Vital Reenchantments: Biophilia, Gaia, Cosmos, and the Affectively Ecological

Lauren Greyson

Published by Punctum Books

Lauren Greyson.

For additional information about this book
https://muse.jhu.edu/book/66821

For content related to this chapter
https://muse.jhu.edu/related_content?type=book&id=2333207
Decades after its initial articulation by E.O. Wilson, biophilia’s heritage is a divided one. On the one hand, it survives as an evolutionarily driven hypothesis circulating in the fields of architecture and design, diagnosing (and offering a cure for) most modern ills. “Evolution has made us predisposed to want and need nature,” it is claimed in a series entitled “How Biophilia Can Improve Our Lives” on the popular environmental blog Treehugger. The article continues, “The jump to high-rises, concrete and curtain walls could be the cause of most disorders present in society today. As a species, we are unaccustomed to these

new non-biological environments.”² This strain of biophilia re-sembles, in suspicious ways, the theories of disenchantment that trace nearly every conceivable ill plaguing the individual and society to the nomad’s fall from grace and the rise of civilization.

The other biophilic strain is more tenuous, less reductive, and focuses on the depth and breadth of human affiliation to life and the lifelike, rather than, for instance, how forest bathing prevents cancer.³ One might point here to the biophilia of the Icelandic artist Björk, who released an album entitled “Biophilia,” inspired by Wilson’s work, in 2011.⁴ More than an album, “Biophilia” was an experimental, multimedia extravaganza, requiring programmers to cooperate with musicians and artists in order to release not only the songs themselves but also interactive material to accompany them. Scientists also cooperated with instrument-makers in order to produce the most distinctive sounds on the album, rigging, in the case of “Thunderbolt,” a Tesla coil so that it functioned as a baseline. Björk’s biophilia explores Nature writ large — not as a design concept, but as a set of potentials and enactments, affects and precepts.

That Björk’s biophilia is more than the insistence that we were made to saunter through the savannahs and stare up at the intricate leafy patterns of trees is evident throughout the album, but the song “Crystalline” illustrates this particularly well. The song’s first verse and chorus also provide an especially good launching point for this chapter:

*Underneath our feet
Crystals grow like plants
(Listen how they grow)
I’m blinded by the lights
(Listen how they grow)
In the core of the earth*

² Ibid.
(Listen how they grow)
Crystalline
Internal Nebula
(Crystalline)
Rocks growing slow-mo
(Crystalline)
I conquer claustrophobia
(Crystalline)
And demand the light

This is a biophilia that is unmistakably affective, a symphony of images that blend into light that blend into sound. “Crystalline” points to what I will later, in the analysis of Wilson’s biophilia, call the “infinite unseen”: the sense of there always being something growing (and dissolving) beneath, above, everywhere around us, even if that something is not strictly alive. “The infinite unseen” is the richness and complexity of life that surrounds one at any given time, of which one can only perceive a minute fraction. Moreover, underscored by the otherworldly sounds of the sharpsicord (a harp nestled in a giant music box), Björk, like Wilson, works to defamiliarize the supposedly natural. Apparently mundane or familiar phenomena, in this way, acquire novelty and singularity. When Wilson does pluck one organism from the unfathomably deep well of life for examination, he casts the group as “aliens among us,” as fundamentally different life forms, with fundamentally different Umwelten or even haecceities in their own right. Finally, “Crystalline” calls attention to the various scales at which processes unfold and bodies live. Rocks grow “slow-mo” here, and yet one is asked repeatedly to “listen how they grow.” “I conquer claustrophobia” might well refer to the effort required to affiliate with things that occupy cramped spaces underground. On a more profound level, however, to be discussed in greater detail in “Scale and the Readerly Umwelt,” this conquering of claustrophobia echoes the expansion of the readerly Umwelt occasioned by wonder.

It is important to state that, although both Björk’s biophilia and the evolutionarily charged Treehugger variety can be found
in Wilson’s own text, this chapter is all about the former. The latter, as will become clear in the following sections, drains biophilia of its richer, affective dimensions, and, along with it, presents a reductive vision of the human. The first section here, in addition to defining biophilia, thus also critically examines its evolutionary basis, arguing it functions much better as a label for affiliation with the nonhuman than as a hypothesis in evolutionary biology. It proposes a definition of biophilia that operates more explicitly on affective terms. The bulk of the chapter, however, revolves around wonder as a theme and strategy in *Biophilia*. This is the terrain alluded to above, where the affective biophilic strain, which “Crystalline” picks up on so well, becomes apparent. “The infinite unseen,” examining references to the intricacy and infinity of experience in the nonhuman world, “The aliens among us,” looking at wonder occasioned by particularity, and “Scale and the readerly Umwelt,” investigating Wilson’s inventive interfacing with the reader, are all attempts to “tease out” this affective biophilia from the text. The last section of this chapter turns to praxis, complicating Wilson’s own conservationism with a look at Project Isabela, an ecosystem restoration project implemented in the Galapagos Islands. Despite the effort in *Biophilia* to escape anthropocentric approaches to wildernesses and other creatures, I argue that the work’s plea, at the end especially, to preserve environments in order to preserve human wonder, forms one of the most anthropocentric conservation ethics of all.

### 3.2 Biophilia and Its Discontents

*Biophilia*, penned by the famed myrmecologist E.O. Wilson, has spawned a word and an idea that has, since 1984, gained ever more circulation, if not traction. The book and its eponymous coinage has had a deep and lasting influence in ecological

---

circles. More recently, biophilia has been taken up by the fields of architecture and design, as well as the evolutionary psychological fields to which the previous section alluded. That the concept of biophilia has survived to at least the first decade of the twenty-first century is evident not only in Björk’s adoption of it in her 2011 album and its continued circulation in the blogosphere but also in the 2009 establishment of the E.O. Wilson Biophilia Center, located in Florida’s Longleaf Pine ecosystem, for which Wilson has long been an advocate.

It is unsurprising that Wilson is the originator of the term. Although trained as an entomologist and recognized by the end of the 1960s as the world authority on ants, he was also one of the early systems ecologists, coining the wildly successful term “biodiversity” in a 1988 edited volume. Wilson began to write books intended for popular audiences in 1975, with the highly controversial *Sociobiology: The New Synthesis*. It was here that he first dared to write about the biological basis of human behavior, taking this up again in *On Human Nature* (1978), for which he also won the Pulitzer Prize. In the course of the next two decades, he would write seven more books for popular audiences, including *Biophilia*, winning another Pulitzer along the way. Continuing to produce best-sellers, he was and continues

---


to be a key figure in the conservation movement, serving as the director of the American Museum of Natural History, Conservation International, The Nature Conservancy, and the World Wildlife Fund.\footnote{Academy of Achievement, “E.O. Wilson Biography,” 2013, http://www.achievement.org/achiever/edward-o-wilson-ph-d/} He is, in short, as popular as scientists get, and also an important figure in environmental circles.

Although reference will be made to some of Wilson’s other works, I focus on \textit{Biophilia} here not only because of the concept it advances but also because it is, I would argue, the least sociobiologically driven of Wilson’s books. One may, as I will suggest here, dispense with the “innate” part of its definition altogether, and still retain an incredibly vibrant concept. More than that, the concept becomes far more dynamic when unleashed from the confines of the sociobiologically innate.

