once again, but he indicated that "there will be no roof over the pool, thus giving full ventilation to the place and providing an adequate escape for the vapors rising from the pool."[37] It was the first in a series of "improvements" to the facilities that ultimately served only to highlight the state of decay into which the resort was falling. To add insult to injury, the springs went dry the following year after a canal built by the city accidentally tapped into the spring's water table.[38] Although Mellen and others won their subsequent litigation against the city and spring's flow was restored, the damage was done. In the early 1940s, two attorneys, A. L. Hoppaugh and Frank A. Johnson, tried to update the resort and undo the considerable damage done by the neglect of Mellen and the Breens, but it proved too much for their skills and resources and the property went into foreclosure in 1942.[39]

In 1943, the HOM Company and the chemist Harvey Woodbury purchased the resort. Harvey had worked as a research chemist for the Utah Copper Division of Kennecott and was convinced he could overcome the obstacles presented by both the makeup of the spring water and the neglect of the facilities. He left his job at Kennecott to personally oversee renovations and management of the resort, making critical updates to the facility and replacing many of the corroded pipes.

A 1951 regulation from the State Health Department largely negated Woodbury's efforts. It required the chlorination of all swimming pools, a move precipitated by outbreaks of a number of communicable diseases, including polio. The improvements that would be necessary for Woodbury's resort to be in compliance were cost prohibitive. The owners again tried to adapt to these circumstances by developing plans to turn the facility into a health center with a series of small flow-through pools that could be emptied after each use and for which compliance measures would be far less expensive.[40] But it was not to be. The Health Department's regulation was followed shortly by the announcement that the Utah State Highway Commission would build a new portion of US 89 that would run directly through a number of Beck Street properties, including Woodbury's resort. The facility closed for good on March 3, 1953, when the state acquired the title to the property under threat of condemnation. It was an inglorious end to one of the largest and most touted leisure spots in the city's history.

Developments in medicine, particularly a better understanding of viruses and bacteria, began to erode the popularity of medical geography. In the early twentieth century, shortly after the discovery of *e. coli*, the water in Warm Springs was tested and found to be a haven for the bacteria, particularly during times of high visitation. Although this did not deter many bathers initially, it damaged the mystique of the springs and their supposed curative powers, which had held for over two-thirds of a century. This change in a small corner of the valley also illustrated a larger shift occurring along the Wasatch Front: a shift from a water-centered culture that recognized the valley as an oasis within a greater desert to a renewed interest

in the mountains that surrounded these waters. The Wasatch came to be the focal point of recreation as years went on, while the hydrological features came to be neglected, a process that made them more exploitable or disposable for the industry taking hold nearby. As Farmer puts it, "concurrently with these two great desiccations—one recreational, one ecological—a related psychic shift took place: in collective memory, post-pioneer Mormons reimagined Utah's land of lakes as a desert, a place where lifegiving aquatic resources—and the natives who once used them—did not belong."[41] Even as the resorts along the Great Salt Lake—Black Rock, Garfield Beach, and the great Saltair among them—fell victim first to repeated fires and then to changing public whims, allowing increased industry along the lake's shores, so too did the resorts, springs, and marshlands in the Beck Street area begin to fall into obsolescence just as extractive industries in the city were gaining momentum.

The area where Beck's resort once sat is now covered by I-15, as well as refinery and gravel pit properties. Refineries also occupy the former bed of Hot Spring Lake. Although it is no longer visible, Beck's Hot Spring does still flow. The spring's mouth is currently contained in a box beneath the southbound lane of Beck Street, with the flow piped west into drainage ditches that empty into the Jordan River.[42] There is essentially no indication that the resort, a symbol of the heyday of recreation and hydrotherapy in the valley, ever existed. Only the small drainage ponds off I-15 and their occasional sulfuric odors stand as evidence to what was there. This dramatic shift from leisure to industry is more poignant here than anywhere else along Beck Street. While the Warm Springs Plunge building still stands, and Warm Springs and Hobo Springs still trickle from the ground to the north, there is nothing left to remind people of Beck's resort.

In many ways, Hot Spring Lake faced an even more precipitous decline than the other geothermal features in the area. As early as 1892, it was believed that large pockets of natural gas existed below the lake, and, at one point, the American Natural Gas Company drilled test wells down to four hundred feet to gauge these estimates.[43] Nothing came of these explorations. A little over a decade later, the Reliance Irrigation and Water Company began work on a large-scale pumping operation on the lake, accompanied by a series of dikes that would raise the lake's level by five feet, in order to provide irrigation to nearly 12,000 acres north of the city while largely cutting off the lake from the Jordan River and the Great Salt Lake.[44] The elevation of the proposed farmland would require lifting the water in tiers of 35, 125, and 185 feet over its course. While this plan again amounted to little more than speculation, the life of Hot Spring Lake as a leisure destination would prove very short-lived once Beck's resort burned down.

The reputation of the lake as a cesspool was furthered by the construction of canals to transport runoff north from industrial operations to the lake. Benjamin Cater describes how, over time, "these canals became 'open sewers' that caused many observers to collectively brand them a menace to public health . . . [they were] choked with weeds, leaves and silt, and often . . . dirty hazardous water from upper ward ditches, bathhouses, sanitariums, and breweries."[45] The presence of a sewage farm only exacerbated the problem. The lake was finally drained in 1915, following a report by the Board of Health that named it a public health menace because it provided ideal conditions for breeding mosquitoes. Other facets of the geothermal area continued to draw visitors for another five or six decades, yet the public indifference to Hot Spring Lake is indicative of shifting perceptions in regards to medical geography and tourism, as well as an absence of ecological concern. Hot Spring Lake and Beck's Hot Springs quickly faded from memory as residents and visitors looked to the mountains and sought leisure from a different form of water: snow. However, the treatment of Hot Spring Lake also illustrates the increasing local disregard toward the Great Salt Lake and its environs, a process that would continue to feed the desert mythos of the city's residents. As more and more bodies of water tied into the lake's ecosystem disappeared, its reputation as a dead, desert terminus on the far edge of the Great Basin was cemented.

The structure most associated today with the Warm Springs area is the massive Wasatch Warm Springs Plunge building that sits at approximately 800 North where 300 West curves

and begins its northwest run as Beck Street. The architectural firm of Lewis Cannon and John Fetzer built it in 1921. With its cream, stucco walls and bright red tile roof, it is a prominent example of Mediterranean-style architecture in Salt Lake City and was viewed as a significant upgrade over the frame buildings that had previously occupied the site.

Unlike the resorts at Beck's Hot Springs and the bathhouses that preceded the plunge building—which changed hands frequently and went between private and municipal ownership—the new Warm Springs Municipal Baths (later known as the Wasatch Warm Springs Plunge) remained under city ownership throughout its entire history. Municipal ownership was popular with the public and the initial response to the new facility was overwhelmingly positive.[46]

However, the onset of the Great Depression resulted in a dramatic decrease in use of the facility, despite its reasonable admission fees, and, with the war period, came another trend that simultaneously drove swimmers away from the plunge while dramatically shifting the nature of its use. A statewide outbreak of polio occurred in the 1940s, a portent of later concerns about waterborne illnesses and bacteria. By the summer of 1943, forty cases of poliomyelitis (polio) had been reported in Utah, primarily in Salt Lake and Utah counties.[47] As numbers continued to rise, the Health Department ordered all public pools closed, including Beck's Hot Springs and the Wasatch Warm Springs Plunge. However, the two hot springs facilities were quickly identified as potential hydrotherapy sites for polio victims, and Warm Springs became a center for such treatment.

This was not the first time that the waters had been recommended for these purposes. As early as 1936, officials with ties to Franklin Delano Roosevelt noticed that conditions at Warm Springs in Utah resembled those of Warm Springs, Georgia, where Roosevelt himself often sought therapy. Of particular interest was nearby St. Mark's Hospital's use of pipes to bring water directly from the spring for similar treatments. It was recommended that the hospital develop an infantile paralysis center, because "exercise in buoyant water will give the crippled children of Salt Lake . . . curative treatment in conjunction with hospital facilities that will approximate the benefits of the Georgia resort."[48]

Ultimately, and despite these hopes of therapeutic use, the public plunges in the adjacent rooms proved too great a threat to public health. Studies commissioned by the State Department of Health and conducted by University of Utah scientists in 1947 indicated that bacterial counts in the water were high enough to pose a hazard to swimmers, and the facility was closed until the issue could be resolved. While bacterial levels remained relatively low during non-peak hours, a large influx of swimmers during certain times caused these levels to spike dramatically. The Health Department recommended the water be heavily chlorinated to kill the bacteria. What they failed to understand was that sulfurous spring water cannot be chlorinated without producing precipitates harmful to both swimmers and to the facilities themselves. After a long closure and repeated debates over whether to sell the plunge building, it was decided that the two large pools would be filled instead with fresh water, which would allow for a consistent standard of chlorination and cycling for all pools in the state, while the small private baths could continue to utilize the water from the springs.[49]

By 1970, concerns over the health threats posed by the water were supplanted by fears regarding the structure of the building itself. In June 1970, the city commission closed the facility after large chunks of concrete came loose from the ceiling and crashed into the pools and the surrounding area.[50] After substantial remodeling, it reopened again for a brief period but closed again for the final time, in 1976, after which Salt Lake City's Parks Department used it for storage for nearly a decade. The plunge building was repurposed one more time in 1983 when the city leased it to the Children's Museum. The museum was beloved by many in the city and lasted nearly two decades before its move to the Gateway. Since then, the building has sat empty, a decaying testimony to the heyday of Warm Springs as a getaway from the bustling city.

