Chapter 1
Early Wolf Research and Conservation in the Great Lakes Region

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1.1 Introduction

The history of wolf research and conservation in the upper Great Lakes is only one chapter in the epic story of evolving relationships between people and land in North America. It is, however, an especially significant chapter. The rapid pace of Euro-American settlement and environmental transformation from the early 1800s to the mid-1900s led (among other impacts) to the near extirpation of the wolf from the region. During this same period, however, the American conservation movement arose in response to reckless resource exploitation. Shifts in conservation science, policy, and philosophy allowed the wolf to be understood within a broader ecological and ethical framework, preparing the way for the recent recovery of the species in the region. In this way, the fate of the wolf in the Great Lakes has reflected broader trends in the history of conservation.

Since its historic low point in the mid-1900s, the wolf population of the Great Lakes region has recovered due to two overriding factors: ecological conditions of the landscape have been conducive to the population's growth and expansion; and the knowledge, values, and actions of the region's people have provided space – on the ground and within our human society – for such growth and expansion to occur. The natural and cultural history of wolves in North America and around the world has been well told in both popular and professional publications (e.g., Lopez 1978; Mech and Boitani 2003). Other chapters in this volume provide accounts of the history of wolves in the Great Lakes states. This chapter provides a brief overview of early wolf research and conservation efforts in the region.

1.2 Wolf Research and Conservation in Historical Context

The science of wildlife ecology and the practice of wildlife management fully emerged only in the late l930s. This was several decades after conservation first found traction as a public concern and a policy goal during the presidency

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of Theodore Roosevelt (1901–1909), and several decades before the modern environmental movement reconfigured the older conservation movement in the 1960s and 1970s. More recently, interdisciplinary fields such as conservation biology, landscape ecology, environmental history, and environmental ethics have transformed the scientific foundations of conservation as well as our understanding of its social and cultural context (Knight and Bates 1995; Meine 2004). Through all these changes the wolf has served as an indicator species, telling us much about the status not only of our ecosystems but also of our scientific knowledge and our evolving conservation ethic. To track the history of the wolf in the Great Lakes is to follow a trail through the heart of American conservation history.

Knowledge of wolf biology, ecology, behavior, and populations in the Great Lakes of course predates the arrival of modern Euro-Americans (see David, this volume). Humans and wolves shared the Great Lakes regional landscape for at least ten postglacial millennia, the populations of both responding to changes in climate, flora, and fauna. The shifting presence of (and relationships among) native communities influenced the numbers and distribution of wolves and other wildlife species (Hickerson 1970). How, where, and to what degree that influence played out over time may never be known with precision. However, the basic fact that wolves and humans coexisted for so long suggests that, however native people conceived their ethic, it was sufficient to accommodate large predators within the land community. Wolves and other creatures were meaningful inhabitants not only of the land but also of the myths, stories, and traditions of the people. For the Ojibwe and other tribes of the region, wolves and people belonged to, and were connected within, the same moral community (Callicott and Nelson 2004).

As Euro-American explorers, missionaries, trappers, and settlers moved into the mid-continent, economies based on the commodification of nature transformed the region's human-land relationships (Cronon 1991). In the increasingly humanized and privatized landscape, wolves and other large predators began their long slide toward near-extirpation. The loss of viable wolf populations proceeded along with the widespread disruption and depletion of the region's other natural assets: its pine (and later hardwood) forests, wetlands, grasslands and savannas, its game populations, and Great Lakes and inland fisheries.

The arrival of Euro-Americans also brought a more beneficent force to the landscape. A strong tradition of education and scientific inquiry was activated in the new institutions of the emerging states – museums, public schools and universities, scientific organizations, and historical societies. These provided important cultural underpinnings for the nascent conservation movement. Even as the region's resources were diminishing, the response was being born. The deforestation of the Great Lakes pineries provided strong impetus to the national forestry movement. Under Roosevelt and his chief forester Gifford Pinchot, this burgeoned into a broader conservation movement in the first decade of the 1900s. Michigan, Wisconsin, and Minnesota, having experienced the profligate exploitation of their land resources, emerged as national leaders in the movement.

