A Sand County Almanac

INTRODUCTION

BRIEF BIOGRAPHY OF ALDO LEOPOLD

Leopold was born in Burlington Iowa, where he spent his early childhood. He was often outdoors, playing in the woods and cataloging animals. At sixteen he moved to New Jersey to attend a college preparatory school, and then attended the Sheffield School (a college associated with Yale University), and the recently founded Yale School of Forestry, where he received a graduate degree. Leopold spent his twenties working for the United States Forest Service in New Mexico and Arizona. Leopold eventually went on to accept a professorship at the University of Wisconsin, where he lived, taught, and wrote for the rest of his life.

HISTORICAL CONTEXT

Leopold came of age just as Americans were beginning to consider that the wilderness was a nonrenewable resource in need of protecting. During the 1800s, as industrialization swept westward, much of the landscape, as well as its plants and animals, were consumed by this flood of civilization. The American bison was hunted almost completely to extinction, and the passenger pigeon was completely wiped out by 1914. John Muir, a writer, philosopher, and naturalist, was struck by the spectacular and relatively untouched wildernesses of the west, and advocated for the creation of Yosemite National Park, which became first national park in America in 1890. This helped lead to the creation of the National Park Service in 1916, as well as the Wilderness Society in 1935 (which Leopold cofounded), a nonprofit whose missions is to protect natural lands by petitioning the government to designate them as federally protected wildernesses, historical sites, or national monuments. However, Muir and other contemporaries—like Henry David Thoreau and even president Theodore Roosevelt—did more than legally protect the natural land. They also began a public conversation about the importance of the landscape and humankind's duty to protect and preserve it. This is the legacy that Aldo Leopold inherited as a person passionately writing about the need to protect the natural world in the twentieth century.

RELATED LITERARY WORKS

Leopold wrote in the tradition of the elder statesmen of environmental literature, such as Henry David Thoreau, whose famous work *Walden* (1854) is about his time alone in a cabin on Walden Pond in Massachusetts, and John Muir, co-founder of the Sierra Club, who wrote countless essays about his life and the wilderness he loved and lived in. Leopold also inspired much of the writing of American Environmentalists in the second half of the twentieth century, including the essayist and activist Wendell Berry, the biologist and author Rachel Carson, who spoke out against the widespread use of pesticides in her groundbreaking work, *Silent Spring* (1962), as well as Annie Dillard, who like Leopold documented a year in her life and the life of the natural world in *Pilgrim at Tinker Creek* (1974).

KEY FACTS

- **Full Title:** A Sand County Almanac with Essays on Conservation From Round River
- **When Written:** 1940s
- **Where Written:** Wisconsin
- **When Published:** 1949
- **Literary Period:** American Environmentalism
- **Genre:** Environmental Science, Nonfiction, Philosophy
- **Setting:** Saulk County, Wisconsin; Various wilderness areas around North and South America
- **Point of View:** First person. Leopold narrates.

EXTRA CREDIT

Gila National Forest. During his time in the Forest Service in New Mexico, Leopold helped protect the Gila National Forest, which is now the sixth-largest protected forest in the United States, and contains the Gila Cliff Dwellings, a series of homes carved into the rocks by Indigenous people over six hundred years ago.

Game Management. Leopold is attributed with having founded the academic field of game management, which is dedicated to preserving the biodiversity of the earth by considering not only the needs of people but the needs of plants, animals, and ecosystems.

PLOT SUMMARY

A Sand County Almanac is divided into four sections. As a project, it began simply as the first section, the Almanac, but after Leopold's early death, his family collected many of his other essays and compiled them into this book.

The first part of *A Sand County Almanac* is the eponymous almanac. In it Leopold records observations of the landscape on his Wisconsin farm each month, beginning in January and ending in December. Sometimes his observations are incredibly specific: in January he tracks a skunk across his property, and in June he recounts a weekend-spent fishing at a particular bend

in a local river. Other times, Leopold uses his immediate surroundings as a jumping-off point for longer philosophical or historical tangents. In February, he writes about cutting down a tree, and as he saws through its rings he takes the reader on a journey back through time, looking at developments in the environment as well as in environmental regulation. Throughout the Almanac, he emphasizes the ways in which people have become alienated from the natural world, as well as the ways in which intimate familiarity with one's environment is an important part of preserving the balance of the ecosystems upon which human life depends.

In the second part of the book, *The Quality of the Landscape*, Leopold describes various North American landscapes that he visited in his lifetime. He discusses Wisconsin, Illinois and Iowa, Arizona and New Mexico, Chihuahua and Sonora, Oregon and Utah, and Manitoba. In each section of this longer essay, he returns to the same themes, describing how spectacular the natural landscape is or was, and how human interventions are destroying and degrading it.

The book's third section, *A Taste for Country*, is a series of loosely connected essays about how humans use the land. In "Country," he mediates on the distinction between the idea of land, which can be owned, and that of country, which is the personality of the land, and cannot be regulated or possessed by humans. In "The Round River" Leopold describes his philosophy of conservationism. In "Wildlife in American Culture," Leopold breaks down what he believes are the three most important ways people can interact with the land, and the values they take from these three interactions. He defines these tree categories of values and experiences as: split-rail values, which connect people to their ancestors (who in turn were more connected to the earth); man-earth experiences, which remind people of the importance of the natural world; and sportsmanship, which encourages hunters and fishermen to hunt in a way that emphasizes the quality of their skill, as opposed to focusing on the quantity of animals killed.

In the book's final section, Leopold puts forth an extended argument for what he calls a land ethic—an ethical code for interacting with and caring for the land that acknowledges that humans are not just living *off* the land, but are living *with* the land. Humans are part of a community that includes plants, animals, and the landscape, and Leopold argues that humans need to do a better job of respecting and caring for the natural world.

CHARACTERS

MAJOR CHARACTERS

Aldo Leopold – The protagonist and narrator of *A Sand County Almanac*. Leopold is a trained ecologist and a professor of game management, but in this book his primary focus is articulating a kind of ethical philosophy concerning the environment. He is concerned with finding a way for humans to interact with the landscape and take pleasure from it without destroying it. He lives in Wisconsin, where the first third of the book takes place, but draws from his travels around the world to illustrate the different challenges that diverse global wildernesses are facing. Leopold is a blend of an academic and a dedicated outdoorsman. He is a complex thinker, and has developed a deep philosophy surrounding the art of land management—a philosophy based entirely on his personal relationship with the land and the observations he has made during a lifetime spent visiting and living in the wilderness.

MINOR CHARACTERS

65290 – A chickadee banded by Leopold in the winter of 1937. 65290, who is identified only by its banding number, managed to live for at least five years—much longer than the average chickadee lives.

TERMS

Draba – A genus of flowers that grows in Wisconsin. **Leopold** often refers to the draba as a single flower, when in fact the genus contains over four hundred species.

Cheat Grass – A prickly grass native to Europe, Asia, and Africa, it sprang up as an invasive species in the American Midwest after overgrazing destroyed the native flora.

Bur Oak – An oak tree common in North America. It has thick, cork-like bark that makes it resistant to prairie fires.

Tamarack – A North American coniferous tree. Its needles turn yellow in the autumn, and Leopold writes about the unparalleled beauty of the experience of hunting grouse among the falling needles of the Tamarack.

Candle – The very tip of a tree, which determines how it will grow. Also known as a meristem.

Passenger Pigeon – A now extinct breed of North American pigeon. Once extraordinarily common, it was hunted to extinction in the 19th century.

Peat Bog – A bog is a type of wetland. A peat bog specifically is a wetland that contains layers of decomposed plant matter, or peat. They are notable for their biodiversity.

Grouse – A game bird common across the Northern Hemisphere.

Gavilan – A river ecosystem in the Sierra Madre mountain range in Mexico.

Split-Rail Value – A term coined by **Leopold**. This refers to a set of values that can be practiced by partaking in any activity that reminds a person of the past, and a time when people were forced to live off—and thus *with*—the land.

Man-Earth Experiences – A term coined by **Leopold**. This refers to any set of experiences that reminds a person of their place in the natural ecosystem with its interconnected community of life.

Sportsmanship – A term repurposed by **Leopold**. He defines sportsmanship as any voluntary behaviors that limit a person's use of mechanical technology in favor of a more primitive technology that requires greater skill. For example, Leopold sees falconry and archery as demonstrating more sportsmanship than hunting with a rifle, because the latter requires relatively little skill, and relies instead on the power of the mechanized tool, whereas the former require extensive training.

Land Ethic – A philosophical term invented by **Leopold**. He believes that human beings should treat the land ethically. That is, he believes humans should see themselves as part of a community, and include the land itself in that community. Instead of considering only how the land can help them, Leopold hopes humankind will begin to consider what their obligation is to the land.

Conservation – The act of protecting or restoring the natural environment. People who conserve are called conservationists. **Leopold** compares the act of conserving the land to a friendship. It requires loving the land and all its many facets—flora, fauna, predators, and prey—and not simply the beautiful or economically valuable aspects. In an early chapter, Leopold defines a conservationist as someone who wields an axe, and who is aware that "with each stroke he is writing his signature on the face of the land."

Land Pyramid – A visualization of the ecosystem that places soil on the bottom, then plants, then herbivores, then omnivores, and finally, at the top, apex predators. **Leopold** has invented this visualization in the hopes that picturing the natural environment as a solid object will make people more empathetic towards it.

Wilderness – **Leopold** defines the wilderness as "the raw material out of which man has hammered the artifact called civilization." Wilderness varies depending on its location, its flora, and its fauna, but all wildernesses are necessarily untouched by humans—a natural and unspoiled landscape. Leopold focuses especially on the ways in which building roads through wilderness areas to make them more accessible to the public ruins their status as wilderness.

THEMES

In LitCharts literature guides, each theme gets its own color-coded icon. These icons make it easy to track where the themes occur most prominently throughout the work. If you don't have a color printer, you can still use the icons to track themes in black and white.

TIME AND HISTORY

Within *A Sand County Almanac*, Aldo Leopold often marks the passing of time by noting the hour, day, week, or season. However, although he divides the first, eponymous part of his *Almanac* into months, the natural occurrences within each block of time prove more important indicators of changing seasons and natural development than dates on a calendar. Dates are only useful as long as they allow for the monitoring of natural occurrences, but his life is lived by the freeze and thaw of the world around him, the migration of the geese, and the flooding of the river. Dates provide a suggestion of when these events may occur, but the earth's own biological clock requires more focused attention, and rewards the listener more generously than a paper calendar or mechanical watch. Similarly, Leopold often looks to nature for lessons on history, and finds that events of the past are often carefully recorded in the landscape itself, providing supplemental, or even entirely new resources for the observant naturalist. Leopold, leading by example, advises readers to look carefully at the natural world for truly useful markers of time, and for truly comprehensive accounts of history.

Time can be marked in two different ways. It can be tracked on a calendar created by mankind, or it can be inferred through the weather and the behavior of plants and animals. The book opens with a description of a hibernating skunk waking from his sleep and cutting a path through the January snow. Leopold remarks that this "track marks one of the earliest datable events in that cycle of beginnings and ceasings which we call a year." Leopold finds importance in the behaviors of the natural world, which provide more information and real-time feedback than a conventional calendar. Similarly, in May, the "final proof of spring" is not the date on the calendar, but instead the "flight-song of the upland plover, just now back from the Argentine." Leopold watches the plants and animals around him respond to the changing seasons. He notes that each species has its own special way of marking time, and takes different significance from changing seasons and weather. Mice recognize "snow means freedom from want and fear," while hawks see thaws as "freedom from want and fear." Although the time-marking of the animals seems self-centered, Leopold argues that humans who are cut off from nature, not forced to chop their own wood or monitor the seasons themselves, are similarly obliviously self-centered.

Just as time can be tracked on paper or on the land itself, history can be recorded both by humans and by the landscape. Leopold describes history as a "hodge-podge," and is happy to look for clues to the past in unexpected places. He describes how records of the past are contained within a **tree he has cut down** on his property. When he takes the saw to it, "fragrant little chips of history spewed from the saw cut," and in the sawdust he sensed "something more than wood…the integrated transect of a century." He continues, "our **saw** was

bating its way, stroke by stroke, decade by decade, into the chronology of a lifetime, written in concentric annual rings of good oak." Leopold respects and carefully observes this tree, and as he cuts it he records in his *Almanac* the events of each year, both in terms of human history (federal laws, Supreme Court decisions), and events in the natural world (floods, fires, droughts). Later in the *Almanac*, Leopold describes the peats and bogs of his county as containing their own history. They are made of "compressed remains of the mosses that clogged the pools, of the tamaracks that spread over the moss, of the cranes that bugled over the tamaracks since the retreat of the ice sheet. An endless caravan of generations has built of its own bones this bridge into the future, this habitat where the oncoming host again may live and die." Although he does not suggest taking a cross section of the bog like he did of the oak he felled in the winter months, Leopold acknowledges how time and history are hidden in so many out of the way places. Even the cranes themselves, whose migration path allows them to stop on the bogs, live "not in the constricted present, but in the wider reaches of evolutionary time. Their annual return is the ticking of the geologic clock." These birds hold history in their bodies, minds, and behavior, instinctively acting out a ritual that stretches into the distant past and (hopefully) into the far future. Similarly, Leopold believes "A sense of history should be the most precious gift of science and of the arts," but also believes that the grebe "knows more history than we do," and holds within him a "sense [of] who won the battle of time."

Leopold doesn't argue that the reader should do away with man-made markers of time or burn their history books. In fact, the first section of his *Almanac*, which tracks his observations across seasons, is divided into months to give the reader a clearer sense of the passage of time. Similarly, he enjoys watching birds in the early morning, but only knows when to wake up by consulting a clock and setting an alarm. Instead, he advises readers to become more attuned to the natural rhythms of time, and the ways in which the plants, animals, climate, soil, and rivers record the past, shifting and changing with and against the carefully demarcated human hours, days, and months.

TYPES OF KNOWLEDGE

Although Aldo Leopold himself attended the Yale School of Forestry and spent the last fifteen years of his life as a professor at the University of Wisconsin, he was acutely aware of the limits of schooling, and of academic knowledge. Instead, in *A Sand County Almanac*, Leopold extols the virtues of a natural (or naturalist's) education — one that comes from careful, patient observation of the natural world. He understands the purpose of a conventional education, and the ways in which children and adults can learn in academic settings, however, in his personal experience, and in his surveys of the world, Leopold has observed that much essential knowledge is either unteachable, or else left untaught. He instead dreams of a world where the content of a school's curriculum more closely aligns with a useful working knowledge of the natural world, and through his book attempts to inspire a generation of self-motivated students to go outside and learn about nature.

Leopold criticizes what he sees as a failure of the educational system, which has left thousands of people without a working knowledge of the natural world. Leopold has many theories of education, one of which is that education might be "a process of trading awareness for things of lesser worth," leaving its recipients (intellectually) poorer than when they began. He compares students to a goose, who, once he has traded away his natural instincts "is soon a pile of feathers." Although perhaps less fatal, Leopold argues that abandoning one's innate sense of the natural world is potentially dangerous, both for the student and for nature itself. In describing one of Wisconsin's native flowers, the **Silphium**, he remarks that although 100,000 cars pass by a graveyard where it blooms extensively, almost no one has noticed the flower. Leopold has been charting its demise due to the development of its natural range and overzealous landscapers, but fears he will be the only one to miss it. He notes that in those cars "must ride at least 100,000 people who have 'taken' what is called history, and perhaps 25,000 who has 'taken' what is called botany. Yet I doubt whether a dozen have seen the Silphium, and of these hardly one will notice its demise." Education, in this situation, has failed to attune its students to the very real threat of the eradication of a native species. Leopold also criticizes his own education, during which he learned nothing about ornithology or Mammalogy — the study of birds or mammals — that would prove crucial in his later field studies. He sees schooling as an "educational marathon," during which an outsized importance is placed on laboratory technique and memorization, as opposed to "some understanding of the living world," which is more useful to the average citizen (if not to a medical student or a doctor, who will, Leopold acknowledges, benefit from memorization of bones as well).

Still, despite his skepticism, Leopold has a sense of what an ideal education would look like. He believes a proper "conservation education" would build "an ethical underpinning for land economics and a universal curiosity to understand the land mechanism." His entire book is a lesson on ethical environmentalism. Although not always explicitly didactic, he continually attempts to convey a sense of the importance and fragility of the environment with each anecdote and illustration. Leopold proposes a list of questions he believes a well-educated student should be able to answer. For example, if they see ragweed growing in a field can they speak about whether "this field [would] be a good place to look for quail?" or "if all the ragweed in this watershed were short, would that tell us anything about the future of floods in the stream?" Leopold

suspects most students would find his questions "insane," but argues that "any amateur naturalist with a seeing eye should be able to speculate intelligently on all of them, and have a lot of fun doing it." He wonders, "If education does not teach us these things, then what is education for?" However, Leopold also acknowledges there are downsides to receiving the proper education. Because so few do, they are disproportionately left to live "alone in a world of wounds." As a result, an "ecologist must either harden his shell and make believe that the consequences of science are none of his business, or he must be the doctor who sees the mark of death in a community that believes itself well and does not want to be told otherwise."

Leopold proposes that there are many places to uncover information outside of traditional academic settings, and that the best educated men and women will not necessarily come from the academy. He describes two amateur naturalists — one man, a professional and industrial chemist, has "read 100,000 documents in his search for pigeon data," and has become the most knowledgeable man alive on the extinct passenger pigeon. Leopold notes that this task, which would be boring for many, brings to this man "adventure, exploration, science, and sport." The second naturalist is an "Ohio housewife" who tagged and tracked the song sparrows who visited her backyard garden. "In ten years she knew more about sparrow society, sparrow politics, sparrow economics, and sparrow psychology than anyone had ever learned about any bird," to the point where she was recognized by trained ornithologists. Leopold argues that deep learning and discovery can, and perhaps should, be born out of a genuine personal passion, not because someone is looking for fame.

Leopold argues that although deep learning can be facilitated in traditional academic environments, in his personal experience, the best students are students of the natural world. The questions that he finds most interesting and exciting are questions that can only be answered after deep immersion in the outdoors, after hours, if not years of intensive observation and study. He questions if a classroom education is the best way to train students to truly notice and understand the world around them, and proposes an alternative course of study.

THE VALUE OF THE LAND

Leopold sees the land not as a resource free for him to exploit, but as a community in which he must participate. In considering the land community, Leopold includes the physical landscape, like rocks and rivers, as well as all the living beings that require the land to survive, including plants, animals, and humans who call the environment their home. He hopes that "we may begin to use it with love and respect." However, he realizes that many people see the land as merely something they live *on*, as opposed to something they live *in* and *with*. Leopold recognizes that to most people, and, crucially, to the governments that regulate the land, nature has no value beyond its economic one. As a result, Leopold is aware that many people see the land as a resource to be manipulated, mined, and extracted, as opposed to an entity to be looked after and treated well, a member of the community which can yield not only physical but cultural harvests.

Leopold recognizes that many people are trained only to view land in terms of its economic resources. Because of this, he recognizes that much of land management is structured around economic interests, as opposed to ecological ones. Leopold criticizes economists who "mistake physical opulence for riches," and therefore only see land with a great "physical endowment" as inherently valuable. He describes land-relations as being "strictly economic, entailing privileges but not obligations." That is, people see the land as something they deserve, something free for them to take, as opposed to something they can live peacefully with and must actively maintain and support. Unfortunately, Leopold notes "one basic weakness in a conservation system based wholly on economic motives is that most members of the land community have no economic value." In Wisconsin, for example, only 5% of plants and animals "can be sold, fed, eaten, or otherwise put to economic use." When looking for ways to protect more plants or animals than the "valuable" ones, "evidence had to economic in order to be valid." That is, monetary value has to be manufactured to justify the continuation of a species. Unfortunately, Leopold recognizes that "entire biotic communities" like "marshes, bogs, dunes, and deserts" have no real economic value and therefore are not carefully preserved. Leopold often uses economists as a foil, a stand-in for a group of people who cannot see real value in the land, and only wonder what can be financially taken from it. Describing a beautiful weed called lupine, he wonders, "Do economics know about lupines?" later remarking "I have never met an economist who knows Draba," another type of (economically valueless) flower.

Leopold argues that the land can offer value beyond its pure economic worth, and that economics are not necessarily a useful indicator of value. He dedicates much of the book to hypothesizing a "land ethic," or a way to ethically live on and with the land. This, in his mind, cannot be based in economics, and so he looks for alternative sources of value. He believes, for example, "birds should continue as a matter of biotic right, regardless of the presence or absence of economic advantage to us." Similarly, Leopold looks for new metrics by which to measure the value of predators, who are often actively killed for supposed economic or biological reasons. Farmers with cows pushed for the eradication of the wolves, and governments complied, considering that this would make farms more profitable, but it destroyed a natural balance, and led to a destructive increase in the deer population. Leopold notes that "predators are members of the community" and argues that "no special interest has the right to exterminate them for the sake

of a benefit, real or fancied, to itself." Additionally, even from a purely economic perspective, this kind of disregard for the food chain or the land pyramid hurts the value of the land. Unchecked deer destroy valuable crops, and valuable scenery that helps encourage tourism. Leopold's proposal is to "quit thinking about decent land-use as solely an economic problem. Examine each question in terms of what is ethically and esthetically right, as well as what is economically expedient. A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."

In the chapter "Wildlife in American Culture," Leopold clearly proposes three ways mankind can evaluate land aside from economics. Firstly, he argues that there is "value in any experience that reminds us of our distinctive national origins and evolution, i.e. that stimulates awareness of history." He cites, as an example, a child who, wearing a raccoon skin hat, would feel some connection to frontiersman Daniel Boone. Secondly, Leopold argues "there is value in any experience that reminds us of our dependency on the soil-plant-animal-man food chain, and of the fundamental organization of the biota." This would include the act of farming or raising one's own food. It would also likely extend to the act of cutting one's own firewood, or maintaining a garden. Finally, Leopold argues that sportsmanship, here defined by "voluntary limitation" on the use of "gadgets in the pursuit of wild things," is an important way to see value in the wilderness. A hunter, by purposefully practicing self-restraint, learns a new kind of respect for the animals he tracks, and may learn to place greater value on the few kills he makes.

