
The Naturalist's Virtues

PHILIP CAFARO
Department of Philosophy
Colorado State University
Fort Collins, CO 80521
cafaro@lamar.colostate.edu

Abstract: *This paper argues that studying natural history helps make us more virtuous; that is, better and happier people. After sketching a broad conception of virtue, I discuss how naturalizing may improve our moral character and help develop our intellectual, aesthetic and physical abilities. I next assert essential connections between non-anthropocentrism and wisdom, and between natural history study and the achievement of a non-anthropocentric stance toward the world. Finally, I argue that the great naturalists suggest a noble, inspiring alternative to the gross consumption and trivial pleasures offered by our destructive modern economy: the exploration, understanding and appreciation of nature. I conclude that a better understanding of our enlightened self-interest would do as much to further environmental protection as the acknowledgment of nature's intrinsic value.*

I. Introduction

This paper argues that studying natural history will make us more virtuous; that is, better and happier people. I claim that the active exploration of wild nature improves our lives by building our character, enriching our experience, increasing our knowledge, developing our intellectual faculties and fostering beneficial, lasting relationships with wild things and wild places. I also claim that lives lacking such activities and connections to nature are importantly deficient. Before considering these claims

in detail, let me define two key terms.

The Naturalist As I use the term, a naturalist is someone who pursues a knowledgeable acquaintance with wild nature and loves and appreciates it. I mostly have in mind amateur naturalists – realizing that an amateur's interests can develop into a professional career and that the term will remain fuzzy around the edges. Birdwatchers, casual or not so casual botanists, mushroom hunters, amateur geologists ("rock hounds") are common examples of naturalists. Hunters, anglers and backpackers may be naturalists, depending on how much they know and love the animals they stalk or places they explore (some of our greatest naturalists have been hunters). Too exclusive a focus on consumption or recreation disqualifies them from naturalist-hood. Scientists may be naturalists, depending on whether they spend time in the field and care about what they are studying (many scientists begin as amateur naturalists, many biologists are also excellent field naturalists). Too exclusive a focus on the pursuit of knowledge or career advancement disqualifies them.

It is hard to pick out particular features that characterize all naturalists. Naturalists frequently keep journals or lists of what they have seen and experienced. They often seek out wilder landscapes. They sometimes belong to organizations of like-minded individuals, and supplement their activities with some degree of scientific training (classes, field studies, reading relevant scientific literature on their own). But none of this is essential. Perhaps the key characteristic is that naturalists spend time attending

to some aspect of wild nature. Along with attentiveness, curiosity and care define the naturalist.

A bit of history may be useful here, as the terms 'naturalist' and 'natural historian' have undergone revealing shifts in meaning over the past two hundred years. The *Oxford English Dictionary* gives as one definition of 'naturalist': "one who studies, or is versed in, natural science; a natural philosopher, a physicist. Now rare or Obs. (very common in 17th c.)." In an influential study, John Hildebidle describes the typical procedure of naturalists in the seventeenth and eighteenth century thus:

What the natural historian must do is first, observe carefully and clearly; then describe, again with precision, without lapsing into connotation or association.

The method of the field naturalist ... must begin with observation and collection (and must indeed always stay well grounded in these), move to cataloging and categorization, and-only with his facts clearly in hand-proceed to a more developed interpretive description and to generalization about Nature.¹

Hildebidle emphasizes the importance of careful and repeated observation, the weeding out of true from fanciful accounts of nature, and the importance in all of this of personal verification of these facts. Whether the naturalist himself goes on to generalize from his facts, or merely collects information from which others may generalize, the goal is a correct local knowledge which will lead to a correct "universal natural history." In all of this we see the early naturalist as a proto-scientist.

However, this use of the term 'naturalist' is now obsolete, the dictionary tells us. A similar shift has occurred with the term 'natural history.' "Originally," according to the *OED*, "the systematic study of all natural objects, animal, vegetable, and mineral; now... freq. implying a popular rather than a strictly scientific treatment of the subject." Compared to the modern scientist's knowledge, the typical naturalist's knowledge is unrigorous and unsystematic. It is also parochial, focused on her particular locality. 'Naturalist' has become a *literary* term and the literary naturalist is more likely to write "popular" accounts which introduce scientific discoveries to a non-scientific readership than to collect information which leads to further scientific discoveries. She is more likely to introduce and celebrate particular organisms or a particular place than to further scientific attempts to understand them.

Although this shift is largely complete – few

scientists today call themselves "naturalists" – it was a long time happening. As recently as sixty years ago, in the introduction to a popular collection titled *The Book of Naturalists*, editor William Beebe summed up the "ideal equipment for a naturalist writer of literary natural history" thus:

Supreme enthusiasm, tempered with infinite patience and a complete devotion to truth; the broadest possible education; keen eyes, ears, and nose; the finest instruments; opportunity for observation; thorough training in laboratory technique; comprehension of known facts and theories, and the habit of giving full credit for these in the proper place; awareness of what is not known; ability to put oneself in the subject's place; interpretation and integration of observations; a sense of humor; facility in writing; an eternal sense of humbleness and wonder.²

Beebe included leading scientists in his collection, as well as literary figures, big-game hunters, and others. His ideal encompasses the virtues of the scientist, writer, experienced traveler and amateur naturalist. But in the sixty years since his book's publication, the gap between science and natural history has widened considerably.

John Hildebidle notes that seventeenth and eighteenth century naturalists were motivated to study nature by "the clear attachment to place." He believes this concern with place:

is a fundamental distinction between the writing of natural history and the more modern modes of writing science, which tend not only to be more specialized but more abstracted from place, and more reliant on the observation to be done in a laboratory. ... Modern experimental science depends upon the control and limitation of context.³

A basic economy of intellectual effort dictates that today's biologist or ecologist will spend most of his time indoors: at his computer, in the library, or in the laboratory.⁴ For all of science's success, however, the naturalist must remain in the field. Because he likes it there. Because he feels a special connection to particular places and organisms – or desires to. Because he wants to know about *these* things and *this* place – irrespective of whether science already knows about them or whether his personal efforts will contribute to scientific knowledge. "Rather than abandon this principle," Hildebidle concludes, in the

nineteenth century and twentieth centuries, “the naturalist usually abandons the name of scientist, and along with it the respect which is more and more commonly accorded that name.”⁵

So natural history is both a faded (or transformed) tradition of scientific inquiry and a robust literary genre. Most naturalists, however, are neither professional scientists nor nature writers, but enthusiastic amateurs. It is this amateur pursuit that I am advocating in this paper (whether you take it further and become the next E.O. Wilson or Barry Lopez is up to you!). I am recommending buying a cheap pair of binoculars and tagging along on the next Audubon Society beginners' field trip; digging out that band lens and field guide and keying out some of the flowers down by the river; sketching the animals or landscapes to which you are repeatedly drawn. I'm suggesting keeping a journal or sketchbook to record your discoveries, and sharing them with friends and family. In what follows, I argue that such activities provide important avenues for personal happiness and excellence. In other words, they make us more virtuous.