There is perhaps no starker contrast that could exist to the recreational uses made of Beck Street's east side than that of the refineries

that tower over its west side. Whereas the springs symbolized cleanliness and healing, even after they were made into commercial venues, refineries are reminders of the grittiness and perpetual motion of capital and commerce. The product created in these complexes of steel and lights is the literal fuel of capitalism. The names that have graced the barbed wire fences from 900 North to 2500 North are familiar to most Americans: AMOCO, BP, Chevron, Tesoro. Tesoro and Chevron remain the two largest operations in the area and, aside from a thin frontage on the west side of Beck Street and the transportation corridor operated by Utah Transit Authority, they own nearly all the land between Beck Street and approximately 900 West. The refining of crude oil to create gasoline, lubricants, and other petroleum products continues day and night, every day of the year.

The refineries came relatively late to the Beck Street area. In 1903, a Swedish immigrant and Mormon convert named C. J. Gustaveson arrived at Ellis Island and quickly made his way to Utah. Gustaveson saw a clear need for lubricants, particularly for the rapidly expanding trolley lines. In 1908, he founded Lubra Oils Manufacturing Company at 900 North Beck Street. His company produced about six barrels of lubricants per day, as well as paraffin distillates that were used in dynamite, matches, and wax cartons. One of the byproducts of his production process was gasoline, which at the time was considered essentially useless.[51]

Two years later, Gustaveson sold to John C. Howard, who had recently incorporated the Utah Oil Refining Company. Howard finished the refinery that Gustaveson began constructing while increasing its capacity. By 1922, Howard's

Utah Oil and Refining Company (UTOCO), view from the top of a warehouse, 1920. Prior to the dawn of the automotive age, gasoline had been considered a byproduct in the refining of lubricants. As cars became ubiquitous, refining operations expanded at a rapid pace. *Utah State Historical Society, Shipler no. 20726.*

company was producing 3,200 barrels per day, with a significantly higher percentage of that output consisting of gasoline, a change driven by the onset of the automobile age.[52] By 1940, Utah Oil Refining had sold controlling shares to Midwest Refining Company, which in turn was purchased by Standard Oil. Once Standard Oil had a 75 percent share in the company, it changed the name to Utah Oil Company (UTOCO).[53]

In 1939, the company's reliance solely on Union Pacific trains to deliver crude oil to its operations ended with the creation of a 437-mile pipeline from the Wyoming oil fields to the Salt Lake City refinery.[54] What the railroad had begun with its arrival in the Salt Lake Valley in 1867, the pipeline solidified a little over a half century later: Beck Street was now part of a globalized network, a petrochemical rhizome firmly entrenched in the rapidly shrinking freshwater hinterlands surrounding the Great Salt Lake and whose significance would be amplified significantly in World War II and beyond.

With the onset of the war, the UTOCO refinery ramped up its production to over 14,000 barrels per day.[55] Refineries such as UTOCO's became an integral part of the military-industrial complex, fueling not only the literal war machines in Europe and the Pacific but also infrastructure projects underway within the United States, such as the Manhattan Project. As if to reinforce the importance of this relationship, the expansions made in 1940s at UTOCO were known as "the Defense Plant."[56] The historian Thomas Alexander writes that, for many Utah industries, including UTOCO, this relationship did not end with the conclusion of the war and "provided a base for the more recent expansion of companies like Thiokol and Hercules."[57] Whereas the hot springs had attracted people from all over the world, oil ensured that Beck Street now exported both oil and American influence around the world. The relationship with the federal government and the military expanded further when the Salt Lake City refinery became the first in the state to manufacture jet fuel. By 1945, it produced the largest percentage of such fuel per barrel of crude of any refinery in the world.[58]

By the 1960s, Standard Oil had changed its brand name to American Oil Company (AMOCO). When Standard Oil officially absorbed UTOCO in 1963, UTOCO also began using the name AMOCO. In September 2001, the UTOCO/AMOCO facility was sold to Tesoro. The Tesoro plant now stands as the largest refining operation in Utah, producing 58,000 barrels a day.[59] The increased demand for petroleum products following World War II was the catalyst for the founding of a second refinery on Beck Street. Chevron has continuously owned and run this facility since 1948.

Across the road from the refineries is another crucial element of today's industrialized Beck Street: the aggregate mining operations that take place along three miles of the corridor's east side. Because Beck Street and I-15 place the viewer directly adjacent to these operations, their severity can be startling. As the roads curve to the northwest and then back to the north, it is impossible to ignore the areas on the Wasatch foothills where large spurs have been removed in order to provide the materials that make the very grid of the city possible. The mountainside has provided the gravel and derivative products that are the foundations of countless roads and subdivisions throughout the valley. As Robert Phillips documents, this list of products and byproducts is substantial and has a wide reach throughout municipal infrastructure: road base, asphalt cleaning material, ready mix concrete, asphalt, precast and pre-stressed concrete structural members, railroad ballast, slag stone, road base, terrazzo aggregates, glass and brick sand, and sand blasting and polishing sand slag silicon.[60]

The spit that runs north-by-northwest along the Warm Springs Fault and along nearly the entire length of Beck Street is made up of limestones and sandstones deposited by inflows and tides from the ancient Lake Bonneville. This massive face of conglomerate rock proved useful to Mormon settlers early on, and the establishment of quarries in the area took place within two years of settlement. A public works service was established in the city on January 26, 1850, during a meeting of LDS church leaders. While the primary purpose of the service was the construction of the LDS temple, it also created a wide variety of building and works projects around the city in the next few years. This in turn necessitated shops and plants,

including a lime kiln, an adobe yard, and sand and gravel operations.[61] The latter material largely came from the quarries north of the city. Gravel from this area was mixed with mud and straw to create the composite material for the wall commissioned by Brigham Young to surround the city. Although the wall was left mostly unfinished, gravel operations continued in this area under the auspices of a number of small, municipal or individually owned quarries until the 1920s. At this point, large-scale production began in earnest.

The increase in production by these quarries throughout the first half of the twentieth century was rapid—nearly four-fold at one point—pushed along by the valley's growth and especially by the expanding use of the automobile and the subsequent need for more roads.[62] Will and Eric Ryberg founded the Utah Sand and Gravel Products Corporation—an important player in the Utah aggregates industry—in March 1920; they incorporated in 1925, along with H. E. Eastman and Boyd Hatch. In May 1919, the Ryberg brothers had secured an eighty-acre lot at on the foothills north of the city, in what was referred to as the "Bonneville Level," for their operations.[63] Nearby, Salt Lake Valley Sand and Gravel was founded four years later. Early on, Utah Sand and Gravel mostly provided products for sidewalk and curb contracts in Salt Lake City and Provo. However, in the early 1930s, the company secured the contract to supply materials for the runways and other infrastructure at the expanding Salt Lake City Municipal Airport. Such large jobs resulted in a series of expansions that quickly made the North Salt Lake plant one of the largest in the area.[64]

Gravel mines along Beck Street, including the Stauffer Pit at Utah Sand and Gravel's North Salt Lake facility, were some of the first operations to tap into the geothermal springs for industrial purposes. Unlike the railroad and others that wanted to divert the springs away from their plants to avoid damages, the gravel pit tapped two wells via the springs that were then used to supply washing water for materials.[65] The use of the wells reduced the footprint of the operation because it negated the need for settling ponds, but it also made the pits more environmentally unsound because it eliminated the reuse of water and permanently altered the geological profile of the foothills and the springs.[66]

The gravel pits, refineries, and affiliated businesses polluted the Beck Street area environment via the earth and the water beneath it and via the air above it. In the mid-twentieth century, the canals running behind the Beck Street refineries routinely caught fire as a result of byproduct spills or dumping from the refineries. Tremendous dust, as well as noise and vibratory pollution came from the quarries.[67] The effluence of industry has become less overt in recent years but no less toxic. Although most residents typically only notice the large-scale burn-offs that create plumes of flame from time to time, the refinery stacks pump out gases such as dioxins, sulfur dioxide, and nitrogen oxide on a regular basis. With minimal oversight on the federal and local levels, the refineries are largely left to their own devices. According to studies from the advocacy group Utah Physicians for a Healthy Environment, between 2000 and 2010, Utah's refineries have "reported fire, explosions, chemical releases and spills, both large and small, on average once every nine days" for the last several years.[68]

Air pollution is only one of a number of threats posed by petrochemical and extraction industries in the Beck Street area. Contaminated soils, whether a result of hazardous waste storage or the result of leaking or spilling machinery and vehicles, can lead to equally severe problems because the soils either become windborne as they dry out or are dissolved and carried into water tables by runoff. The legacy of contamination along Beck Street is best illustrated by the presence of two Superfund sites—those places that the Environmental Protection Agency (EPA) notes as especially contaminated—each of which is tied directly to Beck Street industry.[69]

The first such site is the Rose Park Sludge Pit, which the oil refineries used as a dumping ground from the 1920s through 1957. Salt Lake City purchased the spot in 1957, removed many truckloads of waste sludge, and capped the pit with soil; then, in 1976, the city rediscovered the problem with the expansion of a city park. The EPA designated the site with Superfund

status in 1983 and placed particular emphasis on the activities of AMOCO. Reclamation efforts included a slurry wall to isolate wastes, a clay cap over the pit to keep visitors to the park and rainwater out, and traffic barriers to prevent damage to the renovations.[70]

The second Superfund location in the area is the 6.6-acre Petrochem Recycling Corporation/Ekotek site at 1628 North Chicago Street, just northwest of fifty or so homes in Swedetown. Beginning in 1978, it became home to hazardous waste storage and oil recycling facilities, where hundreds of businesses across five states sent their waste.[71] Improper storage procedures caused several releases from aboveground tanks and contamination of the soil and groundwater. The EPA began emergency response measures in 1988 following the bankruptcy and closure of Petrochem, and the U.S. Justice Department subsequently convicted an owner and operator of Ekotek of environmental crimes for their actions.[72] The EPA removed the site, as well as the Rose Park Sludge Pit, from its National Priorities List in 2003.[73]

While much of the Beck Street area remains firmly situated in a kind of industrial limbo, Salt Lakers have shown renewed interest in both the green space around the springs and the plunge building itself: Warm Springs Park. This is somewhat unsurprising, because the residents of Swedetown and the Marmalade neighborhood were largely the catalyst for the establishment of the park in the first place. The park's current reputation for homelessness, drugs, and other problems does not sit well with those individuals who fought hard for some remnant of the area's leisure heyday to be maintained amidst the industry. Further, gentrification of the neighborhood has heightened pressure on the city to provide amenities in the area.