Leopold also makes it clear that, just as humans consider and evaluate nature, nature is making its own evaluations of itself and of humankind. Leopold goes into the minds of the local flora and fauna he has encountered across North America. He indulges in some anthropomorphism, imagining their thoughts and motivations. He believes plants and animals only care about themselves, and their own histories — as he describes in the first section of the Almanac, "the mouse knows that grass grows in order that mice may store it underground," and the hawk "has no opinion why the grass grows, but he is well aware that snow melts in order that hawks may again catch mice." In Leopold's view, each element of an ecosystem sees the world in terms of what it can offer themselves, without thinking about the wider effects. Similarly, Leopold notes "my dog does not care where heat comes from, but he cares ardently that it come and soon." However, just because nature can be indifferent towards mankind, does not give mankind an excuse to be indifferent towards nature. Leopold argues that because human beings have the capacity to enact change (positive or negative) it is their duty to work for, and not against, the land they live on.

Leopold understands that for humankind to truly treat the environment ethically, some kind of value must be placed on it. However, he disagrees that economic valuations are the most useful way to assess the health or quality of the land. Instead, Leopold argues that using economics as the only measure of worth necessarily means overlooking other reasons plants, animals, and landscapes deserve to exist. Although he has studied ecology for the majority of his life, he admits he doesn't understand everything, and therefore wonders how anyone could claim to know clearly what is valuable in nature, and what is not. Instead, he challenges readers to consider nature's intrinsic value, or else to consider alternative forms of measurement.

ETHICS AND ECOLOGY

Leopold's primary concern, which spans *A Sand County Almanac* but is addressed most directly in its final essay, "The Land Ethic," is the question of how to treat the land respectfully and ethically. He defines ethics as "a differentiation of social from anti-social conduct," which essentially means that ethics is behavior that takes into account the well-being of entities outside of the self. Ethics were originally concerned with relationships between people, but Leopold proposes extending them to include "man's relation to the land and to the animals and plants which grow upon it." He sees this as an "ecological necessity," an important step mankind must take if they want to begin to undo the damage they've done to the land thus far.

A key tenet of Leopold's theory of land ethics is an acknowledgement that the natural world is a community, and that human beings are part of that community. Leopold notes that mankind's "instincts prompt him to compete for his place in the community, but his ethics prompt him also to co—operate." In this theory, "soils, waters, plants, and animals" are all included as members of the community, and all should be considered and respected. Humans should not think of themselves as the "conqueror of the land-community," but instead as "plain member and citizen of it." Leopold sees that many people are unwilling to labor for the environment without recompense, but hopes that there is a way to teach them that they have an ethical obligation to the land, which they would willingly fulfill without a monetary incentive. Leopold does his best to point out similarities between mankind and the land, in hopes of stirring the reader's sympathy for it. He writes that mankind has tried both to interfere with its own health, and the health of the land. However, in the case of the land, mankind has not carefully controlled its health, because mankind did not understand it. Leopold argues that what is required is more caution, and more research. Caution will help prevent further degradation, whereas research can help mankind figure out where it went wrong, and how to fix its mistakes.

Leopold understands that land is a "biotic mechanism." He realizes that "we can be ethical only in relation to something we

can see, feel, understand, love, or otherwise have faith in," and therefore finds it useful to picture the land as a living pyramid, to which he can ascribe some kind of personality or identity. This pyramid, he hopes, will be something mankind can treat more ethically than the anonymous soil. In the pyramid, plants take energy from the sun, which is passed to insects, birds, rodents, and eventually to carnivorous predators. Humans, necessarily, also fit into this pyramid, and can perhaps be convinced to care about it because it recognizes their own participation. Leopold notes that land "is not merely soil; it is a fountain of energy flowing through a circuit of soils, plants, and animals." Even if a layperson cannot see that every part of the land is alive and important, perhaps if they consider the pyramid itself they can think more openly and ethically about how to treat the land, from the dirt up to the highest trees. Leopold also hopes to "convey three basic ideas" about the land, "1) That land is not merely soil. 2) That the native plants and animals kept the energy circuit open; others may or may not. 3) That man-made changes are of a different order than evolutionary changes, and have effects more comprehensive than is intended or foreseen." That is, the pyramid underscores the importance of keeping nature in its natural state, and asks people to be aware of the way they can easily damage the environment around them.

Leopold also lays out a theory of "conservation esthetic," which imagines ways to conserve the environment for future use. He primarily discusses recreation, and wonders how it is possibly to ethically open the land to people who want to experience it, and whose experiences may make them more sympathetic to it, while also protecting the land itself. He acknowledges recreation is often thought of economically, but he argues that there is an "ethical aspect. In the scramble for unspoiled spaces" we must consider "outdoor manners" and train ethical sportsmen who use the land with care and caution. Leopold worries about the need for people to take home trophies, which prove that they have been outdoors and remind them of their time in the land. These trophies can range from a harmless photograph to a "bird's egg, a mass of trout, a basket of mushrooms," all of which "attest that its owner has been somewhere and done something." He points out that photographs do not damage an environment, but trophies like game and fish, or rocks or flowers, do actively degrade the environment and "dilute it," thereby reducing its quality for future visitors. Similarly, to make wilderness (which is by "official definition roadless") accessible to the public, roads must be built, thereby compromising its status as wilderness. Leopold acknowledges that mass-use of wilderness then leads to "envelopments" of roads, campgrounds, and toilets, which dilute the experience of true wilderness. However, if visitors are looking not for true solitude and wilderness, but instead "fresh-air and a change of scene," then an outdoor area can accommodate essentially infinite numbers of people, as "the thousandth tourist who clicks the gate to the National Park breathes approximately the same air…as does the first." In the closing sentences of his book, Leopold argues, "Recreational development is a job not of building roads into lovely country, but of building receptivity into the still unlovely human mind."

Throughout the book, Leopold is preoccupied with considering how mankind can ethically interact with the environment. He believes mankind is part of nature, and should therefore treat the whole world, soil, trees, birds, rivers, and all, as part of the same enormous, interdependent community. He also believes in spending time out in nature, observing and learning from it. However, he understands that there are ethical and unethical ways to interact with the world, and so he has proposed a series of solutions. Firstly, he hopes that mankind can learn to love and respect the land as they would love and respect another human being. Secondly, he hopes they can see the land itself as alive, complex, and deeply interdependent — mankind must respect each component of the land, as each component requires the others to survive. Finally, Leopold considers how recreation can be ethical, settling on a change not necessarily in how recreational spaces are constructed, but instead in how mankind perceives recreation.

SYMBOLS

Symbols appear in **teal text** throughout the Summary and Analysis sections of this LitChart.

WOOD

Throughout the book, but especially in the first two sections ("A Sand County Almanac" and "The Quality of the Landscape"), Leopold looks to trees and wood in general as records of history, often comparing them to archives and libraries. This is made clear early in the Almanac when Leopold narrates the cutting down of a tree and, as he saws through each of the tree's many rings, moves gradually backward in history, providing an account of various events that occurred during the tree's lifetime. Trees provide clues about history based on how and where they grow. Trees form one ring each year, and the space between rings can indicate whether a given year was wet or dry, or even whether the tree sustained an injury. At one point, a tree that has grown in front of an abandoned barn door tells Leopold exactly how long it has been since the barn was regularly used. Similarly, healthy or sick trees can provide clues about the history of the soil, and the health of the landscape. In this way, trees and wood come to symbolize knowledge of the history of the land.

WOODCOCK

The woodcock is a game bird native to Wisconsin, but more than that it is a symbol of the utility of

birds beyond their value as hunting targets. During the spring, it performs a mating ritual in the early mornings and late evenings, which Leopold loves to watch. Although Leopold is also an avid hunter, the woodcock brings him so much joy in the spring that he is hesitant to kill as many in the fall. He receives a similar joy from watching its dance as he does from eating its meat, making the woodcock a clear example of the multiple ways that nature can have value to a human beyond its value as a product that is consumed.

SILPHIUM

To Leopold, the Silphium represents the wild prairie. An unassuming wildflower that goes unnoticed by most, to Leopold it represents the last remnants of wilderness. It only grows in patches of unmoved grass—by the highway, by the cemetery—and is noticed by few passersby. Just as few people stopped to notice the decimation of the natural world, or the death of the last bison or the last passenger pigeon, Leopold suspects few people will notice the mowing of the last Silphium, and with it, the end of the age of the wild prairie.

TOOLS

Leopold often turns the tools of a farmer into metaphorical tools for living a thoughtful, carefully considered life. Early in the book he describes cutting down a **tree**, and through its rings discovering slices of history. As he cuts down this tree he refers to an axe, a wedge, and a saw as tools not only for the woodworker but for the historian. Each one has a special purpose that allows it to excavate a different aspect of history. Similarly, he later extols the shovel and the axe, which he believes help him become like a god on his farm, as he undertakes the "divine function" of "creating and destroying plants." The axe, in this scenario, becomes a way for the farmer to enact his or her will on the land. It is a tool of targeted destruction, whose strokes reflect the biases of the person who wields it. The shovel, meanwhile, is a tool of creation, which can sharply cut into the earth and make way for new life. Thus, tools for Leopold come to symbolize the ways that humans impose their will on the land—whether this is done with respect and responsibility or not.

ROUND RIVER

The round river comes from a folktale, which describes a literal round river in the middle of Wisconsin. In reality, there is no round river, but Leopold sees it as a metaphor for the environment, which is interconnected and composed of many different cyclical processes. The round river represents the circle of life, or the interconnected nature of ecosystems. It helps demonstrate how all parts of the natural world feed upon each other, and how damage to one part of the natural world can hurt others as well.

QUOTES

Note: all page numbers for the quotes below refer to the Ballantine Books edition of *A Sand County Almanac* published in 1966.

Part I: February Quotes

Now comes the job of making wood. The maul rings on steel wedges as the sections of trunk are upended one by one, only to fall apart in fragrant slabs to be corded by the roadside.

There is an allegory for historians in the diverse functions of saw, wedge, and axe.

The saw works only across the years, which it must deal with one by one, in sequence. From each year the raker teeth pull little chips of fact, which accumulate in little piles, called sawdust by woodsmen and archives by historians; both judge the character of what lies within by the character of the samples thus made visible without. It is not until the transect is completed that the tree falls, and the stump yields a collective view of a century. By its fall the tree attests the unity of the hodge-podge called history.

The wedge, on the other hand, works only in radial splits; such a split yields a collective view of all years at once, or no view at all depending on the skill with which the plane of the split is chosen. (If in doubt, let the section season for a year until a crack develops. Many a hastily driven wedge lies rusting in the roods, embedded in unsplittable cross-grain.)

The axe functions only at an angle diagonal to the years, and this only for the peripheral rings of the recent past. Its special function is to top limbs, for which both saw and wedge are useless.

The three tools are requisite to good oak, and to good history.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Related Symbols:

Page Number: 17

Explanation and Analysis

Aldo Leopold and his family cut down an oak tree on his land, which has been killed by a lightening strike. As Leopold cuts through the tree, each ring reveals a new year of history, stretching back in time to its birth year, 1865.

Leopold describes the process of cutting down the tree, and turning it into firewood, as similar to the process of a historian turning historical archives into a narrative history. However, this comparison is more than just a simile, as the tree does literally contain a key to the history of the area where it grew. In both cases — making sense of the tree and making sense of the archives — Leopold explains that care must be taken.

Throughout the book Leopold argues against a passive mindset towards the natural world and towards history. In his mind, looking at history is the best way to determine how humans should behave in the future, and how they can alter their behavior to best serve the environment. By treating history as something not only accessible to a layperson, — whether they're reading a book or cutting down a tree — but as essential to everyone's understanding of the natural world, Leopold argues for a broader view of acceptable sources of knowledge.

Part I: March Quotes

❝ One swallow does not make a summer, but one skein of geese, cleaving the murk of a mark thaw, is the spring.

A cardinal, whistling spring to a thaw but later finding himself mistaken, can retrieve his error by resuming his winter silence. A chipmunk, emerging for a sunbath but finding a blizzard, has only to go back to bed. But a migrating goose, staking two hundred miles of black night on the chance of finding a hole in the lake, has no easy chance for retreat. His arrival carries the conviction of a prophet who has burned his bridges.

A March morning is only as drab as he who walks in it without a glance skyward, ear cocked for geese. I once knew an educated lady, banded by Phi Beta Kappa, who told me that she had never heard or seen the geese that twice a year proclaim the revolving seasons to her well-insulated roof. Is education possibly a process of trading awareness for things of lesser worth? The goose who trades his is soon a pile of feathers

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 19

Explanation and Analysis

Leopold looks to the natural world for true markers of time. Although months are marked on calendars, he finds the behavior of animals to be a truer test of shifting seasons. He notes that not all animals are the best timekeepers, but because geese must travel so far to reach him, he knows that they must be confident in the changing weather, because a wrong guess could lead to their death as a species.

In the second half of the quote Leopold calls out a woman who was banded Phi Beta Kappa. This means that she was inducted into a special academic society while in college, that selects and awards the students with the most impressive grades. However, although she received this prestigious honor, Leopold notes that there are huge gaps in her knowledge. He uses the geese as a clock and a calendar, and they consume much of his time, and give him much joy. Although he admits perhaps knowledge or awareness of the geese is of "lesser worth" than whatever this woman learned in the classroom, he feels there are unquantifiable benefits to noticing geese, which might seem worthless to someone educated, but have a clear value to him.

In the final line of this quote Leopold also puts forth his philosophy that education removes human beings from nature. Throughout the book he makes this point in different ways, but here is draws a parallel between a human, who has removed herself from the natural world through education, and a goose, who is still very much a part of the land. Although in the short term a human might be fine with his or her lack of knowledge, by comparing the woman in his anecdote to a goose whose lack of knowledge would lead to its death at the hands of waiting hunters, Leopold suggests that in the long term, humankind might suffer consequences for removing itself from nature.

Part I: July Quotes

❝ During every week from April to September there are, on the average, ten wild plants coming into first bloom. In June as many as a dozen species may burst their buds on a single day. No man can heed all of these anniversaries; no man can ignore all of them. He who steps unseeing on May dandelions may be hauled up short by August ragweed pollen; he who ignores the ruddy haze of April elms may skid his car on the fallen corollas of June catalpas. Tell me of what plant-birthday a man takes notice, and I shall tell you a good deal about this vocation, his hobbies, his hay fever, and the general level of his ecological education.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 47

Explanation and Analysis

Just as Leopold uses birds to mark the beginning of the seasons, he can track the spring and summer by the blooming of wildflowers. Although Leopold often bemoans the fact that people are not more educated and interested in the natural world, this passage demonstrates that he does not expect everyone to be as attuned to the land as he is. Instead, Leopold wishes that everybody was more aware of the world around them, and more willing to take the time to appreciate aspects of the land that are not explicitly valuable or useful to them.

Paying attention to the land in this way requires no real ecological education. Instead it requires natural curiosity. Still, Leopold can use the level of interest a person has in the land, and what plants catch their attention to make assumptions about who they are. For better or for worse, people do tend to notice plants that have a special meaning to them, whether it is because they are a farmer attuned to invasive weeds, or a florist who especially likes certain flowers, or a child from the city who only sees flowers growing in cracks in the pavement, and so only recognizes a few species. Leopold makes these observations without judgment, simply happy that anyone is noticing flowers at all.

❝ The Highway Department says that 100,000 cars pass yearly over this route during the three summer months when the Silphium is in bloom. In them must ride at least 100,000 people who has 'taken what is called history, and perhaps 25,000 who has 'taken' what is called botany. Yet I doubt whether a dozen have seen the Silphium, and of these hardly one will notice its demise. If I were to tell a preacher of the adjoining church that the road crew has been burning history books in his cemetery, under the guise of moving weeds, he would be amazed and uncomprehending. How could a weed be a book?

This is one little episode in the funeral of the native flora, which in turn is one episode in the funeral of the floras of the world. Mechanized man, oblivious of floras, is proud of his progress in cleaning up the landscapes on which, willy-nilly, he must live out his days. It might be wise to prohibit at once all teaching of real botany and real history, lest some future citizen suffer qualms about the floristic price of his good life.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Related Symbols:

Page Number: 49

Explanation and Analysis

In this passage Leopold criticizes mainstream education. By referring to botany and history as "what is called botany" and "what is called history" he delegitimizes them, and calls into question how much a student actually learns in school. Leopold believes a comprehensive education should include an awareness of the natural world. In this specific instance, he thinks a comprehensive education should alert more than a dozen passersby to the lowly Silphium, a prairie plant which, to him, stands as a symbol of the entire prairie.

Leopold argues that this simple flower has as much knowledge to offer as a book someone would read in school. Although it cannot be literally read, its behavior can be seen as providing insight into the health and history of the prairie, and the way in which much of it has been domesticated. This a shift in the land which Leopold has paid great attention to, and wishes more people would join him in his concern. He feels that by teaching pseudo-botany and history in school, students are actively discouraged from looking out their windows at the botany and history living around them.

Part I: November Quotes

❝ The Lord giveth, and the Lord taketh away, but He is no longer the only on to do so. When some remote ancestor of ours invented the shovel, he became a giver: he could plant a tree. And when the axe was invented, he became a taker: he could chop it down. Whoever owns land has thus assumed, whether he knows it or not, the divine functions of creating and destroying plants.

Other ancestors, less remote, have since invented other tools, but each of these, upon close scrutiny, proves to be either an elaboration of or an accessory to, the original pair of basic implements. We classify ourselves into vocations, each of which either wields some particular tool, or sells it, or repairs it, or sharpens it, or dispenses advice on how to do so; by such division of labors we avoid responsibility for the misuse of any tool save our own. But there is one vocation—philosophy—which knows that all men, by what they think about and wish for, in effect wield all tools. It knows that men thus determine, by their manner of thinking and wishing, whether it is worthwhile to wield any.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Related Symbols:

Page Number: 72

Explanation and Analysis

Although Leopold will not lay out his land ethic until later in the book, in this early section he begins to construct a theory of how humankind interacts with the land, and what responsibilities people have to the natural world in which they live.

Leopold compares the way humans manipulate the land to the way many religions believe God created the earth. Humans are able to both create and destroy — two actions that Leopold simplifies into planting trees (creating life) or cutting them down (taking life away). Every other action a human does is some variation of this, whether it be planting wheat, or harvesting it, mowing grass, or raising chickens, each action, in its simplest form, is the bestowal or withdrawal of life.

With great power, however, comes responsibility. Leopold realizes that a person should not wield the ability to create and destroy lightly, and perhaps should not take advantage of their ability at all. He turns to philosophy with this question, and spends much of the rest of the book trying to find an ethical answer.

❝ I have read many definitions of what is a conservationist, and written not a few myself, but I suspect that the best one is written not with a pen, but with an axe. It is a matter of what a man thinks about while chopping, or while deciding what to chop. A conservationist is one who is humbly aware that with each stroke he is writing his signature on the face of his land. Signatures of course differ, whether written with axe or pen, and this is as it should be.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Related Symbols:

Page Number: 73

Explanation and Analysis

Throughout his book Leopold offers various theories of conservation. At another point he compares it to a friendship, which requires a complete acceptance and acknowledgement of the land and everything that lives on or with it, as opposed to a selective love of certain species or landscapes. Here, Leopold compares conservation both to the act of writing, and to the concept of stewardship — which implies a responsibility for the health and wellbeing of the land.

Although a conservationist is not required to keep the land perfectly preserved, he or she must, instead, make intelligent and thoughtful decisions about any alternations they decide to make. Just as a writer makes marks with a pen, a conservationist is forever changing the land with each destructive stroke of an axe, or creative stroke of a shovel. Leopold hopes all conservationists will consider their own biases when they enact their will upon the land, and reminds readers that biases are not inherently bad, everyone has their own agenda, a conservationist must simply be aware of their biases and careful in their actions.

Part II: Wisconsin Quotes

❝ Our ability to perceive quality in nature begins, as in art, with the pretty. It expands through successive stages of the beautiful to values as yet uncaptured by language. The quality of cranes lies, I think, in this higher gamut, as yet beyond the reach of words.

This much, though, can be said: our appreciation of the crane grows with the slow unraveling of earthly history. His tribe, we now know, stems out of the remote Eocene. The other members of the fauna in which he originated are long since entombed within the hills. When we hear his call we hear no mere bird. He is the symbol of our untamable past, of the incredible sweep of millennia which underlies and conditions the daily affairs of birds and men.

And so they live and have their being—these cranes—not in the constricted present, but in the wider reaches of evolutionary time. Their annual return is the ticking of the geologic clock. Upon the place of their return they confer a peculiar distinction. Amid the endless mediocrity of the commonplace, a crane marsh holds a paleontological patent of nobility, won in the march of aeons, and revocable only by shotgun. The sadness discernible in some marshes arises, perhaps, from their once having harbored cranes. Now they stand humbled, adrift in history.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 102

Explanation and Analysis

In this passage, Leopold discusses various aspects of the

Wisconsin landscape that are personally meaningful to him. He comments, as he often does, on the fact that it is difficult for many people to find value in nature. Either they focus only on its economic value, or they focus only on its aesthetic value. Both are dangerous, as they leave no room for a person to value to nature for itself — for the beautiful balance of the ecosystem or for the longevity of many of its species.

Leopold finds value in the crane beyond anything it can offer him visually or monetarily. He sees the crane itself as a kind of history book. He appreciates cranes more the more he learns about the species, and the more he understands that they contain clues to the past in their genes and in their behavior. These cranes, to Leopold, are symbols "of our untamable past." They are at once a relic of earlier times, following the same ancestral migratory patterns, as well as markers of the passion of time, as they return during the same months each year. To kill a crane, in Leopold's mind, is to capture a slice of the "paleontological" past, a bird that is a once a bird, but also a time traveler, who has visited the same marshes during the same seasons for thousands of years.

Part II: Arizona and New Mexico Quotes

❝ We all strive for safety, posterity, comfort, long life, and dullness. The deer strives with his supple legs, the cowman with trap and poison the statesman with pen, the most of us with machines, votes, and dollars, but it all comes to the same thing: peace in our time. A measure of success in this is all well enough, and perhaps is a requisite to objective thinking, but too much safety seems to yield only danger in the long run. Perhaps this is being Thoreau's dictum: In wildness is the salvation of the world. Perhaps this is the hidden meaning in the howl of the world, long known among mountains, but seldom perceived among men.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 141

Explanation and Analysis

Leopold borrows a quote from Henry David Thoreau, who was an essayist and nature writer active during the first half of the nineteenth century. Here he applies Thoreau's proposal, that "wilderness is the salvation of the world," to his life and the society he has observed. Leopold has noticed a tendency in all animals, humans included, to try and make their lives easier. Much of human intervention in the natural world is build around the idea that it will improve the quality of human lives. Leopold sees ease of living as a kind of dangerous complacency. He sees the wilderness as a necessary anecdote to modern life, an interesting, challenging, and ultimately healing contrast to an increasingly safe and mechanized society. In this way wilderness is valuable, although Leopold realizes it is hard to quantify this value, market and sell it to the masses.