\textit{Biophilia} has never lent itself particularly well to exacting definitions. The original 1984 articulation\footnote{It should be noted here that Erich Fromm was the first to use the word “biophilia,” although he did not explore it at length. See Erich Fromm, \textit{The Anatomy of Human Destructiveness} (1971; rpt. New York: Holt and Company, 1992).} cast it as “the innate tendency to focus on life and lifelike processes.”\footnote{Wilson, \textit{Biophilia}, 1.} Later, in the ’90s, it became “the innately emotional affiliation of human beings to other living organisms.”\footnote{E.O. Wilson, “Biophilia and the Conservation Ethic,” in \textit{The Biophilia Hypothesis}, eds. Wilson and Kellert, 31–41, at 31.} This phrasing, especially considering Wilson’s background as a biologist, lacks a certain amount of theoretical rigor, although, as deep ecologist Arne Naess reminds us, “Being more precise does not necessarily create something that is more inspiring.”\footnote{Arne Naess, \textit{Ecology, Community, and Lifestyle: Outline of an Ecosophy}, trans. David Rothenberg (New York: Cambridge University Press, 1989), 8.} Indeed, the natural scientists who have acted as proponents of the term, among them Lynn Margulis and Dorion Sagan, have largely abandoned the attempt to express it in more precise or reductive terms — in other words, in the language of modern science. Sagan and Margulis readily admit that “biophilia and biodiversity are scientifi-
biophilia — cally sanctioned catchwords calling for us to attend seriously to nature and our responses to nature — forms of attention already more fully developed in traditions less nomadic and technologically expansive than those of the west.”16 The words “catchwords calling for us to attend to” should already give us some inkling that biophilia, rather than constituting a reductive description of human behavior and a testable hypothesis, is much more a loose ecosophical concept and a vision for a richer engagement with the nonhuman. It is also, as we shall see, intimately entangled with a vision of an enchanted science that is capable of multiplying, rather than reducing, the number of ways we can relate to the world. *Biophilia* itself contains so many highly impressionistic anecdotes about Wilson’s experience in the field that it defies attempts to categorize it as natural science, philosophy, or memoir. Too meandering and conscientiously subjective to constitute a scientific work, but too inexact to lend a new ecological philosophy firm foundations, it becomes interesting to us here precisely when it is most “pop,” when Wilson attempts to reach out from the field or the page and infect the reader with the urgency of an environment.

With the concept of biophilia, Wilson transforms wonder from a mere accident in life, a kind of aesthetic excess perhaps, into the very stuff from which our spiritual fabric is woven. He says of biophilia: “To an extent still undervalued in philosophy and religion, our existence depends on this propensity, our spirit is woven from it, hope rises on its currents.”17 The wondrous, for Wilson, is not transcendent, but immanent, found in the things growing, chirping, multiplying, and digesting around us, and of utmost importance is the activity of exploration, the pushing of the boundaries of one’s own small *Umwelt*. “The brain is prone to weave the mind from the evidence of life,” Wilson writes, “not merely the minimal contact required to exist, but a luxuri-

---

17 Wilson, *Biophilia*, 1.
ance and excess spilling into virtually everything we do.”18 This “luxuriance and excess,” which Wilson continually attempts to capture, is the affective. This is the realm of the incorporeal material — that which cannot be jotted down in field notes.

One can certainly experience a “naive,” “unmediated” biophilic wonder within Wilson’s framework, but he also makes a case for connecting biophilia to scientific endeavors. He asserts throughout Biophilia that scientific knowledge, for instance his own impressive knowledge of the leafcutter ant, does nothing to undermine wonder and, in fact, may increase it.19 Indeed, Wilson writes, “Humanity is exalted not because we are so far above other living creatures, but because knowing them well elevates the very concept of life.”20 For Wilson, we as a species are not so much defined by peculiarities or our superiorities of physical biology, as much as we are by our curiosity and remarkable attunement to that which is not strictly necessary for survival — in other words, by wonder. Sue Thomas, author of Technobiophilia, emphasizes the “catalytic” aspect of biophilia, which she describes as a “process of attraction, forever renewing itself,” and, in this way, it functions as a particular type of inexhaustible wonder, focused, above all, on life.21

It should be noted that although Wilson claims that the rationalizing of the inexplicable and puzzling can render “it,” whatever “it” may be, more wonderful, his prose is sometimes at odds with this. At the very beginning of the book, when he is speaking of his memories of the tiny village of Bernhardsdorp in Surinam, he says this:

For reasons that were to take me twenty years to understand that moment was fixed with uncommon urgency in my

18 Ibid., 118.
19 Ibid., 10. Nearly twenty years later, Wilson still insists adamantly on this, referring to Faraday’s statement that “nothing in this world is too wonderful to be true.” See E.O. Wilson, The Future of Life (London: Little, Brown, 2002), 16.
20 Wilson, Biophilia, 22.
memory. The emotions I felt were to grow more poignant at each remembrance, and in the end they changed into rational conjectures about matters that had only a distant bearing on the original event.\(^2^2\)

He thus confesses, from the beginning, that he cannot exactly think this “uncommon urgency,” this immediacy. His attempt to do so, twenty years later, is the concept of biophilia, but it is a much less technical concept than he would have perhaps liked, and that is, in large part, because much of what he hopes to capture is a kind of sensation or intensity. This may go some way to explain his recourse to the lightly evolutionarily charged “tendency,” a slippery concept if there ever was one.

There are good reasons for framing biophilia as an ecosophical concept, as I have begun to do here, rather than a scientific hypothesis. The first is its imprecision, which is evident from vocabulary like “emotional affiliation” and “tendency.” The second is that Wilson’s claim that biophilia is innate or instinctive, somehow “coded for” in our genes, remains highly controversial. Yannick Joye and Andreas de Block, in one of the most exhaustive critiques of biophilia, point out that the claim is a very convenient one, insofar as it renders a conservation ethic a natural feature of human life: If we are indeed programmed to care for nature, it is culture, and particularly Western culture, that subverts this. To create a biophilic ethic, we need only unlearn what is, in any case, unnatural behavior.\(^2^3\) This, however, becomes just another incarnation of the extremely suspect figure of the ecologically noble savage.\(^2^4\) Indeed, even if one merely wants to claim that some aesthetic aspects of biophilia are innate, one runs into problems. While it is easy to prove, for in-

\(^2^2\) Wilson, *Biophilia*, 1.


stance, that we pay more attention to lifelike movement,\textsuperscript{25} and that natural landscapes do a better job at alleviating anxiety than artificial ones resembling natural ones,\textsuperscript{26} preference for certain landscapes and creatures does not necessarily align with what is evolutionarily advantageous.\textsuperscript{27} The “innate” part of the definition is thus riddled with problems.

Wilson, in fact, softened his own evolutionary claims for biophilia in 2002’s \textit{The Future of Life}, stating that “[t]he relative indifference to the environment springs, I believe, from deep within human nature.”\textsuperscript{28} Here he points to our ancestors, “a limited band of kinsmen,” emotionally committed “only to a small piece of geography.” He then concludes, “To look neither far ahead or far afield is elementary in a Darwinian sense,” effectively admitting that an instinct to ignore life runs as deep as any to affiliate with and protect it.\textsuperscript{29} Later in the same work, he also writes, “To say that there is an instinct, or more accurately an array of instincts, that can be labeled biophilia is not to imply that the brain is hardwired.” He explains rather that “we are hereditarily \textit{prepared} to learn certain behaviors and \textit{counterprepared} to learn others.”\textsuperscript{30} We may, according to Wilson twenty years later, be innately \textit{prepared} to focus on life and lifelike processes. As one might imagine, distinguishing between a behavior one is prepared to acquire and one that one can acquire is not very easy. For all intents and purposes, it is best to dismiss the evolutionary part of the hypothesis altogether.

