

F O R E S T W I S D O M

"Humans go outdoors . . . because they seek something greater than can be found indoors. . . . Forests and sky, rivers and earth, the everlasting hills, the cycling seasons, wildflowers and wildlife—these are . . . the timeless natural givens that support everything else."

In a forest, as on a desert or the tundra, the realities of nature cannot be ignored. Like the sea or the sky, the forest is a kind of archetype of the foundations of the world. Aboriginally, about 60 percent of Earth's land surface was forested; historically, forests go back 300 to 400 million years. Humans evolved in forests and savannas, where they once had adaptive fitness, and classical cultures often remained in evident contact with forests. In modern cultures, the growth of technology has made the forest increasingly a commodity, decreasingly an archetype. That transformation results in profound value puzzle-ments. What values lie deep in the forest?

The forest is about as near to an ultimate archetype as we know. I become astonished by the fact that the forest is here, spontaneously generated. There are no forests on Mars or Saturn, none elsewhere in our solar system, perhaps none in our galaxy. But Earth's forests are indisputably here. There is more operational organization, more genetic history in a handful of forest humus than in the rest of the universe, so far as we know. How so? Why? A forest wilderness elicits cosmic questions.

The central goods of the biosphere—hydrologic cycles, photosynthesis, soil fertility, food chains, genetic codes, speciation, reproduction, succession—were in place long before humans arrived. The dynamics and structures organizing the forest do not come out of the human mind; a wild forest is wholly other than civilization. Confronting it, I must penetrate spontaneous life on its own terms. The genius of forestry as a pure science helps us to appreciate the biology, ecology, integrity of the forest primeval.

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Immersed in a nonhuman frame of reference, foresters know the elements, raw and pure.

Applied forestry, making a commodity out of an archetype, is humane and benevolent at risk of prostituting the primeval. The principles reorganizing the managed forest do come out of the human mind. Seeking goods of their kind,

humans modify the natural kinds. A domesticated forest, like a caged wolf, is something of a contradiction in terms. What used to be a forest or wolf is thus reduced to something less. A tract of pine planted for paper pulp is not deep woods. The radical values are gone.

In the forest itself there are no board-feet of timber, BTUs, miles, or acre-feet of water. There are trees rising toward the sky, birds on the wing, and beasts on the run, age after age, impelled by a genetic language almost two billion years old. There is struggle and adaptive fitness, energy and evolution inventing fertility and prowess. There is cellulose and photosynthesis, succession and speciation, muscle and fat, smell and appetite, law and form, structure and process. There is light and dark, life and death, the mystery of existence.

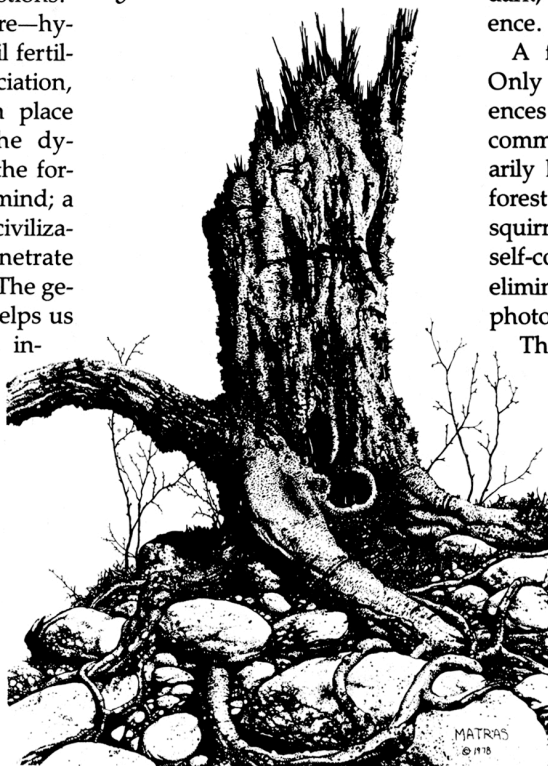
A forest is objectively a community. Only subjectively, with human preferences projected onto it, does it become a commodity. "Forest products" are secondarily lumber, turpentine, cellophane; the forest "produces" primarily aspen, ferns, squirrels, mushrooms. This life is never self-contained but incessantly ingests and eliminates its environment. Trees must photosynthesize, and coyotes must eat.

The flora, like the fauna, make resources of soil, air, water, nutrients.

Many species have found homes in the forest ecosystem, life-supporting niches into which they are well fitted. This objective satisfaction of life occurs with or without our human experiences. That the forest is able on occasion

Values Deep in the Woods

By HOLMES ROLSTON



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to satisfy human preferences seems a spinoff from its being able to satisfy biological needs of its own processes.