In 2014 and 2015, Salt Lake City contracted with Blū Line Designs to draft proposals for a renovation of the park. At a series of meetings, members of the public were asked to prioritize uses and amenities for the park, which included trails, natural areas, tables, an amphitheater, security, public art, a restoration of the springs, off-leash dog use, interpretive elements regarding the history of the area, and an awareness for the environmental sensitivity of the space. The consultants utilized these requests to create two options for a makeover of Warm Springs Park, "activity central" and "open green." Conspicuously absent from the discussions were any proposals that tied restoration of the plunge building to the park proposal, given the building's dilapidated state.

The final planning meeting for the Warm Springs Park renovations took place in March 2015. There, Blū Line Designs presented its master plan, an amalgam of the two previous plans presented to the public that incorporates approximately fifteen design elements. Most prominent among these is the restoration of the springs, which would include a stone channel as well as a boardwalk and additional paths around both spring sources. The proposal does not include any recirculating features or further modification to the flow of the springs themselves. In addition, the proposal includes a dog park, community garden, multipurpose athletic field, additional pavilion, and a series of paths and trails circumventing the park and connecting to extant trails such as the Bonneville Shoreline Trail. The compromise is one that requires minimal restructuring of the site and recognizes the history of leisure uses for the area.[74]

Environmental histories are often stories of declension—of the transition from pristine landscape to defiled one. The history of the Beck Street area may be so read, at least in perception: prior to the mid-twentieth century, people considered the thermal springs to have healing properties, though in just a few decades the springs were replaced by an interstate highway and refineries, entities whose presence generates repeated investigations into their deleterious health effects. The area *has* undergone a transition from a predominantly watery landscape to one dominated by refineries and an interstate. This is not to say that the dominant industrial landscape is entirely degrading; all landscapes—*natural* or *industrial*—are more complex than the terms we use to classify them. Sand and gravel operations may present an eyesore for those driving along I-15, but as Rebecca Anderson writes about the gravel pits in North Salt Lake, these mountain ramparts provided the raw materials to make development along

The main plunge inside the Wasatch Warm Springs Plunge building. Since 1976, this space has been unused aside from storage purposes. Bleachers can be seen to the left and various depths and warning signs still line the poolside walls. *Utah State Historical Society, photo no. 24769.*

the Wasatch Front possible.[75] The refineries and other industrial companies likewise provide tangible benefits to the community. And yet, the contrast between what stands in this place now and what once is stark.

Given the contrast, it is not surprising that in recent years small but determined groups, such as the Capitol Hill Community Council and the Warm Springs Alliance, have attempted to reclaim elements of a shared history. These Salt Lakers and others have identified such sites as a cultural source, something worthy of both preservation and use, an effort that accords well with the words of the writer J. B. Jackson: "we must save what is worth saving and worth using. But to keep them alive means to give them a living function."[76] Jackson also wrote of the "cultural poverty" of landscapes stripped of their political history, bereft of "memory or forethought."[77] It is in these places that collective memory is fostered. This is particularly true of a space that was the focal point of leisure for a city, a place where its communities gathered to share both the land and their lives, and an important transitional zone between the Great Salt Lake and the Wasatch Mountains.

Warm Springs is distinctive, a place steeped in history and tied to the inner workings of the land on which it resides. It is a last point of physical contact with the land before Beck Street acquiesces to the industrial processes rending it apart just outside its doors. Like the saline lake to the west, its waters lured tourists from around the world and provided a recreational focal point for those in the city, and, like the lake, it is now threatened by diversions and other human actions. Only the sustained efforts of citizens living at the edges of this industrial

haven will ensure that the last few vestiges of this former time survive.

Notes

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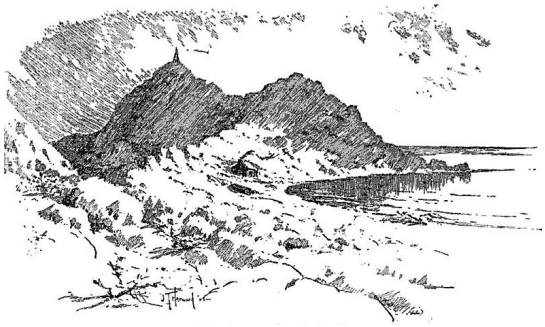


Alfred Lambourne's sketch of the east side of Gunnison Island (top) and the 2018 view (bottom) during an effort to relocate Lambourne's residence. In Lambourne's sketch, the Gunnison Island triangulation station can be seen on the peak with his residence in the drawing's center. In the 2018 photo, the remains of the Guano Sifters' shack can barely be seen in the photo center. *Sketch reproduced from Alfred Lambourne,* Our Inland Sea: The Story of a Homestead *(Salt Lake City: Desert News Publishers, 1909)*.

TANGIBLE HISTORY ON GREAT SALT LAKE'S GUNNISON ISLAND

BY CHRISTOPHER W. MERRITT AND ARIE LEEFLANG

Archaeologically, Gunnison Island is the most enigmatic of the Great Salt Lake islands. A lack of both research funding and interest from academic departments and other organizations has limited historical archeology on Gunnison, as it has elsewhere on the Great Salt Lake. Mostly the neglect is due to the island's remoteness and inaccessibility, even though all but one of the islands are managed, wholly or in part, by state and federal agencies. Gunnison Island—connected as it is to Howard Stansbury's surveying expedition, Alfred Lambourne's wintry residence, the late nineteenth-century guano sifting industry—stands out as the crown jewel for historical investigation. The primary reason: Utah Division of Wildlife Resources (UDWR) management policies since the 1970s prohibit access to the island by any nonsanctioned party and limit staff or affiliated researchers to no more than two or three visits per year. A happy byproduct of these restrictive policies, in place to protect one of the largest American white pelican rookeries in North America, is the preservation of historical and archaeological evidence dating to at least 1850, though there is the potential for much older evidence of humans on the island.

In the summer of 2018, the UDWR agreed to facilitate an exploratory archaeological trip to Gunnison Island as part of a pelican research trip. The authors, both with the Utah Division of State History, approached John Luft of UDWR's Great Salt Lake Ecosystem Program to negotiate passage on the fall research trip to Gunnison Island to recover identification bands from dead pelicans.[1] For months before the trip, we pored through the Stansbury and Lambourne writings for verbal or visual leads to the locations and disposition of potential archaeological sites for documentation. Our approach was both scholarly and practical. The current survey goes beyond existing published information on the history of the

Great Salt Lake—among them Dale L. Morgan's authoritative 1946 work and Gary Topping's 2002 anthology—by identifying cultural resources and new information not currently published.[2] In addition to contributing to the canon of what we already knew about Gunnison, we had in mind an archaeological survey that would help inform the continued management of the island's pelican habitat alongside the protection of cultural resources. While this survey was not comprehensive, it did yield sufficient evidence of human occupations to support additional visits to help researchers understand the relationship between nature and humans in the Great Salt Lake.

One of Captain Howard Stansbury's men, in 1850, was likely the first European American to visit Gunnison Island. Initially named Pelican Island by Stansbury's men, the landform was later officially named after Lieutenant John Williams Gunnison, a chief member of Stansbury's expedition and land-surveying party. Stansbury makes no mention of any evidence of prior Native American visitation to the island, though peoples likely visited it for hundreds or even thousands of years previously to hunt birds, collect eggs, and engage in other activities. Stansbury does reference meeting a Native American couple and their child just south of Gunnison Island, near Strongs Knob, evincing enthnohistoric use of the area by Native Americans.[3] However, the only current historical evidence for Gunnison Island's Native American history, beyond ethnographic tribal territories and oral traditions, is the journal of Alfred Lambourne and his discovery of an indigenous burial site.[4]

Upon reaching the yet unnamed Gunnison Island and Cub Island—Gunnison's northern extension—on May 8, 1850, Stansbury landed in the eastern bay of the island and noted the "immense flocks of pelicans and gulls, disturbed now for the first time, probably, by the intrusion of man."[5] To support his continued mapping efforts, Stansbury and his men quickly constructed from driftwood a triangulation station atop the island's highest point, a "perpendicular cliff of dark-grey limestone [rising] from the water to the height of five hundred feet." Stansbury left Gunnison Island during a terrible storm on May 10, but returned on May 30 to complete his survey of the island's shoreline while the majority of his crew gathered fresh water from the east side of the lake. Stansbury's 1852 report includes a lithograph of the eastern side of the island, featuring an empty, conical-poled structure, likely documenting the location of their camp in what is now called Lambourne Bay.[6] For the next six days, Stansbury and his small team of expeditioners rebuilt the triangulation station because it was "not sufficiently conspicuous" and on June 6, 1850, departed the island with some regret, as it "was the most pleasant [camp] we had yet made in our peregrinations around the lake."[7] These are the first recorded stays on the island, eight days spent camping, surveying, constructing the triangulation station, and eating the abundant gull and pelican eggs. These Gunnison Island excursions were part of a larger survey of the Great Salt Lake conducted by Stansbury between 1849 and 1850.[8]

Further survey work around the Great Salt Lake was conducted by a party led by Second Lieutenant Willard Young in 1879. Young's directive was to make a "careful meander of the shore-line of the land and its islands." He and his party diligently gauged the rivers and streams emptying into the Great Salt Lake and made triangulation measurements from numerous geographic high points. Gunnison Island is only mentioned in a list of points occupied as secondary triangulation stations, and there is no record of how much time Young or his party spent on the island.[9]

After Young's visit, there is no human occupation of any scope at Gunnison Island until the arrival of the artist Alfred Lambourne in 1894. Lambourne established a homestead on the eastern bay of the island in the fall of 1895, but it appears that he visited Gunnison Island around 1882 for his painting "Sunset on Gunnison Island" and again in 1894 during a circumnavigation of the lake for a sketchbook.[10] In February 1895, months before the arrival of Lambourne, the fight over Gunnison Island's future as a homestead or mineral entry commenced. Ernest Cummings, Earl Cummings, and a Mr. Jennings landed on the island to assess the potential for guano development and spent nearly a week stranded, awaiting the return of their vessel.[11] Although more commonly associated with bats, guano, even from birds, is a highly valued fertilizer for agricultural purposes.