Margulis and Sagan, moreover, point to a third and related reason to be suspicious of biophilia as an evolutionary given, emphasizing that it may be just as prevalent as biophobia and

\begin{itemize}
\item \textsuperscript{25} See Gunnar Johansson, “Visual Perception of Biological Motion and a Model for its Analysis,” \textit{Perception & Psychophysics} 14, no. 2 (June 1973): 201–11.
\item \textsuperscript{26} See Roger S. Ulrich, “Visual Landscapes and Psychological Well-Being,” \textit{Landscape Research} 4, no. 1 (March 1979): 17–23.
\item \textsuperscript{27} Joye and de Block, “Nature and I Are Two,” 201.
\item \textsuperscript{28} Wilson, \textit{The Future of Life}, 40.
\item \textsuperscript{29} Ibid.
\item \textsuperscript{30} Ibid., 137.
\end{itemize}
that one may articulate a whole spectrum of responses to life, “varying from disgust (maggots, bacterial infection), care (kittens, puppies), horror (spiders, snakes), awe (tigers), and well-being (magnolia trees, actinobacteria with their woodland scent) to longing or envy (birds in flight).” Biophilia, according to Sagan and Margulis, is only one very particular way of relating to life and the lifelike. They go on to refute Wilson’s claim to biophilia’s uniqueness among humans, stating that both biophobia and biophilia are examples of a “prototaxis that extends throughout not only the animal but also the plant, fungal, protocist, and bacterial kingdoms.” Sagan and Margulis’s critique of the original concept is important because it helps to distance the concept from the facile figure of the “animal lover,” connecting it not only with less sentimentalized kinds of affiliation, but also making clear that this affiliation is far from one-sided or uniquely human. It points, rather, to the importance of complexity in biophilia. It is not the creaturely, necessarily, to which we are drawn, but that which confronts us with reservoirs of affects beyond those that typically constitute our own Umwelten.

And, indeed, despite his sociobiological claims about the concept, Wilson alludes to biophilic attitudes throughout the work in ways that seem as if they are engendered, rather, through techniques of attention. Whether these techniques are innate or learned is beside the point. It is the techniques themselves and what they yield that are of real interest. Wilson, rather than painting the hackneyed picture of scientists as domesticators of wonder, insists that their methods are built upon the same disposition that allows us to experience it in the first place. Thus:

Scientists do not discover in order to know, they know in order to discover. That inversion of purpose is more than just a trait, it is the essence of the matter. Humanists are the shamans of the intellectual tribe, wise men who interpret knowl-

32 Ibid., 357.
edge and transmit the folklore, rituals, and sacred texts. Scientists are the scouts and hunters.\textsuperscript{33}

The emphasis here is on the broadening of the realm of perception, the expansion of the \textit{Umwelt}. As with Uexküll’s scientist, Wilson advances a notion of the scientist (and he urges us all to adopt the traits of these “scouts and hunters”) as acutely aware of the whole host of phenomena which we have not yet or somehow cannot as humans experience, repeating in various forms the following mantra: “So we are drawn to the natural world, aware that it contains structure and complexity and length of history as well, at orders of magnitude greater than anything yet conceived in human imagination.”\textsuperscript{34} As we will see in the following sections, this exploration of wonder, this plea to pursue novel affects in the “wild,” becomes so powerful and persistent that it overshadows the more dubious evolutionary claims. If we go back to our definition of biophilia, then, “innately emotional affiliation” might become something like “affective affiliation,” or perhaps even the openness to nonhuman (and even non-biological) becomings.

The potential of biophilia to operate beyond or at least independent from this narrow evolutionary framework has been recognized by others as well, notably by the literary scholar Dianne Chisholm. In a contribution to the volume \textit{Queer Ecologies}, she elects to speak of Deleuze and Guattari’s “involution,” rather than “evolution” when discussing the concept of biophilia.\textsuperscript{35} In contrast to evolution, “involution” is tied to a becoming that need not be procreative in character and perpetually crosses

\begin{itemize}
\item Wilson, \textit{Biophilia}, 58.
\item Wilson, \textit{The Future of Life}, 146.
\end{itemize}
species lines. “Neither progressive nor regressive,” as with typical framings of evolution, Chisholm writes, “creative involution affects bodies of different kinds with the change of time.”

Instinct becomes of diminished importance when speaking in involutionary terms, while affective elements (which, if we remember the first chapter, always involve a change, a difference between two states), our various modes of affiliating, take center stage.

3.3 The Infinite Unseen

Near the beginning of Biophilia, Wilson describes his experience of the field in Surinam:

I focused on a few centimeters of ground and vegetation. I willed animals to materialize, and they came erratically into view. Metallic-blue mosquitoes floated down from the canopy in search of a bare patch of skin, cockroaches with variegated wings perched butterfly-like on sunlit leaves, black carpenter ants sheathed in recumbent golden hairs filed in haste through moss on a rotting log. I turned my head slightly and all of them vanished. Together they composed only an infinitesimal fraction of the life actually present. The woods were a biological maelstrom of which only the surface could be scanned by the naked eye. Within my circle of vision, millions of unseen organisms died each second. Their destruction was swift and silent; broken apart in clean biochemical chops by predators and scavengers, then assimilated to create millions of new organisms each second.

Much of Wilson’s prose follows this pattern: a turn of the head, a conscious effort to focus on something small, a tiny but lush scene that washes over him and perhaps the reader, then the

---

37 Wilson, Biophilia, 7.
VITAL REENCHANTMENTS

revelation that this is, as Uexküll has it, “only a tiny sector of nature.” Biophilic wonder is not just experienced in the singular (as opposed to the plural, but the sense of wonder itself is always singular in the sense of being unreproducible). One may simply admire the web of the spider, but one may also, even simultaneously, “emotionally affiliate” with the community of life. Wilson gave us at least two good reasons for doing as much, the first of which is the notion that “life is an exceedingly improbable state, open to other systems, thus ephemeral.” Life here is happy accident, and we may wonder at its improbability and our own improbable participation in it, just as we might wonder at the exceeding unlikelihood of a singular friend discovered among the multitudes.

But we may also wonder at life’s intricacy and complexity. Wilson continues: “Despite the fact that living organisms compose a mere ten-billionth part of the mass of the earth, biodiversity is the most information-rich part of the known universe. More organization and complexity exist in a handful of soil than on the surfaces of all the other planets combined.” One may see here one of the first samples of what we introduced in the last chapter as the “affective statistic”: the declaration of a number that, in so many cases, expresses the collision of infinity and singularity. In this case, as in many others, the unfathomable permutations of life are held up against what we can only guess is its scarcity in the vast, vast cosmos. On the surface of a planet that is finite (in the sense that the atmosphere provides a relatively clear demarcation between it and space), so many manifestations of the intricate assemblage we know as life creep and crawl that we will never fully come to terms with them. The affective statistic, time after time, reasserts the inexhaustibility of wonder. Provided life survives in some form or another, it attests to the fact that there will never be a time at which the

40 Wilson, “Biophilia and the Conservation Ethic,” 39.
individual Umwelt cannot expand. On a fertile Earth, at least, there will always be new affects.

This is not to say that experiencing the infinite in this manner is necessarily a wholly positive experience, as we already saw with the passage from Dillard. For instance, Mary-Jane Rubenstein also explores the trauma of the infinite in Strange Wonder, writing, “As trauma, infinity takes place as the discomfiting nonadequation of knowledge and the known; infinity is the thought the thinking self cannot think.” Wilson continually brushes up against the infinite, oftentimes literally, and it is not science, in these cases, that allows him to begin to articulate these encounters with the unthinkably vast community of life. Instead, as with the description of the forest floor, he asks us to imagine what it is like to stand there “affiliating,” and this sometimes means something as abstract as picturing biological order as light.