The utilitarian cast of the early conservation movement reflected its pre-ecological origins and its narrow economic premises. The persecution of predators was

already deeply embedded in a culture that viewed them mainly as "vermin" and "varmints." Beginning in 1914, predator control became national policy. Congress directed the US Bureau of Biological Survey (BBS) to undertake formally what until then had been a sideline for federal foresters, range managers, and game wardens (Dunlap 1988). The removal of wolves and other predators was akin to the suppression of fire, the damming of rivers, and the plowing under of the prairies: all served the goal of rational management of nature for human benefit through maximum efficiency and the sustained yield of resources. Science of a sort informed that rational management approach. But a new kind of science – one that stressed the diversity, functioning, and interrelationships inherent in natural systems – would soon start to call into question the aims of purely utilitarian conservation. And it would lead at least some conservationists to reevaluate the role and value of wolves and other predators.

1.3 Shifting Policies and Emerging Insights

The concerted campaign against predators that began in 1914 accelerated into the 1920s. The BBS was highly successful in its efforts to remove remnant populations of large predators from the mountains and rangelands of the American West. The Bureau found itself less devoted to its prior mission of research, and increasingly in the business of predator eradication. Among scientists (both within and outside the agency) a split developed between those who regarded predators first and foremost as agents of destruction and those who viewed them as creatures of scientific interest and value. This tension erupted into open dispute in the mid-1920s, pitting leading members of the American Society of Mammalogists (ASM) against BBS administrators and field agents (Dunlap 1988). Into the 1930s the annual meetings of the ASM served as the arena for pitched debate over the perpetuation of large carnivores in the American landscape.

Through these same years, one of the most consequential events in the annals of wildlife management played out on the Kaibab Plateau, on the north rim of the Grand Canyon (Young 2002; Binkley et al. 2006). After the Kaibab was designated a national game reserve in 1906, deer hunting was curtailed and livestock grazing restricted, and the BBS set about removing the plateau's wolves, mountain lions, coyotes, and bobcats. The deer herd swelled. By the early 1920s foresters were reporting the damaging effects of the superabundant deer on forest and range vegetation. The irruption of the Kaibab deer herd occurred before the science of wildlife ecology existed. Reliable techniques of game censusing and range assessment had yet to be developed. However, the informal evaluations and visual inspections of the rangers, foresters, and biologists were convincing enough. Among professional resource managers and the public alike, the Kaibab episode became a starting point for reconsideration of the role of predators.

Historian Thomas Dunlap (1988, p. 43) noted that "the ecology of large predators and their prey presented technical problems that would discourage researchers for

… years. Wolves ranged widely and swiftly over enormous areas of forested wilderness land. Even counting them was a formidable task; discovering their relations to other species and to the environment was even harder." The thin science involving wolves of the Great Lakes region as of the late 1920s demonstrates the point. Published research, such as it was, consisted of descriptive accounts, local reports of occurrences and extirpations, records within site-specific mammal inventories, and the occasional anecdote involving noteworthy wolf behavior. Reflecting its focus on "economic mammalogy," the BBS had published Vernon Bailey's "Destruction of Deer by the Northern Timber Wolf" in 1907 – and little of scientific relevance on the topic since (Bailey 1907).

Even Aldo Leopold in his obscure but critical *Report on a Game Survey of the North Central States* (1931), which included a chapter on predators, had essentially nothing to report on the subject of wolves. Leopold's vehement antipredator stance, evident when he served with the US Forest Service in the Southwest, had shifted. He began keeping his own office file on wolves and coyotes in the mid-1920s. He knew most of the main actors in the ASM/BBS debates over predator policy. He was also acquainted with many of the biologists and foresters who were trying to understand the cascading ecological effects on the Kaibab Plateau. By the late 1920s, Leopold was publicly expressing tolerance for predators. As the chief author of a new American game policy report, a key document in the development of professional wildlife management, Leopold recommended that "no predatory species should be exterminated over large areas" and that "rare predatory species … should not be subject to control" (Leopold 1929).

Although Leopold's *Game Survey* contained scant reference to wolves, his fieldwork in preparing the report provided support for his evolving attitude toward predators. He wrote after his survey of Missouri in 1930: "Predators show no alarming trends. All past and present ideas about predator-control seem inadequate. A rational policy must be built up on a foundation of scientific facts yet to be determined" (quoted in Meine 1988, p. 274). As the field of wildlife management emerged in the 1930s, Leopold, his students, colleagues, and contemporaries supplied the first layers of that foundation.