Alfred Lambourne spent a winter on Gunnison Island trying to establish a homestead and vineyard from November 1895 to March 1896. Although he eventually lost his fight to homestead the island in 1900 to a conglomerate of guano extractor interests, who had claimed the island under placer mining claims, his 1909 publication *Our Inland Sea* describes his time on the island and is one of the classic texts of the Great Salt Lake.[12]

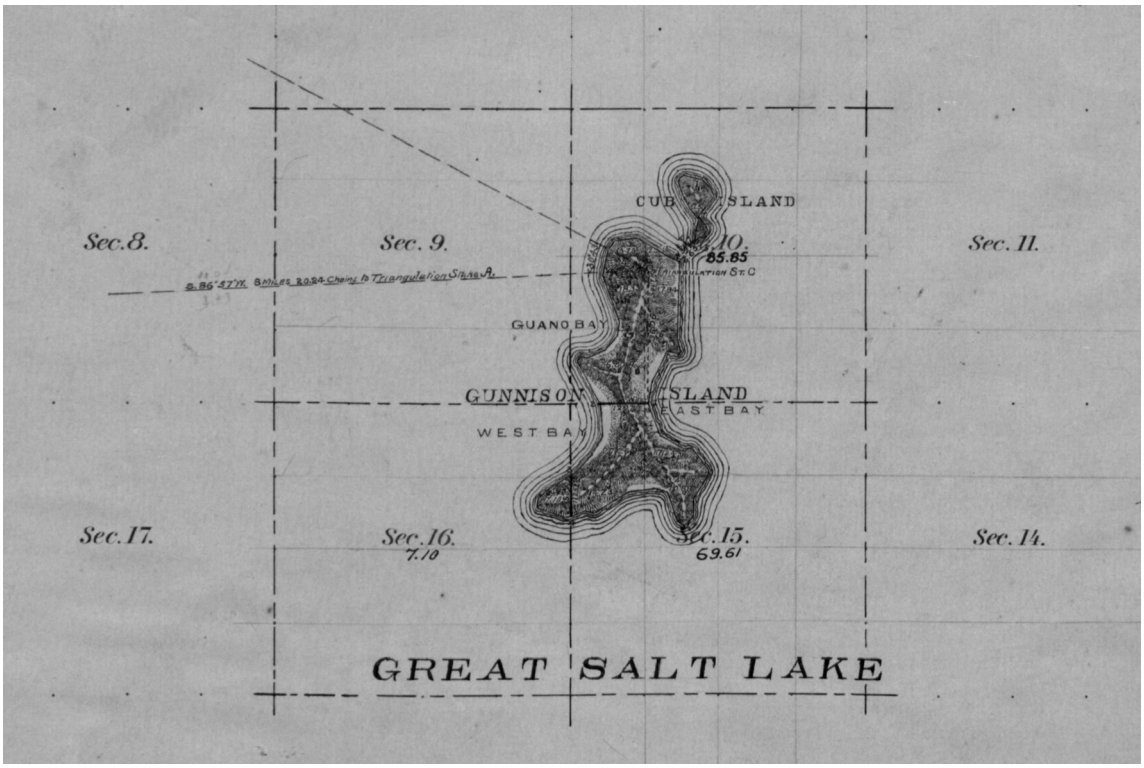
Guano sifting, the collecting and sorting of the guano, never did pan out for the companies that exploited the island's fecal bird material, but their operations, intermittent for several years, also left behind a cultural legacy awaiting discovery. Lambourne's journals provide the only known description of these operations, from their rectangular stone home to the pits and trenches dug throughout the island and the sorting, packing, and shipping of the product to market. A wooden shack along Gunnison Island's eastern bay, known as Lambourne Bay, reportedly dates to early twentieth-century guano operations, but it was likely reused many times by researchers and State of Utah employees for geological and biological projects. In 1977, the State of Utah, having declared that "areas that will support certain threatened life forms shall be preserved for their benefit," condemned current land ownership under mineral rights and allocated state funds for the purchase of Gunnison Island.[13] UDWR now manages both Gunnison and Cub Islands under the Gunnison Island Wildlife Management Area and conducts partnered research through the UDWR's Great Salt Lake Ecosystem Program.

Because a management prohibition keeps human activity one mile away (including in altitude), Gunnison and Cub are perhaps the least visited of the Great Salt Lake islands. This inaccessibility hopefully will continue to protect the islands' bird habitats and, incidentally, preserve their unique archaeological and historical value. In cultural resource management, it is important to document in detail any identified historic properties so that later scholars and policy makers can understand the human and environmental impacts and make management decisions. No baseline exists, however, for the cultural resource signatures remaining on the two islands. Photographs do exist of both the Stansbury triangulation station and the guano sifters' shack, dating to 1934 and 1954 respectively, but no researcher has formally recorded either resource. Chas Cartwright of the Salt Lake Field Office of the Bureau of Land Management completed the only formal archaeological inventory of Cub Island in 1981.[14] Cartwright did not identify any sites as part of his inventory but did note the presence of a significant amount of railroad debris that had washed up along the western shore of Cub Island. This nearly forty-year-old inventory represents the totality of formal investigations of the island, although the historical record indicates the likely existence of many other resources.

In the limited time we had in 2018, our intent was to document three specific high priority targets: Captain Howard Stansbury's 1850 triangulation station, Alfred Lambourne's 1895 house foundation, and the shattered remains of the guano sifters' shack, first built in 1896 but likely rebuilt at a later date. Prior to visiting the island, we gleaned the locations of both the triangulation station and the guano sifters' shack from written descriptions and aerial photographs, but Lambourne's house required a formal inventory to locate. However, by the end of the trip to Gunnison Island we identified five archaeological sites in a little over two hours.[15]

Passing by boat through one of the breaches along the Lucin, or Great Salt Lake, Cutoff—a portion of the Southern Pacific rail line built across Great Salt Lake—feels like moving from one planet to another in the span of a hundred feet. To the south, the water is green and brown in hue, but as one passes through the darkness of the railroad bridge's shadow, surrounded by thousands of California gulls, the water turns bright lime green and then into the pink and amethyst tone of the hypersaline northern arm. While Stansbury's journal describes Gunnison as "surrounded by bold, clear, and beautifully translucent water," the water today is deep amethyst.[16]

During our excursion, we saw iceberg-like piles of foam, formed by vigorous wave action, rolling over the saline water. The various types and amounts of organic material and other dissolved solids in the lake combine to form blocks



A cropped General Land Office plat of Gunnison Island, dated 1896, showing the triangulation station on the northern summit and a "house" on the center-east side of the island. The building location seems to match the Guano Sifters' shack remains seen today. *Courtesy of General Land Office Records, DM ID no. 373699*.

of foam that can reach four-to-eight feet high in places. Lambourne witnessed this foam—so it is not a new manifestation produced by changing lake dynamics—noting amidst a storm that he could hear "the roar of the breakers as they hurl briny foam far up the face of the Northern Cliff" on Gunnison Island.[17] The serene pink water and sticky piles of foam distract the viewer from the real problem of receding water levels in the Great Salt Lake. As of 2018, all of the islands in the Great Salt Lake are really peninsulas, no longer disconnected from the shoreline many miles away. Record low water levels in the lake cause a multitude of ecological and human health consequences, including massive dust storms, new access to sensitive rookeries for predators and humans, increasing salinity levels that affect wildlife, and growing distances between places of rest for feeding birds. For this trip, however, the receding water levels only meant a longer trip to beach the boats at Gunnison Island's northern arm, just to the southwest of Cub Island. Unlike Stansbury or Lambourne, we did not land in the eastern bay, due to shallow water and poor mooring.

Although the weather on this trip was ideal for our intended documentation efforts, the sunny warmth of this fall day enlivened the sickly sweet smell of decaying pelican and seagull carcasses, and the lack of a breeze did nothing to ease the cloud of stench. Like the aftermath of an epic battle, hundreds of pelican carcasses in various states of decay stretched along Lambourne Bay, with the dead ranging from full-sized fledglings to smaller juveniles. As quickly as the smell filled the nostrils, it became clear that there was no use for a metal detector to help identify any buried deposits of historic trash. Thousands of metal fragments—fishing spinners, forks, shotgun shell casings, soda cans, and even railroad ephemera—lined the entirety of the island's gull and pelican rookery areas. While eating fish from the Bear River Migratory Bird Refuge or other freshwater buffets in the region, these birds ingest significant amounts of

human trash and then vomit it up when returning home to feed their still-flightless young. This is perhaps the most complicated of all archaeological site contaminations, but it offers a unique perspective on how an archaeological site can form from the most distinctive of situations. As archaeologists, we hoped to identify artifacts related to the peoples who lived on the island; the nearly 180-years' worth of bird-deposited material mixed with cultural deposits made our work more difficult.