The tour of Bernhardsdorp, the small village at the edge of the rain forest in Surinam, which is given by Wilson at the beginning of the work, is already highly charged with affect. He inducts us into the energetic view of the rain forest by first introducing us to the decomposers of which he is so fond. “If you close your eyes and lay your hand on a tree trunk almost anywhere in the tropics until you feel something touch it,” he writes, “more times than not the crawler will be an ant.” He continues, “Kick open a rotting log and termites pour out. Drop a crumb of bread on the ground and within minutes ants of one kind or another drag it down a nest hole.” Wilson briefly explains the ants’ role in the process of decomposition, then states the following:

Between them they form the conduit for a large part of the energy flowing through the forest. Sunlight to leaf to caterpillar to ant to anteater to jaguar to maggot to humus to ter-

42 Wilson, Biophilia, 5.
mite to dissipated heat: such are the links that compose the great energy network around Surinam’s villages.43

Here Wilson traces the entire energetic cycle, from solar rays to “waste energy,” the inevitable byproduct of entropic processes. Every preposition, every “to,” in the second sentence implies a profound energetic and material transformation and reorganization, and Wilson reminds us, again and again, although it may be obvious, that this lengthy process is happening all of the time, at all stages. We cannot begin to fathom it in any way one might call complete, but the mere effort at least forces one to become aware of the ceaseless activities of transformation that occur even when we cannot attend to them. This is the original ecological thought44: We are caught in energetic networks no matter what and to an extent that we will never fully be able to comprehend. All this is launched by attending to an ant that scurries across the hand.

Throughout the text, Wilson struggles to find almost extra-linguistic techniques of capturing the infinite complexity of life he finds at Bernhardsdorp. Early on he writes:

At Bernhardsdorp I imagined richness and order as an intensity of light. The woman, child, and peccary turned into incandescent points. Around them the village became a black disk, relatively devoid of life, its artifacts adding next to nothing. The woodland beyond was a luminous bank, sparked here and there by the moving lights of birds, mammals, and larger insects.45

This is energy made perceptible — the virtual, or at least a portion of it, quite literally come to light. Even, and especially in, the dark, which normally so severely constrains the Umwelt,

43 Ibid.
45 Wilson, Biophilia, 6.
Wilson allows himself to be overcome by the intensity of the “richness and order” of the life buzzing and growing and trotting around him. And that this echoes an experience that many readers (at least within certain latitudes) remember from their childhood — seeing fireflies as mysterious and alluring points of light in the summer night — is likely no accident. Wilson calls upon our own reservoirs of wonder in order to supply us with a sense of the ineffability of his own experience.

A similar strategy seems to be at work when Wilson reverts to biological metaphors to explain the manner in which energy flows through the rainforest ecosystem. He explains:

After the sun’s energy is captured by the green plants, it flows through chains of organisms dendritically, like blood spreading from the arteries into networks of microscopic capillaries. It is in such capillaries, in the life cycles of thousands of individual species, that life’s important work is done. Thus nothing in the whole system makes sense until the natural history of the constituent species becomes known. The study of every kind of organism matters, everywhere in the world.46

This is an especially interesting strategy, for it not only allows the reader to vividly imagine solar energy coursing through the ecosystem and the infinitely intricate paths the sun’s energy must take to sustain every part of it; it also positions the ecosystem as a kind of body. This transforms what we would ordinarily refer to as the organism into the organ — the parts are made subordinate to the way in which they relate to one another — in other words, to their affects.

The affective intensity that Wilson finds near Bernhardsdorp, among other places, becomes, for him, a variety of religious experience. In this he places himself in a long line of scientists and naturalists:

46 Ibid., 8.
I savored the cathedral feeling expressed by Darwin in 1832 when he first encountered tropical forest near Rio de Janeiro (“wonder, astonishment & sublime devotion, fill & elevate the mind”). And once again I could hold still for long intervals to study a few centimeters of tree trunk or ground, finding some new organism at each shift of focus. The intervals of total silence, often prolonged, became evidence of the intensity of the enveloping life.\(^{47}\)

For Wilson, it is when he is farthest from the realm of human affects, in “intervals of total silence,” that he experiences wonder. A conscious effort draws him into this state, certainly, but it is also quite literally punctuated by moments that shake him. He continues in the same paragraph:

> Several times a day I heard what may be the most distinctive sound of the primary tropical forest: a sharp *crack* like a rifle shot, followed by a whoosh and a solid thump. Somewhere a large tree, weakened by age and rot and top heavy from layers of vines, has chosen that moment to fall and end decades or centuries of life. The process is random and continuous, a sprinkling of events through the undisturbed portion of the forest.\(^{48}\)

These spectacular moments of decay are, for Wilson, equally wonderful. And while this may partially be due to the fact that the toppling of the trees presents so many possibilities for his precious ants, it is also a more elemental matter of a sensation

---

\(^{47}\) Ibid., 27. Note that although Wilson borrows the language of the sublime from Muir (directly, in fact), what Wilson describes here is actually a much different phenomenon. While both Burke and Kant refer continuously to the role of the object in sublime experience, in the constellations Wilson (and Sagan) describe and conjure up, there is no object to be isolated. Nor is it as if the ecosystem in its entirety comes to replace the sublime object; Wilson never has any illusion of not being caught up in the intensity of enveloping life.

\(^{48}\) Ibid.
that draws one involuntarily into the unthinkably old and varied processes of life and death. The crack of the tree is both a fissure in Wilson’s contemplations and the beginning of them. As Rubenstein writes, continuing her discussion of wonder and trauma, “This astonishment interrupts the project of thinking, cores out the self, and redirects it to the other.”49 The next section concerns itself with what comes of that redirection.

3.4 The Aliens Among Us

Wilson’s project, despite his insistence on energetic indiscreetness, never attempts to homogenize the radically individual actors in the biological kingdom. He refuses to stay at the level of the (incomprehensible) system, dipping again and again into individual Umwelten, all the while staunchly refusing at least more obvious kinds of anthropomorphizing.

Indeed, in stark contrast to other ecosophical traditions, there is no comfort to be found in Wilson’s jungle — it is too strange. He writes:

I was a transient of no consequence in this familiar yet deeply alien world that I had come to love. The uncounted products of evolution were gathered there for purposes having nothing to do with me; their long Cenozoic history was enciphered into a genetic code I could not understand.50

Wilson is fundamentally a creature out of place in the jungle. And yet it is the very alienness of the world that attracts him. He is confronted, all at once, with a mass of creatures whose af-

49 Rubenstein, Strange Wonder, 67. Despite Rubenstein’s use of “the other” in this quote, this work will largely attempt to avoid reference to it. This has as an ecological, as well as an affective-theoretical rationale; material and energetic, as well as virtual and affective, indiscreetness demands the use of other vocabulary.

50 Wilson, Biophilia, 7.
fектs seem so very different from his own. And unlike with the nineteenth-century naturalist,⁵¹ “nature” here is no drama that unfolds for him, but a tight knot of affects that enfold him. Thus, although the world is alien, he cannot be said to be alienated from it. In fact, he admits to loving it for its strangeness, insisting, “Every species is a magic well.”⁵²

The radical difference between these organisms is what he seeks, for this entails confrontation with ever-new Umwelten. He admits: “I opened logs and twigs like presents on Christmas morning, entranced by the endless variety of insects and other small creatures that scuttled away to safety. None of these organisms was repulsive to me; each was beautiful, with a name and special meaning.”⁵³ Specificity (going far beyond the species) is the source of wonder here. Each instantiation of life, for Wilson, is a new source of wonder, for it is also a composition of new affects.