❝ Since the beginning, time had gnawed at the basaltic hulk of the Escudilla, wasting, waiting, and building. Time built three things on the old mountain, a venerable aspect, a community of minor animals and plants, and a grizzly. The government trapper who took the grizzly knew he had made Escudilla safe for cows. He did not know he had toppled the spire of an edifice a-building since the morning stars sang together.

The bureau chief who sent the trapper was a biologist versed in the architecture of evolution, but he did not k now that spires might be as important as cows. He did not foresee that within two decades the cow country would become tourist country, and as such have greater need of bears than of beefsteaks. The Congressmen who voted money to clear the ranges of bears were the songs of pioneers. They acclaimed the superior virtues of the frontiersman, but hey strove with might and main to make an end of the frontier.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 144

Explanation and Analysis

The Escudilla is a mountain on the border of Arizona and New Mexico, part of a larger wild region that Leopold oversaw during his time in the United States Forest Service. This anecdote, which takes place on the mountain, is an example both of the difficulty of quantifying the value of the land, and an example of humankind failing to anticipate the long reaching affects of their actions on the land.

Although Leopold does not introduce the term "land pyramid" until later in the book, it nonetheless describes what is being modified by the death of the grizzly bear. A land pyramid is made up of all the species that inhabit a land, not only the ones that humans like, or are convenient for farmers to navigate around. At the top of each land pyramid is the apex predator, which is crucially important as it helps

keep all other organisms, at every level of the pyramid, in check. By killing the grizzly, the whole land pyramid, that is, the entire ecosystem has been thrown into chaos, and the exact effect on the land is unknown, but will likely be significant.

In the same way the bureau chief who sent in the trapper to kill the last grizzly did not have any sense of how its death would impact the landscape, the bureau had no sense of how its death would impact human life in the area. Although he had predicted the land would be made more valuable by the agriculture made more viable after the death of the bear, instead the bear itself would have provided more value to the tourists who came in looking for an authentic wilderness after the farmers moved away. This is a clear example of the great impact of human ignorance, and the dangerous way humankind can easily shape a landscape.

Part II: Chihuahua and Sonora Quotes

❝ The physics of beauty is one department of natural science still in the Dark Ages. Not even the manipulators of bent space have tried to solve its equations. Everybody knows, for example, that the autumn landscape in the north woods is the land, plus a red maple, plus a ruffed grouse. In terms of conventional physics, the grouse represents only a millionth of either the mass or the energy of an acre. Yet subtract the grouse and the whole thing is dead. An enormous amount of some kind of motive power has been lost.

It is easy to say tat the loss is all in our mind's eye, but is there any sober ecologist who will agree? He knows full well that there has been an ecological death, the significance of which is inexpressible in terms of contemporary science. A philosopher has called this imponderable essence the numenon of material things. It stands in contradistinction to phenomenon, which is ponderable and predictable, even to the tossings and turnings of the remotest star.

The grouse is the numenon of the north woods, the blue jay of the hickory groves, the whisky-jack of the muskegs, the piñonero of the juniper foothills. Ornithological texts do not record these facts. I suppose they are new to science, however obvious to the discerning scientist. Be that as it may, I here record the discovery of the numenon of the Sierra Madre: the Thick-billed Parrot.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 146

Explanation and Analysis

In this passage Leopold waxes philosophical about the grouse, a bird he enjoys hunting, as well as about other species that he feels similarly add value to a landscape. He coins the term "numenon" (also spelled noumenon) which is the opposite of a phenomenon. A phenomenon is something that can be witnessed and understood. A numenon, in contrast, is something that exists beyond human perception.

Although technically Leopold can see, or even hold a grouse, he also knows that it adds huge value to a landscape, but he does not understand how it does this. The unquantifiable aspect of the grouse, and of other organisms like it, is how much it improves the quality of a wilderness. Although its mass is small, and its actual physical impact low, it has some additional unique quality that adds a value to the wilderness, beyond the economic, beyond the aesthetic, and maybe even beyond human perception.

There are men charged with the duty of examining the construction of the plants, animals, and soils, which are the instruments of the great orchestra. These men are called professors. Each selects one instrument and calls his life taking it apart and describing its strings and sounding boards. This process of dismemberment is called research. The place for dismemberment is called a university.
A professor may pluck the strings of his own instrument, but never that of another, and if he listens for music he must never admit it to his fellows or to his students. For all are restrained by an ironbound taboo which decrees that the construction of instruments is the domain of science, while the detection of harmony is the domain of poets.

Professors serve science and science serves progress. It serves progress so well that many of the more intricate instruments are stepped upon and broken in the rush to spread progress to all backward lands. One by one the parts are thus stricken from the song of songs. If the professor is able to classify each instrument before it is broken, he is well content.

Science contributes moral as well as material blessings to the world. Its great moral contribution is objectivity, or the scientific point of view. This means doubting everything except facts; it means hewing to the facts, let the chips fall where they may. One of the facts hewn to by science is that every river needs more people, and all people need more inventions, and hence more science; the good life depends on the indefinite extension of this chain of logic. That the good life on any river may likewise depend on the perception of its music, and the preservation of some music to perceive, is a form of doubt not yet entertained by science.
Science has not yet arrived on the Gavilan, so the otter plays tag in its pools and riffles and chases the fat rainbows from under its mossy banks with never a thought for the flood that one day will scour the bank into the Pacific, or for the sportsman who will one day dispute his title to the trout. Like the scientist, he has no doubts about this own design for living. He assumes that for him the Gavilan will sing forever.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 162

Explanation and Analysis

Leopold develops his sense of what education is, and is not, good for. Here, he criticizes academics whose field of study he believes to be too narrow. Leopold imagines the natural world as a symphony, but sees each professor as studying only a single instrument in the grand orchestra of life. Although an academic could become an expert in a single area, Leopold worries that person will never have a full sense of the natural world, and how all of its elements interact with each other.

Leopold also criticizes the ways in which education, science, and the destruction of the natural world can go hand in hand. Professors of science serve science, which is then used to industrialize and mechanize the outside world. This is often seen as progress, and often seen as a good thing, but Leopold sees the ways in which an unquestioning deference to science and logic can cause people to ignore the aspects of the natural world that they cannot easily study, and cannot easily exploit for the sake of progress.

On the Gavilan river where "science has not yet arrived," progress has not yet exploited the natural world to make life temporarily easier for humankind. Although Leopold does not think that progress is inherently bad, he does see it as an unthinking, almost unstoppable force, that assumes "every river needs more people and all people need more inventions," a chain of logic that will eventually lead to the destruction of the natural world.

Part III: Country Quotes

There is much confusion between land and country. Land is the place where corn, gullies, and mortgages grow. Country is the personality of land, the collective harmony of its soil, life, and weather. Country knows no mortgages, no alphabetical agencies, no tobacco road; it is calmly aloof to these petty exigencies of its alleged owners. That the previous occupant of my farm was a bootlegger mattered not one whit to its grouse; they sailed as proudly over the thickets as if they were guests of a king.

Poor land may be rich country, and vice versa. Only economists mistake physical opulence for riches. Country may be rich despite a conspicuous poverty of physical endowment, and its quality may not be apparent at first glance, or at all times.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 177

Explanation and Analysis

At the beginning of his essay on "Country," Leopold sets up his personal distinction between land and country. In other parts of the book his definitions seem to shift, and he occasionally uses land as he uses "country" here. However, in this section, he uses the two terms to examine the ways in which humans find value in the ground on which they walk, and the natural world that surrounds them.

Land is something that can belong to human beings, it can be modified, it can be owned, it can be regulated with laws. Country, in contrast, is something older and freer, although it is related to the land it transcends it. While land is physical, country is more of a feeling, the sense of a place more than the fences that bound it.

Although Leopold finds that people often assume the natural world is rich or poor, valuable or invaluable based only on the quality of the land itself, he sees that there are other ways to assess the value of a place. Land without the ability to give something economic to its owner can still be valuable because as country it brings joy. For example infertile soil would make land poor, but an abundance of grouse would make the country rich, and any hunters' hearts full.

Part III: A Man's Leisure Time Quotes

❝ The text of this sermon is taken from the gospel according to Ariosto. I do not know the chapter and verse, but this is what he says: 'How miserable are the idle hours of the ignorant man!'

There are not many texts that I am able to accept as gospel truths, but this is one of them. I am willing to rise up and declare my belief that this text is literally true; true forward, true backward, true even before breakfast. The man who cannot enjoy his leisure is ignorant, though his degrees exhaust the alphabet, and the man who does enjoy his leisure is to some extent educated, though he has never seen the inside of a school.

I cannot easily imagine a greater fallacy than for one who has several hobbies to speak on the subject to those who may have none. For this implies prescription of avocation by one person for another, which is the antithesis of whatever virtue may inhere in having any at all. You do not annex a hobby, the hobby annexes you. To prescribe a hobby would be dangerously akin to prescribing a wife—with about the same probability of a happy outcome.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 181

Explanation and Analysis

Leopold has many theories about ethical ways to interact with the land, but his favorites revolve around the concept of the hobby. Many people recognize that world, but Leopold has a specific definition of a hobby. In his mind, it is, as he writes later in the essay "a defiance of the contemporary," and categorizes as hobby any task that attempts to do something with rudimentary tools that could more easily be accomplished with more modern implements. For example, Leopold sees hunting with falcons, or with a bow and arrow, as some of the greatest hobbies, because they make hunting harder than it would be with a gun, and force its practitioners to spend more time in nature, and more time in thought.

Leopold believes that hobbies are the most important way a person can spend their time. He believes hobbies are more important than an education, because in his mind education can make a person less attuned to the land, whereas by his definition, a hobby must make a person more in touch with the natural world.

Part III: The Round River Quotes

❝ In our educational system, the biotic continuum is seldom pictured to us as a stream. From our tenderest years we are fed facts about the soils, floras, and faunas that comprise the channel of Round River (biology), and their origins in time (geology and evolution), and about the technique of exploiting them (agriculture and engineering). But the concept of a current with droughts and freshets, backwaters and bars, is left to inference. To learn the hydrology of the biotic stream we must think at right angles to evolution and examine the collective behavior of biotic materials. This calls for a reversal of specialization; instead of learning more and more about less and less, we must learn more and more about the whole biotic landscape.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Related Symbols:

Page Number: 189

Explanation and Analysis

As he has earlier in the book, Leopold criticizes an educational system that encourages its students to learn about the natural world in pieces. Instead of considering the way all the organic and nonorganic members of an ecosystem live together in harmony, many academic disciplines encourage its practitioners to learn dry facts about each plant, animal, stone, or soil particulate, not stopping to consider that the "collective behavior" of the elements is more important than the sum of each individual biotic actor.

Later in the book Leopold brings up the idea of a land pyramid. Although he does not directly apply this concept here, it nonetheless describes the idea he is trying to communicate. The idea of a land pyramid requires us to view the land as a closely connected system, from which it is almost impossible to extract any single plant or animal. Similarly, pulling a single element out of a stream to study gives a person no real sense of the land itself. The waterway, or pyramid, must be examined as a whole to truly learn anything about it.

❝ Conservation is a state of harmony between men and land. By land is meant all of the things on, over, or in the earth. Harmony with land is like harmony with a friend; you cannot cherish his right hand and chop off his left. That is to say, you cannot love game and hate predators; you cannot conserve the waters and waste the ranges; you cannot build the forest and mine the farm. The land is one organism. Its parts, like our own parts, compete with each other and co-operate with each other. The competitions are as much a part of the inner workings as the co-operations. You can regulate them—cautiously—but not abolish them.

The outstanding scientific discovery of the twentieth century is not television, or radio, but rather the complexity of the land organism. Only those who know the most about it can appreciate how little is known about it. The last word in ignorance is the man who says of an animal or plant: 'What good is it?' If the land mechanism as a whole is good, then every part is good, whether we understand it or not. If the biota, in the course of aeons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 190

Explanation and Analysis

Leopold puts forth various definitions of conservationism in his book, but this is one of the most comprehensive. It relates to his idea of a land ethic, which he introduces later in the text, that requests people consider the land as a community of which he or she is a member, as opposed to a resource that can and should be exploited.

Conservation requires people to acknowledge that they are part of the land, and not above it. It also requires them to accept the land as it is. Leopold discourages people from only appreciating the land based on the element in it that they personally find valuable, as true conservationists appreciate the land for everything it contains, regardless of whether it is valuable to them.

Because the land has been revealed to be complex beyond human comprehension, Leopold also points out how presumptuous it is to assume that, as a human, a person could know what parts of the land are or are not important. He understands that the land is a web of relationships between the plants, the animals, the water, and the soil. He also understands that nature is tenuously balanced, and as a conservationist a person must be incredibly careful about throwing off that balance.

Part III: Goose Music Quotes

❝ I am sure those thousand geese are paying human dividends on a dollar value. Worth in dollars is only an exchange value, like the sale value of a painting or the copyright of a poem. What about the replacement value? Supposing there were no longer any painting, or poetry, or goose music? It is a black thought to dwell upon, but it must be answered. In dire necessity somebody must write another *Iliad*, or paint an 'Angelus,' but fashion a goose? 'I, the Lord, will answer them. The hand of the Lord hath done this, and the Holy One of Israel created it.'...If, then, we can live without goose music, we may as well do away with stars, or sunsets, or *Iliads*. But the point is that we would be fools to do away with any of them.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 229

Explanation and Analysis

Leopold attempts to determine the value of the geese he sees migrate past his farm every year. He uses various logical comparisons to try and quantify the worth of the bird he loves. First, Leopold wonders how much it would cost to replace a goose. While other wonderful, valuable objects in the world — like books, or paintings — can always be replicated or replaced by humans, humankind is not capable of creating a goose from nothing. This is, Leopold argues, the domain of the divine.

Still, even using this thought experiment, Leopold is unable to place a numerical value on a goose, in the same way he has difficulty placing numerical value on a beautiful poem, or a painting. Even if each individual goose could be sold for a specific amount of money, in the same way that each

individual printing of the epic poem the *Iliad* has a set price, the concept of geese, or the concept of the *Iliad* is not quantifiable. By demonstrating this, Leopold demonstrates the futility of only protecting the land that can deliver economically — many things in life don't have an easy, fixed economic value, but that does not make them less important, or worthy of continued existence.

Part IV: The Land Ethic Quotes

❝ All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts. His instincts prompt him to compete for his place in the community, but his ethics prompt him also to co-operate (perhaps in order that there may be a place to compete for).

The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 239

Explanation and Analysis

Leopold deals with the idea of the land ethic in the final essay of his book. The land ethic is the concept that humans are part of the land itself. The ethic requires people to think of themselves as members of a community that includes the inanimate land, as well as the flora, fauna, and water systems housed within it. It requires people to consider themselves as responsible for the health and wellbeing of the land, and to think about what they can offer to their community, as opposed to what they can extract from the landscape. Although this concept is only named in the last fifth of the text, this idea of responsibility and stewardship is alluded to throughout *A Sand County Almanac*, during the span of which Leopold encourages his readers to consider the land as a living thing, worthy of respect, and inherently valuable.

❝ A land ethic of course cannot prevent the alteration, management, and use of these 'resources,' but it does affirm their right to continued existence, and, at least in spots, their continued existence in a natural state.

In short, a land ethic changes the role of *Home sapiens* from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such.

In human history, we have learned (I hope) that the conqueror role is eventually self-defeating. Why? Because it is implicit in such a role that the conqueror knows, *ex cathedra*, just what makes the community clock tick, and just what and who is valuable, and what and who is worthless, in community life. It always turns out that he knows neither, and this is why his conquests eventually defeat themselves.

In the biotic community, a parallel situation exists. Abraham knew exactly what the land was for: it was to drip milk and honey into Abraham's mouth. At the present moment, the assurance with which we regard this assumption is inverse to the degree of our education.

The ordinary citizen today assumes that science knows what makes the community clock tick; the scientist is equally sure that he does not. He knows that the biotic mechanism is so complex that is workings may never be fully understood.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 240

Explanation and Analysis

Leopold complicates his concept of a land ethic — the concept that humans are members of a community that includes the land itself. Just because humans are members of the community does not mean that they cannot modify it. Instead, Leopold hopes a land ethic will help people be more thoughtful about the ways in which they interact with the land.

For much of history humans have seen themselves as "conquerors" of the land, but instead, Leopold hopes they can see themselves instead as stewards. Conquerors, Leopold believes, operate from a position of presumed knowledge and authority. As a conqueror, a person assumes that they know what is best for the land, understanding "what and who is valuable, and what and who is worthless." However, the land is complicated. It's impossible to know exactly what each element of the land contributes to the whole. By stepping down, and admitting ignorance, a person is better able to make decisions regarding the land. Instead

of assuming they know best and are always right, they instead, like the scientist, acknowledge everything there is that they do not understand. Although Leopold believes people should be allowed to modify the land, he wants them to go forward knowing they are undertaking a risk, and going forth with only limited information about the complex biotic mechanism.

Leopold also takes a shot at education here, arguing that the more educated a person is, the more they assume they know. However, even if a person technically knows more facts after having attended school, he argues they are still ignorant regarding the complexity of the natural world.

> When the logic of history hungers for bread and we hand out a stone, we are at pains to explain how much the stone resembles bread. I now describe some of the stones which serve in lieu of a land ethic.
>
> One of the basic weaknesses in a conservation system based wholly on economic motives is that most members of the land community have no economic value. Wildflowers and songbirds are examples. Of the 22,000 higher plants and animals native to Wisconsin, it is doubtful whether more than 5 per cent can be sold, fed, eaten, or otherwise put to economic use. Yet these creatures are members of the biotic community, and if (as I believe) its stability depends on its integrity, they are entitled to continuance.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 246

Explanation and Analysis

Leopold complains that instead of adopting his land ethic — the idea that humans are members of a community that includes the land, and that therefore they must treat it with care and respect — many people and societies have come up with inferior ways to relate to the natural world. He uses an analogy, comparing his land ethic to edible, healthful bread, and these substitutes as inedible, worthless stone.

Instead of treating the land as part of a community, inherently valuable, some people have instead attempted to find economic value in the land, and use that as a way to signal its worth. Leopold is opposed to this economic perspective of land value for several reasons. Primarily, he is concerned that it is too narrow — very few species of the biotic community have any economic value at all, leaving 95% of organisms unprotected under this system. Additionally, Leopold reveals in other parts of the book that he does not trust humans to know what is valuable, so even if he appreciates the protection extended to certain species, he is skeptical of how the value of those species was even determined. He also realizes that what is valuable can change, depending on human whims. Earlier in the book he complains of a grizzly bear shot and killed because it devalued farmland. However, a few years later the community realized the bear was more valuable alive as a tourist attraction. Because of changes of heart like this, Leopold does not trust economic value as a governing principle that will keep the land healthy into the future.

> The thumbnail sketch of land as an energy circuit conveys three basic ideas:
>
> (1) That land is not merely soil.
>
> (2) That the native plants and animals kept the energy circuit open; others may or may not.
>
> (3) That man-made changes are of a different order than evolutionary changes, and have effects more comprehensive than is intended or foreseen.
>
> These ideas, collectively, raise two basic issues: Can the land adjust itself to the new order? Can the desired alterations be accomplished with less violence?

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 255

Explanation and Analysis

Leopold proposes the idea of a land pyramid. This is similar to the idea of a food web, or the concept of a Round River, which he introduced in an earlier essay. The idea of a land pyramid is that everything that lives in or on the land is connected, from the soil, to the plants, to the water, to the animals. Leopold hopes that by thinking of the land as a pyramid, people will think of it as a physical object with needs, as opposed to an abstract concept.

The land pyramid evolves and changes on a geological scale — over hundreds of thousands, if not millions, of years animals and plants evolve, the ecosystem becomes more complicated. This is natural, and the land slowly shifts to accommodate these changes. However, changes made by humankind have happened on a much shorter scale, which has not given the land ample time to adjust. Leopold hopes

that by illustrating the complexity of the land pyramid, and the long timeline of its history, people will be better able to understand humankind's place in it, and the dangers of their interventions on it.

He hopes that humans can change the land in a less "violent" way, which causes less irreversible trauma to the landscape. Similarly, he hopes there will be a way that the land can in fact shift and accommodate human intervention, finding a new status quo, instead of slowly eroding and destroying itself.

> ...We see repeated the same basic paradoxes: man the conqueror *versus* man the biotic citizen; science the sharpener of his sword *versus* science the searchlight on his universe; land the slave and servant *versus* land the collective organism. Robinson's injunction to Tristram may well be applied, at this juncture, to *Homo sapiens* as a species in geological time:
> Whether you will or not
> You are a King, Tritram, for you are one
> Of the time-tested few that leave the world,
> When they are gone, not the same place it was.
> Mark what you leave.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 260

Explanation and Analysis

Leopold rephrases his concept of the land ethic, this time as a literary allusion. He references contemporary poet E. A. Robinson's long poem *Tristram*, about a knight of the Arthurian round table. Leopold quotes Robinson, who himself had developed a kind of preliminary land ethic — the idea that people should do their best not to alter the world for the worse. Even a King is not the conqueror of the land, but a member of the greater biotic community. Each and every biotic citizen has a duty to the natural world. When presented with the opportunity to rule, or to cooperate, people must choose to cooperate to ensure a bright future for the land, but also for humankind, which requires the land to live.

> It is inconceivable to me that an ethical relation to the land can exist without love, respect, and admiration for land, and a high regard for its value. By value, I of course mean something far broader than mere economic value; I mean value in the philosophical sense.

Perhaps the most serious obstacle impeding the evolution of the land ethic is the fact that our educational and economic system is headed away from, rather than towards, an intense consciousness of land.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 261

Explanation and Analysis

In this short quotation, Leopold brings together many of the themes of *A Sand County Almanac*. In explaining his land ethic, he also calls out the downsides of an ethic created around economics, as well as calling out the greater education system.

Not only does Leopold want disciples of his land ethic to see the land as part of their community, he hopes they see land as something worthy of love and respect, like a fellow human being. He hopes they will be able to find land inherently valuable, as opposed to economically valuable — a substitute for the land ethic many people and governments have adopted, which Leopold finds insufficient.

Leopold worries that his land ethic is being actively undermined by the educational system, which, through its focus on narrow facts as opposed to big picture ideas discourages students from considering the land as a whole. If children learn only to evaluate the land in disconnected parts, Leopold worries they will grow into adults who do not value the interconnectedness of the land, and look for value only in these disparate elements that they have been taught to study.

Part IV: Wilderness Quotes

Wilderness is the raw material out of which man has hammered the artifact called civilization.