As the two archaeologists on the excursion, we divided and conquered to make the most of the few hours we had on shore. Leeflang sought to document the remains of Stansbury's triangulation station on the island's northernmost peak and complete a reconnaissance survey of Cub Island. Meanwhile, Merritt, armed with a sub-meter-accurate Global Positioning System (GPS), metal detector, and other tools, headed to the south to identify and document the remains of Lambourne's house and the guano sifters' shack. On the way, however, both of us looked into rocky crags and overhangs for any other remains of past humans, such as the Native American skeleton that Lambourne described finding in the northern crags of the island.

Perhaps no other human creation on the Great Salt Lake's islands captures the imagination as the remnants of the triangulation station built by Howard Stansbury's expedition on the northern peak of Gunnison Island. The heavy rocks stacked in a turret-like arrangement on top of one of the most inaccessible and remote locations in Utah is both picturesque and imagination-stirring. Constructed in 1850, the triangulation station is a large rock circle built on summit bedrock from locally sourced stone with a wooden tripod in its center. This is one of over twenty triangulation points and stations used by the Stansbury party in mapping the Great Salt Lake. While UDWR staff reports the Gunnison Island wooden tripod as having collapsed in the past decade, the rock walls are remarkably intact.[18]

As documented by the digital game camera mounted just to the west of the station, this rocky feature is now a perch for peregrine falcons. During this visit, Leeflang completed a measured plan drawing of the station, acquiring accurate measurements for the first time since it was built nearly 160 years ago. The rock-walled station measures nine feet in diameter at its maximum extent, and the tallest wall extends sixty inches above ground surface. During the documentation of the station, no historic artifacts were observed beyond the rock ring feature, the collapsed wooden tripod, and small piles of decaying milled lumber. The piles of milled lumber are curious in origin and function and were likely brought by later visitors, but the wooden tripod appears to be consistent with Stansbury's description of simply constructed poles built from driftwood.[19] Several wire nails were observed in the wooden tripod poles, which were likely added sometime after the tripod's construction, as wire nails were not in use before the 1890s.[20] Leeflang did not identify any historic inscriptions or other markings, but it is possible that artifacts are present in the depth of the rock ring's floor.

Potential changes to the triangulation station since its initial construction are unknown. The current location and general structure of the station match the lithograph in Stansbury's report, titled "Gunnison's Island Station from the North."[21] The subsequent survey visit to the island by Willard Young's party in 1879 may have modified the rock ring structure but likely just reused the Stansbury structure.[22] The current structure largely matches the structure seen in the 1934 photograph by Charles Kelly and also matches, in structure and description, another Stansbury Expedition triangulation station found on Stansbury Island.

From Lambourne's own description and drawings, his island home (built in 1895) appears to have used local rock for its walls, chimney, and entrance. The best description from Lambourne states that "my hut, massive though small, its low, thick walls, built of rough, untrimmed slabs of stone, taken from the cliff by which they stand, its roof, earth-covered, its chimney starting from the ground, and almost as big as the hut itself."[23] Lambourne's use of rock for construction makes it easier to locate these potential features, much easier than locating the organic remains of logs, lumber, or the earthen roof described by Lambourne. Jaimi Butler, of the Great Salt Lake Institute, identified some unusual upright limestone slabs

A 1934 photograph by Charles Kelly (top) and 2018 photo by the authors (bottom) of the Gunnison Island triangulation station, showing the remarkable preservation of the rock structure. Note the since-collapsed pole tripod. *The 1934 photograph is courtesy of Utah State Historical Society, photograph no. 2188.*

on a previous trip to the island, and these, we hypothesized, are the remains of Lambourne's camp. A comparison of Lambourne's own drawing of his home and the surrounding landscape to our images from 2018 supports our hypothesis that the strange upright slabs and roughly rectangular outline of rock are likely the remains of Lambourne's house.

Unfortunately, it appears that visitors to the island either cannibalized much of the house walls for other structures, or perhaps Lambourne's own drawings and descriptions overstated the amount of rock used for this structure. From the remaining foundational walls and porches, it appears that Lambourne's house measured about sixteen feet long on the north/south axis, and eight feet on the east/west axis. A three-feet-wide by six-feet-long entrance extends from the eastern face and is flanked by upright limestone slabs. A rock ring behind the house to the west might be the remains of his fireplace but appears to perhaps be more evidence of the rock walls of his home being reused by later visitors.

Above this foundation remnant are long, level benches of ancestral Lake Bonneville's variable shorelines. It is upon these natural terraces that Lambourne apparently constructed the scaffolding for his vineyards, from which he expected to make a living. "My vineyard follows the island lines," Lambourne wrote. "It is high above the present beach. I have taken advantage of the narrow flats, those what mark a pause in the shrinkage of ancient Bonneville. On the nearest slope and along the flats, the posts and trellis stand."[24] Indeed, numerous small terraces above his house foundation remain, but physical reminders of this attempted vineyard are more difficult to see. We did identify several small pieces of milled lumber on these terraces, but are they Lambourne's vineyard or survey stakes lost long ago during land disputes between him and the guano sifters? More identification is needed to verify the location of Lambourne's attempted vineyards.

Lambourne described the original shack of the guano sifters as being "not a hundred rods from my own." There, he wrote, "the sifters have made for themselves a home. It is long and narrow, and is built of rounded slabs."[25] It is possible that Lambourne exaggerated the distance between his home and the guano sifters' shack; the remains we have identified as the guano sifters' shack are located approximately 150 feet south of his home and not the 1,500 feet that would be more in keeping with Lambourne's estimate of "not a hundred rods." Further, with the exception of the foundation footers, the shack does not appear to have been constructed of rounded slabs but rather of milled lumber. It is likely that the collapsed wooden structure we identified as the shack in 2018, which was still standing into the 1990s, is actually a later rebuild of the original guano sifters' shack by unknown parties, such as brine shrimpers or researchers, on top of the original footers. Lambourne's description of the building's dimensions is accurate; it is long and narrow, measuring twenty-four feet long by twelve feet wide. UDWR and other researchers camped in the cabin even into the 1980s, thus continuing to barely maintain the facility originally built so long ago by the guano sifters. Only twenty feet to the northwest of this structure is a fifteen-square-foot rock foundation of unknown association and function. It is likely linked to the original guano sifters' shack but, without additional investigation, its true age or function is unknown.

After completing the documentation of the Stansbury triangulation station, Leeflang conducted a reconnaissance survey of Cub Island, which is connected to Gunnison by an isthmus covered in foam. Although the Bureau of Land Management archaeologist, Chas Cartwright, inventoried this island with no findings in 1981, it was worth completing a revisit to identify anything that he may have missed.[26] Not uncommonly, many practicing archaeologists in Utah and the Great Basin fixated on identification of prehistoric remains and artifacts, not those of the historic period well into the 1980s. Within minutes of ascending Cub Island's diminutive peak, Leeflang identified fragments of badly bent, split, burned, and disfigured steel and iron. Tail sections of potential aerially dropped munitions were the best indicator of the possible origin of these artifacts. Upon additional historic research, this ordnance relates to use of Cub Island as a bombing target for the United States Army's 17th Bombardment Group in 1940.[27] Although newspaper

accounts only describe the bombers dropping smoke bombs, Cub and Gunnison Islands may contain live munitions. Understanding that the islands of the Great Salt Lake were a target for the military during World War II, and potentially beyond, changes the perception of some of these islands as time capsules untrammeled by humans since the early 1900s. Bombing of the islands most assuredly impacted both biological and cultural concerns, and these places now seem more connected to global struggles and the machinations of history. Finally, the summit of Cub Island is capped by a cairn of unknown age, built from mid-sized stones, with a slowly decaying lumber stake silently pointing skyward.

A surprising part of this reconnaissance survey was the significant amount of historic debris on the high-water lines on the west side of the island. Thousands of artifacts line the island's shorelines, including railroad trestle piles and timbers, railroad crossties, buoys, and historic trash such as bottles, cans, and equipment. It appears that when the Lucin Cutoff was reconstructed in the mid-1950s, thousands of piles and timbers floated away and washed ashore at Gunnison Island. When Chas Cartwright surveyed Cub Island in 1981, he noted that "no cultural resources were located. The beaches of the island are littered with lumber from the Lucin Cutoff of the Southern Pacific Railroad."[28] These two statements would now seem almost contradictory in regard to the presence of historic resources if one did not know that the reconstruction of the Lucin Cutoff and this archaeological survey happened only thirty years apart. Today, this wave-tossed debris line warrants detailed documentation to understand its spatial, temporal, and contextual extents. It is likely that passengers and crews on trains crossing the causeway tossed broken glasses and ceramics out the windows, leaving an interesting signature upon the island. This shoreline debris can shed light on the materials used to build and rebuild the Lucin Cutoff, while also shedding light on the personal objects thrown or accidentally dropped into the lake by over one hundred years of railroad travelers.

While the 2018 archaeological inventory of Gunnison Island was both short and focused, the lessons learned from the few hours spent on the island will guide our understanding of the cultural resources both for the management of the island by UDWR and also for future investigations. More cultural resources exist on the island than what we expected. Not only do the triangulation station, Lambourne's house, and the guano sifters' shack adorn this island, there are the various remains of washed-ashore debris from over 110 years of railroad history, rock cairns of unknown function,[29] and a number of unexplored rock shelters that could help express the forgotten Native American imprint upon the island. The historic landscape is constantly being reclaimed by natural forces such as wind and rain, and it is covered in an awe-inspiring amount of detritus brought home by gulls and pelicans. Cultural resources like the triangulation station and guano sifters' shack are slowly melting back into their constituent parts of wood and stone. Humans again are being made the secondary player in Gunnison Island's existence.