Virtue In asserting that spending time studying nature makes us more virtuous, I am not saying that it makes us more chaste – although it seems to have worked that way for Henry David Thoreau. Nor am I just arguing that it improves our moral character – although I think it tends to do so. Rather, I believe that naturalizing helps make us better people, comprehensively considered. I am using the word 'virtue' in an older sense, to mean “human excellence generally,” not “moral excellence” or something even narrower.

The word 'virtue,' like 'naturalist,' has undergone revealing changes over the years. Arthur Adkins, Alasdair MacIntyre and other scholars have shown how philosophers' understandings of virtue and earlier, related terms such as Greek *arete* and Latin *virtus* narrowed over time, from general human excellence to a specifically moral excellence focused on dutifulness and altruistic behavior toward others. We can follow this narrowing in English literature and common English usage over the past few hundred years. The *OED* lists as two main meanings of 'virtue' “conformity of life and conduct with the principles of morality” and “a particular moral excellence; a special manifestation of the influence of moral principles in life or conduct.” But it also notes a broader usage, marking “superiority or excellence, unusual merit, or distinction, in some respect.” The examples given under this heading define virtue in terms of material possessions, prophetic ability, literary accomplishment intelligence, horsemanship, cooking, doctoring, the ability to sing or dance, and in many other ways. However, this sense of the word is no

longer common. The dictionary lists as “obsolete” the formerly important use of 'virtue' to mean “physical strength, force, or energy.” Also marked “obsolete” is the use of 'virtue' to mean “flourishing state or condition,” a use which harks back so directly to ancient Greek conceptions of *eudaimonia*.

Clearly, the meaning of 'virtue' has narrowed over the centuries. This would not be a problem, if another word had sprung up to fill its place and if philosophers had continued to discuss general human excellence. But this topic disappeared from moral philosophy for most of the twentieth century, either on the assumption that moral excellence *was* all there was to general human excellence, through discomfort with the egalitarian nature of virtue judgments, or for other reasons. Fortunately, this is now seen by many as a mistake, and philosophers are once again tackling questions concerning the nature of human excellence and flourishing. In discussing these questions, we can either use the word 'virtue' in its older sense, make do with the somewhat bland 'excellence,' or coin a new word. Here I opt for taking back the word 'virtue' from the moralists.

In this essay, I define the virtues as those traits that help promote individual and collective well-being or flourishing. A virtue is *any* quality which importantly contributes to human flourishing: any quality the possession of which makes a person a better person (all else being equal).⁶ In my view, such qualities include moral virtues, but also the kind of intellectual virtues recognized by Aristotle, St. Thomas Aquinas, David Hume and most philosophers from the eighteenth century on back.⁷ I believe they also include aesthetic virtues, such as perceptiveness, creativity and the ability to make fine sensible distinctions, and even physical virtues, such as health, vigor, strength, stamina and grace. These qualities help us succeed in a wide range of projects and roles. Without some abilities in all these areas, we can hardly be said to be living a full human life. Conversely, a person possessing great intellectual, aesthetic and physical abilities and sterling moral character would be accepted by most people as an excellent person.

This broad definition of virtue is true to how most people define human goodness – including most philosophers, when they are not philosophizing but are instead living their lives. Those who object to the linguistic awkwardness or inaccuracy of using 'virtue' so broadly may substitute 'excellence' or even 'general human excellence'; they should still be able to consider the substantial claims that follow. Those who object to the elitism of calling people better or worse based on their possession of these qualities should ask whether they do not in fact value these

qualities in themselves, seek them in friends and colleagues, and try to foster them in their children. Virtue ethics is inherently inegalitarian; even an account focused strictly on moral virtue will call some people better (more moral) than others. How judgments concerning human excellence cohere with our more egalitarian judgments and hopes concerning basic human rights is an important topic that is beyond the scope of this essay.⁸

II. The Naturalist's Virtues

I turn now to specifying the virtues of the naturalist. My general claim is that engaging nature helps us cultivate these abilities and character traits. I do not assert that studying natural history is the only way to acquire them, but that it is one of the best ways and that in its absence we are less likely to do so.

In *A Sand County Almanac*, Aldo Leopold describes an attempt to get a closer look at a western grebe, a shy, beautiful bird of North America's prairie potholes:

One day I buried myself, prone, in the muck of a muskrat house. While my clothes absorbed local color, my eyes absorbed the lore of the marsh. A hen redhead cruised by with her convoy of ducklings, pink-billed fluffs of greenish-golden down. A Virginia rail nearly brushed my nose. The shadow of a pelican sailed over a pool in which a yellow-leg alighted with warbling whistle; it occurred to me that whereas I write a poem by dint of mighty cerebration, the yellow-leg walks a better one just by lifting his foot.

A mink slithered up the shore behind me, nose in air, trailing. Marsh wrens made trip after trip to a knot in the bulrushes, whence came the clamor of nestlings. I was starting to doze in the sun when there emerged from the open pool a wild red eye, glaring from the head of a bird. Finding all quiet, the silver body emerged: big as a goose, with the lines of a slim torpedo. Before I was aware of when or whence, a second grebe was there, and on her broad back rode two pearly-silver young, neatly enclosed in a corral of humped-up wings. All rounded a bend before I recovered my breath. And now I heard the [call], clear and derisive, behind the curtain of the reeds.⁹

The passage well captures the efforts and

rewards of the naturalist and the virtues necessary for his or her success. There is the patience, quietness and stoic acceptance of a soggy butt for hours on end – moral virtues needed to catch a glimpse of the quarry. The fine perceptiveness and descriptive ability are intellectual virtues, as is Leopold's ability to explain what he is seeing.

The passage shows how different aspects of virtue connect. Patience is part intellectual virtue, part moral virtue and part physical virtue, as it is portrayed here. The humility which allows Leopold to lie down in the muck unselfconsciously is a moral virtue, but humble recognition of our own ignorance is also a key intellectual virtue, as Socrates so often reminds us (see also William Beebe's description of the ideal naturalist quoted earlier). Humility also makes possible Leopold's aesthetic appreciation of the grace of the yellow-leg, and in his recognition of the beauty of the yellow-leg's natural "poetry," we see the genesis of his recognition of its intrinsic value. The passage also shows that virtues can be put to diverse and complementary uses. The patience and persistence needed to explore the marsh are also needed to write a compelling account of the experience for his readers. Many revisions were made to this narrative which reads so effortlessly, just as many trips to the marsh were necessary for Leopold to see the grebes so closely and to appreciate all the rest of what he saw. Presumably patience and persistence were also needed to teach his classes at the university, raise his children, wrangle with politicians and bureaucrats, and do the many other things that Leopold did so well during the course of his life.