1.4 "… A New Appreciation of Carnivores and the Role They Play"

By the early 1930s, university and agency biologists had begun to probe more deeply into the phenomenon of predation. Paul Errington, a University of Wisconsin graduate student whom Leopold began advising in 1929, had begun long-term research on northern bobwhite quail populations. This led him to focus on the impact of predation relative to other factors affecting quail productivity. In addressing that issue, Errington called into question long-held assumptions about the supposed destructive effect of predators on prey populations (Errington 1934). His research showed that predation was only one of many factors that together determined a prey

population's fortunes. Errington's study quickly became a cornerstone in the scientific study of predation, and initiated his own career-long focus on the topic (Errington 1967).

As Errington was studying quail in the Midwest, Olaus Murie was beginning to contribute his voice and field experience to the predator debate. Murie was a BBS biologist who in 1927 had begun research on predators in Jackson Hole, Wyoming – specifically, the impact of coyote predation on elk populations (Murie 1935). His findings put him at odds with many in the BBS. For years to come, Murie would be a staunch critic of his own agency's predator control policies. After reading the predation chapter of the *Game Survey* report, Murie wrote to Leopold about his own field studies: "Personally, I have felt that too much attention has been given to the predatory animal factor. …I do not find the coyote a bad fellow at all. As far as the elk are concerned, he is not nearly as big a factor as several other things" (quoted in Meine 1988, p. 286).

The personal communications with Errington, Murie, and other trusted informants provided Leopold with the material he needed to define more clearly his own take on predation. He expressed it most clearly in his book *Game Management* (1933), the first text in the new field. In his discussion of predation, Leopold appealed to all parties in the debate to acknowledge the complexity of the issue and to maintain an attitude of "fairness" and open-minded curiosity. "There is only one completely futile attitude on predators," Leopold wrote, "that the issue is merely one of courage to protect one's own interests and that all doubters and protestants are merely chicken-hearted" (Leopold 1933, p. 252). In *Game Management*, Leopold offered few references to wolves, reflecting the still-thin body of solid information. He alluded to the wolf's breeding potential, its capacity for recolonization, and, significantly, the positive influence that "normal depredation" by wolves may have on deer distribution. Ever aware of the need for deeper research, Leopold noted that "many possible predator influences [are] as yet beyond our vision" (Leopold 1933, p. 247).

The evolution of Leopold's attitude toward predators advanced quickly after the mid-1930s, through experiences in two very different landscapes: the intensively managed forests of central Europe and the semiarid woodlands of northern Mexico's Sierra Madre (Flader 1974). Traveling across Germany and Czechoslovakia in 1935, Leopold examined the long and intertwined history of forestry and game management in the mid-continent – and the ills that resulted from their inability to reconcile competing resource management goals. "We Americans," he later wrote, "in most states at least, have not yet experienced a bearless, wolfless, eagleless, catless woods. We yearn for more deer and more pines, and we shall probably get them. But do we realize that to get them, as the Germans have, at the expense of their wild environment and their wild enemies, is to get very little indeed?" (Leopold 1936). In Mexico, by contrast, Leopold experienced prey populations thriving amid normal predator populations, reflecting (as he would later phrase it) "a biota still in perfect aboriginal health."

Over the next decade, Leopold continually elaborated and refined this new concept of "land health." It became the focus of his scientific research, a companion

concept to his "land ethic," and an all-encompassing measure of conservation success (Newton 2006). Central to the concept was an understanding of the role of predators in the healthy functioning of ecological communities. For Leopold and his like-minded colleagues, the fate of the wolves in the Great Lakes region would provide a critical example – and test – of the concept in the years to come.

First, however, the "foundation of scientific facts" needed further bolstering. The next significant contribution to that foundation came through the work of Sigurd Olson on wolves and coyotes in the Superior National Forest. Like Leopold, Olson's view of predators shifted dramatically from outright hostility to appreciation to advocacy (Backes 1997). His early antipathy toward wolves began to change when he decided to pursue graduate studies. After an opportunity to study under Leopold fell through, Olson signed on with Victor Shelford at the University of Illinois. Shelford, a pioneering animal ecologist, a leading voice for the protection of natural areas, and an occasional participant in the ASM/BBS debates, guided Olson in his unprecedented study.