And it is perhaps more productive to understand “life and lifelike processes,” which, Wilson claims in the original definition of biophilia, we are so irresistibly drawn towards, and which possesses relatively little meaning in and of itself, as rather haecceity – a singular affective assemblage. Keith Ansell Pearson discusses Deleuze and Guattari’s notion of the term, explaining, “it [a haecceity] has no reference to either subject or substance; on the contrary, it endeavours to deprive both of these notions of their efficacy in order to grant primacy to a mode of indi-

⁵¹ See, for instance, George Iles, “Nature as Drama and Enginery,” Popular Science Monthly 45 (August 1894), Wikisource, http://en.wikisource.org/wiki/Popular_Science_Monthly/Volume_45/August_1894/Nature_as_Drama_and_Enginery. The piece is a bizarrely eclectic overview of then-contemporary science, but the one constant is the place of the scientist in each field and his role (Iles’s pronoun) as spectator. The author says of “nature”: “It is a drama, not a tableau, which the observer to-day sees spread before him; in that drama every actor has been molded by the part it has had to play to maintain itself upon the stage” (par. 2). The scientist, regardless of discipline, is never included among these actors as features in the landscape or animals might be.

⁵² Wilson, Biophilia, 19.

⁵³ Ibid., 28.
viduation that is not of a definite person, determined subject, or a formal substance.” Haecceity is the deindividualized individuation, a particular constellation of affects, of degrees and intensities. A haecceity, needless to say, need not be alive in the traditional sense. One can encounter a haecceity in a rock, even in “rosy-fingered dawn,” just as easily as, say, a sloth’s singularity might hit one. Elizabeth Grosz reminds us, “Individuation is in no sense tied to the human: it is what characterizes cloud formations, the formation of crystals, and ocean currents, as well as the development of cells and the creation of individuals.” Biophilic wonder might be conceptualized, then, as something experienced upon coming into contact with a haecceity. It is hopelessly particular, in a way, but also general insofar as it connects us to a world comprised of infinitely varied intensities and forces, the weird world of flux. Massumi goes as far as to call the haecceity “the agent of an infinitive.” The haecceity is a particular instantiation of complexity.

Timothy Morton, in his so-called “dark ecology,” develops the analogous concept of the “strange stranger.” In his work, the living and nonliving world is conceptualized not as tree, not as web, but as mesh. Junctions in the mesh, where we might understand affects as intersecting, are the “strange stranger.” Ecological praxis, for him, begins with “loving the strange stranger,” and this gesture “has an excessive, unquantifiable, nonlinear, ‘queer’ quality. There is something utterly outrageous and, at the same time, universal and unavoidable about it, something the phrase ‘tree hugger’ fails to capture.” Encountering the strange stranger, opening oneself up to haecceities, is not about crea-

57 A phrase that initially appeared in Morton, *The Ecological Thought*, 94.
58 Ibid., 79.
ture worship, not about the polar bear at the zoo or adrift on a slab of ice, but the bear’s lazy gait, the glint of its teeth, its fishy breath — punctum rather than studium.59

Such an approach refuses the sentimentality and pleas for compassion that characterize other approaches. As entangled as we may be in ecological webs, Wilson never makes any claims regarding “higher” emotional connections with flora and fauna, whether on their part or ours. It is always rather a matter of encountering new Umwelten, of brushing up against speeds and slownesses, sounds and smells, that are not strictly of him. He writes of the ants:

Does some remnant of psychological continuity exist across that immense phylogenetic gulf? The answer is that I open an ant colony as I would the back of a Swiss watch. I am enchanted by the intricacy of its parts and the clean, thrumming precision. But I never see the colony as anything more than an organic machine.60

This does not detract from Wilson’s wonder, but, on the contrary, stokes it. Indeed, it is never “naturalness,” — some kind of identification with a pre-anthropic Garden of Eden — that attracts Wilson to creatures and environments; it is almost always the clockwork, the mysterious manner in which they compose and reform their own Umwelten. “Organic machine,” moreover, especially if we take into account Deleuzian parlance, carries no negative connotation here. By imagining everything as process, everything as machine, Wilson is able to avoid positing himself


60 Wilson, Biophilia, 36.
as “the king of creation,” and becomes the much more profound “eternal custodian of the machines of the universe.”61 The rejection of sentimentality in his approach to the nonhuman opens up a whole new range of possibilities for conceiving of his own relation to them.

3.5 Scale and the Readerly Umwelt

But not all of Wilson’s efforts are directed primarily toward explaining and exploring his own sense of wonder. He also attempts to induce these fits in the reader, mostly by drawing comparisons between what he assumes to be aspects of the readerly Umwelt and aspects of the environment. Far from expounding dryly on radical difference, however, Wilson becomes an ecological magician, shrinking some creatures and processes and enlarging others, inducting the reader, time after time, into Umwelten denied to human speeds and scales.

In this way, even the most ordinary, the smallest clump of dirt becomes something at which to wonder. Wilson instructs his reader to imagine the following seemingly commonplace scenario:

Think of scooping up a handful of soil and leaf litter and spreading it out on a white ground cloth, in the manner of the field biologist, for close examination. This unprepossessing lump contains more order and richness of structure, and particularity of history, than the entire surfaces of all the other (lifeless) planets. It is a miniature wilderness that can take almost forever to explore.62


62 Wilson, Biophilia, 13–14.
In the world, however apparently simple, that Wilson shows us, there is no such thing as inertness; everything teems with life. A handful of dirt from the rainforest (or even our own backyards), one may be certain, is already a collision or mishmash of Umwelten. Thus, when one bothers merely to look, a “drop-let of moisture trapped between root hairs grows into an underground lake, surrounded by a three-dimensional swamp of moistened humus” and “fungi are not formless blobs, but exquisitely structured organisms with elaborate life cycles.” With these miniature unveilings, Wilson attempts not only to retrain the eye but also the expectation that everything of interest will display itself on our human terms. Above all, Wilson assures the reader that, wherever one might look, wonder may be found.

And the complexity to be encountered, even at the smallest of levels, Wilson demonstrates as almost unthinkable. Nevertheless, he constantly attempts to translate this complexity into terms, often spatial, with which the modern reader might be more familiar:

If the information in just one insect — say an ant or beetle — were to be translated into a code of English words and printed in letters of standard size, the string would stretch over a thousand miles. Our lump of earth contains information that would just about fill all fifteen editions of the Encyclopedia Britannica.64

The reference to the Encyclopedia Britannica, while almost comically dated now and likely highly speculative to begin with, at least attempts to illustrate how much we do not know about even the smaller creatures of the Earth, how much a mere quick glance does not offer up. Wilson cannot offer the reader a complete education in other Umwelten, a complete inventory of affects with which we have not yet had the occasion to come into

63 Ibid., 14.
64 Ibid., 16.
contact, but he does attempt to illuminate how much always remains to be investigated and wondered at.

With the relatively small leafcutter ants, Wilson makes an exceptional effort to translate their capabilities and the fixtures of their *Umwelten* to human scales. He notes that, to most, the ants are “inconsequential ruddy specks on a pointless mission,” but “a closer look transforms them into beings of another order.”

Wilson, merely by making a few calculations, turns the ants into the terrifying creatures one may encounter in horror films from the 1950s:

If we magnify the scene to human scale, so that an ant’s quarter-inch length grows into six feet, the forager runs along the trail for a distance of about ten miles at a velocity of 16 miles an hour. Each successive mile is covered in three minutes and forty-five seconds, about the current (human) world record. The forager picks up a burden of 750 pounds and speeds back toward the nest at 15 miles an hour — hence, four-minute miles. This marathon is repeated many times during the night and in many localities on through the day as well.