In what follows, I consider several broad categories of virtues and show how natural history study helps us to develop them. These are artificial categories. Still, they are useful for organizing our thoughts about human excellence.

Intellectual Virtues Each branch of natural history study demands its special abilities: the superior ear of the birdwatcher, the attention to minute detail of the entomologist, the courage of the herpetologist wading into swamps full of poisonous snakes. But some "field skills" are nearly ubiquitous. Perhaps the most important are patience, perseverance, thoroughness and attentiveness. The birdwatcher searching for that one rare gull on a pond among seven hundred common ones may have to watch for hours in bitter cold, patiently scanning the birds one by one. If his attention flags, he may pass right over the rarity. The same is true for the mushroom seeker or rock hound. Patience, persistence, thoroughness and continuous attentiveness, like muscles, can be developed over time. The heightened awareness they make possible is

enjoyable in itself and opens up new worlds of knowledge. They make the world more interesting and allow us to enjoy it without demanding that it crudely entertain us.

Nature study also heightens our perceptive abilities: we see, hear and smell more, and more keenly, because of them. In the cities, our senses tend to atrophy. The relentless commercial badgering of signs, and the general dullness and ugliness of city landscapes, push the urban walker into the safe cocoon of his mind and further out of his senses. Simply spending time out in pastoral or wild landscapes counteracts this tendency. Spend a day in the woods and you will begin to hear a bit more and enjoy what you are hearing: water rushing in the brook, the scolds and screams of a jay. But the naturalist takes this further, using her senses to identify what she is seeing and hearing and smelling, and developing their acuteness in the process. A casual walker may see a bush with green leaves, but the botanist will see one that is four feet tall, with simple alternating lance-shaped leaves with doubly-serrated edges, hanging on flattened leafstalks with reddish leaf-buds at their base. Of course, some people have keener eyesight than others, but the amazing thing is that most people can significantly improve their senses by using them. Make a habit of close looking, and you will see more.

For an impressive demonstration of sensory ability, go into the field with an advanced birder. Although it's called *birdwatching*, a good birder does 90 to 95% of his work by ear, identifying many species before he has ever seen them. With a little practice, even a novice can tell the burry rasp of the mountain chickadee from the cleaner call of its black-capped cousin. But expert birders go well beyond this, distinguishing the little "pik" calls of different species of sparrows from one another, or the subtle changes in pitch and intensity as the breeding season approaches. Sure enough, when you really listen, you begin to hear the slight differences they point out to you. Of course, remembering these differences and using them yourself to identify birds is more difficult! But it can be done – even by those whose hearing acuteness, as measured by instruments, is very ordinary.

(By now some readers might well be wondering what all this has to do with *virtue*. In my view, increased sensory perceptiveness is an intellectual and aesthetic virtue: intelligence and sensitivity to beauty are found in the eye, ear and nose, as well as in the mind. This may seem strange. But I ask: if the intellectual virtues are those qualities that help us to know the world, don't finely honed senses do this? If the aesthetic virtues are those qualities that allow us to appreciate and create beauty, then aren't keen and discriminating senses part of

aesthetic virtue?

In her excellent discussion of the intellectual virtues, Linda Zagzebski includes "sensitivity to detail." This and related descriptive abilities are further important virtues which naturalizing improves. Natural history study always involves the attempt to describe what we are seeing: in letters or journal entries, in conversation or formal reports. Often, there is a specialized vocabulary to master: the spikes, spikelets, glumes, lemmas, paleas, bracts and pedicels used to describe grass flowers; the orbital, supraloral, auricular, malar and primary, secondary and tertial feathers of birds; the many terms to report the shape and arrangements of leaves, such as undulate, serrate, lobed, filiform, linear, lanceolate, entire, ovate, obovate, reniform, imbricate, sessile, and whorled. Sometimes, one makes do with a normal vocabulary but uses it with greater precision; rather than describing a bird as "over there, to the left," your fellow birders will prefer "over there, at ten o'clock, in the big olive tree, six feet from the top, in the right-hand side of the tree." Over time, specialized vocabularies and more precise description become second nature.

The repeated effort to describe nature improves our ability to make fine distinctions and to describe them to others. And improved descriptive abilities go hand in hand with improved perceptions. The better you get at describing what you see, the more you will see. The care and precision of such description are intellectual virtues that, again, can be put to use in areas far from natural history. They further clear thinking generally. They are also marks of respect for what is being described.

To call many of the preceding qualities "intellectual virtues" makes intellectual virtue more embodied and less exclusively focused on abstract thinking than philosophers typically believe it to be. Similarly, a focus on natural history study links intellectual and moral virtue more closely than usual. Humility, for example, a moral virtue, is also clearly an intellectual virtue in a naturalist. Naturalists put a premium on recognizing their own ignorance and not claiming certainty when they are not certain. Nothing loses points more quickly in birding circles than quickly calling out wrong i.d.'s, in an attempt to show off. And in my experience, nothing inculcates humility quite as well as the sight of a meadow full of unknown flowers, unless it is the realization, several hours later, that you have barely made a dent in your ignorance. Patience, too, is a mixed intellectual and moral virtue furthered by naturalizing. We recognized it equally in Leopold in the marsh, but it is shown equally when Jane Goodall returns to the field year after year in search of new insights, or when a novice birdwatcher visits a hedgerow repeatedly, hoping for

another look at that rare sparrow. Everyone knows that patience is a virtue. But it must be strengthened through habit, and natural history study is a wonderful way to do so.

Of all the intellectual virtues, perhaps the greatest is a sense of wonder toward the world. Somewhat paradoxically, a little knowledge can dull this wonder. But naturalists keep it alive, by taking knowledge out of their heads and their books, bringing it out into the field, and letting it embody itself in beauty. This sense of wonder is continually kindled by concrete study of nature, for there is always something unexpected popping up: new puzzles, new structures, new beauty and ugliness to see. Rachel Carson, in an article titled "Help Your Child to Wonder," summed it up this way:

A child's world is fresh and new and beautiful, full of wonder and excitement. It is our misfortune that for most of us that clear-eyed vision, that true instinct for what is beautiful and awe-inspiring, is dimmed and even lost before we reach adulthood. If I had influence with the good fairy who is supposed to preside over the christening of all children I should ask that her gift to each child in the world be a sense of wonder so indestructible that it would last throughout life, as an unfailing antidote against the boredom and disenchantments of later years, the sterile preoccupation with things that are artificial, the alienation from the sources of our strength.¹⁰

Lacking a direct line to the good fairy, Carson took the children in her life out to the tidepools and forest paths along her beloved Maine coast.

Aesthetic Virtues If the intellectual virtues help us understand the world, aesthetic virtues help us appreciate its beauty and create new kinds of beauty and value within it. Here again, natural history study furthers such virtue. Some of this has already been discussed, since perceptive and descriptive abilities are as much aesthetic as intellectual virtues. But more remains to be said.