Wilderness was never a homogenous raw material. It was very diverse, and the resulting artifacts are very diverse. These differences in the end-product are known as cultures. The rich diversity of the world's cultures reflects a corresponding diversity in the wilds that gave them birth.
For the first time in the history of the human species, two changes are now impending. One is the exhaustion of wilderness in the more habitable portions of the globe. The other is the world-wide hybridization of cultures through modern transport and industrialization. Neither can be prevented, and perhaps should be, but the question arises weather, by some slight amelioration of the impending changes, certain values can be preserved that would otherwise be lost.

To the laborer in the sweat of his labor, the raw stuff on his anvil is an adversary to be conquered. So was wilderness an adversary to the pioneer.

But to the laborer in repose, able for the moment to cast a philosophical eye on his world, that same raw stuff is something to be loved and cherished, because it gives definition and meaning to his life. This is a plea for the preservation of some tag-ends of wilderness, as museum pieces, for the edification of those who may one day wish to see, feel, or study the origins of their cultural inheritance.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 264

Explanation and Analysis

In this segment of "The Upshot," the same larger essay in which Leopold introduces the concept of the land ethic, he instead focuses more closely on the concept of the wilderness. He defines wilderness as natural land that has been untouched by humans. In Leopold's view, wilderness is destroyed by the encroachment of roads, or hotels, even campsites. Even if wilderness cannot be exploited economically, people enjoy spending time in it, photographic it, hunting in it, and so on. However, the wilderness becomes less wild when people are in it. Leopold wonders if there is some compromise that can preserve the wilderness, even from those who love it.

Leopold also observes that the wilderness is the opposite of progress. If progress assumes that the world is better when it is connected by the mechanized modern world, then wild spaces that humans do not inhabit seem like opportunities for people to come in and inhabit them. However, Leopold sees that there is value in progress and the development of the modern world, but there is also value in protecting parts of the natural world as well. Just as wilderness itself varies greatly, so should the world as a whole — he believes an ideal future would allow swaths of wilderness to remain untouched for the education of future generations, who want to see what the land used to look like.

Ability to see the cultural value of wilderness boils down, in the last analysis, to a question of intellectual humility. The shallow-minded modern who has lost his rootage in the land assumes that he has already discovered what is important; it is such who prate of empires, political or economic, that will last a thousand years. It is only the scholar who appreciates that all history consists of successive excursions from a single starting-point, to which man returns again and again to organize yet another search for a durable scale of values. It is only the scholar who understands why the raw wilderness gives definition and meaning to the human enterprise.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 279

Explanation and Analysis

Although Leopold has spent much of the book criticizing mainstream academia and the education given to many young people, in this quotation he takes a moment to praise those whose intellectual stances he agrees with. Although often Leopold argues that education blinds students to the natural world, he also can see that certain scholars can in fact appreciate it. Notably, the word "scholar" often refers to someone who has had a traditional education, but it can also refer to anyone who has studied anything. Here, Leopold's scholars could as easily be self-taught botanists as college educated professors. These people are scholars of the natural world, who understand the scale and essential unknowability of the universe.

Leopold believes the first step of a ethical relationship with the land is respect, but also an acknowledgment of a person's own relative ignorance of the natural world. A person who understands how much is left to learn about the land can more fully appreciate the lessons wilderness has to offer.

Part IV: Conservation Esthetic Quotes

❝ Recreation, however, is not the outdoors, but our reaction to it. Daniel Boone's reaction depended not only on the quality of what he saw, but on the quality of the mental eye with which he say it. Ecological science has wrought a change in the mental eye. It has disclosed origins and functions for what to Boone were only facts. It has disclosed mechanisms for what to Boone were only attributes. We have no yardstick to measure this change, but we may safely say that, as compared with the competent ecologist of the day, Boone say only the surface of things.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 291

Explanation and Analysis

In the end, Leopold proposes that human interactions with the wilderness have more to do with humans themselves than with the land. The purpose of an education, in Leopold's mind, is to open a person's eyes to the natural world. Leopold compares Daniel Boone, a famous outdoorsman and pioneer, to the modern day scientist. While Boone has a sense of the land, he had no actual knowledge of it. He knew how things were, but not why they were, or how they had come to be.

Leopold believes that a deeper understanding of the natural world leads to a deeper appreciation of it. Although he is skeptical of certain kinds of mainstream education, he believes that a comprehensive education that teaches a person about the origins of the natural world and the ways in which it is connected will lead to the development of a deeper, more critical thinker, and a more responsible biotic citizen.

❝ The trophy-recreationist has peculiarities that contribute in subtle ways to his own undoing. To enjoy he must possess, invade appropriate. Hence the wilderness that he cannot personally see has no value to him. Hence the universal assumption that an unused hinterland is rendering no service to society. To those devoid of imagination, a blank place on the map is a useless waste; to others, the most valuable part. (Is my share in Alaska worthless to me because I shall never go there? Do I need a road to show me the arctic prairie, the goose pastures of the Yukon, the Kodiak bear, the sheep meadows behind McKinley?)

It would appear, in short, that the rudimentary grades of outdoor recreation consume their resource-base; the higher grades, at least to a degree, create their own satisfactions with little or no attrition of land or life. It is the expansion of transport without a corresponding growth of perception that threatens us with qualitative bankruptcy of the recreational process. Recreation development is a job not of building roads into lovely country, but of building receptivity into the still unlovely human mind.

Related Characters: Aldo Leopold (speaker)

Related Themes:

Page Number: 294

Explanation and Analysis

This is the final passage in the final essay of *A Sand County Almanac*. Leopold begins by criticizing an approach to the land that privileges the gathering of trophies over the health of the land itself. This kind of relationship with the land inherently degrades it, because it requires a person to only engage with land that has some kind of tangible, physical value, and then extract that value in the form of a fish caught in a river, or a deer shot in the woods.

For people who only see the land for what it can offer them, land that ostensibly offers them nothing then appears valueless. Leopold finds this dangerous, and offers up examples of inaccessible wildernesses that remain important and valuable whether or not he ever personally visits them.

Leopold is not against the expansion of roads into wilderness as a rule, however he believes that the issue with human perception of the wilderness is unrelated to the infrastructure that allows them to access it. Instead, Leopold believes that too many people look at the wilderness in a close-minded way, and are interested only in what tangible things it can offer them. Instead, Leopold hopes people can learn how to think of the wilderness in a more open-minded way, and learn to appreciate a natural

world that owes them nothing, but does require their help	to remain wild and free.

SUMMARY AND ANALYSIS

The color-coded icons under each analysis entry make it easy to track where the themes occur most prominently throughout the work. Each icon corresponds to one of the themes explained in the Themes section of this LitChart.

PART I: JANUARY

The first section of *A Sand County Almanac* (which shares the same title as the book) is meant to show, month by month, how Aldo Leopold and his family live on the weekends. Although he teaches at the University of Wisconsin during the week, the rest of the time he lives out on a sand farm in rural Wisconsin where he lives off the land and close to the natural world.

Although Leopold's weekday life is centered around a conventional educational institution, in his free time he is more excited about learning from the land than teaching about it in the abstract. This relationship with the land has structured his entire outlook on life, as well as his academic practice.

Leopold observes a midwinter thaw after a series of blizzards. A skunk comes briefly out of hibernation, which Leopold marks as "one of the earliest datable events" in the year. Leopold follows the skunk, attempting to "deduce his state of mind and appetite, and destination if any." He appreciates that in January, his observation of the natural world is "simple and peaceful." He notes "there is time not only to see who has done what, but to speculate why."

Leopold marks time not by the calendar, but by weather patterns and the behavior of animals. It is evident from the very start of the book that Leopold is constantly on the hunt for knowledge. Even the behavior of a single, simple skunk is valuable to him, a mystery worth investigating.

Leopold watches a meadow mouse and hypothesizes about the animal's thoughts. Leopold supposes that the mouse exists in its own little world, where grass grows so that mice can harvest and store it, and snow falls specifically so that mice can tunnel through it. He observes "to the mouse, snow means freedom from want and fear." Similarly, Leopold suspects a hawk has "no opinion on why grass grows," but believes that the snow melts so it can more easily catch mice.

Leopold indulges in some anthropomorphism here to make a point that all animals see the value of the land in different terms. He sees the behavior of the animals as selfish, but passes no judgment. He believes that these animals only see the world in terms of how it benefits them, because that is all they need to survive. Later in the book, Leopold will criticize his fellow humans for having a similarly narrow world view, when they have the capacity to think more grandly and holistically about their place in the world.

Following the skunk tracks farther across the snow, Leopold wonders about the skunks' thoughts and motivations once again. He wonders if it is fair to "impute romantic motives" to this woodland animal.

Once again, Leopold finds joy and value in investigating the inner thoughts of a skunk. For him, there is no hierarchy of knowledge—he is interested in everything the natural world has to offer.

PART I: FEBRUARY

Leopold believes that not owning a farm poses a "spiritual danger" to a person or a family. He believes that having a farm alerts a person to where their food comes from. Additionally, he argues that cutting one's own wood alerts a person to where their heat comes from. Both of these supply chains can easily be forgotten from the comfort of a city, with a gas or electric radiator and a nearby grocery store.

Leopold values the kind of knowledge that comes from living directly with and off the land. Although people in cities live an easier life (and although he lives that life five days of the week), he feels that he is a better citizen of the land knowing and understanding the ways in which it gives him heat and food and life.

Leopold cut down the **oak tree** that is currently heating his home. He thinks back to when he harvested it, and how he was able to learn so much about its history, and the history of the land, from its age and its rings. The tree had 80 rings, meaning it was 80 years old, and must have started growing in 1865. He sees the tree as part of the circle of life; it spent eighty years taking in the sunlight, and now it releases sunlight as heat. Leopold jokes that his dog doesn't know or care where heat comes from.

Leopold reads the old oak tree in the same way he would read a history book. He finds the tree valuable not only as an object that will warm his house in the winter, but as a key to the past of the place where it grew. The oak tree is one of the most explicit examples of alternative sources of knowledge and history in the book, and is the first time wood specifically is shown to contain keys to the past.

The **oak tree** contains its own history in its rings. Leopold describes the sawdust as the tree is cut as "fragrant little chips of history," and senses that as he cuts across the tree his **saw** is "biting its way, stroke by stroke, decade by decade, into the chronology of a lifetime."

As he cuts into the rings of the tree, Leopold is cutting through history. The tree is at once a portal into the past and a physical object that will provide Leopold with heat. However, it also carries physical markers of the past in its rings.

Cutting through the **tree**, Leopold journeys back in time. He cuts through the years he has owned the farm where the tree stood, and then the years the previous owner lived there. He cuts though the Dust Bowl, and the Great Depression. He notes that during the oak's lifetime various laws were passed that either helped or hurt the environment, but can see that the tree is indifferent to these human developments.

Leopold can see the results of changes in the land in the rings of the tree. Although some of these were likely caused by human intervention (like fires caused by humans clearing out plants that had formerly prevented them), he can also see that the tree does not care about bureaucratic changes that will, in theory, protect it and the natural world.

Continuing back in time, Leopold notes the year Governor Philip of Wisconsin argued, "state forestry is not a good business proposition," which ignores the ways in which land has existence beyond the scope of business.

This is an early example of the dangers of people searching for economic excuses to value the land. Throughout the book Leopold will argue that the land can and should be considered in terms beyond its economic worth.

Back in time he goes again, through drought years and historic blizzards, the death of the last wild turkey in Wisconsin, and all the way back to the Civil War. Leopold thinks the central question of the war is: "is the man-man community lightly to be dismembered?" He observes that no one has applied the same question to the "man-land community."

Although it will be hundreds of pages before Leopold introduces his concept of the "land ethic," he is already hinting at it. He believes that humans are part of a larger community that includes the land, and should consider it as a living thing that deserves respect.

Finally, Leopold has cut to the center of the **tree**, 1865. He cuts back out the other side, and the tree falls to the ground. He describes the process of cutting wood as similar to the work a historian does in the archives. A **saw** cuts across history, creating woodchips or "little chips of fact," sawdust or "archives." Meanwhile, the **wedge** takes a slice perpendicular to the bark, revealing a triangle of history. Depending on who places the wedge, this can provide much or little information. Finally, the **axe** can cut only the recent past, or tree limbs. Leopold says, "the three tools are requisite to good oak, and to good history."

This is the first instance of Leopold treating tools as greater philosophical implements. Here, the saw, wedge, and axe are the tools of the historian and not just the tools of the woodworker. In both situations the person wielding the tools must be careful. Although the tree (or the historical archives) contains history, if it is not carefully approached, the scholar or the woodworker will find no useful facts. However, the careful and considerate investigator can easily find knowledge in any tree.

Leopold reflects that he will return the ashes from the **oak** burning in his stove to the orchard. These ashes, in turn, will help fertilize apples, or feed squirrels. No matter what, he knows the tree will live on in another form.

Although it's not until later that he introduces the concept of the land pyramid and the Round River—both ways of describing the circle of life—this is an early example of Leopold's sense of the interconnectedness of life.

PART I: MARCH

Leopold knows that spring comes when geese begin their migration. He argues that a single cardinal or chipmunk can be confused about the season, but geese must travel hundreds of miles to arrive in Wisconsin and must be certain about the season. Therefore, it is possible to set a calendar by their behavior.

Leopold turns to the natural world, not the human calendar, to track the changing of the seasons. He trusts the geese who must fly thousands of miles based on their own internal clock, and while he trusts other animals, he knows that the geese's sense of time is life or death for them, and therefore likely the most accurate.

Leopold argues that March is only "drab" to people who ignore the geese. He tells an anecdote about a smart woman he knew who never noticed the geese. He wonders "is education possibly a process of trading awareness for things of lesser worth? The goose who trades his is soon a pile of feathers."

Although a college professor, Leopold believes that education can often force people into specialized fields, blinding them to the rest of the natural world. This is a luxury only humans have, as geese who are similarly oblivious are easily shot by hunters.

The geese are "aware of many things." They know that in November hunters are allowed to shoot them, and as a result they are more cautious. In the spring they know they are temporarily safe, and take more stops on their migratory journey. Leopold is happy to see the geese return. He proclaims, "our geese are home again!"

Although Leopold often talks about human knowledge, geese and other animals are knowledgeable as well. Additionally, throughout the book Leopold will talk about the joy the geese bring him, and the value they bring to the land generally. Although he cannot qualify their impact economically, he loves them all the same.

Leopold observes the geese and wonders what they are saying to each other and how they select what to eat. He decides it is better that they remain partially enshrouded in mystery.

Leopold is constantly curious, but understands that part of the magic of the natural world is that it is not entirely knowable, and aspects of it will always remain a mystery to him.

After many years of research, Leopold reports that he and his students found that geese travel in flocks composed of their families, or multiple family units traveling together. Based on this, Leopold speculates that the single geese he has seen migrating by his farm have lost their families to winter hunters. He says he grieves for them. He remarks, "it is not often that cold-potato mathematics thus confirms the sentimental promptings of the bird-lover."

One of Leopold's criticisms of education is that it is too clinical, and leaves little room for emotion or feeling. Here, he is happy to be able to combine his love for the birds, and his sorrow at the fate that has befallen some of their families, with hard data — a merging of his professional and personal interests.

Leopold remarks that it is ironic that human nations remain so fragmented, and only "discovered the unity of nations at Cairo in 1943," while the geese, by contrast, understand the connectedness of the world, and have for thousands of years. The geese do not care about the boundaries of nations. Instead, they participate in an "international commerce," carrying "waste corn of Illinois" up to the Canadian Arctic and down to Mexico.

Another way the geese are knowledgeable that humans are not is in regard to the unity of the land. Leopold often complains about humankind's need to draw strict boundaries on the land, whereas animals naturally understand that the entire world is interconnected.

PART I: APRIL

In April, Leopold meditates on the spring floods that sometimes trap him and his family on their farm. He observes that, as soon as floodwaters rise, the geese arrive searching for food and exploring their "expanding universe." Meanwhile, terrestrial animals are indifferent to the changes in the land, moving only when they must to stay dry.

According to Leopold, different animals only see the natural world in terms of how it affects them. What to one animal is a natural disaster, to another is a welcome flood that expands its habitat. Although for some people, spring floods would be a disaster, Leopold loves getting extra time on his land.

The floods bring miscellaneous objects and scraps of wood to Leopold's yard. In the **wood** especially, Leopold finds "an anthology of human strivings in upriver farms and forests." He notes that "the autobiography of an old board is a kind of literature not yet taught on campuses," but nevertheless finds importance in closely observing the histories of the wooden scraps.

Here, Leopold once again finds history written in wood. Instead of February's oak tree, Leopold now can look at history in driftwood. Though to some this would be trash, to him it is a useful source of knowledge. It isn't the kind of history he could teach in his college courses, but he nonetheless finds it to be personally valuable.

Sitting by the banks of the flooded river, Leopold believes that the solitude created by a spring flood is the most intense kind of aloneness there is. This fills him with glee.

Leopold finds value and joy in a moment that for others might be actively frustrating. This helps prove his point that the value of the landscape is often not purely economic.

Leopold considers the draba flower. It is so small that those who are not looking for it can easily overlook it, and even in botany books its entry is rarely accompanied by an illustration. It can grow where the soil is bad and the sun is weak. Leopold describes it as a flower "of no importance—just a small creature that does a small job quickly and well."

Because he loves the land and pays such close attention to it, Leopold is able to recognize and name many plants the average passerby would not even notice. Although many of these plants are not economically valuable, he believes they are still important members of the biotic community.

Leopold catalogues the bur oak, a tree notable for being able to withstand a prairie fire. They have thick, cork-like bark that functions as armor. Leopold imagines the prairie and the forest engaging in a twenty-thousand-year war for territory, in which rabbits ate the prairie, clearing space for trees, and then winter frost killed oak seedlings, and so on. The human settler eventually ended up in the middle of the war. Fires had helped control the growth of forests, but when farmers came along they mowed the prairie, which reduced the fires and allowed the trees to grow unchecked.

In addition to the draba, Leopold loves and respects the bur oak. He understands its role in the history of the prairie, and uses the oak tree as a way to mentally travel back in time and imagine life in Wisconsin before European settlers irrevocably changed the landscape. Back then, the land regulated itself, and although there was constant tension, there was also a sustainable balance.

Leopold concludes by reminding the reader that to own "a veteran bur oak" is to own "a **historical library**"—to have "a reserved seat in the theatre of evolution" which is only visible "to the discerning eye."

Although not a conventional historical text, the oak tree contains history within it whether it is being cut down to expose its rings, or whether it is being used as a way to imagine a distant, wilder past.

Leopold enjoys a performance that he calls the "sky dance." The sky dance is a nightly dance by a male **woodcock**, who performs in the spring as the suns sets and early in the morning as the sun rises. Leopold finds the sky dance mysterious, but enjoys the mystery, wondering how the female woodcock is incorporated, and whether the ritual is a mating ritual.

Leopold finds value in many aspects of the landscape. The sky dance especially brings him joy, and though he doesn't understand it entirely that does not make him value it any less.

Leopold observes that the sky dance occurs on hundreds of farms, but is ignored by farmers who "harbor the illusion that [entertainment] is to be sought in theatres." These men and women "live on the land, but not by the land."

Leopold readily criticizes farmers who, for whatever reason, are not in tune enough with the land to notice the wonderful performances taking place on it. Although this kind of observation does not require a kind of conventional education, it does require a special kind of observational skill and purpose that many do not seem to possess, and seems inversely related to the "progress" and industrialization of a slice of society.

Leopold sees the **woodcock** as a symbol of the grand utility of birds beyond their use as hunting targets. He still enjoys hunting them, but finds that because he so enjoys their dance in the springtime that he is more moderate in his killing.

While a dead woodcock's economic value can be fairly easily gauged (how much would it sell for, how much would a similar game bird cost), Leopold finds it to be valuable year-round. Its dance, although harder to quantify, brings him equal or greater pleasure than the taste of its meat.

PART I: MAY

Leopold knows that spring has truly arrived when the upland plover, a type of waterfowl, returns from its migration to Argentina. Although Leopold legally owns the land, he notes that this plover "has just flown 4000 miles to reassert the title he got from the Indians," and that the land is technically his.

Just as the geese signal that March has arrived, the plover signals that spring is here. The animals and the weather are more important to Leopold than the calendar, which would say spring always begins in late March.

The plover's migration, in Leopold's mind, serves to "prove again the age-old unity of the Americas." Although political and diplomatic unity is relatively recent among humans, birds have been unifying the two continents via their migration for thousands of years.

Just as the geese seem to know what humans do not—how interconnected the world is—the plover helps remind Leopold of what it knows in its DNA, that North and South America, although crisscrossed with political divisions, are united ecologically by the migration of birds.

Leopold notes that the plover has only two natural enemies, the gully and the drainage ditch. However, he also has an unnatural enemy: the hunting rifle. Leopold wonders if humans will realize they also have to fear the gully and drainage ditch, and applauds the (belated) protection of migratory birds from hunting, arguing that "the lure of plover-on-toast" is not worth the eradication of a species, and the silence of plover-less prairies.

Leopold understands what many people do not—that modifications to a physical environment also modify the behavior of the animals that live upon it (humans included). By changing the land through agriculture and irrigation, humans have destroyed many of the watery places plovers formerly called home. In this way, although humans are not actively killing they birds, they are passively contributing to their potential extinction.

PART I: JUNE

One day in June, Leopold goes to a nearby stream to fish. At first he has little luck, but then remembers that the stream has tributaries. He imagines he is a trout, and tries to envision where he would go were he a fish in the water. Thinking this way leads him to a new fork in the river, where he finds a trout the next morning.

Leopold does his best to think like a fish. This is a kind of knowledge not taught in schools, and not even particularly useful, as it barely helps him catch a fish, but it brings him joy and makes him feel closer to nature.

Leopold spends many hours trying to catch a trout. He reflects that men are like fish: "ready, nay eager, to seize upon whatever new thing some wind of circumstance shakes down upon the river of time!" He also notes that men, like fish, are attracted to glittery "gilded morsels," even if they might contain a dangerous hook within them. Leopold is glad he isn't "a wholly prudent man," reflecting that life would be dull if he did not sometimes take risks. The next day he returns, and eventually catches a trout, and though it is not large or impressive, he is happy that he, like the fish, was willing to take an uncalculated risk.

Although it is not until later in the book that Leopold puts forth his theory of recreation, here he is practicing what he will later preach. Recreation, in his mind, doesn't need to be practical, it just needs to connect a person to their roots in some way, either by making some simple task more challenging and purposeful, or reminding them of the way their ancestors caught food.