Olson undertook his field research in northeastern Minnesota in December 1930. Previously a proponent of wolf-control measures, Olson was skeptical of the effectiveness of poisoning and trapping due to the continual influx of wolves into Minnesota from the north. By the time he completed his thesis – "The Life History of the Timber Wolf and the Coyote: A Study in Predatory Animal Control" – Olson had come to question not only the wisdom of control techniques but also the cultural stereotype of predators that had motivated the control programs.

In 1938 Olson published two articles based on his thesis (Olson 1938a, b). "Organization and range of the pack" appeared in the journal *Ecology* and "A study in predatory relationship with particular reference to the wolf" in *Scientific Monthly*. In the introduction to the latter, Olson emphasized the ecological and aesthetic significance of large predators as indicators of the vitality of wildlands.

> With the fast-growing appreciation of the true meaning of wilderness, we are beginning to question the idea of the total elimination of predators, realizing that, after all, lions, wolves and coyotes may be an exceedingly vital part of a primitive community, a part of which once removed would disturb the delicate ecological adjustment of dependant types and take from the country a charm and uniqueness which is irreplaceable. To go into a region where the large carnivores are gone, to see hoofed game with its natural alertness lacking, to know above all that the primitive population has been tampered with, is like traveling through a cultivated estate. Wilderness in all its forms is what the true observer wants to see and with this realization dawns a new appreciation of carnivores and the role they play. (Olson 1938b, p. 324)

In the concluding section of his paper in *Scientific Monthly*, Olson indicated just how thoroughly he had rejected his own youthful aversion to wolves, and adopted the scientific language of Shelford's community ecology.

> The presence of the timber wolf in the Superior Area, instead of being a hazard, is a distinct asset to big game types. Long investigation indicates that the great majority of the killings [is] of old, diseased, or crippled animals. Such purely salvage killings are assuredly not detrimental to either deer or moose, for without the constant elimination of the unfit the breeding stock would suffer. Furthermore, the wolf is a natural stimulus to a

> herd's alertness and injects the primitive element of danger without which most big game animals lose much of their natural charm. (Olson 1938b, p. 335)
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> The timber wolf is an integral part of the wilderness community, the destruction of which would destroy the fine balance between related forms. To eliminate as vital a relationship as exists between predatory forms and the animals they prey upon, to destroy a mutual dependence, means that artificiality has entered the wilderness picture. (Olson 1938b, p. 336)

Olson's paper reflected Shelford's influence not only as an ecologist but also as a conservation advocate. Backes (1997, p. 88) notes, "Under Shelford's tutelage … Olson joined the ranks of the wolf advocates. … He concluded with a call – radical for its time – to designate the canoe country's Superior National Forest as a carnivore sanctuary." Olson's study, basic by today's standards, and beholden to the idea of natural "balance" in a way that even his contemporaries had begun to move away from, was nonetheless a milestone. It stands as the first in-depth scientific study of wolves in the region, and perhaps in the world. The findings of that research also provided one of the first widely published calls to conserve the species.

1.5 Green Fire Dying

Errington's pioneering studies of predation, Murie's challenge to predator control orthodoxy, Leopold's reframing of the larger debate over predators, and Olson's original thesis on the wolves of Minnesota – all were indicators of a changing relationship between wildlife science and wildlife policy in the 1930s. Establishment of the Wildlife Society in 1937 symbolized the emergence of wildlife ecology and management within the family of resource management professions. The new field bridged the gap between basic wildlife research and the pragmatic work of the state and federal resource management agencies. The implications for conservation of wolves and other large predators were far-reaching, not only in regions like the Great Lakes where they had grown scarce but also in parts of North America were they still thrived.

The pace of policy debates and research on predators began to accelerate in the late 1930s and early 1940s. In 1937, E. A. Goldman of the BBS published "The wolves of North America" in the *Journal of Mammalogy* (Goldman 1937). Goldman's taxonomic review of the species provided the basis for an expanded book, also entitled *The Wolves of North America*, coauthored with Stanley P. Young and published in 1944 – at that point, the authoritative scientific text on the species (Young and Goldman 1944).