The ability to describe objective nature shades off into the ability to express our own subjective emotions and experiences. We might call this expressive virtue. One writer who illustrates and appreciates the value of nature study for such personal expressiveness is Henry Thoreau. After clearly and accurately describing the great horned owls and screech owls living near his shack in Walden woods, he remarks: "I rejoice that there are owls. Let them do

the idiotic and maniacal hooting for men." And indeed they do, embodying moods and providing words for aspects of human experience which are difficult to convey. "It is a sound admirably suited to swamps and twilight woods which no day illustrates," Thoreau continues, "suggesting a vast and undeveloped nature which men have not recognized. They represent the stark twilight and unsatisfied thoughts which all have."¹¹ Similarly, a playful loon helps him convey the elusive nature of the search for knowledge, while a crumbling sand bank illustrates nature's creativity. Not that representing human ideas and experiences is all owls, loons, sand banks or the pond itself are good for. Thoreau is clear that they are above all good in and for themselves: "It is no dream of mine / to ornament a line," he remarks of the pond. Still, nature gives us the words and tropes for our own experiences of joy or sorrow, hope, dullness or despair. Just as she gives us many new experiences to ponder, so she provides the means to understand them and convey them to others.

We also use nature to express our moral, religious or philosophical interpretations of the world. Aldo Leopold employs the flowering of a tiny, insignificant plant, the common draba, to convey what he takes to be the proper attitude toward nature's beauty and bounty:

He who hopes for spring with upturned eye never sees so small a thing as Draba. He who despairs of spring with downcast eye steps on it, unknowing. He who searches for spring with his knees in the mud finds it, in abundance.¹²

Rachel Carson presses the ocean itself into service, in the conclusion to *The Edge of the Sea*:

Now I hear the sea sounds about me; the night high tide is rising, swirling with a confused rush of waters against the rocks below my study window. Fog has come into the bay from the open sea, and it lies over water and over the land's edge, seeping back into the spruces . . . Once this rocky coast beneath me was a plain of sand; then the sea rose and found a new shore line. And again in some shadowy future the surf will have ground these rocks to sand and will have returned the coast to its earlier state. And so in my mind's eye these coastal forms merge and blend in a shifting, kaleidoscopic pattern in which there is no finality, no ultimate and fixed reality – earth becoming fluid as the sea itself.¹³

Who but Ocean could so powerfully convey the limits of human understanding and the eternal flux of nature? Ocean: who taught Carson these lessons, just as he has taught them to uncountable generations living out their lives on so many varied and distant shores.

Study nature to find your voice. One reason the natural history genre thrives today is the tremendous variety of voices it makes possible: the wild exactness of Annie Dillard, the calm thankfulness of Terry Tempest Williams, the scientific precision of Bernd Heinrich. But again, this is not just the province of professional writers or exceptional talents. No matter how dry or literal an amateur naturalist's field notebook might be, sooner or later it begins to fill up with descriptions of her *experience*; also her theories and suppositions, her value judgments, her wild flights of fancy. She can push this further, if she wants to. Like describing nature itself, attempts to capture our own experience, interpret what we are seeing scientifically, clarify our value judgments or create new imaginative worlds, are endlessly fascinating. One gets better at them as one goes along.

Perhaps the cardinal aesthetic virtues are *appreciation* and *creativity*, virtues that supplement and complete one another. The value of natural history study for appreciating the world is clear. But natural history is equally valuable for developing human creativity. Generations of apprentice painters have gotten started drawing from nature. Figures as diverse as Hemingway and Nabokov show that studying nature is good training in literary discipline and creativity.¹⁴ Careful description may lead to creative fantasy, as in the ancient naturalist Pliny, who:

believed the mares of the Portuguese used to raise their tails to the wind, "and turn them full against it, and so conceive that genital air instead of natural seed: in such sort, as they become great withal, and quicken in their time, and bring forth foals as swift as the wind."¹⁵

For celebrated writers and regular folks, natural history study replaces dull language and revives dead metaphors. We see this in such complex examples as Henry Thoreau's use of "awakening" as a trope for moral progress in *Walden*, and in simple, personal experiences, where an early flower or the season's first returning bluebird say "spring" and "hope" to us so powerfully that they take our breath away. In a discussion of the uses of natural history, Holmes Rolston remarks:

Perhaps it may not be so fanciful but rather entirely realistic that [the] pasqueflower should in its limited and natural way come to serve as a symbol for what Jesus in his unlimited, supernatural way represents to the Christian mind, a hint of the release of life from the powers that would suppress it. . . . here we have an earthen gesture of the powers of resurgent life.¹⁶

The world itself may reawaken dead religious feelings and abstract ethical ideals. So much of the power and meaning of words come from the world they represent Rolston concludes:

We have become too wise in our own conceits if ever we let a winter solstice go by without a glance upward to rejoice that the sun will sink no lower in the darkening sky . . . We walk too hurriedly if ever we pass the season's first pasqueflower by, too busy to let its meeting stay us for a quiet moment before this token of the covenant of life to continue in beauty despite the storm.

The aesthetic appreciation of nature lies near the heart of much that is most valuable in human life.

Physical Virtues But while we acknowledge intellectual and aesthetic excellence, we should not neglect the physical virtues. *Mens sana in corpore sano*. Five years after completing his second term as president, Teddy Roosevelt headed up an expedition to explore the previously uncharted River of Doubt in western Brazil. In *Through the Brazilian Wilderness*, Roosevelt chronicled the grueling expedition. Of a typical day, he wrote:

For an hour we went through thick jungle, where the machetes were constantly at work. Then the trail struck off straight across the marshes . . . It was a hard walk. The sun was out. We were drenched with sweat. We were torn by the spines of the innumerable clusters of small palms with thorns like needles. We were bitten by the hosts of fire-ants, and by the mosquitoes, which we scarcely noticed where the fire-ants were found, exactly as all dread of the latter vanished when we were menaced by the big red wasps . . . In the marsh we were continually wading, now up to our knees, now up to our hips. Twice we came to long bayous so deep that we had to swim them, holding our rifles above water in our right hands. . . .¹⁷

In our day as in Roosevelt's, the physical virtues remain virtues. Strength, stamina, hardiness and health are all valuable qualities which improve us and help us do what we want to do in life. Self-reliance and resolution are related "stoic" virtues with wide applicability.

Spending time out in nature keeps us healthy and strong; planning and executing extended field trips encourages self-reliance and persistence. Forget your lunch? Then do without it for the day. Don't wuss out and call off the hike. Tent a bit wet? On one of his Alaska trips, John Muir canoed a good portion of the inland passage with several Tlingit Indians and a missionary:

"Just feel that," said the minister in the night, as he took my hand and plunged it into a pool about three inches deep in which he was lying.