PART I: JULY

While Leopold officially owns one hundred and twenty acres of land, he remarks that he owns all the land he can walk across at dawn, regardless of what is legally his. When he walks in the early mornings, Leopold remarks that "it is not only boundaries that disappear," but the human sense of being bounded, limited, and fenced in.

During certain times of day, certain boundaries no longer matter. Arbitrary human borders do not technically divide the land, as Leopold has observed earlier in the book. Like the birds before him, he is happy to treat the entire landscape as a single, unified entity.

Leopold lists the "tenants" of his land. He jokes that they don't pay their rents, but do police their own boundaries. In the early morning in July he goes out onto his porch and watches his animal "renters" start their days. First a series of field sparrows call out and declare that a small portion of the land belongs to them. Then a rabbit claims his small corner, then a robin, then an indigo bunting, then a wren, and then a series of other birds. Leopold refers to these animals as "performers."

Leopold thinks of his land as something that belongs not only to him but to the animals that live upon it. As opposed to thinking of them as intruders or outsiders, Leopold understands that he is living in a complex community, rather than "owning" it, and the animals deserve a place on his property as much as he does.

Together with his dog, Leopold leaves his porch and begins to explore. He notes that his dog is uninterested in the performances going on around him, and is more interested in the scents of their tenants than their sounds. Leopold waits for his dog to "translate" the scents of the animals for him, each animal and its corresponding odor a "poem."

Leopold understands that his dog has a different set of knowledge than he does, and that this knowledge can be useful. He feels no sense of jealousy or wounded pride, but instead defers to his pet, who better understands the scents and behaviors of the animals living on his property.

As the sun rises, the birds begin to quiet and Leopold hears his neighbor's tractor. He observes that the world is no longer his, as the boundaries drawn by the county clerks, who keep track of who owns what land, have been reinstituted with the rising of the sun.

As the day progresses, dawn redraws human boundaries. Clocks don't merely mark the passage of time, but the strength of laws and human influence.

Each week, from April to September, many new wild flowers begin to bloom. Leopold remarks that while no one could observe the blossoming of every flower, everyone is bound to notice at least a few. He suspects he could find out a lot about a person based on the flowers he or she noticed.

Different flowers would interest different people depending on their hobbies and jobs. Farmers, for example, would be more likely to notice weeds, while florists would notice flowers that they could sell in their shops. This is unrelated to a person's education, Leopold suggests—the highly educated might notice few flowers, but the self-educated might notice many.

In July, Leopold is especially happy to celebrate the "prairie birthday" of the **Silphium** plant, which blooms in a stretch of unmoved prairie protected by the fence of a cemetery. It is the only patch of Silphium left in this half of his county, and a few weeks after it blooms, in early August, Leopold notices that the fence of the cemetery has been moved and the flowers mowed. He mourns its mowing, predicting that eventually it will be unable "to rise above the mowing machine." When it finally dies, "with it will die the prairie epoch."

To Leopold, Silphium represents the prairie. It is one of the last native plants that continues to bloom, and although it has no agricultural purpose, it has, by accident, been allowed to remain. Much of the wild prairie has been domesticated, and so Leopold especially appreciates this economically valueless plant, that nonetheless represents the long history of the native flora of the region. It is no accident Leopold observes it growing by a cemetery, since the loss of the final Silphium will be the death of the idea of the wild prairie entirely.

Each year, Leopold calculates, 100,000 people drive past the patch of **Silphium**. But of those people he bets only twelve or so would even notice if it disappeared forever. Leopold complains that "mechanized man" is happy to clean up the landscape, disregarding the flowers that grow upon it. He ironically suggests that no one should be allowed to take a history or a botany class, lest it make them miss the flowers which will soon be mowed to extinction.

Leopold criticizes both the educational system, which makes people ignorant of the natural world, and the industrialization of the land, which destroys it. He finds that the educated are more likely to be happy to "clean up the landscape" by domesticating it and turning it into cities or suburbs or farmland. He also finds that education often turns students inwards, making them less likely to notice the natural world around them.

During the weekend, when Leopold lives on his farm, he lives in the backwoods and sees all kinds of wild plants. During the week, when he is teaching in the city, he must hunt for flowers in the suburbs and on the university campus. He has observed that approximately twice as many species of flower bloom on his farm as on campus. He wonders "whether we cannot have both progress and plants."

Leopold often sees scientific progress and the preservation of the natural world as being at odds. As a professor and a scientist, he does hope there is some way to have "both progress and plants," but anecdotally has not found many people to find this kind of compromise.

Leopold notes how, surprisingly, railroads have ended up protecting many native plants, by preventing anyone from plowing the prairie between the tracks and railroad fences.

Although only Leopold finds these stretches of free prairie to have value, he appreciates the railroads, which find it more financially practical not to mow these strips of grassland, thus allowing the natural prairie to endure.

Leopold notes that humans "grieve only for what we know," and do not miss the loss of species we did not know existed, or even people from other cultures who we did not know well or personally. The **Silphium**, for example, will not be missed by those who know it "only as a name in a botany book." From personal experience, Leopold knows the Silphium plants are hearty, with deep roots. He suspects the oldest plants in the cemetery are older than the oldest gravestones. Leopold compares the eventual loss of the Silphium to the loss of the buffalo, a loss no one mourned at the time it occurred.

Leopold complains that not enough people consider the health of the entire landscape, and do not consider the ways the loss of a single species can affect the land as a whole. He also reflects on how the death of a single species is often not noticed until much later. A single hunter killing an animal has no way of knowing how that death will impact the world, even if it is the last of its species. Leopold also criticizes those who are educated only in books, and not in the world, and who therefore only know plants and animals as static and dead, and never observe them in nature. Later, Leopold will argue that one central quality separating humans from animals is the ability to acknowledge mistakes and mourn for extinct species.

PART I: AUGUST

Leopold describes a nearby river as an artist who paints beautiful scenes on the surface of the water and on the banks. The river is temperamental, and it is impossible to know how the scene will change day to day, but Leopold appreciates it as ephemeral art.

Although not inherently valuable, Leopold finds joy in the beauty of the river, which operates without human intervention.

He warns that the only way to guarantee the river will paint a beautiful picture is to give the river "three or more weeks of solitude," and then visit it only once to see how moss and sod has grown on the banks, along with various flowers, which have in turn attracted wild animals. You cannot preserve the beauty of the scene, but Leopold reminds the reader: "in your mind you may hang up your picture."

Again, Leopold takes time to appreciate the beauty of the natural world, although it has no economic value, and cannot even be consistently preserved. Even though this scene is not constructed for him, and cannot always even be viewed, he finds it inherently valuable and important in the moment.

PART I: SEPTEMBER

By September, the birds have begun to stop singing in the mornings. Leopold finds extra joy in hearing bird song when it is rarer. Although often he wakes up early to listen to birds and is greeted with silence, he feels that "the hope of hearing quail is worth half a dozen risings-in-the-dark." One morning, sitting on his porch, he hears a "chorus" of quail singing nearby. He feels "honored," and the world around him seems to become more vibrant and beautiful.

Leopold often appreciates nature the most when watching, listening to, or hunting birds. This is true in the fall as well as in the spring. Although sometimes he frames birdsong as a performance for him, here he frames it as something the birds do for themselves, a phenomenon he is lucky to witness.

PART I: OCTOBER

Leopold breaks hunting down into two categories: category one is hunting grouse in Adams county when the tamaracks are smoky gold; category two is hunting anything else under any other circumstances. Leopold believes there is a unique beauty to standing beneath a tamarack tree as its "golden needles come sifting down," and a grouse escapes into the underbrush.

Leopold loves to hunt, but he takes even more joy in hunting in these specific conditions. This is an early example of the way a single species, or in this case two species—the grouse and the tamarack tree—can have an effect on a landscape that is difficult to quantify, enhancing and brightening it in a way disproportionate to any measurement of mass or economic value.

When hunting for grouse in the tamaracks, Leopold trusts that his dog knows best. He enjoys the moments of uncertainty when the dog has spotted something, but he (Leopold) does not yet know what it is: a grouse, a **woodcock**, or a rabbit. He advises those who want to hunt with certainty to hunt pheasants instead of grouse.

Once again, Leopold turns to his dog, who he understands has knowledge and skills that are often more useful than his own. Leopold is happy to defer to his dog, who he trusts, and who he understands is superior in certain fields.

Leopold believes that the "sweetest hunts are stolen," by which he means the best hunts are those in a far-off wilderness where others have not hunted before, or else in a private place close to home, that has for some reason remained undiscovered. Hunting grouse fits into this second category. Most people do not know there are grouse in Adams County, and drive right past the patches of wilderness that conceal them.

Later in the book, Leopold will put forth a more comprehensive sense of wilderness and what he feels it is good for. This is an early example of Leopold's love of undeveloped, unexplored land. He prefers places that have been untouched by human hands—although, ironically, by being in them at all he necessarily corrupts them.

Leopold finds great beauty in the nearby tamarack groves. Even when he is pursuing a grouse, he will take a moment to stop and observe blue gentian flowers nestled among golden tamarack needles.

Although the grouse, when caught, arguably has some material value, the tamaracks provide only beauty, and yet Leopold values them equally on his autumnal hunts.

Wandering through the wilderness, Leopold comes across an old abandoned farm. He can tell when it was abandoned because a **young elm** blocks the barn door, and the rings on the elm say it has been growing since 1930.

The young elm blocking the barn door is another example of the way wood can act as an indicator of history—here it tells him that no one has tried to open a certain barn door for years.

Many animals wake up "too early," and Leopold observes that freight trains and hunters do as well. Leopold believes all early risers feel solidarity with each other, because they all "are given to understatement of their own achievements," either totally silent, like the stars, or else modest, like the owl. Early mornings require a person to listen, as they cannot easily see the world around them, which helps enforce this modesty. In the sunlight, Leopold feels that everything and everyone is gripped by self-importance and inflated self worth, which is stripped away at sunset.

This is an early example of Leopold's sense of solidarity with the land and all of its inhabitants. Later he will propose the idea of a "land ethic," and the idea that humans are part of a community with the land, but here he describes himself as part of a community with the animals on his property, united both by their chosen home and their sleeping habits. He treats these animals with the same respect he'd treat a fellow human awake at a similar hour.


When hunting partridge, Leopold recommends either making a plan, or wandering aimlessly from one blackberry plant (which he calls "red lanterns" because of their red leaves) to another, because this is where the birds hide. Leopold feels pride in knowing that this is where partridges congregate, as it is something few other hunters know, and is a secret shared between only the stream and his dog.

Just as Leopold enjoys hunting in areas relatively untraveled, he enjoys knowing secrets about the wilderness that others do not. Additionally, he finds joy in small aspects of the natural world that many would find no value in at all, for example the red leaves of the blackberry plant, which come after the blackberries have been eaten, and so have no human value other their beauty—which for Leopold is enough.


Leopold concedes that his dog is the true expert on partridges, and he knows he will never know as much as his companion, comparing himself to a dull pupil, and his dog to a wise professor.

Once again, Leopold defers to his dog. This time he compares his dog to a professor, in both a compliment to his dog and an insult to himself, as he teaches at a university.

Hunting for partridges doesn't always lead to a partridge being shot. It is partially a matter of skill but there is a huge component of chance. Leopold doesn't seem to mind this, and accepts it as part of life.

Leopold finds value in tracking partridges and being in nature. It does not entirely matter to him whether or not he can take home a trophy—that is not where the value in the experience lies.


On the last day of grouse season, Leopold observes "every blackberry blows out his light." He wonders how the bushes sync so perfectly to the laws that dictate the beginning and end of grouse season, and reflects that sometimes, the year from November to September feels unreal, a waiting period before the next grouse season begins.

Leopold experiences time in ways unrelated to the standard 12-month, Gregorian calendar. In this moment, he experiences it as grouse season and the time he spends waiting until the next grouse season, projecting that the entire world is waiting with him.

PART I: NOVEMBER

Leopold compares the landowner to God; just as "the Lord giveth, and the Lord taketh away," the landowner creates with a **shovel**, and takes with an **axe**, shaping the land to his will, and assuming a "divine function": that "of creating and destroying plants."

Leopold believes that humans have a responsibility to take care when modifying the land. He sees the two basic tools of land modification, the shovel and the axe, as stand-ins for the two major changes a person can make to the land: creating life, by planting a seed, or destroying life, by killing a plant.

November is "the month of the **axe**." It is still warm enough to work outside, but not too cold as to make the work unbearable. Leopold considers definitions of what a conservationist is, and wonders if a conservationist is best defined as someone who wields an axe with thought and care, aware that "with each stroke he is writing his signature on the face of his land."

Once again Leopold divides the year into periods of time unrelated to the months on the calendar. For him, the late fall is significant as a time of destruction and death, and less significant because it is called "November." Leopold here defines conservation for the first time, and although he will redefine it later, this simple definition requires a person to consider how their actions, their creation and destruction, affect the world around them.

Leopold considers his own biases when wielding an **axe**, and notices he favors pine trees over birch trees. Although he is unable to justify why, he eventually decides, "I love all trees, but I am in love with pines." All people who wield an axe have to grapple with their own biases, and every person's biases are different. Leopold is fascinated by the way different people can apply different biases, drawn from their own diverse experiences, onto the same tree.

Just as different people notice different flowers on the side of the road depending on who they are, different people care about different trees depending on their upbringing, their life experiences, their profession, and a thousand other factors. Leopold understands no one can act in an unbiased way, but hopes that everyone can become aware of their biases, and not necessarily fight against them, but at least monitor and investigate them when enacting change on the land.

Leopold notices that he has more biases than his neighbors, likely because he knows more about individual species that they dismiss as a monolithic category. He likes the wahoo tree because animals he likes eat it, the hazel because of its coloring, the bitter-sweet because it connects him to his father, and so on. Leopold recognizes that biases towards or against plants are partially familial, influenced by the plants one's family favored. It is also partially professional, in that biases can be based on which plants harm or help a person's vocation.

Ironically, greater education has made Leopold even more biased, because he has more information with which to judge the separate trees, causing him to value some more than others. This value is not at all rational—instead it is emotional and ancestral, based on his own personal experiences and the experiences of his family. It is biases like these that conservationists must recognize and work around.

Since buying his land, Leopold has realized how many types of diseases trees can get. Although he wishes there were not so many, he recognizes how oaks felled by disease provide habitats for other animals, like raccoons and grouse, which he enjoys having around.

Leopold understands the idea of the circle of life, and the ways in which the death of a single organism can benefit another. He is able to see how things like tree diseases, which he is biased against, do have a positive use in the grander scheme of the landscape.

In the winter when Leopold and his family begin to harvest dead trees and turn them into firewood, chickadees come to feast on the eggs and insects hidden within the rotting bark. Leopold likes the chickadees, and remarks that if the trees were not diseased, and did not fall, and he did not then chop them apart, there would be no chickadees at all. Leopold also loves the prothonotary warbler, a small yellow songbird. Like the chickadees, it is drawn to rotting trees, and through its song and plumage Leopold can see "proof that dead trees are transmuted into living animals, and vice versa."

Just as Leopold has learned to appreciate tree diseases, he sees how the chickadees he shares the land with might "appreciate" the trees he cuts apart with his axe. Although a tree has died, it has become home to hundreds of new organisms, which in turn feed hundreds more.

PART I: DECEMBER

Leopold wonders if his universe is bigger, or if the animals that live on his land travel more broadly than he does. Although the animals cannot speak to him, by examining their tracks and watching their behavior he can begin to make assumptions about the extent of their home ranges, and what areas of his farm are most familiar to them.

Leopold finds value and personal joy in learning about the lives of the animals he shares his property with. This is the kind of knowledge he seems to love the most—that which requires physical labor, like the tracking and observation of creatures.

Leopold argues that "science knows little about home range," but the farm itself is "a textbook on animal ecology," happy to offer information about the behavior of animals to the careful student.

Leopold believes his way of learning about the natural world—through direct observation—is superior to learning in a textbook.

Leopold compares the act of caring for a farm to an act of divine creation. Planting a tree feels especially holy, as it begins as a small seed but can grow tall and strong, and swiftly multiply in size. He wonders why "the **shovel** [is] regarded as a symbol of drudgery." He jokes that it is perhaps because many shovels are themselves dull, but he has found that with a sharp shovel he can find joy and music in his work.

Calling back to the previous chapter, where Leopold set up the axe and shovel as the "divine" tools of creation and destruction, he here takes a moment to celebrate the shovel, which allows new life to be created in fertile soil. Although he does not specifically mention it, this is an extension of his philosophy of what it means to be a conservationist.

Leopold tracks a **year in the life of a pine**. Its year begins in May, when the bud or "candle" at the tip of the tree begins to grow. Leopold sees the pines as bankers or bookkeepers, always recording how much nutrients they took in the past year, and carefully growing based on past stores. Because of this, when a pine is cut down, it is easy to read in its rings which years were good and which years were hard, as it will have grown (or not grown) accordingly.

Once again, Leopold turns to a tree to track the passage of time. Instead of traveling back through the decades, he simply imagines a year going by for a single pine tree, and then imagines the way the conditions of each year will affect the tree's growth, which will eventually be uncovered if it is chopped down and its rings exposed, each one telling the tale of a single twelve-month period.

Pines can also share "gossip" with Leopold. For example, based on how many of the lower branches of a pine have been eaten, Leopold can tell how hungry deer have been. Similarly, when the "candle" at the top of a pine begins to die, disrupting the tree's normal growing pattern, Leopold knows the tree has been attacked by a pine weevil.

Trees hold many kinds of knowledge for Leopold. Like people, they are a member of his greater ecological community, and he has uncovered how to "speak" to them, or at least how to listen carefully and share in their knowledge.

One way to track animals is to "band" them (that is, to mark them with numbered tags in order to later identify them). Leopold bands the chickadees that visit his feeder, and describes the act of banding a bird and waiting for its return the following year as akin to holding "a ticket in a great lottery." For the young, banding birds is a kind of game, but for the more experienced birder the joy comes from recapturing an old bird you have seen for many years, and know intimately.

Banding birds makes Leopold more aware of them, and makes him feel a greater kinship with the chickadees, who are now his confirmed semi-permanent neighbors. This is a type of academic work, a style of knowledge collection, but it requires no college education. It is a way to learn about and appreciate the land that requires very little human infrastructure or oversight, aside from a bird feeder and some bird bands.

Every year for the past ten years, Leopold and his family have captured and banded birds, which they have then released into the wild. One chickadee in particular, 65290, was first captured in the class of 1937, and although the bird didn't seem to be exceptional in any other way, he lived for five more winters, surviving all other chickadees in his cohort. Leopold has no idea why or how he lived so long, and notes that few people stop to observe such a small bird. Instead, "everyone laughs at so small a bundle of large enthusiasms."

Leopold feels a special kind of love for this single chickadee, which manages to live much longer than its friends and family. Although this single bird's lifespan is anomalous, and teaches Leopold nothing quantitative that he cares to share in his book, it nonetheless brings joy and unquantifiable value to his life.

Leopold considers the life of a chickadee. Wind governs much of their behavior, and acts as "the boundary of the habitable world." Leopold hopes that chickadee 65290 is happy in his afterlife, and that there is always low wind, and always recently fallen oaks full of insects and eggs for him to eat. He also hopes that 65290 continues to wear Leopold's band.

Leopold sees the chickadee not as an animal different and separate from him, but as a member of the same community in which he resides. As such, he hopes the chickadee had a good life, and a happy afterlife, affording it the same well wishes he would give any human.

PART II: WISCONSIN

Since the ice age, Leopold says, cranes have arrived on the Wisconsin peat bogs. The bogs themselves contain layers of history, of moss, trees, and the bodies of cranes, the whole landscape a "bridge into the future" and into the past.

Leopold feels like he can see the entire history of time written in the landscape of Wisconsin, and in the bodies of the cranes that migrate there each year. Their behavior is a continuation of the same pattern that has been occurring for tens of thousands of years.

Leopold observes that nature's worth often derives from its beauty, but that nature can hold value in other complex and difficult-to-describe ways. The cranes, for example, are important because of the longevity of their species, not just because of their physical beauty. The cranes are a "symbol of our untamable past," a reminder of the scale of "evolutionary time," their very migration "the ticking of the geologic clock." The cranes and their behavior serve as a timekeeper and an anchor for humans and for the landscape.

Although humans often want to extract economic value from the land, Leopold also notices that people will look for stunning physical beauty as a marker of a place's value. He dismisses this outlook, instead finding value in the more everyday qualities of stability and longevity. He loves the cranes and finds them valuable not because they are beautiful to look at, but because they are remnants of the ancient past, reminders of the land from before Europeans, or perhaps any humans, had walked it.

Leopold recounts a broad survey of the history of the cranes and the marshland. First, a glacier cut through the land, then a lake filled the land cleared by the glacier, then it drained away. Instead of waterways, mossy meadows and bogs took over, and the cranes migrated through them. Leopold imagines French trappers stopping by the marshes, then Englishmen making farms and cutting hay from the prairies a century later.

Leopold enjoys taking opportunities to trace back the history of a landscape back through time. Here, he mentally excavates the layers of a peat bog, which naturally preserve layers of sediment back through time. This exercise is part of what is valuable to Leopold—he likes land that allows him to see and consider its history.

During these "haymeadow days," marsh dwellers celebrated an "Arcadian age" in which plants, animals, and humankind lived together in peace. However, the humans didn't understand the delicate balance they had struck with the marshes. They wanted to farm not just *by* the marshes, but *in* the marshes, and so they converted them into dry farms. This destroyed the area, as the farms were unsuccessful, and the remaining marshes dried up and caught fire. As a result, the number of cranes diminished.

Leopold criticizes the European settlers who moved into the marshes of Wisconsin and were unable to appreciate them for what they were—complex and densely populated ecosystems. Instead, these settlers only saw them for what they were not—arable land. Because of this, they destroyed the wild, but to them worthless, land to make room for farms, from which economic value could be more easily extracted.

Leopold believes that the engineers who drained the marshes didn't care about the cranes, and imagines them thinking, "What good is an undrained marsh anyhow?" However, the government eventually began to regulate the area, and the marsh was partially re-flooded.

Leopold disagrees with the decision to drain the marshes, and specifically attacks those who he sees as agents of progress—the engineers, who, in his mind, assume that science and mechanization are the solution to every problem. Leopold often argues that people like this seem to create problems in order to be able to solve them with industrialization.

Leopold argues that "the ultimate value in these marshes is wildness, and the crane is wildness incarnate." However, to many people a marsh that is truly wild and inaccessible is worthless. He alleges that, unfortunately, to appreciate wilderness "we must see and fondle" and therefore destroy the wilderness we were trying to protect.