There can no longer be found about 500 faunal species and subspecies that have become extinct in the United States since 1600, and another 500 threatened and endangered species are rarely found. Hardly a stretch of forest in the nation is unimpoverished of its native species—especially those at the top of trophic pyramids: otters and peregrine falcons. We have only scraps of undisturbed once-common ecosystems, such as hemlock forests, and no chestnut forests at all. Acid rain is impoverishing the Adirondacks and the Great Smokies. An area of tropical rainforests the size of West Virginia is being destroyed annually.

All this ought not to be. Rather, forests ought to be optimally rich in native fauna and flora, in community types, and some forest ecosystems should remain intact to support grizzly bears, wolverines, red-cockaded woodpeckers, Chapman's rhododendron. What the forest produces is individuals; but at a deeper level, what the forest has produced is species and ecosystems. Extinction shuts down forever life lines that flowed over the continental landscape long before humans arrived and that might, apart from us—or together with us, were we more sensitive—continue for millennia henceforth.

A pristine forest is a historical museum that, unlike cultural museums, continues to be what it was, a living landscape. A visit there contributes to the human sense of duration, antiquity, continuity, and our own late-coming novelty. The forest—we first may think—is prehistoric and timeless; world history begins with armies and kings. The perceptive forest visitor knows better and realizes the centuries-long forest successions, the age of se-

quoias or great oaks; he sees erosional and geomorphic processes in rock strata, canyon walls, glacial moraines. The Carboniferous Forests were giant club mosses and horsetails; the Jurassic Forests were gymnosperms—conifers, cycads, ginkgoes, seed ferns. A forest today is yesterday being transformed into tomorrow.

Each forest is unique. Forest types exist only in forestry textbooks; what exists in the world is Mount Monadnock, Tallulah Gorge with its unique colonies of *Trillium persistens*, Mobley Hollow on Sinking Creek. Forests with their proper names and locales—Grandfather Mountain, or Chattahoochee National Forest—always exist specifically, never abstractly. When visited by persons with their proper names, the encounter is valued because it yields distinctive, never-repeated stories—the biography of John Muir in the Sierras, or one's vacation spent hiking the Appalachian Trail.

At least half of what is to be known about forests remains undiscovered. Successive levels of biological organization have properties that cannot be predicted from simpler levels, and the least-known level of organization is that of landscape ecology. Do forests inevitably appear, given a suitable moisture and climatic regime? We are not sure why tree line lies at the elevations it does, or why the balds in the southern Appalachians are there. We are beginning to suspect that insect outbreaks sometimes convey benefits to a forest, something like those of fires, and of which we were long unaware.

Does diversity increase over time? Does stability? Do the species at the top of trophic pyramids rise in complexity? In neural power? All this seems to have happened, but why we do not know. Biologists are divided over whether intraspecific or interspecific competition is a minimal or a major force in evolution. Sizable natural systems are the likeliest places to settle such debates. To destroy the relict primeval forests is like tearing the last pages out of a book about our past that we hardly yet know how to read.

Like clouds, seashores, and mountains, forests are never ugly; they are only more or less beautiful; the scale runs from zero upward with no negative domain. Destroyed forests can be ugly—a burned, windthrown, diseased, or clearcut forest. But even the

ruined forest, regenerating itself, has yet positive aesthetic properties; trees rise to fill the empty place against the sky. A forest is filled with organisms that are marred and ragged—oaks with broken limbs, a crushed violet, the carcass of an elk. But the word "forest" (a grander word than "trees" in the plural) forces retrospect and prospect; it invites holistic categories of interpretation as yesterday's flora and fauna pass into tomorrow. This softens the ugliness and sets it in somber beauty.

One has to appreciate what is not evident. Marvelous things are going on in dead wood, or underground, or in the dark, or microscopically, or slowly, over time; they are not scenic, but an appreciation of them is aesthetic. The usefulness of a tree is only half over at its death; an old snag provides nesting cavities, perches, insect larvae, and food for birds. The gnarled spruce at the edge of the tundra is not really ugly, not unless endurance and strength are ugly. It is presence and symbol of life perpetually renewed before the winds that blast it.

In the primeval forest humans know the most authentic of wilderness emotions, the sense of the sublime. By contrast, few persons get goose pimples indoors, in art museums, or at the city park. We will not be surprised if the quality of such experiences is hard to quantify. Almost by definition, the sublime runs off scale.