"Never mind," I said, "it is only water. Everything is wet now. It will soon be morning and we will dry at the fire."¹⁸

Not only do naturalists' efforts and hardships build strength and character, they also vivify our experience. Earlier on the same trip, Muir explored the Stickeen glaciers by himself. Of one day, he writes:

*It was raining hard when I awoke, but I made up my mind to disregard the weather, put on my dripping clothing, glad to know it was fresh and clean . . . and with my indispensable ice-axe plunged once more into the dripping jungle. I found my bridge holding bravely in place against the swollen torrent, crossed it and beat my way around pools and logs and through two hours of tangle back to the moraine on the north side of the outlet – a wet weary battle but not without enjoyment. The smell of the washed ground and vegetation made every breath a pleasure, and I found *Calypso borealis*, the first I had seen on this side of the continent, one of my darlings, worth any amount of hardship. . . the mosses were indescribably beautiful, so fresh, so bright, so cheerily green, and all so low and calm and silent, however heavy and wild the wind and the rain blowing and pouring above them.¹⁹*

Many readers will have experienced the heightened perceptiveness and exhilaration Muir describes.

Of course, few naturalists push the limits of wilderness travel in the ways that Roosevelt and Muir

did. Nevertheless, they do push their own limits and tend to stay more fit than non-naturalists. In a nation as overweight and steeped in luxurious living as contemporary America, that is all to the good. "No man," Roosevelt wrote:

has any business to go on such a trip as ours unless he will refuse to jeopardize the welfare of his associates by any delay caused by a weakness or ailment of his. It is his duty to go forward, if necessary on all fours, until he drops.²⁰

A companion said something similar to me when I was lagging on a recent Audubon Society Christmas bird count

Moral Virtues As we have seen, the activities of the naturalist train people in patience, persistence, self-control and other moral virtues. "Wildlands provide a place to gain humility and a sense of proportion," writes Holmes Rolston:

The virtues of humility, simplicity, frugality, serenity, and independence can also be learned in town. But they are nowhere better taught than in encounter with nature.²¹

I would add that naturalizing makes it more likely that our time in nature will help us develop such virtues. Heading out into the forest in an ORV, tearing across streams and crushing small trees, is preparation for arrogance, not humility. Hard training for a marathon on forest paths helps develop physical virtue, but not the intellectual or aesthetic virtues nature study fosters.

Of course, naturalists' activities themselves can go astray or fail to provide their full benefits. Rachel Carson warned that "it is possible to compile extensive lists of creatures seen and identified without ever once having caught a breathtaking glimpse of the wonder of life."²² A concern to have the newest, fanciest gear has taken many a birdwatcher away from simplicity and frugality! As with hunting's "sportsman's code," a "naturalist's code" might help prevent these failures and perversions. Official birders' codes of conduct typically include restraints on badgering wildlife and trespassing on private lands. They don't yet condemn wasting money on unnecessary gear or driving hundreds of miles for a quick glimpse of a "life bird." Perhaps they should. Birdwatchers know better than most the toll that excessive energy consumption takes on wildlife. By building temperance and restraint into their own codes of conduct they could further the values they believe

in and act with greater integrity.

Some moral virtues, like temperance, are particularly important for a strong environmental ethics. Care or respect for non-human beings is one key environmental virtue that natural history study strongly promotes. We see this, for example, in Erazim Kohak's descriptions of the squirrels playing around his house "beyond the powerline" in rural New Hampshire.²³ Kohak's phenomenological approach shows particularly clearly the transition from the naturalist's attentiveness to a recognition of non-human intrinsic value. Reading naturalists, it is striking how often they refer to the *personhood* of what they are seeing (sometimes apologetically, if they have scientific pretensions). Kohak calls his squirrels "furry people." After describing the play of Antarctic penguins in great detail, G. Murray Levick writes:

*So extraordinary was this whole scene, that on first witnessing it we were overcome with astonishment, and it seemed to us almost impossible that the little creatures, whose antics we were watching, were actually birds and not human beings.*²⁴

Even when naturalists do not find personhood in their subjects, they usually find beauty and interest and value. Arguments for non-human intrinsic value are central to environmental ethics, but we must remember that arguments will only get us so far. Much of the work to promote a strong environmental ethics must be done by *feelings* and *habits* of attentiveness and care toward non-humans. Natural history study is one of the best ways to foster this.

Of course, we can combine natural history study with gardening, hunting, owning pets, and other pursuits that keep us close to the earth. The more such activities, the better, in terms of a full, rich, character-building relationship to nature. But natural history study provides training in another key environmental virtue that the others do not: *leaving things alone*. The sportsman's code prohibits wasting meat from the animals killed, the organic gardener's ethics proscribe unsustainable or wasteful practices. These are necessary lessons and these activities habituate them wonderfully. But gardening and hunting cannot fully teach restraint in our engagement with nature, for obvious reasons. The naturalist knows nature on its own terms. His goal is to see and understand animals and plants without disturbing, changing, taming, or otherwise constraining them. In an ever more crowded, manipulative, human-dominated world, restraint is an absolutely crucial environmental virtue. Without restraint, we lose wild nature, and environmentalism becomes just another movement to

make the world a little safer for humanity. The best way to habituate this is to study and appreciate wild nature *as is*.

If we do so, we will also find ourselves strengthened for the many environmental battles to come. Courage and persistence in the face of long odds are further, necessary environmental virtues. No one better exemplified them than Rachel Carson, who finished *Silent Spring* racing the cancer that she knew would shortly end her life. Carson's efforts to synthesize a mountain of scientific work and write a book that was both accurate and compelling, in the face of family tragedy, failing health, and despicable slanders by chemical and agribusiness flunkies, provided one of the heroic stories in conservation history. How did she persevere? In a letter to a friend, she wrote:

*I have had the privilege of receiving many letters from people who, like myself, have been steadied and reassured by contemplating the long history of the earth and sea, and the deeper meanings of the world of nature. In contemplating "the exceeding beauty of the earth" these people have found calmness and courage.*²⁵

III. Non-Anthropocentrism and Wisdom

William Beebe, director of the department of tropical research at the New York Zoological Society and one of the premier scientific naturalists of his generation, recounted the following story about his friend, the twenty-sixth president of the United States:

After an evening of talk, perhaps about the fringes of knowledge, or some new possibility of climbing inside the minds and senses of animals, we would go out on the lawn, where we took turns at an amusing little astronomical rite. We searched until we found, with or without glasses, the faint, heavenly spot of light-mist beyond the lower left-hand corner of the Great Square of Pegasus, when one or the other of us would then recite:

*That is the Spiral Galaxy in Andromeda.
It is as large as our Milky Way.
It is one of a hundred million galaxies.
It is 750,000 light-years away.
It consists of one hundred billion
suns, each larger than our sun.*

After an interval Colonel Roosevelt would grin at me and say: "Now I think we are small enough! Let's go to bed." We must have repeated this salutary ceremony forty or fifty times in the course of years, and it never palled.²⁶

TR wasn't uninterested in human affairs, of course. But he saw a value in taking the larger view – because it was truer, and because it punctured human pretensions.