Leopold is practiced in seeing value in a wilderness that is not technically economically valuable or conventionally beautiful. Here Leopold begins to lay out his land ethic—that land deserves to exist even if it does not directly benefit a human.

Leopold bought a farm in the Sand Counties in the 1930s. The counties are economically poor, but ecologically rich. The counties are full of plants and flowers (like the draba), as well as many endemic bird species. No economist would stop and look at any of these plants or animals, but they enrich Leopold's life.

Leopold has managed to see beyond the economic richness or the poorness of the land, to other, less easily quantifiable aspects of it. He finds value in many (economically worthless) plants and animals, and in living and working on his farm, even if it is not profitable labor.

Leopold traces the life of an atom from the Paleozoic era to the present. The atom began lodged in a piece of limestone, but was released by the root of an oak tree, traveled through many flowers, into a plover, back to the prairie, and eventually into the sea (taking many detours along the way), where it is lost forever.

Leopold undertakes another historical mental exercise. This time, he travels back in time to visit a single billion-year-old atom, and then follows it into the present, underscoring the age of the landscape, the tiny amount of time humans have inhabited it, and the interconnectedness of all matter.

Tracing another atom, Leopold imagines a farmer coming into the prairie and failing to understand the value of natural diversity. Instead, the farmer only makes room for what he finds useful: wheat and oxen. As a result, he makes no effort to protect the natural landscape, allowing the loam to slowly erode, restricting the rivers, and allowing the passenger pigeon to die off.

Following another atom, Leopold again emphasizes the length of history and the complex web of life. This time, however, he looks at human impact. For almost a billion years the landscape remained unchanged, or changed slowly, but after humans began to aggressively modify it, much of the landscape has changed for the worse.

Leopold meditates on the now extinct passenger pigeon, for whom a monument was built and dedicated in 1947. Society grieves for the passenger pigeon, which was once so populous that its flocks could blot out the sun, but which was hunted to extinction in the early 20th century. Leopold sees that the pigeon was part of a greater exchange: a natural world for an industrialized one. He wonders if this was a fair trade. Although "the gadgets of industry bring us more comforts than the pigeons did," he asks, "do they add as much to the glory of the spring?"

Leopold is concerned that humans do not view the natural world as something they are obligated to respect or take care of. Additionally, he is upset that not more people care about the human impact on species of plants and animals that have become endangered or completely extinct. Some people see progress as more important than the natural world, but Leopold wonders if the loss of entire species is too steep a price to pay for increased industrialization and convenience.

Leopold worries that not many people know what he now deeply understands: humans travel forward in time not alone, but with all the plants and animals on earth. Choices humans make not only affect them, but the wider natural world as well. Although the individual person who killed the last of any endangered species likely didn't notice or mourn its loss, Leopold believes it is society's ability to collectively mourn for a species whose extinction we have caused that separates humans from animals.

Leopold lays out his land ethic again—the idea that humans are part of a community that includes the natural world—without strictly defining it. He sees that many humans act as though they are alone in the world, when in fact they have an impact on, and are therefore responsible for, the well being of much of the natural world. Unlike animals, who are presumably unaware of their greater impact, Leopold argues that humans, who are able to see the destruction they have wrought, should also feel a responsibility to mitigate it.

"Economic moralists" might argue that if the pigeons did not go extinct when they did, farmers protecting their land would have killed them later. Leopold feels this misses the point. He believes that the ability "to love what *was*" and to celebrate the history of the land is another way in which humans are superior to animals.

Leopold feels that seeing only the economic loss of pigeons is looking at their extinction too narrowly. He believes humanity has a moral obligation to the natural world, and that while humanity is superior, this does not give humans a free pass to destroy the environment. Instead, their superiority burdens them with the responsibility to mourn what they have destroyed, and try to do better in the future.

Leopold considers childhood and the wilderness after some young men canoe past him on a river. He sees that, for them, this trip down the river is "their first and last taste of freedom," an opportunity for them to make mistakes and take control of their own lives in between the order of school and their professional lives.

One way in which the wilderness is valuable is its ability to grant a person solitude and freedom from the burdens of civilization. Later in the book Leopold will outline a more comprehensive theory of the value of wildernesses and outdoor recreation.

Leopold remembers his own childhood. Going down a nearby river, he felt that the wilderness was unimpressive, interrupted by docks and cabins. On a wider scale, much of the wilderness had been destroyed or developed, to the point that many Wisconsin log cabins were made with wood from Idaho or Oregon. However, in 1943 the State Conservation Department began to actively try and restore a stretch of wilderness along this river. Then, in 1947, dairy farmers organized and petitioned to dam the river to create a cheaper source of local power. Their petition was approved, the river dammed, and the wilderness destroyed for good.

This anecdote about Leopold's childhood underscores one of his recurring beliefs about how mankind interacts with nature. Leopold does not believe that humans understand the natural world well enough to make huge decisions about how the landscape should look or function. This is an example of humans making a selfish choice that provided them with short-term economic incentives, but destroyed the environment, which they did not value, in the long term.

In his final passage in the chapter, Leopold reflects upon an old oak that had been girdled, and had died. Killing this tree for its wood, to Leopold, seems equivalent to burning one's furniture in order to keep warm—a last ditch effort that will bring you no joy in the end.

A girdled tree is one that is tied tightly around its trunk with wire, which slowly kills it. Leopold, who only harvests wood from trees who have already died of natural causes, sees this as a selfish way to extract value from the land, and one that is even foolishly self-destructive to the humans themselves.

PART II: ILLINOIS AND IOWA

Taking a bus through the Illinois countryside, Leopold watches a farmer and his son cut down a tree. Leopold remarks that a tree "is **the best historical library** short of the State College," but because once a year the tree sheds on the farmer's house, the farmer has decided it must be cut down. The State College offers advice about trees that are easier to cohabitate with, but Leopold believes its suggestions are all intended to "make Illinois safe for soybeans," and nothing else.

Leopold is always looking at the world as an educational resource. Trees, especially, hold history within them, and, in Leopold's mind, should be treated with great respect. Leopold even prefers the knowledge held within trees to the knowledge taught at local schools. He worries that the state college is teaching its students not to love the land, but how to best monetize it, which often requires acting against the best interest of the wild landscape.

On the bus, Leopold observes only a thin slice of prairie between the road and the fences of the fields that flank it. He suspects he is the only one who notices this "relic" of what Illinois used to be. He also suspects that the local farmers have not spent time considering why the land produces as much corn as it does, or even what the names of many local flowers are.

Leopold loves the wild prairie and is always seeking out slices of it. Like in Wisconsin, there are strips of unmowed grass throughout Illinois and Iowa. Leopold believes that few people appreciate the natural prairie's value. However, he knows that a closer study of the flora would help farmers better understand the soil for agriculture.

The bus enters the Green River Soil Conservation district. Leopold notes that a creek has been redirected into a straight line "uncurled" by an engineer to speed its journey. Similar, nearby hills have been engineered to reduce and slow agricultural run off. Leopold jokes, "the water must be confused by so much advice."

Leopold believes that the natural world can easily regulate itself, and is often skeptical of the effectiveness of human intervention. Here, the straightened stream moves faster than before, but then the hills must be modified to prevent it from moving too quickly. In this instance human "progress" simply created an entirely new problem that more progress must then fix.

The farm Leopold visits is clearly wealthy, as evidenced by fresh paint and well-fed animals. However, Leopold wonders about the ecological cost of the farm's wealth. He suspects there are no quail in the cornfields, and he notices no animal activity on the creek beds. He wonders "Just who is solvent? For how long?"

Although the farm he visits is financially rich, Leopold is not impressed. He understands that the value of a landscape cannot be determined by its success as farmland, and further knows that even its success as farmland is not always long-lived. He also personally gets great joy from the wild animals on his property, and so finds this (technically rich) land to be lacking value.

Listening to other passengers talk on the bus, Leopold infers that to them, "Illinois has no genesis, no history"—it is simply a state to pass through on the way to something bigger and better.

Although Leopold always seeks out the history of a place he visits, he realizes that not everyone is as attuned to the natural world as he is.

Reflecting back on his childhood, Leopold wonders if children are actually more developed than adults, more attuned to the wonders of the natural world. His memories of the natural world as a child are more vivid than any impressions formed as an adult.

Based on his observations of his fellow passengers, who seem uninterested in the natural world, Leopold suspects, as he often does in the book, that growing old and receiving an education in fact turns people away from the wonders of the natural world.

Leopold recounts a story of killing a duck after waiting by a hole in an iced-over pond, the first strategic kill he made as a child. Then he discusses a partridge he killed, an impressive kill because he caught it in mid air. He suspects his adult affinity for certain local plants came from the plants present in the grove in which he killed the partridge.

Leopold will later set forth an idea of the importance of recreation, and the best types of recreation. One type is hunting, but in a way that requires skill, patience, and thoughtfulness. This way of extracting value from the land likely was informed by Leopold's childhood experiences, such as hunting by this pond.

PART II: ARIZONA AND NEW MEXICO

When Leopold first moved to Arizona in the early 1900s, the state's White Mountains were inaccessible except by horse. Although in other areas of the state there were multiple modes of transportation, only horsemen could make it to the top of the mountain. This was before cars were widespread, and Leopold notes that now, automobiles and airplanes have made the world accessible to all. However, the mountain was temperamental, and in the winter even horsemen couldn't go up. In the spring and summer, when the paths were clear again, terrifying lightning storms served to impede travelers.

Leopold finds a special kind of value in landscapes that are inaccessible. He is often able to experience these landscapes despite their inaccessibility, and therefore gets the best of both worlds—a relatively unspoiled wilderness, and the ability to explore it. However, Leopold manages to appreciate wildernesses that even he cannot access, and wishes more people could appreciate landscapes that they don't personally benefit from.

At the top of the mountain was a huge meadow. Although Leopold felt he was freshly discovering it every time he crossed it, the names and **dates carved into many of the trees** he passed told a different story. These dates stretched back in time, and allow Leopold to trace the history of individual adventurers who had traveled up the mountain before him, year after year, signing the same trees.

Once again Leopold enjoys the ways history is physically carved into trees. Ironically, although he appreciated how untouched this wilderness was, one of his favorite parts was this gesture that clearly demonstrated other humans had visited.

Leopold has not recently returned to White Mountain, and is nervous to see the effects "tourists, roads, sawmills, and logging railroads" have had on it. Still, he is happy to hear that young people describe it "as a wonderful place."

What Leopold valued was the wildness of the place, and while he appreciates that new people are getting to explore the landscape, what he loved and valued most is likely gone now that it is open to everyone.

Leopold believes mountains have opinions on the wolves that roam them. Leopold himself used to kill wolves on sight, when he was younger and assumed killing wolves would mean more deer for the hunters. However, after seeing a wolf die as a young man, he realized that the mountain did not agree with him that fewer wolves were better. In the years since then, wolf populations were essentially killed off by the state, and deer ran rampant, destroying much of the mountain's vegetation. Leopold realizes "as a deer herd lives in mortal fears of its wolves, so does a mountain live in mortal fear of its deer."

As a young man, Leopold belonged to the same camp as many other people, who believed that predators were a threat to human well-being, and should be killed. It was only after watching a wolf die, and considering the perspective of the mountain itself, that Leopold began to realize that the mountain is a complex ecosystem, in which every organism plays a role. Just because humans don't like a certain animal, doesn't give them the right to kill it off—it still deserves to live, and still serves an ecological purpose.

Similarly, cowmen, freed from the threat of wolves, fail to "think like a mountain." Instead of culling their herds (thereby keeping the grazing of the cows sustainable), cowmen let their animals run wild, contributing to the environmental devastation of the dust bowl. Leopold reflects that "too much safety seems to yield only danger in the long run." He continues, saying that Thoreau may have been right when he said, "In wildness is the salvation of the world," but perhaps it is the danger of the wilderness, not the comfort, that saves.

Earlier in the book Leopold argued that true conservationists had to consider how their biases shaped the land, and had to make careful decisions regarding what they would create or destroy. He sees that many farmers and cowmen are not considering how to ethically create or destroy, and instead made decisions based on economics, not on the idea that the land is a living thing, deserving of respect.

Escudilla Mountain in Arizona housed another apex predator, the grizzly bear. Although no one saw the bears, evidence of their kills would be scattered around the mountain. Eventually, progress came to the mountain. Automobiles came, and telephone lines, and eventually a government official asking locals if there were "destructive animals in need of slaying." The government official went up the mountain and killed the bear, the last grizzly on the mountain. The bear itself was unimpressive, with a patchy, worthless coat. Leopold felt the death of this bear was an unfair trade for so-called "progress."

As with the wolves, Leopold sees the grizzly as important and inherently valuable, even if it makes agriculture more difficult. In this moment, he sees culture and industry and progress as the opposite of wilderness, and it is only because progress has come to the mountain that a government official even comes to kill the bear. He sees the bear itself, and the way it symbolizes the untamed wilderness, as more valuable than any kind of "progress" humans could make on the mountain.

Killing the last grizzly made the land safe for cows, but twenty years later the cows would be gone and tourists would take over. Leopold remarks that the area has "greater need of bears than of beefsteaks," and that killing the grizzly was a mistake. Leopold recalls being a young man and criticizing Spanish settlers who eradicated the Native Americans living in the state hundreds of years before. At the time, however, he failed to realize that he too was contributing to an invasion and eradication.

Leopold frequently questions humankind's ability to make smart decisions about what is valuable in the landscape. Here is an example of humans choosing wrong—assuming agriculture was the most important industry, before realizing tourism was in fact more lucrative. However, this realization came too late, after the wilderness was already being destroyed.

PART II: CHIHUAHUA AND SONORA

Leopold believes that natural beauty is unquantifiable. He gives an example of a landscape that is made beautiful by the addition of a ruffled grouse. However, he notes that a grouse is a tiny percentage of the "mass or the energy of an acre." Still, it has some special power that brings beauty to the woods where it resides.

Leopold believes that the true value of the land is unquantifiable, and is even beyond rational thought. He says this because he believes a single species can enhance a landscape in a way that has nothing to do with its actual contribution in weight or energy, but instead has to do with its spirit, or some other indefinable quality.

After listing other birds that greatly enhance their environments, Leopold observes, "ornithological texts do not record these facts." Nonetheless, he finds them important, and tells the story of seeing a rare and shy Thick-billed Parrot in the Sierra Madre.

Many birds enhance their environments in the same way as the grouse. Although just one of hundreds or thousands of species, the presence of certain organisms somehow brighten their entire ecosystem.

Leopold offers some advice: he argues that a person should never return to a wilderness they loved when they were young. The golden lily will become "gilded," and returning "tarnishes a memory." This is the reason Leopold never returned to the Delta of the Colorado, which he canoed in 1922. When he traveled it as a young man, the water was clean and clear, and plants and animals were thriving. Now, he suspects the Delta has been converted into pasture for cows. He laments that a "freedom from fear has arrived, but a glory has departed from the green lagoons."

One downside to time passing is that spaces that were once wild can become the victims of progress and industry. Although Leopold understands the human urge to expand civilization into the natural world, he wishes more of the world remained natural. He feels the trade-off of wilderness for farmland is not a worthwhile exchange.

The Delta was almost embarrassingly fertile, hunting was easy because there were so many birds in each flock, and the deer themselves were fat. However, there wasn't a lot of water, and most of it was salty. The wilderness was so wild it did not yet have place names. Leopold recalls seeing flocks of cranes, and while he suspected they were Sandhill cranes, the name didn't matter. What mattered was that they were wild, and he was sharing the wilderness with them. He has heard the lagoons are now used to raise cantaloupes. He proclaims, "man always kills the thing he loves," and has killed much of the wilderness.

What Leopold loved about the Delta region was that it was wild. He is unhappy to hear that what he loved has been converted into something he personally finds much less valuable, because it is much more common—farmland. The region was only important to him because of its ecosystem. Converted into farmland, like so much of the world, Leopold feels that the unique, lovely part of the area has been "killed," and all its value stripped away.

Reflecting on the Rio Gavilan, a river in the Sierra Madre mountain range, Leopold recalls the "pulsing harmony" of the wilderness. Most rivers have been, in Leopold's mind, misused. Even when wilderness areas are converted into parks, the music often becomes pure noise.

Although Leopold doesn't define his philosophy until later, this description of the river is an example of his idea of the land pyramid—a concept he's invented in which all parts of the land are interconnected in a complex pyramid-shaped web.

Leopold wonders if it is possible for humans and nature to live in harmony. In the Gavilan region, indigenous people lived in and with the wilderness for many years. He can see the ruins of their buildings, and understands that they, like he, saw the land not as "hard and stony," but a "land of milk and honey." Historically, the indigenous people in the region would kill a buck on a strict schedule and only during certain months: no earlier than November, no later than January. The land kept its own time. The oak trees, for example, fed a food chain of animals, beginning with the shedding of their acorns every fall.

This is one a few moments where Leopold considers alternative ways humans can interact with the land, and one of the only times where he acknowledges the indigenous people who lived on much of North America before European settlers moved in. These people lived more in line with what Leopold will call his land ethic—they saw they land as a living thing worthy of respect, and treated it with care and kindness.

Leopold criticizes academia for having experts and professors focus their studies so narrowly. He compares this to listening only to a single instrument in the symphony of nature. He argues that looking at the whole symphony, or nature as a whole, is "the domain of poets." He continues, "professors serve science and science serves progress."

Leopold sees academia as forcing people to specialize too narrowly. He believes the best way to consider the natural world is to look at it as a complicated entity made up of many important, diverse parts, as opposed to focusing in on only a single element.

Science contributes to the world both materially and morally, but Leopold argues its most important (if most dangerous) contribution is the scientific point of view, the use of facts. For example, he worries that ideas about the music of a river have no place in science, such that a scientist would argue in favor of making a river more accessible to the public, as opposed to preserving its wildness.

Leopold also worries that science is concerned less with understanding the natural world and more with taming it. He considers science as serving progress more than it serves the preservation of nature, and sees many scientific discoveries as contributing to the destruction of the wilderness.

PART II: OREGON AND UTAH

Leopold observes that even when one species of plant or animal pest is conquered by nature, another springs up. He traces the history of various pests like the English sparrow, the starling, and cheat grass. Cheat grass has replaced the native grasses that were unable to recover after the overgrazing of the natural grassland.

The ecosystem of Oregon is delicately balanced, and disturbances wrought by agriculture have led to the proliferation of this invasive species. Leopold blames this entirely on thoughtless and greedy human interventions in the landscape.

It is difficult for cows to eat the prickly cheat grass, and it is difficult to protect hills that are covered in it from fire. As a result, fires in the areas covered by the grass end up destroying the native plants, which leaves less for deer and birds to eat, especially in the wintertime. Cheat also grows in hayfields and lowers the quality of hay, and prevents pine seedlings from growing. However, Leopold has observed that "cheat-afflicted regions" manage to find uses for it. It reduces erosion, and sheep find it edible. Leopold has noticed that society as a whole has "no sense of pride in the husbandry of wild plants and animals," and "no shame" in caring for a sick landscape.

For everything bad about cheat grass, it also has positive qualities. The landscape has managed to shift around and accommodate it, as nature usually does. Leopold wishes the general population felt more responsibility for the landscape, and felt as though they contributed to its health and wellbeing.

PART II: MANITOBA

Leopold argues that a conventional academic education blinds its students to the natural world. He praises the Clandeboye marsh, which has managed to avoid development, and remains in "the geological past," a quality recognizable by the migrating birds that often land in it.

As he has argued before in the text, Leopold complains that conventional education narrows the minds of students, and makes them less likely to widely and carefully observe the natural world.

Leopold is especially excited by a western grebe that frequents the marsh. He criticizes a birder whom he feels does not fully appreciate the bird, checking it off a list and noting its bird call without understanding the bird was conveying some "secret message," ready to be decoded by a careful listener. Leopold believes the grebe is an agent of history, a member of a species so old it can say "who won the battle of time."

Leopold loves the grebe just like he loves geese and cranes—largely for their historical symbolism. He finds value in any species that reminds him of the birds' ancestral past. Although they might soon lose a battle against humanity and human interventions in nature, Leopold respects the species' long legacy.

Leopold is upset to see that the marshlands which once spotted the prairies are disappearing. Because marshes have little economic value, they are often converted to farmland. What many people do not realize is that both marsh and farmland can exist in harmony.

Leopold hates that marshes are seen as invaluable and subsequently destroyed. He believes they should be allowed to exist for their own sake, and that progress does not have to eliminate every patch of wilderness, in the same way he believes wilderness can be preserved without halting all progress.

PART III: COUNTRY

Leopold explains how he perceives the difference between *land* and *country*. He defines land as something that exists on a human scale: land can have mortgages, it can be owned. Country, in contrast, is "the personality of the land," and cannot be owned. "Poor land may be rich country, and vice versa." Leopold suggests noting the wildlife of an area to determine whether the country is rich or not.

Leopold can find non-monetary value in the land by separating it from the concept of country. While land has a monetary value, country has a value that is harder to define—it is unrelated to money, and more related to the animals living on it, the history of the place, and its cultural context.

Leopold complains that many people only want to see "scenic" places, and only judge country to be good if there is something grand or shocking there, such as "waterfalls, cliffs, and lakes." However, Leopold argues there is beauty in the plains and prairies, and that a beholder must simply pay closer attention to the landscape.

Leopold respects and values most landscapes, and encourages his readers to do the same. Just because a landscape is not shockingly beautiful does not mean it doesn't deserve to exist. Subtler landscapes can also have rich ecosystems or rich histories, and deserve protection.

PART III: A MAN'S LEISURE TIME

Leopold accepts as "gospel truth" the saying "how miserable are the idle hours of the ignorant man!" He believes any man who wastes his leisure time is ignorant, and any man who uses it well is educated, but he clarifies that this education need not have come from a school. Leopold sees hobbies almost as a spouse—a companion to take with you through your life.

Recreation is the number one way Leopold interacts with the land. More than through scientific study or philosophy, Leopold connects with nature by getting out into it, and he believes others should too. For him, recreational activities are more than distraction; they are a moral and intellectual obligation that brings humans closer to the land they live on.

Leopold attempts to define a hobby. He decides to call it "a defiance of the contemporary," a radical act that rejects progress and celebrates the past. A hobby is not something undertaken with a result in mind, but rather is undertaken for the joy of doing. In Leopold's mind, a hobby is inherently against progress.

For Leopold, adopting a hobby is taking a stand against progress. Although he does not believe all progress is bad, he sees hobbies as a mindful way to more deeply engage with and appreciate the natural world.