In the West, Olaus Murie's younger brother Adolph completed a ground-breaking ecological study of the coyote in Yellowstone National Park (Murie 1940). Adolph's thorough investigation served to taint his reputation within the National Park Service much as Olaus had been stigmatized within the BBS (Dunlap 1988). Adolph followed up the Yellowstone study by taking his advanced research methods back into the field, this time to examine the ecology of Alaskan wolves at Mt. McKinley (Denali). The results of Murie's work appeared in 1944 as *The*

Wolves of Mt. McKinley. It was the most advanced examination of wolf ecology, life history, behavior, and social dynamics yet undertaken, and its findings influenced wolf protection and restoration efforts nationwide, not the least in the Great Lakes. Commenting on Murie's work, Leopold noted with some understatement that "the publication of authoritative prey-predator studies, like that now given us by Murie, is of great importance to sound conservation" (Leopold 1945b).

For the foresters, wildlife managers, landowners, conservationists, and sportsmen of the upper Great Lakes at the time, greater scientific understanding of wolf ecology was of immediate and pressing importance. Wolves were at the center of a complex, interlocking set of conservation issues (Flader 1974). As the cutover forests of the north began to recover, the deer herd grew quickly, threatening widespread damage to the regenerating forest. Signs of such damage, and of stressed deer populations, were evident in Wisconsin as early as the mid-1930s, becoming even more apparent by the early 1940s. In Wisconsin, wolves were restricted to a few remote northern locations, and in some areas had shown signs of rebounding, but remained subject to state bounties (Thiel 1993). The Great Lakes became the venue for debate over new ideas, new approaches, and new conflicts over conservation policy. The region's wolves were at the epicenter of that debate.

In February 1941, Leopold received a letter from William Hamilton, a zoologist from Cornell University then serving as Chair of the ASMs' Committee on Conservation of Land Mammals (on which Leopold was serving at the time). Hamilton asked Leopold to indicate priorities for committee action. Leopold responded, "I think the most pressing issue in this region is the one of wolf policy. All of the lake states as far as I know continue an official policy of wolf extermination, despite the fact that excess deer are a growing menace to forestry, to conservation of flora, and to their own welfare. I, for one, think the time has come to begin an earnest agitation for reversal of such antiquated policies."

Leopold, with others, had taken steps in Wisconsin to do just that by initiating a research project led by William Feeney ("a full-time deer man who is fully sympathetic with our viewpoint and one who can eventually muster the facts to support it in public debate"). Leopold was also in contact with colleagues in the Michigan and Minnesota conservation departments, and fully understood the regional significance of such research. "The time would seem to be right," he wrote to Hamilton, "for a lake states 'bloc' to advocate reform. I am not sure whether the supposed opposition of sportsmen and of agricultural interests may not be imaginary." Feeney, beginning his work in March 1941 in northern Wisconsin, was not so assured. He wrote to Leopold, "Most of the field workers, wardens, rangers, lumbermen, and settlers are not very receptive to the wolf deer-control idea and do not rate wolves valuable, esthetically or otherwise, except for the bounty they bring." Two weeks later, Feeney wrote again: "We have not yet covered the entire State adequately but it appears that certain tracts in Forest County are, or soon will be, known as the last stand of timber wolves in Wisconsin …. Some of the old-timers state rather convincingly that the timber wolf is doomed to extermination because of logging operations and that they will eventually go out with the timber, regardless of other factors."

A. M. Stebler of the Michigan Department of Conservation concurred with Feeney's observation. "With very few exceptions," Stebler wrote to Hamilton, "we are constantly faced with rather determined opposition toward our ideas. Judging from our experiences it is going to be some time before the public at large really understands predators and their role in the scheme of things." Stebler would make his own key contribution to early wolf conservation literature in 1944, when his article, "Status of the Wolf in Michigan," appeared in the *Journal of Mammalogy* (Stebler 1944). He concluded, soberly, that the available evidence indicated that "the wolf is in real danger of becoming entirely extirpated in Michigan." Widespread clearing and settlement of Michigan's forestland had restricted the wolf to the Upper Peninsula, and even there to "only a few remaining large wilderness areas …. The modification of the primitive habitat by man may have had more of an effect in reducing wolf range and numbers than all the control measures that have been attempted." The earlier studies of Errington and Olaus Murie, Stebler stated, "show plainly that it is possible for both predator and prey species to live together without apparent disadvantage to either …. Considered from a long range viewpoint, predation is not necessarily a harmful influence upon prey species." In a statement that was undoubtedly difficult for a state wildlife biologist to make at the time, Stebler opined that "the loss of so spectacular and notorious a member of the State's native fauna would be unfortunate, to say the least. … To forestall, or prevent, the passing of the wolf in Michigan, or for that matter, in the Great Lakes' region generally, what measures can be taken?"