Anthropocentrism isn't just a faulty value system, but also a faulty way of understanding the world. Modern science has shown this, displacing human beings from the center of the universe, opening up immense vistas of space and time, telling a story of life in which chance, not destiny, has raised an unusual primate to dominance for a short time on a tiny planet in one insignificant corner of the universe. We know this, of course. But our daily experience tends to contradict it, as we walk through landscapes of artifacts which reflect back our own purposes. Our natural self-centeredness and the places we live in conspire to keep us anchored in a foolish anthropocentrism.

Traditionally, wisdom is the crown of the virtues. John Kekes defines wisdom as "a form of understanding that unites a reflective attitude and practical concern," aiming "to understand the fundamental nature of reality and its significance for living a good life."²⁷ Wisdom involves knowledge of what is most important in life, but *mere* knowledge is not wisdom, which includes living a life in accordance with this knowledge. Conceptions of wisdom vary, yet on most accounts wisdom involves placing ourselves in proper perspective, knowing our opportunities and limits, and appreciating the larger world we inhabit.

Natural history study helps us accomplish this. It's quotidian joys-identifying a new flower, hearing the first returning spring warbler – teach us to appreciate the commonplace. At the same time, it widens our horizons and reveals the immense diversity of life. Perhaps most important studying nature helps us see ourselves in deep, evolutionary time in a world that does not revolve around us. In all these ways naturalizing defeats anthropocentrism – a key impediment to wisdom.

There is no such thing as a wise man or woman whose wisdom is limited to human affairs. As Thomas Henry Huxley remarked in "a short lecture delivered to the working men of Norwich" in 1868, such people are ignorant of almost all recorded history. They cannot put human beings in proper perspective. "I weigh my words well," Huxley wrote:

when I assert, that the man who should know the true history of the bit of chalk which every carpenter carries about in his breeches-pocket [the history of the life fossilized within it], though ignorant of all other history, is likely, if he will think his knowledge out to its ultimate results, to have a truer, and therefore a better, conception of this wonderful universe, and of man's relation to it, than the most learned student who is deep-read in the records of humanity and ignorant of those of Nature.²⁸

So non-anthropocentrism is both an ethical position and an intellectual task, and the latter demands as much from us as the former. In particular, it demands repeated attention to the non-human world: the setting aside of our own works and a concentration on nature's. If such non-anthropocentrism is part of wisdom, it is also a key goal of most naturalists.

For example, the attempt to transcend anthropocentrism is a key theme throughout Rachel Carson's natural history works. In an author's questionnaire submitted to the marketing division of Simon & Schuster, publisher of her earliest book, *Under the Sea-Wind*, she wrote:

I believe that most popular books about the ocean are written from the viewpoint of a human observer and record his impressions and interpretations of what he saw. I was determined to avoid this human bias as much as possible . . . I decided that the author as a person or a human observer should never enter the story, but that it should be told as a simple narrative of the lives of certain animals of the sea. As far as possible, I wanted my readers to feel that they were, for a time, actually living the lives of sea creatures.²⁹

Carson goes on to describe her efforts to imagine for herself, and recreate for her audience, the world as experienced by sandpipers, crabs, mackerels and eels. In this difficult attempt, Carson worked back from what she knew of each animal's natural history, to try to imagine how it might perceive its environment and its varied interactions with other creatures. Her imagination took her beyond a focus on individual animals to the larger forces which shape their lives. "I very soon realized," she continued:

that the central character of the book was the ocean itself. The smell of the sea's edge, the feeling of vast movements of water, the

sound of waves, crept into every page, and over all was the ocean as the force dominating all its creatures.

How to make the ocean a character without inappropriate personification thus became a delicate task. Like other serious interpreters of nature, she struggled to avoid bogus personification and the pathetic fallacy, on the one hand, and an unjustified reductionism and simplification of nature's complexity, on the other.³⁰

Carson connected non-anthropocentrism to humility, which she recognized as a key environmental virtue. In her next book, *The Sea Around Us*, Carson pictures the astonishing variety and strangeness of marine life, and works to instill a sense of the vast, titanic forces which have created it over geologic time scales. She repeatedly invokes the ocean's radical non-humanity, asking readers to imagine underwater "tides so vast they are invisible and uncomprehended by the senses of man," or lights traveling over the water "that flash and fade away, lights that come and go for reasons meaningless to man," though "man, in his vanity, subconsciously attributes a human origin" to them.³¹ This ocean wilderness teaches humility and wisdom, she believes, for modern man:

*in the artificial world of his cities and towns . . . often forgets the true nature of his planet and the long vistas of its history, in which the existence of the race of men has occupied a mere moment of time.*³²

The wildness and radical otherness of nature should be known, imagined, experienced – on pain of ignorance and arrogance. Achieving such a perspective involves both knowledge and imagination. From such a perspective, non-anthropocentric value judgments will tend to follow.

Non-anthropocentrism is triumphant in science and ascendant, we hope, in ethics. However, non-anthropocentrism still needs to be incorporated into our lives at the practical level. One part of living non-anthropocentrically is to reform our actions so that they no longer harm the environment. But another part is to explore and enjoy that environment through the study of natural history. To do this, of course, we need to preserve wild nature. Not just for the sake of wild organisms and places themselves – although that is reason enough. We also need to preserve these places for ourselves, to enjoy nature and to grow wise with the seasons. Losing this natural connection cuts us off from much of our history, when our ancestors lived in a much wilder world. It obscures whole worlds of diversity, with an infinity of beauty and

interest. Most important it makes us less wise, because more solipsistic and self-involved. As Thoreau put it in the conclusion to *Walden*:

*Our village life would stagnate if it were not for the unexplored forests and meadows which surround it. We need the tonic of wildness, – to wade sometimes in marshes where the bittern and the meadow-hen lurk, and hear the booming of snipe; to smell the whispering sedge where only some wilder and more solitary fowl builds her nest, and the mink crawls with its belly close to the ground . . . We must be refreshed by the sight of inexhaustible vigor, vast and Titanic features, the sea-coast with its wrecks, the wilderness with its living and its decaying trees, the thunder cloud, and the rain which lasts three weeks and produces freshets. We need to witness our own limits transgressed, and some life pasturing freely where we never wander.*³³

None of this is simply a matter of knowledge, however. It is a matter of habitually attending to the nonhuman world. Putting the knowledge and the habits together into a non-anthropocentric life and worldview is not only possible, but highly desirable.