Leopold tells a series of anecdotes about men he knew who made good use of their leisure time. First he recalls a merchant from childhood who would carve fossils out of local limestone. After he died, Leopold realized the man was a "world authority" on the subject of fossils. Next, he discusses a bank president who loved roses, and a man who made wheels but truly loved tomatoes, each ostensibly getting more joy from his hobby than his job.

Leopold sees hobbies as an ethical way to connect with the natural world. They take very little from the land, but enrich human lives and can potentially enrich the landscape as well. They also provide an alternative education for those who did not study the natural world, and arguably educate them better than school ever could.

Leopold proposes that falconry is the "most glamorous hobby" he knows. Hunting with a falcon is much less efficient than hunting with a gun, but Leopold argues that a hawk, when trained well, is a perfect weapon that surpasses anything man can make. Similarly, Leopold argues that using a longbow is a perfect hobby: less efficient than a gun, but requiring more time and skill to master. Leopold then amends his earlier definition of a hobby. He clarifies that a good hobby must involve some kind of risk, and must require the hobbyist to make something, or make the tools to make something else, "and then [use] it to accomplish some needless thing."

Leopold believes that the most valuable hobbies are the ones that are the most challenging. He personally feels that the best hobbies take some task that has been mechanized, like hunting with a gun, and forces hobbyists to develop a skill instead, that makes the whole endeavor harder and more purposeful. This forces them to be more mindful of the things they try to kill, as well as forcing them to spend more time outdoors.

PART III: THE ROUND RIVER

The Round River was a fabled Wisconsin river, described in folktales, which was said to flow in a circle. Leopold explains that this was a parable, and the state of Wisconsin is itself a round river, a loop of energy, a circle of life. Leopold extends this metaphor, describing economics as being similar to riding on logs floating on the river, and national planning as being similar to the urge to control every log floating in the river at once.

The round river is simply another way of presenting the idea of the circle of life. Later in the book Leopold will introduce the idea of a land pyramid, which is a similar concept—the idea that the land is made up of many disparate elements and organisms, that are all connected largely based on who eats what.

Leopold complains that children in school are taught facts about biology, geology, agriculture, and engineering, but not about the importance of natural waterways. To understand water and streams, a student must understanding the "whole biotic landscape," and must not specialize, as is often encouraged in schools. Leopold thinks the new field of ecology is the best way to understand the natural world and the **round river** of the ecosystem.

Leopold often complains that education forces students to focus on specific facts or organisms, but not on the greater ecosystem. He believes that to truly understand the natural world, a person must first understand how complicated and interconnected the ecosystem is, which cannot happen if everyone only specializes.

Leopold compares conservation to a friendship, in that it requires a harmony between humans and the land, and requires humans to accept everything about the land. For example, he explains "you cannot love game and hate predators." A person can regulate the land, but not destroy any part of it, because it requires all parts to thrive.

Leopold believes that a true and successful conservationist will take into account the value of the land as a single unit, which includes all the organisms that live within it. A true conservationist will not pick and choose their personal favorite organisms to preserve.

Leopold believes the most important discovery of the century has been how complicated the land is. He thinks it is essential not to evaluate individual components of the land as useful or valuable, but to consider the land as a whole. He argues that it is impossible to fully understand it, and if it cannot be fully understood, it is unreasonable to think that a person would be able to evaluate separate parts of it.

Although Leopold has dedicated his life to studying and understanding the land, more than anything else he has learned how little he truly knows. He believes this is an important thing for any conservationist to acknowledge—even when they are doing their educated best, there will always be unknowns because the natural world is so vast and complex.

Leopold shares an anecdote about a German mountain. Humans have carefully managed it for over two hundred years. However, before it was carefully managed, one half of the mountain was clear-cut, and the other was preserved for deer hunting. Even though both sides of the mountain have benefited from two centuries of conservation, the soil on the side that was formerly clear-cut, and the trees themselves, are still unhealthy.

Even centuries out, Leopold observes that human impact on the land remains tangible. He uses this example to demonstrate how much human intervention can affect the natural world, and how hard it is to undo the effects of human damage to the landscape.

Leopold worries that conservation in America only cares about "show pieces," and prioritizes the preservation of a few flashy organisms over the "cogs and wheels," by which Leopold means the basic elements of an ecosystem that give it balance and harmony. He also argues that saving a single "show piece" species in a single location will not save it for long. To ensure the longevity of a species, a conservationist must save it "*in many places* if it is to be saved at all."

Throughout the book Leopold has expressed anxiety around the idea that even self-proclaimed conservationists only want to conserve land that is valuable to them because it is beautiful. He argues that the natural world is incredibly complex and requires all of its elements to be protected in order to survive, not just beautiful or exciting species or landscapes.

Leopold argues that people use the wrong metrics when considering the best way to protect the natural world. He dislikes that many use economic arguments, and wishes instead people could develop "a refined taste in natural objects." For example, scientists argue that wolves are necessary in an ecosystem because they kill deer. Hunters, in turn, argue that they can kill the deer themselves. Similarly, as forests in the north of Wisconsin are replanted, white cedars are omitted because they grow too slowly to be economically viable, even though they provide useful ecological diversity.

Leopold struggles to find metrics by which people can measure the landscape. Later in the book he will introduce the concept of a land ethic, which will provide an alternative to looking for aesthetic or economic value in the landscape. This land ethic treats the land as inherently valuable, and appreciates it for its complexity and includes all its many (ostensibly "worthless") species.

Humans have disrupted the biotic stream, and introduced new domesticated plants and animals into the ecosystem via farming, which affects the circle of life. Leopold does not yet know how replacing domesticated animals for wild ones will change the land, but he is not optimistic about the future of the landscape.

Leopold continually worries about the accidental human impact on the land. He knows humans are changing it, perhaps irrevocably, but also understands that the land is so complicated he will never be able to predict the exact changes that have occurred.

Leopold describes an ecological education as preparing a person to live alone "in a world of wounds." People have hurt the earth, but few take the time to examine the damage.

Unfortunately, to fully understand the natural world and humankind's place in it is also to see the degree to which humans have destroyed and disrespected the land in which they live.

Leopold thinks that, when modifying the environment, every person should consider two criteria: whether their change will maintain the fertility of the land, and whether their change will maintain a diverse ecosystem.

This theory is related to Leopold's earlier theory of conservation, which sees humans as stewards and gods who have the ability to create and destroy. He hopes people deploy these powers with empathy and critical thought.

Leopold worries about "clean farming," a kind of farming which is mean to restore the soil, but also requires that every animal and plant in the ecosystem be controlled by the farmer. Wild flora and fauna, as a result, are pushed out.

This kind of farming is selfish—it considers only the immediate needs of the farmer, but none of the needs of the land, or the flora and fauna that have inhabited it for hundreds if not thousands of years.

Leopold laments that private landowners do little to conserve their own land. He has observed that economic motivation wrecks the land, and wonders if it can be repurposed to instead protect the land. He notes that there is no social stigma against owning unhealthy or polluted land as long as it continues to make its owners money. He hopes that the next generation can be provided with a "conservation education," and learn to value the land in more ways than one.

Leopold has noticed that most people only make an effort to care for the land if they are paid to do so. It is not enough to feel some kind of moral obligation to help the land—instead, people want some kind of economic recompense, even if they are required to do very little. He believes this is an issue of personal morals and values, and believes that the next generation could be taught to more naturally value the health of the land.

PART III: NATURAL HISTORY

From the 1840s to when Leopold wrote his book in the 1940s, farmers in Wisconsin happily chopped down tamarack trees for wood. However, they've recently begun to plant the trees, realizing that the tamaracks have a hidden value. The trees allow moss and wildflowers to grow, and so by chopping down this one type of tree, for almost a century farmers have been accidentally destroying an entire ecosystem. Leopold applauds this "revolt against the tedium of the merely economic attitude towards land."

Leopold has always loved the tamarack trees for the golden color they turn in the fall, and is happy to see that other farmers have begun to see that the trees are valuable for more than just their wood. They contribute to the complex Wisconsin ecosystem—a kind of contribution that cannot be easily quantified.

Leopold is unimpressed with contemporary formal education. Instead, he is impressed by a chemist who taught himself about the history of the passenger pigeon by extensively reading archival material about it, and an Ohio housewife who obsessively observed and banded sparrows in her backyard, becoming a world-renowned ornithological expert.

Leopold frequently applauds those who are self taught. These people follow their passions, as opposed to what their teachers tell them to study, and without outside help manage to develop a thoughtful, nuanced relationship with the land, the very thing Leopold is constantly trying to encourage in his readers and, presumably, his students.

Leopold feels the education system does not encourage this kind of amateur passion project. Instead, it places emphasis on rote memorization and indoor labs over outdoor exploration. Leopold admits that medical students or zoology students would benefit from memorization of animal parts or species, but believes that most people would benefit more from a broader knowledge of the natural world than they would from a list of facts and terms. Lab work and fieldwork should go hand in hand, and although they do at a professional level, in schools they remain separate. Most schools only make time for lab work.

As a professor, Leopold is not opposed to all types of formal education. In fact, he admits that for certain students it makes sense to learn specific facts and to focus narrowly. However, he believes that the general population would benefit from a broader view of the environment, and from an introduction to a kind of land ethic (the idea that humans and the land exist in a community together).

Leopold imagines a hypothetical student, who is book smart, but unable to answer questions about a patch of land just by looking at it—a skill Leopold believes more people should have. Leopold thinks it is essential that everyone understands how interconnected the natural world is. He wishes everyone understood that each individual person is only "a cog in an ecological mechanism."

Although this specific anecdote is hypothetical, it is likely also based on real students Leopold knew. Leopold believes that a traditional formal education often robs students of the opportunities to explore the natural world on their own terms, and prevents them from understanding their place in the larger machine of the world.

Leopold knows it will be impossible for people to fully harmonize with the land, but he thinks it is important to try. He wonders how it is possible to teach people how to live in harmony with the land when so many don't even consider the land itself. He argues "education and culture" have become "almost synonymous with landlessness." In Leopold's mind, the more educated and cultured a person is, the less connected they will be to the natural world.

In Leopold's experience, the more educated a person is, the less connected with the land they become. He doesn't have a solution, but does often argue that a formal education isn't necessary if someone is already passionate about the environment and chooses to follow their own passions.

PART III: WILDLIFE IN AMERICAN CULTURE

Leopold believes it is important for people in society to remember the "wild rootage" of their culture. He believes there are three ways to do this. First, he thinks there is value in any experience that reminds a person of history. He calls this "split-rail value." Second, he finds value in any experiences that remind a person of the importance of the natural world and the circle of life for their own survival. He calls these "man-earth experiences." Third, Leopold finds value in any activities that force a person to practice "sportsmanship." By this he means that any activity which requires a person to voluntarily limit their use of mechanical technology, so as to use another method that requires more skill and precision, is valuable.

In this essay, Leopold puts forth his concept of outdoor recreation. At the center of this concept, which he breaks down into three types, is the idea that all recreation should make a person feel closer to the land, and farther from civilization. Split-rail values remind hobbyists of their ancestors' simpler past, man-earth experiences remind people of the circle of life, and sports force hobbyists to undertake tasks that would be easy with a gadget, but are hard with simpler tools. All of these require hobbyists to be out in the land, thinking critically and carefully about it, and being mindful and moral in their experiences.

Expanding on the concept of sportsmanship, Leopold looks back to an archetypical pioneer, the original sportsman. These pioneers traveled lightly, and adhered to a "one-bullet-one-buck" mentality. Both of these qualities were out of necessity, as a pioneer was unable to carry much equipment, and this included bullets. Additionally, once they killed an animal they had to transport it themselves, and so only killed what they truly needed.

Out of necessity, early explorers of the landscape treated it with respect. They did not have the tools or the knowledge to irrevocably change the landscape, and so they practiced low impact sports. Leopold hopes that contemporary sportsmen, who have the choice to lessen their impact on the land, will take it.

After the pioneer came the "gadgeteer," a person who uses gadgets and mechanical tools instead of "self-reliance," "woodcraft, or marksmanship." The gadgets are often expensive, and their cost is equated with "the economic value of wildlife."

The idea of the gadgeteer is just one way that mechanization and civilization have encroached upon nature. Leopold, who is skeptical of all progress, is predictably skeptical of this kind of outdoorsman as well.

Leopold admits that while gadgets often replace sportsmanship, it is possible for both to coexist. He gives the example of Theodore Roosevelt, who used contemporary rifles, tents, and dehydrated foods, but was able to use these "mechanical aids, in moderation, without being used by them."

Still, Leopold understands that some advances are good, and can make concessions for ethical and moral sportsmen who incorporate gadgets into their practice while maintaining a respectful relationship with the land.

Still, Leopold has noticed an overall increase in mechanization, and a decrease in the cultural values (like split-rail values and sportsmanship) he finds so important. He argues that outdoor recreation is "essentially primitive," and therefore unsuited for mechanization, even as the developed world continues to mechanize.

Leopold is such an advocate for outdoor recreation because of the values it instills. While a student could read his book and learn about his land ethic, a child could also go outside and play in the land and discover for themselves the joy of a more "primitive" world.

He also argues "mechanization offers no cultural substitute for the split-rail value it destroys." However, he concedes that cropping—that is, reintroducing animals to fish or hunt into a former wilderness—does provide a cultural substitute, as it requires the cropper to remember the man-earth relationship, and practice sportsmanlike restraint.

Leopold explains why he is skeptical of so many types of mechanization—because he feels that it does not provide the same value to the world as the wilderness it overtakes. However, he does see some value in cropping—which is the process of reintroducing game animals that have been overhunted. Although this is unnatural, it teaches croppers to respect the land, care for it, and monitor its health, and attempts to mitigate some of the damage mankind has done.

Leopold proposes a reframing of what a "sport" can be. He suggests that more people should take up the sport of wildlife research, which uses gadgets in a positive way, and does not hurt the landscape. He relays an anecdote of various amateur naturalists who turned their hobbies into vocations. He cautions the reader to not think of this as an example of anyone making "work out of play," but instead a lesson on how "the most fun lies in seeing and studying the unknown."

Leopold hopes that time spent outdoors sporting will also serve as time spent learning about the natural world. More than the sports themselves, Leopold values the relationship people form with nature when they are out in it. His definition of sports is wide enough to include his own job—that of an ecologist. Although he does not hunt for trophies, he hunts for knowledge, which is even more valuable.

Leopold points out that although behavior patterns in large populations of animals is observable, individual animals are likely unaware of the role they play in a larger cycle. Leopold suggests that humans may also be playing a role in a larger, species-wide behavior pattern, while individuals remain unaware. He suggests looking to the animal kingdom for "analogies to our own problems."

Leopold worries that humans have been destroying the natural world and not even noticing. He hopes that society as a whole will grow more self-aware and will become better at analyzing its own effects—both positive and negative— on the natural world.

Leopold ends the chapter by reminding the reader that wildlife and nature were once interesting enough to occupy a person's leisure time. He suggests the world would be better off if people turned back towards nature as a site of leisure, while also treating it as a site of new wisdom.

Once again, Leopold explains that he finds hobbies and leisure time essential because they allow people to live in nature, as well as learn from it.

PART III: THE DEER SWATH

Leopold believes there are four types of outdoorsmen: "deer hunters, duck hunters, bird hunters, and non-hunters." Each group interprets and observes nature through their own individual lens. Deer hunters watch deer trails, duck hunters watch the sky, bird hunters watch their hunting dogs, and non-hunters (according to Leopold) do not watch at all.

Leopold's theory of hunters is that everyone is inherently selfish, and interacts with the natural world in a way that betrays their own inherent biases. He presents this without judgment, as he knows everyone (including himself) has a lens through which they view the world.

Leopold has also observed a fifth category of hunter, a person who reads signs left behind by animals, like excrement, tracks, feathers, and nests. Leopold suggests this skill is "inverse to book learning." He also explains that ecologists attempt to observe the world both like the tracker and the other types of hunters, but do not succeed.

Leopold finds the tracker to be the most admirable of all types of hunters, because they are forced to engage most thoroughly with the land itself.

PART III: GOOSE MUSIC

Leopold observes how golf went from being a sport for the rich to a sport accessible to everyone. He compares golf to hunting and fishing, which he refers to as the "most universal of all sports," but which are not practiced universally. He laments that exposure and access to wildlife is not seen "in terms of social welfare," and that access is limited to those who live in nature, and those who are wealthy enough to travel to it.

Leopold is concerned with the accessibility of the landscape, and enjoys many outdoor sports because they serve as an entry point that makes the landscape interesting and accessible to others. He understands that for those who do not live near to nature, and who cannot afford to travel to it, the outdoors is a luxury. Leopold, however, feels it should be more of a right.

Leopold argues that anyone who cannot enjoy nature, either by hunting in it, or photographing it, or tracking birds or animals in it, "is hardly normal." He refers to these people as "supercivilized," and compares their lives without nature to people who live without "work, play," or "love." He believes access to wildlife is an inalienable right, and those without it are deprived.

Just as Leopold believes that too much education can blind a person to the natural world, he believes that too much civilization can prevent a person from appreciating the land. He thinks of a relationship with the land as being as essential as human love, and so is willing to fight to get more people access to the natural world.

The wilderness is being destroyed, and Leopold explains that the destruction of the wilderness destroys this inalienable right to experience it. Nothing can replace the loss of wilderness, not technology and not civilization.

Leopold wants to preserve the natural world both for its own sake and for the sake of the people who he believes deserve to experience it.

Leopold looks to his notes and recalls that he has seen over a thousand geese during their fall migration. He wonders how to quantify and determine the value of the joy their presence has brought him. He wonders if "goose music" and art should be valued in the same way. He asks whether a goose's song is valuable in the same way a poem or a painting is, and determines that goose music is indeed a kind of art. Poets and hunters are both in search of the same "thrill to beauty." Critics and hunters then both attempt to "reduce that beauty to possession."

Leopold often wonders how he should look for value in the landscape. He frequently writes about his love for geese, and here compares their contribution to the world as similar to a poem or a song. Like manmade art, the geese are beautiful, and therefore have a value. More than that, however, geese cannot be replicated. Leopold understands that geese, and the natural world generally, is special because it is irreplaceable.

Leopold reiterates that he thinks hunting and fishing are natural, instinctual, and important activities. They are essential access points for people to begin to experience the environment. Hunting and fishing require self-control and self-monitored, ethical behavior. Additionally, hunting in particular requires participants to use other animals, like horses and dogs, and requires them to treat these animals with kindness and respect.

Leopold again voices his support for outdoor sports and hobbies, pointing out that he feels these activities are valuable because they force people out into nature, and make them think deeply about humankind's relationship to the natural world.

Leopold concludes the chapter by imagining a future where his three sons, whom he hopes will be infected with "hunting fever," are left with a wilderness stripped of anything wild. He hopes that when his children grow up there will still be deer in the hills, and goose music in the air.

Leopold has received so much joy from spending time in the wilderness, and he hopes his generation can preserve it well enough so that his sons can have a similar experience. Presumably he has passed on to them his love of the natural world and his sense of respect for the land.

PART IV: THE LAND ETHIC

Leopold proposes the construction of an ecological ethic. This would distinguish between "social" and "anti-social conduct," and would encourage a cooperative view of humankind's place in the natural world.

Throughout the book Leopold has been alluding to his idea of the land ethic, but this is the first time that he solidifies it. This is perhaps because the book was compiled posthumously by his son. Had Leopold organized the book himself, he may have introduced this concept sooner.

Leopold gives a brief history of ethics. At first, ethics concerned behavior between individual people. Eventually it extended to include the relationship between individual people and the society in which they lived. Leopold proposes extending ethics one step further, to include people's relationship to "land and to the animals and plants which grow upon it." The land ethic simply assumes the community extends to include the natural world—"soils, waters, plants, animals, or collectively: the land."

At the heart of Leopold's philosophy is the idea that people need to see the land as a being with needs, just as they themselves are beings with needs. The land is part of a community, and needs to be treated with respect. Any ethical system assumes that individuals are members of a community, and the individual must cooperate and compromise with others to guarantee that the community thrives.

Leopold points out that, at present, society's relationship with the land is economical, not ethical. However, he thinks ethics are an "ecological necessity." They would serve as a kind of guide for future behavior and policy. Where "animal instincts" guide an individual's behavior, he argues ethics create a "community instinct."

Leopold does not trust humankind to instinctually understand how to care for the land. He can simply look back at all of human history and see that this is not true. However, Leopold has hope that people can train themselves to interact with the land more ethically.

Leopold admits that a land ethic can't prevent the use or alteration of the land, but it can help protect it from destruction. A land ethic ideally makes humans feel as though they are respectful citizens of the land-community, not conquerors.

Leopold hopes to change how people interact with the land. He wants them to see the land as equal to them, not beneath them, a fellow biotic citizen, not a resource to be exploited.

Leopold criticizes what he sees as an educated view that the earth exists to be exploited by humankind. Many people assume that experts and scientists know what is best for the environment. However, Leopold challenges the idea that humans always know what is best for themselves and for the land they inhabit.

One downside of education, in Leopold's mind, is the assumption that once a person is educated they understand the land and how to modify it. Leopold believes the land is too complicated to ever fully understand.

Leopold discusses the European settlement of the Mississippi Valley, which taxed the land in such a way that it created an ecological void that was filled by the now famous Kentucky bluegrass. In contrast, in the Southwest, grazing animals ate so many native plants that they degraded the land and the soil, causing erosion which led to further destruction of plants. Leopold argues that if humans cannot even predict how their behavior will affect the landscape and the soil, they are hardly qualified to make decisions about the landscape's future.

This anecdote drives home Leopold's idea that the natural world is too complicated for people to fully comprehend. He argues that if people cannot even understand why bluegrass grows in some places but not others, they are not qualified to actively make changes to the landscape. Part of being a good ethical biotic citizen is staying educated, but another aspect is admitting ignorance, and not presuming to know what is best for the world.

Leopold contrasts the Europeans' treatment of the American landscapes with the Pueblo Indians' treatment of the land which, perhaps because they didn't have grazing animals, was less detrimental to the soil's health. He also discusses parts of India that have preserved the landscape by cutting sod for cows to eat, as opposed to letting them graze freely.

Although historically some groups have been able to coexist with the land, Leopold sees this as an exception, not a rule. Still, he hopes to learn something from societies that treated the land with respect, and made less of a negative impact upon it.

Leopold hopes "the concept of land as a community" will soon "penetrate our intellectual life." He is unhappy that conservation has not fully caught on. He thinks it is an issue not just of "volume" or education but of "content." He thinks conservation is taught as though it is a simple matter of voting and leaving the rest up to the government. He complains that this style of conservation "assigns no obligation" and "calls for no sacrifice."