That question bedeviled the small community of Great Lakes wolf researchers and advocates through the World War II years. It was intertwined, intimately and inherently, with the emotional issue of deer management. Leopold, serving on the Wisconsin Conservation Commission, dealt with both matters in the public arena, arguing for more liberal deer seasons and for lifting the bounty on wolves (Flader 1974). Through other connections, Leopold supported Feeney's research on Wisconsin's remaining wolves, and used that information to push for reforms in Wisconsin's deer and predator-control policies. Amid the intense political forces swirling around these issues, Leopold agued for lifting the wolf bounty in 1944, then found himself in the awkward position, as a commissioner, of having to vote to reinstate it a year later (Flader 1974).

At the height of Wisconsin's "deer wars," Leopold stepped back from the fray and expressed his mature perspective on predators in more poetic terms. In April 1944, he drafted his famed essay "Thinking Like a Mountain," in which he poignantly expressed the ecological lessons he had garnered since he himself had led the charge against wolves years earlier.

> We reached the old wolf in time to watch a fierce green fire dying in her eyes. I realized then, and have known ever since, that there was something new to me in those eyes—something known only to her and to the mountain. I was young then, and full of trigger-itch; I thought that because fewer wolves meant more deer, that no wolves would mean hunters' paradise. But after seeing the green fire die, I sensed that neither the wolf nor the mountain agreed with such a view. (Leopold 1949, p. 130)

Published posthumously in *A Sand County Almanac*, Leopold's essay would eventually carry the new perspective on predators and prey, people and land, human

cause, and ecological effect, to a global readership. Leopold's highly personal account was forged in a crucible defined by the wolves of the Great Lakes region and their tenuous fate.

1.6 "Shall We Save Our Larger Carnivores?"

Soon after drafting "Thinking Like a Mountain," Leopold reviewed Young and Goldman's *The Wolves of North America* (Leopold 1945a). He did not spare ink in his direct criticism.

> Viewed as conservation, *The Wolves of North America* is, to me, intensely disappointing. The next to the last sentence in the book asserts: 'There still remain, even in the United States, some areas of considerable size in which we feel that both the red and gray [wolves] may be allowed to continue their existence with little molestation.' Yes, so also thinks every right-minded ecologist, but has the United States Fish and Wildlife Service no responsibility for implementing this thought before it completes its job of extirpation? Where are these areas? Probably every reasonable ecologist will agree that some of them should lie in the larger national parks and wilderness areas; for instance, the Yellowstone and its adjacent national forests.

Leopold then asked a radical question: "The Yellowstone wolves were extirpated in 1916, and the area has been wolfless ever since. Why, in the necessary process of extirpating wolves from the livestock ranges of Wyoming and Montana, were not some of the uninjured animals used to restock the Yellowstone?"

Leopold's review is regularly cited for its remarkably early recommendation for the restoration of wolves. It was not an isolated proposal. Leopold drafted his book review in August 1944. That same month he wrote to Newton Drury, Director of the National Park Service (NPS), advocating the introduction of wolves to Isle Royale National Park. Drury shied away from the idea, citing "the possibility for adverse public reaction that might do harm to the conservation of an adequate stock of wolves in the lake states region."

Over the next several years, however, Leopold continued to discuss the potential for introducing wolves to Isle Royale with Victor Cahalane, an NPS biologist based in Chicago. Leopold and Cahalane shared ideas and information about the occurrence of large predators in other national parks. In September 1946, Cahalane shared the news that fresh wolfs tracks had been found in Yellowstone. Encouraged perhaps by this event and his correspondence with Leopold, Cahalane published that year in *Living Wilderness* (the magazine of the Wilderness Society) an article entitled "Shall we save the larger carnivores?" (Cahalane 1946). Meanwhile, the prospect of translocating wolves to Isle Royale continued to intrigue Leopold and Cahalane. In 1947, Cahalane made arrangements for Leopold to visit Isle Royale as a consultant, but Leopold had to forego the opportunity for health reasons (Meine 1988).