IV. The Really Good Life

Virtue ethics is about living the good life; as many scholars have noted, human excellence and human flourishing are complementary concepts. A large part of the "virtue ethics revival" of the past twenty-five years has involved rehabilitating self-interest as a legitimate part of ethics. Not that virtue ethicists believe we should act selfishly, or ignore our legitimate duties toward others. Rather, they believe that part of ethics involves specifying intelligent accounts of human happiness and flourishing, and discussing how we can achieve them, as individuals and societies. In other words, virtue ethics works to specify our *enlightened* self-interest.

As I have argued elsewhere, I believe a better understanding of our enlightened self-interest would do as much to further environmental protection as the acknowledgment of nature's intrinsic value.³⁴ Both, if taken to heart, would lead us to reduce much needless consumption and careless harm to the natural world. For environmentalism to work, environmentalists need to offer positive alternatives to the gross consumption and trivial pleasures offered by our destructive modern economy.

The great naturalists suggest one alternative: the exploration, understanding and appreciation of nature. From Thoreau onward, they have echoed the ancient philosophical belief that the pursuit of knowledge is a nobler goal than the pursuit of wealth or physical pleasure. They have also argued, and demonstrated in their own lives, that a rich experience is key to living a good life, and that attentiveness and wonder are more important than money in enriching our lives. As Aldo Leopold put it:

*To promote perception is the only truly creative part of recreational engineering. This fact is important, and its potential power for bettering "the good life" only dimly understood.*³⁵

I venture to say that Americans are even farther away from understanding this than they were fifty years ago, when *A Sand County Almanac* was first published.

A main reason environmentalism has stalled in the United States is that we are in the grip of ignoble and false conceptions of happiness. We need appealing alternatives. Rachel Carson diagnosed the situation this way, in a speech accepting the John Burroughs Award for excellence in nature writing:

*I myself am convinced that there has never been a greater need than there is today for the reporter and interpreter of the natural world. Mankind has gone very far into an artificial world of his own creation. He has sought to insulate himself, in his cities of steel and concrete, from the realities of earth and water and the growing seed. Intoxicated with a sense of his own power, he seems to be going farther and farther into experiments for the destruction of himself and his world. There is certainly no single remedy for this condition and I am offering no panacea. But it seems reasonable to believe – and I do believe – that the more clearly we can focus our attention on the wonders and realities of the universe about us the less taste we shall have for the destruction of our race.*³⁶

With Carson, I can think of no alternative to our current destructive ways superior to a physical and intellectual engagement with the natural world. Instead of consumers, let us be appreciators. Instead of possessors, let us be content to explore and enjoy nature, and pass it on to the next generation unimpaired. Properly understood, this is no sacrifice.

It feels better and *is* better—even from a “selfish” point of view.

Re-reading *Silent Spring* reminds us of three further points in favor of natural history study. First, it was not sophisticated postmodern deconstructionists but naive realist birdwatchers who provided much of the evidence about the dangers of pesticides that Rachel Carson laid before the public. Again and again in the following years, naturalists have been in the front lines warning of environmental dangers and working to protect nature.³⁷

Second, Carson reminds us of how easy it is for people to destroy wild things when they do not even know they exist.³⁸ We won't protect what we don't care about, and we cannot care about what we do not know. Abstract arguments are ineffective, absent strong emotional bonds to a place or a species in danger. *With* such bonds, people will often rally to nature's side.

Third, Carson's experience reminds us that environmental advocacy is grueling and often heartbreaking work. “Burnout” is a perennial problem. To combat it, environmentalists must periodically put aside their environmental impact statements, cancel their meetings, and high-tail it out into nature. Without these regular reminders of the point of it all, few environmentalists can stay active and effective over the long haul.

The upshot is that knowledge, care and enjoyment of nature are all necessary for effective environmental advocacy and protection. As we have already seen, such knowledge, care and enjoyment define the naturalist.

A final point. This essay has appealed to readers' enlightened self-interest, in line with an environmental virtue ethics. However, natural history study also supports more conventional, altruistic approaches to environmental ethics. We should remember that it was philosophically-inclined naturalists who made some of the first and strongest arguments for nature's intrinsic value.

Aldo Leopold is seen by many as the father of environmental ethics, based on his essay “The Land Ethic.” But this famous piece comes late, in a section called “The Upshot,” in a book largely devoted to natural history. Would Leopold have written the essay without his experiences as a naturalist? Would the essay be as convincing without the rest of the book as corroboration? I believe the answer is “no” in both cases.

Many historians date the modern environmental movement to publication of Rachel Carson's *Silent Spring* in 1962. Here again, this is clearly the work of a naturalist. Carson would not have bothered to write the book if she had not cared

deeply about the natural world. She would not have had the necessary expertise without a lifetime of studying nature, or the potential audience without having written three best-selling works of natural history. There would not have been nearly as much evidence concerning the harmful effects of DDT and other chemicals if naturalists had not gathered information about the harms caused to their favorite places and organisms – as the footnotes to Silent Spring confirm.

No contemporary philosopher has done more than Holmes Rolston to argue for nature's intrinsic value or to establish environmental ethics as an important discipline. Rolston published his first article on environmental ethics in 1975. But he first mentions non-human "inherent worth" much earlier, in 1968, in a natural history article for *Virginia Wildlife*:

Never was I quite convinced of spring until I sighted, inevitably in March, two of our county's humblest weeds and most ambitious harbingers of spring. In the pasture across from where for years I lived, March belongs to the tiny Whitlow-grass, Draba verna, and to the Bitter Cress, Cardamine hirsuta. Crowded out of the best of the spring by larger plants and grasses, they flourish earlier, doing nobody any good except themselves and me, flourishing in their diminutive way for their own inherent worth in the March wind and sun, and reminding me year after year that spring simply could not be gainsaid.³⁹

Just as Rolston's philosophical contributions to environmental ethics probably wouldn't have come about without his experiences as a naturalist, I doubt whether his arguments – or the many similar arguments refined by others over the years – can convince people who have not had similar experiences. For when all is said and done, people who know the non-human world tend to value it. People who don't, don't.

I do not point this out in order to undermine arguments for nature's intrinsic value, or to suggest that they represent mere special pleading. But I think this preponderance of naturalists in the forefront of environmental ethics suggests the need to supplement intrinsic value arguments. First, they must be supplemented by experience out in nature, if they are to convince the doubtful. Second, they must be supplemented by appeals to our enlightened self-interest. These appeals will show that in many cases, respecting nature's interests does not entail any sacrifice of our own interests, but instead furthers

them. By doing right by nature, we can become better and happier people.

Notes

1. John Hildebidle, *Thoreau: A Naturalist's Liberty* (Boston: Harvard University Press, 1983), 19-20; 30.

2. William Beebe, *The Book of Naturalists* (New York: Alfred A. Knopf, 1944), 87.

3. Hildebidle, *Thoreau*, 58.

4. Modern biology has also moved the laboratory outdoors, modifying natural areas (often simplifying them) in order to further study. See for example David Simberloff and E. O. Wilson, "Experimental Zoogeography of Islands: Defaunation and Monitoring Techniques," *Ecology* 50 (1969): 267-78, and Thomas Lovejoy et al., "Ecosystem Decay of Amazon Forest Remnants," in Matthew Nitecki (ed.), *Extinction* (Chicago: University of Chicago Press, 1984), 295-325.