Reading both Stansbury and Lambourne provides colorful narrative and prose, but the actual visitation to the island and the places they describe generated another level of understanding for the authors. Both Stansbury and Lambourne included in their publications renderings of the island through the eyes of two astute artists. What still remains of Lambourne's house, in particular, on the ground on Gunnison Island is a shadow of itself when compared to his illustrations from his time on the island. Standing on this landscape, so colorfully described during Lambourne's months on the island, helps contextualize the forces of nature that faced him, Stansbury, and the guano sifters. This is truly an isolated place, worthy of protection for the pelican, but also for the embedded stories of the Great Salt Lake's rich history.

We hope that this limited reconnaissance and documentation effort will spur new cultural resource investigations into not only Gunnison and Cub Islands but also all of the Great Salt Lake's islands. Archaeological tools and techniques can provide yet another analytical means for the base understanding of what the lake was and where it is going, from both a historical and ecological perspective. Using this preliminary data, UDWR and Utah Division of State History are already discussing

return trips to the island to better identify and explore the remaining parts of the island's past and provide meaningful data to help increase our understanding of pelican and gull habitats and the impact of past human activity. Without great partners at the Great Salt Lake Ecosystem Program and UDWR, the dedicated staff, volunteers, and researchers at Westminster College's Great Salt Lake Institute and other entities, the true nature of Gunnison Island's past and future would remain a side chapter to a broader story of the Great Salt Lake. Our sincere thanks to these people and organizations for allowing us to explore this corner of Great Salt Lake history.

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Web Extra

For more information and photographs of the 2018 archaeological survey, visit ushs.utah.gov.

Notes

1 As the island is a protected rookery for pelicans and UDWR prohibits all visitors except for limited research trips, the October 2018 visit included scientists from Westminster College's Great Salt Lake Institute, the University of Utah, and a volunteer from the Audubon Society. Each group possessed their own goals for the visit, including collecting bands from dead pelicans for mortality research, replacing batteries for remote digital cameras that monitor animal activity, and upgrading the battery of the island's weather station.

2 Dale Morgan, *The Great Salt Lake* (Indianapolis, IN: Bobbs-Merrill Company, 1947); Gary Topping, ed., *Great Salt Lake: An Anthology* (Logan: Utah State University Press, 2002).

3 Howard Stansbury, *An Expedition to the Valley of the Great Salt Lake of Utah*, Senate Executive Document No. 3, 32nd Congress, Special Session (Washington, D.C.: Government Printing Office, 1852), 202.

4 Alfred Lambourne, *Our Inland Sea: The Story of a Homestead* (Salt Lake City: Desert News Publishers, 1909), 121–26.

5 Stansbury, *Expedition*, 179.

6 Stansbury, 179.

7 Stansbury, 194.

8 Beyond Stansbury's 1852 report, see *Exploration of the Valley of the Great Salt Lake*, introduced by Don D. Fowler (Washington, D.C.: Smithsonian Institution Press, 1988); Brigham D. Madsen, ed., *Exploring the Great Salt Lake: The Stansbury Expedition of 1849–50* (Salt Lake City: University of Utah Press, 1989); and Madsen, ed., *A Forty-niner in Utah with the Stansbury Exploration of Great Salt Lake: Letters and Journal of John Hudson, 1848–50* (Salt Lake City: University of Utah Press, 1981).

9 Willard Young, "Report of Lieutenant Willard Young, Corps of Engineers, in Charge of a Special Party Engaged in the Survey of Great Salt Lake and Vicinity Season of 1879, United States Engineer Office, Geographical Surveys West of the 100th Meridian," *Annual Report of the Chief of Engineers to the Secretary of War for the Year 1879* (Washington, D.C.: Government Printing Office, 1879), 2214.

10 Dean L. May, *Utah: A People's History* (Salt Lake City: University of Utah Press, 1987), 51; "Lambourne's Latest Work," *Salt Lake Tribune*, July 29, 1894, 4.

11 "Filed on an Island," *Salt Lake Herald-Republican*, February 26, 1895, 7.

12 "Guano Land Decision," *Salt Lake Tribune*, July 4, 1900, 3.

13 Full text of the Pelican Management Act, passed by the Utah Legislature in 1977 establishing the Gunnison Island Wildlife Management Area, can be found under Utah Code, Title 23, Chapter 21A.

14 Chas Cartwright, "Division of Wildlife Resources Recreation and Public Purposes Act Inventory," Report Number U-81-BL-0025, Salt Lake District Office, Bureau of Land Management (on file at the Utah Division of State History, Antiquities Section). Both the locations of archaeological sites and this type of report are classified as protected under the State of Utah Government Records Access and Management Act (GRAMA).

15 Most archaeologists in the United States use the Smithsonian Trinomial system to identify and track archaeological sites. These numbers are comprised of a state number (Utah is 42), a two-digit code for county (BO in this case is Box Elder), and the final string of numbers denote roughly the number of sites documented in this county. This system of tracking sites dates to the 1940s, when the Smithsonian's River Basin Survey instituted this system to maintain control of the amount of data produced throughout the country. See Chris Webster, *Field Archaeologist's Survival Guide: Getting a Job and Working in Cultural Resource Management* (London: Routledge, 2014). For the five sites on Gunnison and Cub Islands, these numbers are 42BO2524 (Lambourne's House), 42BO2525 (Triangulation Station), 42BO2526 (Cub Island Bombing Range), 42BO2527 (Guan Sifters Shack), and 42BO2528 (Unknown Foundation).

16 Stansbury, *Expedition*, 191–92.

17 Lambourne, *Our Inland Sea*, 20.

18 John Luft, Program Manager, Great Salt Lake Ecosystem Program, personal communication, October 17, 2018.

19 Stansbury, *Expedition*, 179.

20 William Hampton Adams, "Machine Cut Nails and Wire Nails: American Production and Use for Dating 19th-Century and Early 20th-Century Sites," *Historical Archaeology* 36, no. 4 (December 2002): 66–88.

21 Stansbury, *Expedition*, 190.

22 Young, "Report of Lieutenant Willard Young," 2213.

23 Lambourne, *Our Inland Sea*, 22.

24 Lambourne, 55.

25 Lambourne, 45–46.

26 Cartwright, "Inventory," 1–3.

27 "Bombers 'Attack' Isles in Great Salt Lake in Warm Games Monday," *Springville Herald*, October 17, 1940, 3.

28 Cartwright, "Inventory," 3.

29 These could be physical markers of land ownership and mining claims to the islands' contentious 1890s–1910s feud over Lambourne's homestead versus mineral ownership claims of the guano sifters.

The Powell Expedition: New Discoveries About John Wesley Powell's 1869 River Journey

By Don Lago

Reno: University of Nevada Press, 2018. xx + 396 pp. Cloth, $39.95

Anniversaries of key historical events spawn books, and the 150th anniversary of John Wesley Powell's 1869 exploration of the Green and Colorado Rivers has bred several. The best of these so far is Don Lago's *The Powell Expedition*. The most revered writers on the topic tend to be either academics or river guides, erstwhile or present. Academics bring the best tools of their disciplines to the subject, while river guides bring their understanding of the river. Lago, a respected Grand Canyon historian, brings both.

Lago's book is not a simple rehashing of the 1869 journey. Rather, it is an examination of new information missed by previous writers, a summary of the best research on the most challenging questions raised by the expedition, and a recounting of theories generated in answer to those questions. The book should appeal to Western historians, river historians, river guides, and serious river runners who want to delve deeper than Powell's own writings on his trip, which unfortunately sacrifice accuracy for expediency.

Part I of the book examines whether Powell and his crew were the first to navigate the Green and Colorado. It focuses on the story of James White, whose "naked, sunburned, bruised, semiconscious" body (21) was fished from the Colorado at Callville, Nevada, in September 1867. When White revived, he claimed to have started along the San Juan River and floated through the Grand Canyon. In examining the man's life and the evidence of his story, Lago deflates the credibility of White and his most ardent advocates.

Lago makes some of his most important contributions in Part II, "the heart of this book" (xiii), which examines Powell's crew members. Major Powell built a famous career on the backs of his crew, without whose help he could not have survived the journey. Though Powell has become almost a household name (aided by the large reservoir named after him), his men are largely unknown to the general populace. Historians, who tend to revere the major not only as a great explorer but also as a founder of environmentalism, have underappreciated and even denigrated Powell's men. Lago helps correct this imbalance. For example, he explores how the Howland brothers, especially Oramel, helped lay the foundation for Powell's journey and were important to its success. He elucidates the life of William H. Dunn, "the most mysterious of Powell's crewmembers" (126). And he leads readers to the real William Hawkins, a crewman previously "abducted by alias" (144) in the literature.

Lago works further to rebalance the record in Part III, taking some of the shine off the famous story of how Powell lost his arm at Shiloh and revealing that it was not a bullet that did the damage but rather "cannonball shrapnel" (208). Throughout the volume, Lago demonstrates that it was Powell's "political astuteness" (230), not just his penchant for science, that drove much of his decision-making.

Part IV of the book, titled "Naming Names," along with chapter 9 in Part II, helps readers understand the names of Powell's 1869 boats the *No Name* and *Maid of the Cañon*. Part IV also provides insight into the naming of the Canyon of Lodore. In Part V, "The End of the Adventure," Lago provides accounts of the end of Powell's 1869 journey by James Leithead and William H. Hardy. He also traces what happened to the two boats with which Powell reached his destination, concluding that one went on to live "a long and productive

life" (265) on the Colorado well after Powell's men abandoned the river.

Finally, in Part VI, Lago tackles the greatest mystery of Powell's 1869 voyage, "The Fate of the Howland Brothers and William Dunn." This section, more than the others, shows Lago's ability to combine the rigor of an academic with the storytelling skill of a river rat. In examining all the combinations and permutations of what might have happened to the three crewmen who left the river just before Powell reached Callville, Lago ranges from the probable to the possible and into the highly unlikely. Those accustomed to seeking only the most probable answers might find their patience strained at this point. But Lago systematically lays out the evidence and provides careful signs along the way to help readers understand what he is doing. At the same time, he manages to do what office-bound writers find difficult: give the reader a sense of what it is like to be on the river at night, jawing with longtime guides steeped in the sources who love to explore mysteries that have no definitive answers. If you are serious about understanding Powell's first expedition down the Green and Colorado Rivers, this is the book to read during this sesquicentennial year.