It is immediately clear from this description that these are not merely sub-human animals with an impoverished range of affects. These are beings of another order, with entirely different *Umwelten*, as well as entirely different affects. And yet Wilson invites us, as far as it is possible, to learn about the irreducibly strange worlds the ants inhabit, and to allow our own *Umwelt* to expand to accommodate them. Wonder may describe a kind of a stretching of the individual *Umwelt*. Wilson invites the reader into other *Umwelten* almost always by introducing human equivalences. Thus, he describes the fungus cultivated by the ants as food by writing, “This mass ranges in size between a clenched fist and a human head, is riddled with channels, and

---

65 Ibid., 29.
vital reenchantments

resembles a grey cleaning sponge.”68 And sometimes the comparisons are even more immediate: when explaining the tasks of the “tiny gardener workers,” he describes them as “somewhat smaller than this printed letter I.”69 Wilson effectively invites the reader to imagine an ant on the page. He attempts, like any biologist with the gift of narrative (one may note Darwin and Uexküll here, as well), to reenact the Umwelt of the creature in the text.

Something about the life of the creatures is never quite captured, however. Part of the mystery of the ants consists of their sheer numbers, which exceed, by leaps and bounds, human scales. Wilson says of the queen in any given colony, “In her lifetime an individual can produce over twenty million offspring, which translates into the following: a mere three hundred ants, a small fraction the number emerging from a single colony in a year, can give birth to more ants than there are human beings on Earth.”70 It is important that, despite Wilson’s efforts at translation, he always allows something to escape, to resist even the most valiant efforts at computation and imagination. Not all affects offer themselves up willingly; he cannot communicate antness to us, only give us small glimpses of it. In this way, he guarantees a certain reservoir of novel affects will always remain.

Although Wilson spends much of the time making these micro-worlds come to life for his readers (as if they were not already awash in them), he also attempts the opposite maneuver: condensing the macro-level of the ecosystem into terms more readily digestible by the twentieth- and twenty-first-century reader. Wilson thinks up a “motion-picture projector of magical versatility” that allows one to “explode seconds into hours and days,” “condense years and centuries into a few minutes,” magnify an image “to reveal microscopic detail,” or compress it “to take in broad vistas from a distance.”71 It is a fascinating conceit,

68 Ibid., 32.
69 Ibid.
70 Ibid., 34.
71 Ibid., 40.
this tool that possesses the ability, at least at the visual level, to render the entire natural world perceptible.

Contemporary nature documentaries, in part, make use of slow motion and time-lapse photography to serve similar ends, but it is not as if the viewer possesses any ability to choose what to see in these cases. With Wilson’s projector, one may directly encounter nonhuman speeds and slownesses. The projector enables the affective experience of systems and processes that we normally understand exclusively on an abstract, cognitive level.

The following passage, in which Wilson explores the hypothetical functioning of the projector, is worth quoting at length:

As the reel turns ever faster, we rise above Cambridge to view the countryside of Massachusetts, then the full northeastern seaboard. Day and night pass in quickening succession. When the alternation between them reaches the flicker-fusion frequency, ten or more in a second of viewing time, they merge in our brains, so that the landscape is suffused by a continuous but dimmer light. Individual people and other organisms are no longer distinguishable except for a few long-lived trees that spring into existence and enlarge briefly before evaporating. But something new has appeared. We are aware of the presence of whole populations of species, say all of the sugar maples and red-eyed vireos, as they pass through cycles of expansion and retreat across the New England landscape. Ecosystems, formed of combinations of these species, have become the creatures of our vision. A pond is fatigued with larch, fills up with waterweed, and then congeals into a bog. A sand dune sprouts beach grass, then wild rose and other low shrubs, which yield to jack pine and finally hardwood forest. We have entered ecological time. Biochemical events have been compressed beyond reckoning. Organisms are no more than ensemble defined by the mathematical laws of birth and death, competition, and replacement.72

72 Ibid., 43.
Ecological time, normally so opaque to those not working in ecological fields, becomes suffused with light and actors here. Wilson’s projector does indeed show events “which have been compressed beyond reckoning,” but we need not necessarily “reckon” with them. The implicit suggestion, and one unexpect- ed coming from a scientist, is that it is enough to feel the changes and transformations that make up deep time. Because we cannot possibly conceive of the workings of systems at the level of the ecosystem over longer stretches of time, our engagement with them, if we are to engage at all, must be affective. This is the ul- timate expansion of the Umwelt, the placement of the human in deep time, and as such is as wonderful as it is traumatic.

One is forced to think here, as well, of nineteenth-century efforts to come to terms with the knowledge that the human spe- cies is a relative ecological newcomer. In particular, Wilson’s pro- jector is uncannily reminiscent of the scene in The Time Machine in which the narrator speeds in the eponymous device far into the future, through “palpitating greyness,”73 to the twilight of the Earth. The Time Traveller initially pauses on a red beach to look at the red sky (the result of a dying sun) and absorb the only remaining forms of life with morbid fascination: giant crabs and white butterflies, and lichens that creep over the landscape.74 But he does not stop there; he rushes on, past the death of the sun, to experience an Earth cloaked in darkness and silence, removed of all traces of “animal life.”75 This is the eerie, overwhelmingly dreary, and affectively empty death of all Umwelten.

Wilson asks us to imagine similar scenarios in time that is not quite so deep. While in the nineteenth century life on Earth was seen as threatened almost exclusively by catastrophic extra- terrestrial phenomena like the death of the sun, in the twentieth and twenty-first centuries there has been a dawning realization that the end, precipitated by human activity, will come much

74 Ibid., 67.
75 Ibid., 68. Further, “All the sounds of man, the bleating of sheep, the cries of birds, the hum of insects, the stir that makes the background of our lives — all that was over” (69).
sooner than we had initially envisioned. Here Wilson flips his comparative terms. It is no longer the nonhuman that he translates to human terms, but the entire human species that acquires dimensions comparable to catastrophic interstellar phenomena. He states:

Human destructiveness is something new under the sun. Perhaps it is matched by the giant meteorites thought to smash into the Earth and darken the atmosphere every hundred million years or so (the last one apparently arrived 65 million years ago and contributed to the extinction of the dinosaurs). But even that interval is ten thousand times longer than the entire history of civilization. In our own brief lifetime humanity will suffer an incomparable loss in aesthetic value, practical benefits from biological research, and worldwide biological stability.76

As infinitely varied and productive as forms of life might be, Wilson argues, humans possess a decidedly inhuman or at least suprabiological ability to level these infinitely various registers of life and to create affective deserts. We can wonder at the sheer destructive potential of a single species, certainly, but, at least in the long term, environmental damage on a large scale means the death of Umwelten, the death of the affects that comprise them, and thus an extreme limitation of experience and opportunities for wonder. This, in the end, forms the basis of Wilson’s (admittedly roughly hewn) ethics, which the next and final section attempts to flesh out.

Before proceeding to the more concrete, however, it bears looking back at what has thus far been established and discussed in this chapter. Beginning by identifying two strains of biophilia — one reductive and evolutionarily charged, the other concerned with cataloging and fostering the richness of human affiliation with the nonhuman — it was argued that, although both can be found in Wilson’s 1984 work, there is a much bet-

76 Wilson, Biophilia, 122.
ter case to be made for adopting the latter. Rather than understanding biophilia as “the innate tendency to focus on life and lifelike processes,”\textsuperscript{77} or as “the innately emotional affiliation of human beings to other living organisms,”\textsuperscript{78} I argued we ought to embrace a non-evolutionary biophilia, defined as the “affective affiliation with life and lifelike processes.” Life and lifelike processes, in turn, can be understood as encompassing both the community of life and specific instantiations of it—haecceities, that, like Björk’s crystals, may not be “living” in the traditional sense. In embracing this definition, biophilia can be understood as a particular flavor of wonder: the experience of the expansion of the individual Umwelt occasioned by collisions with other Umwelten.