Leopold believes that to be a good, ethical, biotic citizen a person must actively work to better the land. He worries that too many people see conservation as a political issue that should be regulated by the government, and which is out of the hands of ordinary people. This is not true, and Leopold hopes to educate a new generation of conservationists who feel inspired to personally care for the land.

Leopold shares a story about farmers in Wisconsin who were bribed into working to preserve the topsoil for five years with free labor and materials from the government. However, when the five years were up, the farmers stopped maintaining their conservationist practices. The Wisconsin legislature thought maybe farmers would be more motivated to maintain the environment if they wrote their own rules, but after turning over land-use legislation to the farmers, the farmers never wrote a rule to improve their treatment of the land. The only choices farmers made to save the soil were those which were also profitable and convenient, like renovating pastures and not grazing or cultivating hills that could easily erode from overuse.

Leopold has observed that most people will not volunteer to care for the land. Instead, many people feel that they have no duty to the land at all, and want to be paid if they are required to do any upkeep, even if it costs them nothing. Leopold sees that without an ecological education, people are more likely to act selfishly, as though they have no responsibility to the land at all. They only do what is economically viable and valuable in the moment. A farmer himself, Leopold shows little animosity towards this group, and instead is inspired to change minds and hearts.

Leopold worries, "in our attempt to make conservation easy, we have made it trivial."

Leopold knows that most people will only work towards helping the environment as long as it is convenient for them.

Leopold categorizes various substitutes for the land ethic he has observed. Economic substitutes are risky because most organisms, or "members of the land community," have no economic value. Often, plants or animals are seen as having no importance unless they have economic value. Although Leopold finds this upsetting, he is happy that there seems to be a shift towards recognizing the "biotic right" of plants and animals to exist. Similarly, Leopold notes that predators have only recently been seen to have value.

As Leopold has observed multiple times before in the text, protecting only economically valuable parts of the land is a losing proposition. The majority of the land is not economically valuable (in the short-term, at least), thus leaving most of the ecosystem unprotected from capitalist exploitation. Furthermore, Leopold believes in the "biotic rights" of plants and animals. That is, he thinks that because they are living things, they deserve to continue to live.

In the United States many species of trees have been "read out of the party," because they do not have as great an economic value as others, either because they do not sell for a lot of money, or because they grow too slowly. Leopold contrasts this with Europe, where some "valueless" trees have been found to enhance the soil and improve the environment. This is not necessarily a quality that can be measured economically, but it has value nonetheless.

Once again, Leopold looks abroad to Europe, which he believes has a more nuanced and admirable approach to the natural world than contemporary America. There, people have begun to understand that even trees that have no immediate monetary value can still contribute meaningfully to the ecosystem.

Leopold also points out that certain ecosystems, like marshes, bogs, dunes, and deserts, are seen as being of little value. These can be saved by designating them as monuments or parks, or by private owners who choose to preserve the land. Leopold notes that occasionally these valueless areas turn out to have some hidden value, only revealed when an ecosystem is destroyed and has stopped some necessary function that previously benefited the greater landscape.

Leopold continues to argue in favor of parts of the natural world that don't have an immediately obvious value. He often bemoans the fact that areas that are not beautiful are not valued, even if these areas often have an important ecological function that humans, ignorant of so much of the complexity of nature, ignore when making decisions about whether or not landscapes should be allowed to survive.

Leopold observes that American conservation gives much responsibility to the government. Leopold wonders if this is a sustainable model financially and logistically. He worries the government is too big to deal with the minutiae of land management, and again circles back to an ideal of a national (or global) land ethic, which would require every citizen to do their part to treat the land as a community. He concludes that a purely economic system overlooks the unquantifiable, or economically valueless, elements of a landscape. Furthermore, he thinks the government is ill-equipped to oversee conservation, and instead believes that private landowners need to embrace their ethical obligation to the land.

In an ideal world, Leopold would educate each citizen and create millions of people with closely held, deeply ingrained land ethics, who would each contribute a small part to help repair and preserve the natural world. He feels that the government is ill-equipped to deal with this issue, and that by relying on the government the average citizen is disenfranchised and left less inspired to do their own part to help the natural world.

Leopold believes humans can "be ethical only in relation to something we can see, feel, understand, love, or otherwise have faith in." To try and make the land seem more accessible, or more tangible, Leopold proposes the idea of a "land pyramid." This is a visualization of the land as a physical pyramid. Energy flows from soil, on the bottom of the pyramid, to plants, insects, birds and rodents, and finally to apex predators, at the top of the pyramid.

The land pyramid is a concept Leopold only introduces in this final section, but has been gesturing towards throughout the text. He has come up with various other metaphors, similes, and symbols to describe the interconnectedness of the natural world, as he has tried to illustrate how essential each individual component is to the function of the whole.

Each level of the land pyramid eats and receives energy from organisms on the level below, except for plants, which also receive energy from sunlight. Within the food pyramid are additional food chains and food webs, "lines of dependency" that determine which animals eat what.

Like the idea of a food web or food chain, which many people are more familiar with, the land pyramid emphasizes the connections between organisms, driving home Leopold's point that every member of the biotic community is important.

When the earth was younger, the land pyramid was simpler, but as more species have evolved it has gotten higher. Leopold argues that "the trend of evolution" is to "diversify the biota," and therefore extend the land pyramid upwards. Changes in one part of the pyramid change the entire system. Sometimes the pyramid can adjust, when a change is on a slow, evolutionary scale, but it is harder to recalibrate to man-made changes, which were—and continue to be—of "unprecedented violence, rapidity, and scope."

This idea of the land pyramid growing throughout history contrasts with the present-day land pyramid, which is constantly being attacked as different species become endangered or extinct due to human intervention. Although the pyramid can adapt to change on a geological scale, it is harder for it to restructure itself on a manmade timeline.

Leopold lists a few changes humankind has brought to the land pyramid, including the elimination of many apex predators, thereby shortening food chains. These changes also include agricultural practices, which strip the soil of its fertility, and polluting the water, which flows back into the pyramid and feeds its plants and animals.

Modern humans have not been operating with the land ethic in mind, and as a result have severely damaged the ecosystem. This is easily demonstrated with the aid of the land pyramid, a physical representation of an entire ecosystem that can be imagined to shrink and shrivel as species die or are killed off.

In summary, Leopold proposes that looking at "land as an energy circuit" is useful for three reasons: first, because it shows "land is not merely soil"; second, because it shows that native plants and animals help maintain a system, whereas invasive or nonnative organisms may not; third, because it demonstrates how changes wrought by humans are often much more violent and impactful than slower, natural, evolutionary changes.

The land pyramid, like the idea of the Round River in an earlier essay, helps readers picture the ecosystem in more concrete terms. It also helps bring value to inanimate aspects of the wilderness, like the soil itself. Like all of Leopold's visual aids, it is designed to make the reader care more deeply about the natural world.

Leopold has two primary questions: can the land adjust to manmade changes; and can the changes be enacted in a less violent way? Although he notices that many people believe an "indefinite increase" in human density will enrich the quality of human life, he disagrees. Instead, less dense populations will enact less violent changes on the environment.

Leopold worries that education and progress will eventually swallow up the entire remaining wilderness. He knows many people believe that if a little bit of progress improves their lives, infinite progress will improve it infinitely, when, in fact, certain areas that are less developed actually bring humans more joy than a completely developed, "civilized" world would.

Prairie flowers, formerly thought valueless, have been used to rebuild the soil of the dust bowl. He wonders how other, now economically valueless animals might one day be repurposed.

The dust bowl occurred when farmers were not careful about rotating crops, and stripped the soil of nutrients and water. When the land was allowed to regulate itself, this kind of thing didn't happen, and when native plants are reintroduced, the problem is partially solved. This is part of a land ethic—trusting the land to self regulate.

Leopold believes people who have yet to develop a land ethic can view the land in two distinct ways. He splits people into Group A versus Group B, where Group A sees humans as conquerors, and Group B sees man as the "biotic citizen."

When considering the environment, people can either see the land as inherently valuable whether or not humans live on it, or valueless until a human finds a way to extract value from it. Leopold hopes more people can see the land as valuable in itself.

Leopold thinks it is essential that people love, respect, and admire the land. Only then can they see its non-economic value. He worries that the current economic and educational system teaches people to "outgrow" a love of the landscape.

Once again, Leopold blames the educational system for blinding people to the environment. He feels that education does not encourage emotion, which distances people from loving the land, a key tenet of his land ethic.

Leopold's proposed solution is to stop thinking about land-use as an economic issue. Instead, questions about the land should be considered "in terms of what is ethically and esthetically right." He goes on to say that "a thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community." Leopold acknowledges that economics will always influence land-use, but he believes that it does not determine land use totally.

Leopold hopes the future of land management is ethical and not economic. He understands economics will always play a part in how society makes decisions about value, but he truly believes that with the right kind of education, enough people could be convinced of the inherent value of the land and the necessity of a land ethic that economics would become a secondary concern.

Leopold hopes that a land ethic can and will develop in America. Although he has set down some proposed rules, he understands that an ethic is a constantly evolving, organic concept that can soon be applied to all land-use.

Never one to privilege formal education over an informal one, Leopold would be happy if people spontaneously developed their own land ethics merely from spending time in and on the land themselves.

PART IV: WILDERNESS

Leopold defines wilderness as the diverse "raw material out of which man has hammered the artifact called civilization." He attributes the diversity in cultures that have developed across the world to the great diversity of wildernesses. Wilderness was the enemy of the pioneer, something to be conquered, but for someone looking for leisure, wilderness is "something to be loved and cherished," something that can give "definition and meaning" to a life.

Leopold argues for a cultural reframing of wilderness and its value. Although many people, like the pioneer, see it as a raw resource which can and should be exploited and tamed, Leopold applies his land ethic to it—that is, he sees the wilderness as inherently valuable in itself, and believes it should remain untamed.

Leopold explains that this chapter is a plea to preserve the last bits of wilderness left in the wake of industrialization and globalization—to protect them for the sake of the land and for the sake of humans who appreciate it.

As Leopold has explained in bits and pieces throughout the text, the march of progress and mechanization has converted much of the world's precious wilderness into farmland or cities. Although he sees the value in civilization, he believes that wilderness, especially as it gets more precious, is valuable in itself.

Much of the American wilderness has already been destroyed. Leopold gives a list of wilderness areas that have been lost, but compares them to similar areas that could still be preserved. For example, the long-grass prairie is gone, but the short-grass prairie remains and could be saved. The "virgin pineries of the Lake States," the "flatwoods of the coastal plain," and the "giant hardwoods" are mostly gone, but similar hardwoods and swamps exist in other parts of America. Natural coastlines, unfortunately, have almost entirely disappeared, taken over by real estate, and Leopold admits there is little to be done to save them.

An ignorance of the price of progress, as well as a disregard for natural spaces, has led to the accidental destruction of many unique wildernesses. This is not unlike the way hunters unwittingly killed the last buffalo or the last passenger pigeon. Although no one set out to destroy a certain kind of wilderness, Leopold argues that setting out without intending to protect them has the same result as actively trying to steamroll them. He hopes to teach everyone to be conscious of the natural world, to prevent this kind of ignorant destruction of a precious and irreplaceable resource.

In the Rocky Mountains, many areas have been designated National Forests and National Parks. Leopold is especially interested in National Forests, because they are closed to roads, hotels, and other modern developments. He bemoans predator control, which clears apex predators out of a wilderness. This leads to too many deer or elk, which destroy the vegetation. Although human hunters could cull the herds, Leopold points out that more roads would then have to be built to give them access.

Ironically, many people who want to preserve the wilderness also want to be able to experience it. However, by experiencing the wilderness, they destroy it, as wilderness is an area without humans, and humans must build roads into it to feel as though they are receiving proper value from it.

Leopold suggests that conflict between humans and animals is an essential part of human culture, and public wildernesses are a way for people to access this "virile and primitive" skill through hunting and fishing. Leopold thinks it is essential to keep these "primitive arts" alive. In his mind, these allow a kind of recreation, and Leopold believes recreation to be valuable because it is intense and different from workday life.

Once again, Leopold returns to his theory of recreation as a practical and ethical way to interact with the wilderness. His "primitive arts" allow a person to spend reflective time in a wild space, but do not require leaving an enormous permanent footprint upon it.

Organisms are able to heal themselves. Humans have intervened in the health of their own species, and in the health of the land. Leopold judges human intervention on the land to be unsuccessful, as most human interventions have only made the land less healthy and less fertile than before.

Leopold encourages his readers to think of the land as a living thing. Although he does not mention the land pyramid here, this concept would be helpful in imagining the way the land, as an entity, could become sick or healthy. Throughout the text Leopold argues that human intervention in the landscape is often based on ignorance, and as a result humans often cause more harm than good.

Leopold complains that people are happy to treat only symptoms of larger environmental diseases—for instance, poisoning squirrels or mice without wondering why there are suddenly so many more of them and tracking the population explosion to the source. Leopold argues that conservation could help restore the health of the land, but admits that much of contemporary conservation is "local alleviations of biotic pain." To remember what healthy land looks like, Leopold recommends looking to parts of northeastern Europe where the land was managed carefully, or else to the wilderness, which has managed to maintain itself for hundreds of thousands of years.

As Leopold noted earlier when describing invasive cheat-grass or bluegrass, humans often change the landscape accidentally, and then deal with the fallout of the change without considering how they could change the landscape back, or act differently in the future. This pattern of behavior would be helped by the application of Leopold's land ethic.

Healthy wilderness is valuable for its ability to be used as a comparison to sick wilderness, and as a tool to learn how to help landscapes destroyed by humans.

This is an additional way natural land can be valuable that Leopold has not previously explored. It is not an economic value, but a comparative and educational one.

Leopold is upset that National Parks, and even the surrounding National Forests, are often too small to support apex predators. Leopold remembers in 1909 when the West was full of grizzlies, but now, in the 1940s, five of every six grizzly bears is in Alaska. Leopold sees this as a great loss: "relegating grizzles to Alaska is about like relegating happiness to heaven; one may never get there."

Although Leopold does find value in natural spaces even if he will not necessarily be able to ever access or visit them, he still feels that it is a loss to preserve certain kinds of wilderness so far out of sight. While this wilderness can still remain valuable for its own sake, it cannot be used as a teaching tool, and it cannot be expanded to help restore other local wilderness areas.

To save the grizzly, land must be set aside, free of livestock and roads. To save grizzlies, or to save the wilderness, requires both "a long view of conservation, and a historical perspective." Leopold hopes that with improved education, more citizens will understand the ways in which "relics" of the wild West can enhance its present and future.

Leopold truly believes that the application of his land ethic can "enhance the present and future." In this passage he draws together all the themes of the text, arguing that an education that included his land ethic would give people a historical perspective of the land, which would allow them to find greater, more nuanced value in it.

Leopold points out that "wilderness is a resource which can shrink but not grow." Although there are various organizations dedicated to its protection—including The Wilderness Society and The Sierra Club—he believes they cannot do enough. Instead, individuals need to become scholars of the wilderness, and deeply consider its cultural value.

As Leopold has often pointed out, true wilderness is nonrenewable, which is why it must be protected, and not merely restored. This is why he thinks individual citizens, not simply the government or specific organizations (even those like the Wilderness Society, which he personally founded), must open their minds and do their part.

PART IV: CONSERVATION ESTHETIC

Leopold observes that people are more passionate about their recreation than they are about nearly anything else. While he has spent the book arguing about the importance of getting back to nature, he also has observed the problem of too many city-dwellers flooding the countryside. He worries "recreation has become a self-destructive process of seeking but never quite finding." As people search for wilderness to relax in, they end up destroying it.

As Leopold has observed in less detail earlier in the text, people's desire to experience the wilderness has the unfortunate side effect of destroying the very thing that they love. Leopold is constantly searching for ways to allow people these outdoor experiences without incurring such a high environmental cost.

Recreation can often be evaluated in economic terms. Governments will measure how much the public spends pursing it, or how much it costs to live or buy land in a recreational area. However, there is also an ethical component to recreation. Leopold has observed the evolution of "outdoor manners," and a code of sportsmanlike conduct.

Like the idea of sportsmanship introduced earlier, Leopold hopes wilderness lovers can learn to develop "outdoor manners." By this he means he hopes wilderness lovers will be able to ethically enjoy the land in a way that does not destroy it through recreation, and leaves it for future generations to enjoy.

Leopold understands that humans receive joy from interactions with nature. However, he also sees that there are many different perspectives on how to conserve nature. The Wilderness Society wants to exclude roads from many areas, whereas the Chamber of Commerce wants to extend them. Both groups, ironically, make arguments "in the name of recreation." Similarly, game-farmers often want to kill hawks that attack their animals, whereas bird-lovers want to protect them. Both, again, base their positions on protecting recreation.

Leopold founded the Wilderness Society, and so it follows that he and this organization would have similar views regarding the preservation of the wilderness. This conflict between the Chamber of Commerce and the Wilderness Society is the same basic conflict Leopold has been grappling with throughout the "The Upshot" and "A Taste For Country"—is accessible wilderness a right or a privilege, and at what point does the protection of the wilderness take precedent over human recreation in a place?

Leopold breaks down the idea of recreation into five components. First he looks at the act of trophy gathering. This includes hunting or fishing, taking photographs, or collecting plants or rocks. Trophy hunting allows the recreationist to take home a "certificate" proving that they spent time in the wilderness, and to demonstrate some skill in the process. It is easy to generalize and say that "mass-use tends to dilute the quality of organic trophies like game and fish," but a greater volume of participants does not dilute some trophies, like photographs, which can be taken again and again by different people.

Trophies are one way that people can extract value from the wilderness. However, depending on the kind of trophy, this can actively destroy the wild space a recreationist is in. Still, harmless trophies like photographs enhance people's experiences of the wilderness, and make them more likely to want to protect it.

The second enjoyable aspect of recreation is "the feeling of isolation in nature." Leopold defines a wilderness area as being without roads except on the borders. Ironically, extending roads into the wilderness to make it accessible destroys the wilderness, making it even rarer.

This natural experience is one that cannot be had by an infinite number of people. Like certain kinds of trophy gathering, if too many people travel to a wilderness to feel isolated, they will end up surrounded only by other tourists and nature lovers.

Leopold contrasts the idea of wilderness as a place to isolate oneself with the idea that recreation can provide "fresh-air and a change of scene," the third component of recreation. This simply means that people go into nature as a contrast to city or suburban life. Mass-use does not dilute the ability of a landscape to provide fresh-air to visitors.

Unlike the previous two ways of experiencing nature, this type of recreation can be experienced by an infinite number of people. Although isolated wilderness can only service a set number of visitors, fresh air can be experienced by anyone coming from an area where the air is less "fresh."

A fourth facet of recreation is its scientific study. This can be the study of evolution (how things came to be) or ecology (how the environment has maintained itself). Although this field is in its early stages, Leopold hopes nature study will help "the mass-mind towards perception."

Although often a critic of conventional education, Leopold has always supported education that takes place directly in nature. This, he hopes, helps people develop their own land ethics independently, which will make them better biotic citizens.

Leopold notes that recreation "is not the outdoors, but our reaction to it." A person's experience in nature is partially based on the world around them, but also based on their perception of it. Ecological science has opened the eyes of those who study it to "incredible intricacies" of the natural world and the "intrinsic beauty" of the American landscape. Leopold believes "the only true development in American recreational resources is the development of the perceptive faculty." In other words, it is not the wilderness that needs to be changed, but how visitors see it.

Although wilderness, Leopold believes, is inherently valuable, he also believes that less pure or isolated landscapes are also valuable. He believes people should be able to appreciate these less inherently beautiful or valuable spaces. This is not a question of developing the natural world, but of changing how people perceive it, and teaching them how to find value in all types of land.

Leopold believes that people can learn to appreciate nature anywhere. Weeds growing in the city, grasses in a pasture, redwoods in a forest—all of these can offer a viewer the opportunity to truly "see" the natural world. A person does not need a Ph.D. to become an expert in ecology, since perception "grows at home as well as abroad," and "cannot be purchased with either learned degrees or dollars."

As Leopold has often argued, education need not come from a classroom. A person can become a scholar of the land or a responsible biotic citizen simply by observing the natural world. This can happen in the wilderness, but it can also happen in the city—Leopold encourages everyone to take time during their day to practice finding value in what they once believed to be worthless.

The fifth component of recreation is husbandry. This includes any management of the land. Leopold argues that the government should give land to its citizens to manage, as opposed to giving it to field officers to maintain. Instead of paying people to maintain it, citizens could do it for leisure.

In Leopold's ideal world, everyone would have a land ethic, and so when they took care of a patch of land they would care for it as a member of their community. They would value it inherently, and monitor its health and wellbeing, all while receiving joy from their labor.

Leopold introduces the idea that trophy hunters are "the caveman reborn." He does not criticize trophy hunters as a category, only those who begin trophy hunting in youth and never outgrow it. Leopold alleges that trophy hunters who never develop a land ethic or conscience are happy to "possess, invade, [and] appropriate" the wilderness. Because of this, these people do not value any land that is not easily accessible to them.

Leopold returns to the idea of trophies one final time. He sees trophy gathering as a way to access the wilderness as a young person, but hopes that a love for physical artifacts will eventually transform into a love for the land as an organism, and a concept, both of which offer nothing physical in return, but are valuable nonetheless.

Leopold concludes his book by stating that recreational development should not focus on making wilderness more accessible to people by building roads into it, but instead should try to build "receptivity into the still unlovely human mind."

In the end, the question of a land ethic and the question of where humans should find value in the land is unrelated to the land itself. The land has always existed for itself, and never for the benefit of humankind. Humankind must then adjust itself accordingly, to care for, respect, and appreciate the land as it is.

HOW TO CITE

To cite this LitChart:

MLA

Sanders-Schneider, Ivy. "*A Sand County Almanac.*" *LitCharts*. LitCharts LLC, 27 Mar 2018. Web. 21 Apr 2020.

CHICAGO MANUAL

Sanders-Schneider, Ivy. "*A Sand County Almanac.*" LitCharts LLC, March 27, 2018. Retrieved April 21, 2020. https://www.litcharts.com/lit/a-sand-county-almanac.

To cite any of the quotes from *A Sand County Almanac* covered in the Quotes section of this LitChart:

MLA

Leopold, Aldo. A Sand County Almanac. Ballantine Books. 1966.

CHICAGO MANUAL

Leopold, Aldo. A Sand County Almanac. New York: Ballantine Books. 1966.