The word *recreation* contains the word *creation*. Humans go outdoors for the repair of what happens indoors, but they also go outdoors because they seek something greater than can be found indoors—contact with the natural certainties. Forests and sky, rivers and earth, the everlasting hills, the cycling seasons, wildflowers and wildlife—these are superficially just pleasant scenes in which to recreate. They are the timeless natural givens that support everything else.

Those who recreate here value leisure (watching a sunset, listening to loons, or to rain) in contrast to working; they value being in a wild world that runs itself and need not be labored over. They value work (climbing, setting up camp) with no paycheck attached; an environment with uncertainties, in contrast to a boring or familiar job. They value an escape, also being drawn to roots. They want to know the weather, protected by mini-

mal cover and shelter so as to leave rain or sun close at hand. They want to submit to the closing day at dusk, to be roused by the rising sun without benefit of clock. They want to know the passing seasons when migrants return, or leaves fall, without benefit of calendar.

People like to recreate in the woods because they touch base with something missing on baseball diamonds and at bowling alleys—the signature of time and eternity.

It is no accident that many organizations that seek to form character use wildlands—Boy and Girl Scouts, Outward Bound, the National Outdoor Leadership School, church camps. Similar growth occurs in individuals independently of formal organizations. The forest provides a place to sweat, to push oneself more than usual, to be more on the alert, to take calculated risks, to learn the luck of the weather, to lose and find one's way. The forest teaches one to care about his or her physical condition. In the forest one has no status or reputation; nobody is much or long deceived; nobody has to be pleased; accomplishment and failure are evident. One is free to be himself or herself, forced to a penetrating sincerity.

Surrounded by politicians and economists, even by foresters at their business, one gets lured into thinking that value enters and exits with human preference satisfactions. Surrounded by the forest, a deeper conclusion seems irresistible. The forest is value-laden. Trees use water and sunshine; insects resourcefully tap the energy fixed by photosynthesis; warblers search out insect protein; falcons search for warblers. Organisms use other organisms and abiotic resources instrumentally.

Continuing this deeper logic, organisms value the resources they use instrumentally because they value something intrinsically and without further contributory reference: their own lives. No warbler eats insects in order to become food for a falcon; the warbler defends her own life as an end in itself and makes more warblers as she can. A warbler is not "for" anything else; a warbler is for herself. From the perspective of a warbler, being a warbler is a good thing.

Biological conservation is not something that originates in the human

mind, modeled by FORPLAN programs or written into Acts of Congress. Biological conservation is innate as every organism conserves, values its life. Nonconservation is death. From this more objective viewpoint, there is something subjective and naive (however sophisticated one's technology) about living in a reference frame where one species takes itself as absolute and values everything else relative to its utility.

True, warblers take a warbler-centric point of view; spruce push only to make more spruce. But no nonhuman organism has the cognitive power, much less the conscience, to lift itself outside its own sector and evaluate the whole. Humans are the only species that can see the forest for what it is in itself, objectively, a tapestry of interwoven values. Forestry ought to be one profession that gets rescued from this beguiling anthropocentrism through its daily contact with the primeval givens.

"The groves were God's first temples." (Bryant, *A Forest Hymn*). Trees pierce the sky, like cathedral spires. Light filters down, as through stained glass. In common with churches, forests (as do sea and sky) invite transcending the human world and experiencing a comprehensive, embracing realm. Forests can serve as a more provocative, perennial sign of this than many of the traditional, often outworn, symbols devised by the churches. Mountaintop experiences, a howling

storm, a quiet snowfall, solitude in a sequoia grove, an overflight of honking geese—these generate experiences of "a motion and a spirit that impels . . . and rolls through all things." (Wordsworth, *Lines Above Tintern Abbey*).

Such values are, it is commonly said, "soft" beside the "hard" values of commerce. They are vague, subjective, impossible to quantify or demonstrate. Perhaps. But what is really meant is that such values lie deep. The forest is where the "roots" are, where life rises from the ground. A wild forest is, after all, something objectively there. Beside it, culture with its artifacts is a tissue of subjective preference satisfactions. Money, often thought the hardest of values, is nothing in the wilderness. A dollar bill has value only intersubjectively; any who doubt this ought to try to spend one in the woods. Dollar values have no significance at all in the forest (and therefore in pure forestry).

The phenomenon of forests is so widespread, persistent, and diverse—appearing almost wherever moisture and climatic conditions permit it—that forests cannot be accidents or anomalies but rather must be a characteristic, systemic expression of the creative process. Forests are primarily an objective sign of the ultimate sources, and only secondarily do they become managed resources. The measure with which forestry can be profound is the depth of this conviction. AF