Biophilia, therefore, swims in affective wonder, and in the three previous sections, I have attempted to tease out its manifestations. The first section, “The infinite unseen” examined Wilson’s own confrontations and attempts to confront the reader with the infinite variety of life and the accompanying inexhaustible fields of affects. Wonder, here, is linked to intricacy and complexity and is constantly renewable. The next section, “The aliens among us,” looks to the wonder occasioned by particular instantiations of life and assemblages of affects. Rather than establishing our own kinship with other creatures, Wilson focuses on fundamentally different life forms, with fundamentally different Umwelten, insisting that, despite their alien quality, they are worth investigating and mixing oneself up with. Finally, “Scale and the readerly Umwelt” turns to Wilson’s efforts to direct the reader to deep time and the very small or microscopic—scales, in any case, which are not traditionally associated with the human. Even the exploration of the world of the ant here becomes a way to, in Björk’s words, “conquer claustrophobia,” to turn oneself to the novel affects central to an affective wonder.

\textsuperscript{77} Ibid., 1.
\textsuperscript{78} Wilson, “Biophilia and the Conservation Ethic,” 31.
Despite Wilson’s meticulous efforts to explore the Umwelten of animals on their own terms and to avoid anthropomorphizing, his rationale for any kind of ecological action is undeniably anthropocentric. If the living world is such a profoundly important source, or at least cause, of wonder, and wonder can be conceived of as essential to human experience, there arises an ethical imperative to protect the living world. Here the impetus for conservation emerges not so much from the fact that we are dependent on the natural world for our physical survival, but from the idea that, without it, we would be intellectually and spiritually subhuman.

Thus, when speaking of the clear-cutting of the rainforest for agricultural purposes, Wilson makes no appeal to larger concerns like the regulation of greenhouse gasses in the Earth system. Instead, he writes, “This action can be defended (with difficulty) on economic grounds, but it is like burning a Renaissance painting to cook dinner.”79 This likens the destruction of (at least what Wilson conceives of as) our biological heritage to our cultural heritage; the loss is in large part an aesthetic one. But it is also not a shallow aesthetic appreciation that Wilson espouses. It is never about beautiful scenery, for Wilson, but rather the opportunity to see and smell and come into contact with that which is distinctly not of our usual Umwelt—that which shakes the very human in us. Wilson’s conservationism is inescapably affective.

Wilson’s brand of scientific humanism, moreover, of which wonder also forms the foundation, relies on a vision of the human as not a static, enlightened, and Vulcansesque species, but rather as constantly evolving (a less linear approach would call it involving) via new discoveries. Wilson explains:

79 Wilson, Biophilia, 25.
Now to the very heart of wonder. Because species diversity was created prior to humanity, and because we evolved within it, we have never fathomed its limits. As a consequence, the living world is the natural domain of the most restless and paradoxical part of the human spirit. Our sense of wonder grows exponentially: the greater the knowledge, the deeper the mystery and the more we seek knowledge to create new mystery. This catalytic reaction, seemingly an inborn human trait, draws us perpetually forward in search for new places and new life.80

Scientific discovery, propelled by the wonder occasioned by the infinite varieties of life, is inexhaustible, if only biologically rich areas are sufficiently protected. What is essentially human is not the expansion of human settlements, agriculture, and industry into so-called nature, but the expansion of the realm of affective experience and the changes that this engenders. It means, like Uexküll’s scientist, glancing again and again into “a real world,” and attempting to allow the “small sector of nature” perceived to fully affect the one doing the perceiving. That the small sector perceived grows ever wider is no threat to wonder, Wilson assures us. There is no limit to that which the environment furnishes for us: no limit to affective potentials, and certainly not the relations between and among living things that produce them. “Because biology sweeps the full range of space and time,” Wilson assures us, “there will be more discoveries renewing the sense of wonder at each step of research.”81

And even though a brand of conservationism is inherent in Wilson’s ethics, it has nothing to do with future ethics. Indeed, the figure of the child simply never comes up. Instead, Wilson asks a series of questions, for which he provides rather unconventional answers:

80 Ibid., 10.
81 Ibid., 54.
What do we really owe our remote descendants? At the risk of offending some readers I will suggest: Nothing. Obligations simply lose their meaning across centuries. But what do we owe ourselves in planning for them? Everything. If human existence has any verifiable meaning, it is that our passions and toil are enabling mechanisms to continue that existence unbroken, unsullied, and progressively secure. It is for ourselves, and not for them or any abstract morality, that we think into the distant future.82

The real question, of course, is what kind of existence Wilson is referring to when he writes of it continuing “unbroken, unsullied, and progressively secure.” Given that he spends only very small portions of the book on the strictly material aspects of existence and how it is bound up with natural resources, we might assume he intends something like the “luxuriance and excess”83 spoken of at the beginning of the section, the province of the incorporeally material. Although for other authors this may emerge primarily from interactions between human actors, for Wilson this always emerges from encountering nonhuman affects.

Wilson’s conservationism is, in the end — despite, or perhaps because of, its anthropocentrism — deeply progressive. Far from attempting to cordon off environments and creatures so that their own existence may continue “unbroken, unsullied, and progressively secure,” Wilson offers up biologically diverse areas as testing grounds for the human. In order to fully embrace an affective ecology understood this way, however, the new conservationist ethic would have to disabuse itself of a sentimental attachment to life.

More concretely, this entails the following: First, the notion that an environmental ethic must involve “caring” about organisms equally must be put aside. In order for select organisms to

82 Ibid., 120–21.
83 Ibid., 118.
If we were truly serious about saving all other organisms, we would follow Jainist principles and filter our water to save the paramecia. We would surgically implant chloroplasts in our skin in order to photosynthesize ourselves and not uproot lettuce or carrot plants. We would certainly not cavalierly flesh away our solid wastes that serve as a breeding ground for e. coli and other gut bacteria. This reduction ad absurdum shows the hypocritical element implicit in the rhetoric of ecological salvation. In fact, part of the reason a predator like the Bengal tiger is so physically arresting is that it feeds at the top of the trophic chain; it is a carnivore, a killing machine, a king unfairly taxing plant and animal pawns. It has been said that all great poems contain an element of cruelty. Perhaps the same may be said of animals in the biosphere.84

Biophilia may allow us to revere life in the abstract or occasion us to lobby for manifestations of it, but we are not and cannot possibly be serious about protecting life in a way that is entirely just or equal. The business of living, as ecologists are eager to remind us, is also the business of dying: consuming and being consumed. Biophilia does not merely encompass, then, the gazing at silhouettes of trees in the forest, but can also be present in the tug of a fishing line as a hook works its way into the flesh of a fish. This, too, may be a profound kind of affiliation.

On the other hand, a more generous, affective biophilia can also entail a certain broadening of ecological sympathies. Again, Sagan and Margulis offer a valuable insight:

“All organisms are equal,” we seem sometimes to want to say in the discourse on biodiversity, “yet some animals are more equal than others.” Not surprisingly these “more equal” be-

ings are often large mammals either like us or like those found in the savanna in which human primates first evolved.85

Unsurprisingly, we gravitate most readily to creatures like us. But a more radical biophilia, in addition to refusing the impossible task of protecting all life, also seeks to create different kinds of identification. If it is about encountering new and radically different _Umwelten_, experiencing new affects; it is also about attending to more than just charismatic megafauna (although this may still form a part of it).

Secondly, and following from the first point, an environmental ethic informed by biophilia embraces a generous anthropocentrism, abandoning the idea that deliberate actions are ultimately taken for the creatures, ecosystem, or planet alone. Once again, Sagan and Margulis chime in: “the strongest argument for a directed biophilia leading to a general if not all-encompassing biodiversity has to do with survival — not the abstract ethical survival of all sentient entities, but our own survival, the preservation of a certain quality of human life.”86 This, perhaps, is what Wilson is attempting to say when he speaks of owing nothing to our remote descendants, but everything to ourselves in planning for them. It is not the desire to secure a future for all life (which is after all impossible) that motivates conservation efforts, but the preservation of the possibility for affiliation. This is the “certain quality of human life” alluded to by Margulis and Sagan: a world in which the abundance required for contact with other _Umwelten_, and not necessarily all of the creatures we evolved with, remains.