— Richard E. Turley Jr.
Farmington, Utah

Conscience and Community: Sterling M. McMurrin, Obert C. Tanner, and Lowell L. Bennion

Edited by Robert Alan Goldberg, L. Jackson Newell, and Linda King Newell

Salt Lake City: University of Utah Press, 2018. 249 pp. Paper, $25.00

Conscience and Community is an expansion of a 2014 conference commemorating the twenty-fifth anniversary of the founding of the Tanner Humanities Center at the University of Utah and the one hundredth anniversary of Sterling McMurrin's birth. Neither wholly a collective biography nor a typical festschrift, it nevertheless contains elements of both. The three were midcentury's premier Utah public intellectuals who were active on the local, national, and international stages (among other more well-known activities, McMurrin's State Department service in the Middle East and Tanner's work on behalf of the United Nations are notable) and were all intimately implicated in the intersection of the university and the Church of Jesus Christ of Latter-day Saints.

The book features three articles apiece for Tanner, Bennion, and McMurrin, largely written from the point of view of their associates and biographers. The volume alternates between analytical pieces and reflective essays, and thus each chapter essentially stands on its own and can be profitably read as such. However, the volume as a whole suffers somewhat from the repetition of multiple authors' covering much of the same biographical material.

Bob Goldberg's introduction provides context for the contributions and asserts the continuing relevance of the three intellectuals given the unfinished nature of the causes they advanced, particularly in the area of social justice and in the struggle for freedom and integrity against the claims of community. In addition, several pages of photographs, some of them apparently previously unpublished, add warmth to the presentation of these three men's lives.

Of the figures presented here, only Bennion has been the subject of a traditional biography, while Tanner penned his own memoirs and McMurrin took part in an extended set of interviews with L. Jackson Newell to produce a volume that functioned like an autobiography. As such, this volume adds invaluable insights that were not previously available in print. One of the most interesting chapters in the book in this regard is the transcript of the 2014 conference session moderated by one of the volume's editors, Linda King Newell. Newell's gentle questions, perhaps facilitated by her familiarity with these men and their families, lead to easily the most entertaining section in the book.

As an example of the intimate and often humorous look this section offers, consider this comment by Bill McMurrin, a nephew of Sterling: "'A number of times I have been asked if

Sterling *really* rode horses. For many people, picturing him astride a horse was simply out of character with the academic persona they knew.' One day, as Bill and Sterling paused to admire the Tennessee walking horses Sterling was as proud of as he was his seven thousand book collection, Sterling said: 'You know what the best thing about these horses is?' Bill was expecting him to comment on their gait, stamina, or mild temperament. . . . With a twinkle in his eye, Sterling replied, 'They're all Mormons'" (209). The anecdote captures perfectly the book's focus on the three men's unorthodox identification with their community. This connection made their challenging calls for freedom of thought and racial inclusion more effective because they were perceived by many as coming from a place of genuine love and affection.

The volume's contents are vital insights into the lives of the three title figures. The book is even more a window into mid-twentieth-century Utah's intellectual culture as the state transitioned from an economy based on agriculture and mineral extraction to a much more diverse one where the federal government, beginning in World War II and continuing through the Cold War, exercised a strong hand in the local scene. These three men were, in a sense, intermediaries between the secular values of the academy and the religious values of the local Mormon community, and the contributions they made to the intellectual integration of the state into the nation were considerable. Perhaps the best way to understand the uniqueness of the three as a group is suggested by both Linda and Jack Newell, who make a lovely comparison of the Greek virtues of goodness, truth, and beauty to exemplify the lives of Bennion, McMurrin, and Tanner, respectively. *Conscience and Community* is a delightful addition to the somewhat neglected field of Utah's intellectual history and is a fascinating window into the lives of three men who shepherded Utah through a transitional period from ideological isolationism into Utah's full participation in the national marketplace of ideas.

— John Nilsson
University of Utah

The Spiral Jetty Encyclo: Exploring Robert Smithson's Earthwork through Time and Place

By Hikmet Sidney Loe

Salt Lake City: University of Utah Press, 2017. 341 pp. Paper, $34.95

In 1970, artist Robert Smithson created *Spiral Jetty*, near Rozel Point, on the edge of the Great Salt Lake in northwestern Utah. Located amid the detritus of failed oil explorations and built of six thousand tons of black basalt and mud, the fifteen hundred-foot-long coil seemed to unwind from the shore into the deep red, hypersaline waters of the lake's northern arm. It would become the most internationally celebrated work produced by the Land Art (a.k.a. Earth Art) movement, which emerged in the mid-1960s among a group of New York artists who shared an anti-Establishment, anti-authoritarian ethos and chafed at the commodification of art. Some like Smithson used western landscapes as their canvas, far from the galleries of the urban art world. And yet Land Art was more than the large-scale expression of the masculine ego, as some critics have charged. For Robert Smithson, art could be instrumental in helping us to comprehend our environment and the relationships between nature and industry. *Spiral Jetty* also expressed the artist's idiosyncratic fascination with spirals, geological processes, the physical laws of entropy, and the interplay of scale and perception. Soon after its creation, the earthwork vanished under the rising waters of the Great Salt Lake and remained submerged for three decades; it reemerged in the early years of this century as the lake receded, arousing renewed interest. (Today, with water levels at a historic low, the *Jetty* lies stranded on a bed of salt, a marker for gauging the nature of the lake.)

Aimed at Smithson aficionados, Hikmet Sidney Loe's *The Spiral Jetty Encyclo* is a quirky book. An art historian at Westminster College, Loe offers a succinct overview of Smithson's work; a reprint of his 1972 essay on *Spiral Jetty*; and a transcription of the eponymous film, produced in 1970. She also provides the first transcription of a second film, *Mono Lake* (completed by the artist's wife, Nancy Holt, herself a noted artist, in 2004), in which Smithson explored

some of the ideas that would ultimately come to fruition off the shore of the Great Salt Lake. Helpful maps, fascinating drawings, and extraordinary color photographs—some by the author herself, many published for the first time—enrich the volume. The bulk of the book, presented in the form of an encyclopedia, is essentially an exegesis of Smithson's writings, films, and interviews.

It is a useful reference that could well provide hours of free-form exploration of Smithson's work. And yet I wish Loe had adopted a more conventional format that would give greater voice to her interpretation of *Spiral Jetty* and its significance. Reading the book from cover to cover (as, admittedly, few readers will do), I discovered many interpretive insights scattered about. But it was difficult to see the forest for the trees. Indeed, at times, the *Encyclo* reads like an exercise in free word association. An entry on the camera, for example, which otherwise focuses on Smithson's use of photography to document his art, lurches into the nineteenth-century history of photography. Another on "perception" incorporates an odd digression about the Utah Test and Training Range, and the entry on Rozel Point becomes a belabored chronicle of Loe's unsuccessful effort to discover the place name's origins. Far too many entries expound on the work of John Hudson and Alfred Lambourne, nineteenth-century British landscape artists who clearly fascinate Loe but whose relationship to Smithson's work is tangential.

Nonetheless, the *Encyclo* makes some significant contributions to our understanding of Smithson's work. The entry on the construction of the jetty provides fresh insight into Smithson's creative process, and those readers who immerse themselves in these pages will come to appreciate *Spiral Jetty* as a multi-faceted work of conceptual art. Moreover, readers will find sparkling nuggets of information regarding the Great Salt Lake itself, the childhood encounters with natural history that informed Smithson's work, the relationship between *Spiral Jetty* and his oeuvre, his dialogue with the environmental movement, and his efforts to use art to reclaim land disturbed by industrial processes, which was cut short by his untimely demise in 1973 at the age of thirty-five. The *Encyclo* provides entrée into the ideas undergirding *Spiral Jerry* (which the Utah legislature recently designated a "state work of art") and may well encourage readers to make the journey to explore the earthwork itself.

— Marsha Weisiger
University of Oregon

The Art and Life of Jimmie Jones: Landscape Artist of the Canyon Country

By James M. Aton

Layton, UT: Gibbs Smith, 2015. 264 pp. Cloth, $75.00

A few years ago, a billboard on I-15 just south of Beaver proclaimed that this was "Maynard Dixon Country." While Dixon, the famed painter from California, excelled in portraying southern Utah, no other artist is as tied to red rock country as the painter Jimmie Jones (1933–2009). Few knew the region better than Jones and even fewer were better able to capture its power and subtleties in any medium. A native of southern Utah, Jones grew up frequenting the national parks. Most of his life was spent in the region, rooted to the North Rim of the Grand Canyon, Zion National Park, and Cedar Mountain. Only an individual who lived in these sublime landscapes, who returned to the same sites over and over again in all seasons and under every condition, and who proclaimed to have "red sand in [his] blood," could capture the light, color, and atmosphere as well as Jones.

James Aton, author of *The Art and Life of Jimmie Jones: Landscape Artist of the Canyon Country*, acknowledges that it was difficult not to write a hagiography of the Utah painter. An intimate friend and admirer of Jones, the author did not resist the chance to write an unapologetically positive biography. What's not to like? Jones's moving views of Zion or the Grand Canyon are much admired, and, somewhat paradoxically, the reclusive artist had a wide and devoted circle of friends. At the end of his life he gave everything he had, including some of his best landscape paintings and his beloved Rockville home overlooking Zion, to Southern Utah University for the creation of an art

museum in his home town. This was, as many said, a "desert saint."