In his response to Cahalane's news of the Yellowstone wolf, Leopold wrote, "I am letting Bill Feeney and Dan Thompson see your letter. … They will understand that the information is confidential. Both of them share our views about wolves."

Feeney had continued his research on deer–wolf interactions in Wisconsin's northwoods (Thiel 1993). Dan Thompson was a new student of Leopold's, recently returned from the war, who was beginning graduate research on wolf food habits, movements, and population indices.

Leopold died in April 1948, suffering a heart attack while fighting an escaped grass fire at his "sand county" farm. In a real sense, however, Leopold's influence on wolf research and conservation was only beginning to be felt. *A Sand County Almanac* went to press in 1949. Another student of Leopold's, Anton DeVos, also contributed to the literature on wolves of the Great Lakes region, reporting from north of the border in Ontario (DeVos 1949, 1950; DeVos and Allin 1949). Thompson completed his dissertation in 1950, publishing his research in the *Journal of Mammalogy* as "Travel, range, and food habits of timber wolves in Wisconsin" (Thompson 1952). His findings and conclusions echoed those of Stebler's from Michigan, but were distinguished by the strong emphasis he placed on land use and the need to maintain large blocks of road-free forest. "Certain land-use problems and relationships," Thompson wrote, "indicate the precarious state of this species in much of the Lake States area at the present time." He recommended "maintain[ing] areas of at least 150 square miles as wilderness habitat" and surmised that "the timber wolf will eventually be extirpated from Wisconsin" unless such steps were taken.

The most significant development in the story of Great Lakes wolves in the late 1940s occurred far from meeting rooms, agency offices, and academic corridors. Sometime (apparently) in the winter of 1948–1949, an adventurous band of timber wolves set out from Minnesota's north shore, crossed the Lake Superior ice, and arrived on the hard rock shores of Isle Royale. The plans that Leopold and Cahalane explored for bringing wolves to Isle Royale turned out to be unnecessary. In colonizing Isle Royale, the wolves unwittingly opened wide a new chapter in the history of their own ecology and conservation. With their arrival they transformed Isle Royale (and the region in general) into a prime laboratory for the next generation of wolf researchers – Milt Stenlund, Durward Allen, David Mech, and those who would follow in their footsteps (Allen 1979; Peterson 1995; see Vucetich and Peterson, this volume). All, in fact, were following the tracks of the persistent wolves of Minnesota, one small band of which elected to disperse across the frozen water.

1.7 Wolves of the Great Lakes Region and the Extension of Conservation Thinking

At the end of his thesis, Dan Thompson suggested several specific steps that could be taken to maintain suitable wolf habitat in northern Wisconsin: avoid fragmentation, restrict access along fire lanes in the forests, and adhere to rural zoning rules. In 1952, Wisconsin's wolf bounty was still in place. Thompson noted that "some form of legal protection is probably already necessary to perpetuate the timber wolf in Wisconsin; but public opinion today is, of course, unprepared for such an extension of conservation thinking" (Thompson 1952).

Thompson and all his predecessors, colleagues, and contemporaries who first asked new questions about predation and about the wolves of the Great Lakes – Errington, Olaus and Adolph Murie, Leopold, Olson, Cahalane, Feeney, and Stebler – had worked to build a "foundation of scientific facts." They had little reason to expect that their work would prompt the very "extension of conservation thinking" that allowed the region's wolves not only to endure but also to recover.

In 1933, in *Game Management*, Aldo Leopold had posited that there was "social significance" to be found in this new branch of conservation – but that the field itself would need to "[expand] with time into that new social concept toward which conservation is groping" (Leopold 1933, p. 423). Few other species, or places, would contribute so importantly to that new social concept as the wolves in the Great Lakes. In giving wolves the time and space to survive, the people of the region found themselves, too, in a new relationship within the larger land community.

Note

Letters quoted in this chapter are all located in the Aldo Leopold Papers, University of Wisconsin Archives, University of Wisconsin-Madison.

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