Finally, if an affective ecological ethic necessitates abandoning the notion that we can protect _all_ creatures, or even that conservation activities are conducted purely for their sake, it also involves dispensing with the idea that it is possible or desirable to “get back to the Garden.” We can make decisions about the way in which we affiliate with the nonhuman, but there is no

85 Ibid., 357.
86 Ibid., 358.
way to blot out affiliation itself, and the attempts to do so involve, in many cases, a level of violence and micro-management not normally associated with conservation. This raises some very thorny questions about how “the reservoirs of wonder” can best be protected. To better understand this, it is useful to turn to an actual conservation effort in the Galápagos, begun in 1997 and completed in 2006 — Project Isabela.

Project Isabela, at least at the time of its completion in 2006, claimed to be the “largest, most ambitious ecosystem restoration project in a protected area worldwide.” Like so many similar projects, it targeted an invasive species, feral goats, aiming to eradicate them on three of the islands in order to restore the habitats of native flora and fauna. The goats, in all likelihood, had arrived beginning with the first ships to come to the island in the sixteenth century, when sailors, tired of eating (and likely living with) the goats on board, would abandon them on the islands and take giant tortoises in their place. On the return trip, they would often pick up the goats again, but, over the course of a few centuries, the populations bred and became relatively established. On the largest island, Isabela, populations had been held in check by a natural volcanic barrier until the 1970s, but the goats had finally managed to cross it, and populations (estimated at 100,000 on Isabela alone) and grazing territory had expanded to such an extent that it seriously threatened many of the native species, including the tortoises of lore. In 1997, then, when the decision was made to eradicate the goat populations entirely, the goal was, in effect, to erase nearly 500 years of human contact with the Galápagos. A 2002 vision document released by the Charles Darwin Foundation, another partner in the project, “outlined the goal of going ‘Back to Eden’” and re-

87 Facts and statistics concerning the project have been collected from the website of the Galapagos Conservancy, one of the partners in Project Isabela. See “Project Isabela,” Wildlife & Ecosystem Conservation, Galapagos Conservancy, https://www.galapagos.org/conservation/project-isabela.
88 Ibid.
turning “the biological nature of the Galápagos islands almost to the conditions of 1534.”

In order to accomplish this, the project hired sharp-shooters to target goat populations from the air via helicopter. When enough goats had been killed that populations became harder to find, they created an army of “Judas goats.” The Galapagos Conservancy describes their role as follows: “Being naturally gregarious, sterilized Judas goats, fitted with radio collars and then released into the population, would seek out the remaining feral goats, allowing them to be located through radio telemetry and then removed.” Marksman would proceed to shoot every goat but the Judas goat (repeating the process as many times as proved necessary), and a few hundred of them remain on the islands to this day, fitted with trackers, should any feral goat populations reappear.

At least on the larger islands, the eradication of the goats has been “wildly” successful, and the areas, according to the scientists involved, appear to be recovering rapidly from the toll taken by the heavy grazing. On the smallest island involved in the project, Pinta, however, the goat population actually decimated the native tortoise population entirely. Rather than simply repopulating the island with a tortoise species native to one of the other islands, scientists have turned to selective breeding, and potentially genetic engineering, to repopulate the island with a species resembling the original Pinta tortoise. In the meantime, an army of sterilized tortoises from one of the larger islands has been released to act as lawnmowers and ecological place-holders. Getting “back to Eden,” even in an environment like the

---

91 Galapagos Conservancy, “Project Isabela.”
92 Abumrad and Krulwich, “Galapagos.”
Galápagos, thus takes an astonishing amount of tinkering, and, from the perspective of the goats, an all-out war.

Project Isabela is a highly successful example of a conservation project that, in many regards, embraced a non-sentimental conservationism. Scientists understood, for one, that something had to go — in this case over 100,000 goats. And, among all this carnage, the project was not dedicated to protecting life in general, but a peculiar vision of it: one of the Galápagos 300 years prior, even, to Darwin’s arrival. What is so striking is that most documents related to it preserve a vision of an ahuman Eden, but conservationists have largely abandoned this in practice. The Judas goats remain, just in case someone tries to repopulate the island with goats, and the sterilized turtles will wander Pinta for decades to come. The scientists occupy a world in which we meddle, ceaselessly, in which we make decisions about what stays and what goes, and yet the pretense, almost always, is that a world is being resurrected in which the human element has been entirely subtracted.

A more nuanced affective ecology, informed by biophilia, does away with this pretense entirely, and, while it does not provide any simple way to evaluate Project Isabela, it points to a different set of questions that might have been asked at the beginning of the project in the 1990s. When the self-evidence of getting “back to Eden” is done away with, more questions than I can possibly propose here arise.

An affective ecology would raise questions, first of all, about what is being forsaken with the conservation effort: What, in other words, does conservation destroy? Here one might dwell not so much on the lives of hundreds of thousands of goats as on how these goats relate to us. How do we, the scientists, the inhabitants of the island, affiliate with them? Linda Cayot, a conservationist heavily involved in Project Isabela, noted, for instance, that these were not ordinary goats that were “removed”; they were the descendants of old European stock, isolated on the island for centuries. Cayot refers to them as “beau-
tiful animals”93 and, indeed, there were no other populations like them. A whole range of affects died with the goats, deemed impoverished because they were not strictly native. This is not to say that the subsequent flourishing of flora and fauna after the removal of the goats does not add enough richness and complexity to “make up” or “offset” that which disappears with the goats. This is something that, with an affective ecology, must certainly be negotiated.94

This leads neatly into the next set of questions: what *Umwelten*, what ways of affiliating, are being “restored”? Are creatures such as the Pinta tortoise irreplaceable, or is the effort to revive them, as some scientists have suggested,95 precious? For that matter, for whom is the restoration actually taking place? Only conservationists, who are able to visit the sites of restoration, and eco-tourists generally refer to “biological heritage”; do these efforts actually increase the quality of life for those outside these groups?

These questions, far from simplifying the decisions made in order to conduct Project Isabela, make them more complicated. When “the Garden” is abandoned, as a rule, this is what happens: Conservation no longer becomes about chasing some specter of

---

93 Ibid.

94 Elizabeth Kolbert, writing for the *New Yorker*, points to a similar set of concerns at work right now in New Zealand, where there is a grass-roots effort to exterminate the non-native mammals to allow endangered native marsupials and birds to proliferate; she calls their orientation “a bloody, bloody biophilia.” One of the conservation groups Kolbert profiles, Predator Free New Zealand, has a log which “shows a kiwi with a surprised expression standing on the body of a dead rat.” See Elizabeth Kolbert, “The Big Kill: New Zealand’s Crusade to Rid Itself of Mammals,” *The New Yorker*, December 22, 2014, http://www.newyorker.com/magazine/2014/12/22/big-kill.

95 “Galapagos,” the episode of *Radiolab* cited above, relates an especially memorable story surrounding “Lonesome George,” the last of the Pinta Tortoises, who continually frustrated conservationists with his unwillingness to breed. Conservationist Josh Dumlin reports that, at one of the meetings on the Pinta Tortoise project, one scientist finally snapped, suggesting that Lonesome George be shot so that he could “quit wasting our time.”
reenchantment, these astounding islands prior to human contact, but about fostering abundance, creating the conditions of reenchantment in which wonder is possible. And biophilia here, rather than pointing to easy answers about saving the beautiful goats or majestic turtles, asks us to rethink our most fundamental relations with life. How do we preserve and enrich that which ties us to these singular constellations of affects?