Aton has created a broad and breathless biography of his friend that navigates readers through Jones's long career and his evolution as a painter. It details his upbringing in Cedar City through his training at the Art Center in Los Angeles and at the University of Utah. Devotees of Utah art will particularly enjoy reading about his earlier experiences with Gail Lindstrom, Alvin Gittens, George Dibble, Doug Snow, and Angelo Caravaglia. This tome is a fitting complement to the growing work on this important, if largely forgotten, generation of artists. Through exhaustive research, it also follows Jones, through his career as a portrait painter, to Mexico where he worked for more than a decade. An examination of Jones's fateful decision in 1975 to focus solely on landscape painting and his subsequent successes is the highlight of this text.

In truth, another round of editing might have helped the casual reader who might not want to read about every detail of Jones's life. Indeed, they may have wished the author had followed Jones's own advice: "The more there is to say, the less there is to see . . . the more there is to see, the less there is to say" (184). Yet, there is a lot to see in this book even if much of his earlier work, his portraits in particular, do not match the quality of his landscapes. The publisher Gibbs Smith, who believed in the power of Utah art, deserves credit for creating a big, beautiful book with stunning images. By the end of the book, however, one realizes that this effort was not for casual readers; it was written for those who knew and loved Jimmie Jones. It is a record and a reminder of an individual who will largely be remembered for his intelligence, his generosity, and his near-perfect paintings of places shared and loved by many. In time, it might also be for all of us who are increasingly fed up with the masses in the Grand Canyon or the crowds and shuttles of Zion National Park. You will never see these details in Jones's work. What you will find are idealized landscapes that may help you believe in these places again.

In the end, this is a hagiography. And why not? For Jimmie Jones—the immensely talented and intelligent painter, closeted, pot-smoking Jack Mormon, peace-making environmentalist, and lover of rugged landscapes—is representative of our time. He is a modern-day saint.

— James Swensen
Brigham Young University

The City That Ate Itself: Butte, Montana and Its Expanding Berkeley Pit

By Brian James Leech

Reno: University of Nevada Press, 2018. ix + 414 pp. Cloth, $39.95

A life-long resident once told me that Butte's biggest problem was that it produced more history than the domestic market could possibly absorb. He was right. More has to have been written and said about Montana's "Mining City" than about any other place of comparable size anywhere in the world. Historians, filmmakers, memoirists, novelists, poets, and some who defy categorization have all tried their hand at making sense of the story of this self-styled "Richest Hill on Earth." Brian Leech is the latest to join this legion of Butte interpreters. He is also one of the best—in some part because he is one of the few to deal with the city post-World War II, the time when it began to "eat itself"—in larger part because his is a careful, fair, and nuanced portrait of a city not just consuming itself, but being completely transformed.

This is a story of the Berkeley Pit, that giant hole in the ground begun in the mid-1950s, abandoned in the 1980s, and filling with toxic water since. The environmental consequences of the Pit have gotten by far the most attention. Leech does not ignore them; indeed, his discussion is the fairest, least judgmental, and least anti-corporate assessment of environmental damages that I have read. But what makes this book so special is that Leech understands that the Pit undid and re-did everything and that it touched every aspect of life in Butte. His handling of the effect on the men who went from mining underground—out of sight and free of direct supervision—to driving trucks above ground in full view of management is brilliant, particularly his discussion of the effect of the change on notions of masculinity. But nothing is missed in Leech's account: the Pit changed the lives of women, children, families,

churches, schools, and associations. It did not just force people to move; it broke up ethnic neighborhoods and enclaves and forced them to redefine themselves. It changed what people ate for dinner and with whom. It changed Catholic parish boundaries; it ate the Columbia Gardens and forever altered how and where the people of Butte unwound. In sum, the Pit did not just change how copper ore was taken from the ground and with what environmental consequences. It changed everything.

The research that went into the preparation of this book is astonishing, ranging from thousands of oral interviews and transcription to every relevant secondary and primary source extant. The writing style is clear and engaging. But it's the reach and sophistication of the analyses that put it in a special category of scholarship.

I offer this next comment as a kind of addendum; call it a public service announcement, and an important one. It reflects more poorly on the press than the author because it is so secondary to Leech's purpose and so central to the press's series on Western mining. So, let it here be recorded and may it be heeded: IWW stood for the *Industrial* Workers of the World, not, as on page 22 and in the index, the *International* Workers of the World. In addition to being the ultimate redundancy, that latter (and far too commonly encountered) mistaken title entirely misses the point of the IWW: It was an international federated union for industrial, that is, unskilled, workers wherever in the world they were to be found. It was based on syndicalist notions of how capitalism was to be undone and socialism effected. Getting its name right is the first step in getting the Wobblies right.

I'm glad that's off my chest. I do not wish it to detract from my great respect for what Brian Leech has done. He has written an important book on important topics, in the process exporting and marketing more of Butte's "surplus history." His is a cautionary tale, to be sure, but one with lessons that extend far beyond Butte. *The City That Ate Itself* deserves a wide readership, including in Utah where Bingham City and its pit had a few—but only a few—of the same societal effects as the Berkeley Pit had in Butte.

— David M. Emmons
University of Montana

River Master: John Wesley Powell's Legendary Exploration of the Colorado River and Grand Canyon

By Cecil Kuhne

New York: The Countryman Press, 2017. xviii + 269 pp. Cloth, $24.95

Cecil Kuhne, a river guide and travel writer, has authored this book about nineteenth-century explorer John Wesley Powell's expedition down the Colorado River in time for the 1869 journey's sesquicentennial anniversary. While many have previously written about Powell, *River Master* makes use of never-before-used primary sources to tell a different story about Powell's expedition. Kuhne also draws upon his own experience running Powell's route down the Colorado. An entry in the Countryman Press's new *American Grit* series, this book may be of interest to fans of John Wesley Powell or for general readers looking for a Western adventure story.

The Man Who Thought He Owned Water: On the Brink with American Farms, Cities, and Food

By Tershia d'Elgin

Boulder: University Press of Colorado, 2016. xi + 288 pp. Paper, $29.95

Activist and water resources consultant Tershia d'Elgin weaves history and politics into this memoir of her family's struggle over water rights on their Colorado farm. *The Man Who Thought He Owned Water* is a personal story contextualized within the larger framework of water scarcity and conflict in the arid American West. Written to be both informative and persuasive, this book is an invitation to the reader to be mindful of our society's water consumption.

Collecting on the Edge: Nora Eccles Harrison Museum of Art

Edited by Bolton Colburn

Boulder: University Press of Colorado and the Nora Eccles Harrison Museum of Art, 2018. 288 pp. Cloth, $50.00

Collecting on the Edge may push against readers' expectations of what a Western art book should look like. Filled with full-color reproductions of modern and contemporary art from the collection at Utah State University's Nora Eccles Harrison Museum, this book seeks to highlight the "daring, innovative, and iconoclastic" works of art made by artists from the West. Placed into context with an essay by art critic Michael Duncan and an interview with collector George Wanlass, *Collecting on the Edge* aims to showcase Western art that is sophisticated and cutting edge.

A History of Mortgage Banking in the West: Financing America's Dreams

By E. Michael Rosser and Diane M. Sanders

Boulder: University Press of Colorado and Utah State University Press. 2017. 250 pp. Cloth, $35.00, Ebook, $28.00

This book, a collaboration between mortgage banker and educator E. Michael Rosser and historian Diane M. Sanders, recounts the role of finance in the West over the last 150 years. Beginning with agricultural lending, the mortgage industry grew into a collection of large firms that financed some of the region's key components of development—water infrastructure and the railroads. The book continues its analysis through the causes of the 2007 mortgage crisis. Drawing upon Rosser's personal expertise as well as a variety of primary sources, *A History of Mortgage Banking in the West* would appeal to readers interested in the economic history of the West.

CONTRIBUTORS

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Serving Luncheon on Great Salt Lake, Utah, 1924. This beautifully set table was anchored for the benefit of guests at Saltair Beach.

The Great Salt Lake offers a unique experience to those audacious or curious enough to enter its waters. As one of the saltiest bodies of water in the world, several times saltier than the ocean, it is referred to as both a lake and a sea—often as the Dead Sea of the West. The water's salt content, reaching 27 percent or 270 parts per thousand, creates a density and buoyancy such that marketing slogans challenged visitors to "Try to Sink" or enticed them with an ethereal experience to "Float like a cork." As one visitor to the lake in 1909 wrote home in reference to a postcard image of floaters on the lake, "This is how I looked a few minutes ago. You cannot sink in this water if you wanted too. It is the saltiest stuff I ever tasted." Another visitor, in 1955, accepted the challenge and wrote home, "We went swimming in the Salt Lake yesterday to find out for ourselves if a body floats like a cork as the signs say it does, they were right. It is quite a sensation to float around on top of the water & not have to swim."

Marketing gimmicks like brochures, postcards, and billboards, depicting figures in the lake that appear to barely touch the water's surface, further mystified the fine line between floating in and on the water. Bodies appear unnaturally suspended in a reclined position with heads, hands, and feet bobbing above the surface.

We invite readers to view an expanded gallery of curated images on floating and the Great Salt Lake at ushs.utah.gov. *The photo of the dinner party and images in the online gallery are from the personal collection of Beau James Burgess.*

Outside the Denver and Rio Grande Depot, 1910. *Utah State Historical Society*

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BACK COVER

— A lithograph appearing in *Exploration and Survey of the Valley of the Great Salt Lake*, published in 1852. The spring is not named though it was likely Hobo Hot Spring, later known as Beck's Hot Spring. A portion of Hot Spring Lake and marshlands of the Great Salt Lake can be seen in the distance.

FRONT COVER

— Alexander Wetmore of the U.S. Biological Survey releasing a banded pintail that had recovered from botulism near the Duckville Gun Club, September 25, 1914. *Smithsonian Institution Archives, photo no. SIA2015-010542b.*

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