5. Hildebidle, *Thoreau*, 59. However, it should be noted that other naturalists transform themselves into scientists, while continuing to cherish particular places and working to protect them. One example is E. O. Wilson, who titled his recent autobiography *Naturalist*. The book describes Wilson's early interest in nature as a boy roaming the forests and swamps of his native Alabama and Florida, and shows this interest developing into a distinguished career in science and conservation. Many other examples could be given. We need not set up a rigid dichotomy between the scientist and the naturalist, then. But changing usage of the term 'naturalist' suggests that the *typical* naturalist must be defined with reference to those who know less about nature than he does (most of us) and those who know more (scientists).

6. For similar definitions of 'virtue' see Christine McKinnon, *Character, Virtue Theories, and Vices* (Peterborough, Ontario: Broadview Press), 26; and Rosalind Hursthouse, "Virtue Theory and Abortion," *Philosophy and Public Affairs* 20 (1991): 226.

7. For an excellent discussion of intellectual virtue see Linda Zagzebski, *Virtues of Mind: An Inquiry into the Nature of Virtue and the Ethical Foundations of Knowledge* (Cambridge: Cambridge University Press, 1996). Among the intellectual virtues Zagzebski praises are open-mindedness, care, thorough evaluation of evidence, courage, the ability to recognize and rely on good authorities (95),

insightfulness, explanatory ability (109), the ability to recognize salient facts, sensitivity to detail, fairness in evaluating the arguments of others, humility, perseverance, diligence, thoroughness, adaptability of intellect, insight into persons and problems and theories, candor, communication abilities (114), originality, creativity, and inventiveness (125). She marks as intellectual vices pride, negligence, idleness, cowardice, conformity, carelessness, rigidity, prejudice, wishful thinking, closed-mindedness, insensitivity to detail, obtuseness, and lack of thoroughness.

8. My account is not just an account of "the naturalist's virtues," it is in also a *naturalistic* account of virtue. To understand virtue I look to actual human lives and try to understand what makes things go well within them. This marks an essential disagreement with a philosopher like Kant, who looks for a transcendental foundation for virtue judgments (as well as with the transcendentalism of religious virtue accounts which assert that virtue will set us up well in the next world). I believe Kant mischaracterizes human beings as essentially members of an intelligible, moral realm. On the contrary, we are intellectual, social and physical members of actual communities here in *this* world. Any excellence we exhibit is excellence in this world, and can only be understood in relation to our successes and failures within it. Rather than chasing transcendental will-o-the-wisps, some "something more" which will prove the genuineness of virtue or the truth of particular virtue judgments, I believe virtue ethics needs more comprehensive and detailed accounts of actual human lives. Such accounts will go far to specify particular virtues and explain why they are virtues. Along with a basic commitment to live life and a sincere belief in life's goodness, such accounts are all we need to motivate the pursuit of virtue.

9. Aldo Leopold, *A Sand County Almanac with Essays on Conservation from Round River* (New York: Ballantine Books, 1970), 170-171.

10. Rachel Carson, *The Sense of Wonder* (New York: Harper and Row, 1965), 42-43.

11. Henry Thoreau, *Walden* (Princeton: Princeton University Press, 1989), 125.

12. Leopold, *Almanac*, 28.

13. Rachel Carson, *The Edge of the Sea* (New York: Signet 1955), 215.

14. Nabokov was a skilled lepidopterist, who discovered many new species. See Vladimir Nabokov, *Nabokov's Butterflies: Unpublished and Uncollected Writings* (Boston: Beacon Press, 2000).

15. Annie Dillard, *Pilgrim at Tinker Creek* (New York: Harper and Row, 1974), 52.

16. Holmes Rolston III, "The Pasqueflower," *Natural History* 88 #4 (April, 1979): 14.

17. Theodore Roosevelt, *Through the Brazilian Wilderness* (New York: Cooper Square Press, 2000), 118.

18. John Muir, *Travels in Alaska*, in John Muir, *The Eight Wilderness-Discovery Books* (London: Diadem Books, 1992), 806-807.

19. *Ibid.*, 771-772.

20. Roosevelt, *Wilderness*, 328.

21. Holmes Rolston III, "Human Values and Natural Systems," *Society and Natural Resources* 1 (1988): 277.

22. Carol Gartner, *Rachel Carson* (New York: Frederick Ungar, 1983), 118.

23. Erazim Kohak, *The Embers and the Stars* (Chicago: University of Chicago Press, 1984).

24. G. Murray Levick, "Penguins," in Beebe, *Naturalists*, 274-275.

25. Paul Brooks, *The House of Life: Rachel Carson at Work* (Boston: Houghton Mifflin, 1972), 325-326. See also Aldo Leopold, *Almanac*, 93.

26. Beebe, *Naturalists*, 234.

27. Beebe, *Naturalists*, 234.

28. T.H. Huxley, "On a Piece of Chalk," in Beebe, *Naturalists*, 134; see also 148.

29. Rachel Carson, *Lost Woods: The Discovered Writing of Rachel Carson* (Boston: Beacon Press, 1998), 55-56.

30. Gartner, 1983, pp. 35-36; Lear, 1997, 90-91. For another masterful attempt to toe this line, see "The Ponds," the central chapter in Thoreau's *Walden*.

31. Rachel Carson, *The Sea Around Us* (New York: Signet, 1961), 106, 45.
32. *Ibid.*, 29-30. For further discussion see Philip Cafaro, "Rachel Carson's Environmental Ethics," *Worldviews: Environment, Culture, Religion* 6 (2002): in press.
33. Thoreau, *Walden*, 317-8.
34. Philip Cafaro, "Thoreau, Leopold, and Carson: Toward an Environmental Virtue Ethics," *Environmental Ethics*: 23 (2001): 3-17; Philip Cafaro, "Less is More: Economic Consumption and the Good Life," *Philosophy Today* 42 (1998): 26-39.
35. Leopold, *Almanac*, 290-291; see also 180-181.
36. Carson, *Lost Woods*, 94.
37. For further discussion of the role of amateur naturalists in preserving biodiversity, see "Citizen Science: Looking to Protect Nature," a special issue of *Wild Earth* 11 #3/4 (Fall/Winter 2001-2002): 10-49.
38. Carson, *Silent Spring*, 110-115, 118. I am grateful to my friend (and expert naturalist) Jerry Freilich for reminding me more than once of this important point.
39. Holmes Rolston III, "Mystery and Majesty in Washington County," *Virginia Wildlife* 29 #11 (November, 1968): 7.