

In B. L. Driver, Perry J. Brown, and George L. Peterson, eds., *Benefits of Leisure*
(State College, PA: Venture Publishing, Inc., 1991), pages 393-403. By permission.

Creation and Recreation: Environmental Benefits and Human Leisure

Holmes Rolston, III
Department of Philosophy
Colorado State University
Fort Collins, Colorado

The way in which nature-based recreation and preservation are inseparably entwined is suggested by the word *creation* embedded in the word *recreation*. This is partly an etymological accident, but not totally. Persons off the job are re-created, in the environment of creation. Other recreation involves artifacts, but this kind requires natural history; these connections are not accidental, but biologically and psychologically profound. Persons turn to the natural environment, preserved by humans perhaps as a park, a wilderness, a wildlife refuge, for something they cannot get in the built environment. This "recreation" (if that is the proper word for this re-contacting of creation) demands natural history; such recreation presupposes and results in nature preservation. We shall find these connections deceptively simple, finally profound.

The subtitle also needs exploring. How the adjective "environmental" operates on the noun "benefits" needs to be clarified, as does the meaning of the other noun "leisure." How is human leisure tied to environmental benefits? Exactly what are environmental benefits? To whom do they accrue? How significant are they? Some of this logic of leisure and environment will strain, even explode the words "leisure" and "benefits."

RECREATION AND CREATION

Though some persons work outside, the only time that most of us spend with the sky over our head or the ground under our feet is when we are at leisure. Even those who work in and on nature may also recreate there. We may first seek field and stream to "get away from it all," frustrated with office or factory. But later we discover that we are getting back to it all. In the country, we touch base with something greater than can be found in town. We recontact the natural givens, the archetypal world that runs itself, surrounding and supporting us.

At work we are usually too busy to think about these things, but with more leisure, and a reflective turn, we sometimes want to participate intimately in our ecology. When we are at work we are surrounded by artifacts, using or producing them. We use natural things as resources. In that sense, culture always reworks nature; an artifact produced by work interrupts rather than preserves spontaneous nature. At leisure in nature, we are reminded of what we tend to forget when at work in culture. We are re-created by the creation,

Outside of the work context and in pursuit of a recreation environment, humans now defer to what was there before. As expressed by Congress in the Wilderness Act of 1964, we want regions "where the earth and its community

of life are untrammelled by man, where man himself is a visitor who does not remain" (U. S. Congress 1964, sec. 2c). The resolution to be only a visitor who does not remain and to leave natural history untrammelled is ipso facto a resolution to preserve nature. Wildernesses, national parks, and sanctuaries are where humans go on vacation. Such areas are unique in seeking to limit humans to nonconsumptive, nondisruptive uses of the land. Humans resolve that they will not divert significant amounts of energy and materials from these systems of wild nature; they will neither alter natural processes, nor cause the extinction of native species from such natural systems, nor impose artificial materials, energy, processes, and exotic species on them. They will protect them from and prevent or compensate for human alterations.

In the original legislation of 1872, Yellowstone Park was set aside as "a pleasuring-ground for the benefit and enjoyment of the people" (U. S. Congress 1872, Chap. 24). Our park-founding fathers carved that on the gateway arch, designating a place of leisure. But Disneyland, too, is a pleasuring ground for people, and we need to say more today than our fathers about natural pleasuring grounds or we have only a shallow, inadequate description focusing on humanistic benefits and careless about natural preservation. Yellowstone is and ought to be a pleasuring ground for people only insofar as this is commensurate with the preservation of natural history there. The *recreation* there has *creation* embedded in it; the leisure benefits permitted are constrained by environmental preservation.

Two prominent Yellowstone officials have, in modern days, stated a deeper policy. Preservation comes first, and leisure afterward, Douglas Houston says, "The primary purpose of the National Park Service in administering natural areas is to maintain an area's ecosystem in as nearly pristine a condition as possible" (Houston 1971). Glen Cole insists, "The primary purpose of Yellowstone National Park is to preserve natural ecosystems and opportunities for visitors to see and appreciate scenery and native plant and animal life as it occurred in primitive America" (Cole 1969). That is the better order: to preserve nature and for humans to take pleasure in it

This presumes that humans can and will find pleasure in appreciating spontaneous natural history. Now we do have a critical difference between Yellowstone Park and Disneyland. Both are pleasuring grounds—one takes pleasure in human artifacts and fantasy, in fairy castles and roller coasters; the other takes pleasure in wild nature. Much of our leisure is technology-based, and we require technology to get to Yellowstone. But once there, we want nature-based

leisure. If some persons there fail to find pleasure in pristine natural history, so much the worse for them; they need to change their sensitivities, not to alter the state of nature. The sort of recreation encouraged and allowed is constrained by natural history. In Disneyland we rebuild nature to amuse ourselves with artifacts; in Yellowstone we reeducate ourselves to appreciate natural history.

Sometimes when humans recreate they interrupt nature. They hunt and fish, cut firewood, and "harvest" these resources, as we like to put it. It may seem that this type of leisure is no longer entwined with preservation. Even in consumptive recreation, there must be renewability, and so the integrity of the resource is necessary for the recreation. Further, the quality of recreation is often entwined with the preservation of native wildlife. Put-and-take fishing is reduced quality angling; one is catching only hatchery artifacts. A wild trout is a real prize. Quality angling, as opposed to quantity of catch, will want native cutthroat trout on a catch-and-release basis, rather than rainbows in the creel. Some of us think that recreational angling in Yellowstone Park is really not commensurate with streams stocked with exotic, hatchery-bred species. Angling ought to defer to the native species. A fishing pond is one thing; wild nature is something else.

Only about 2% of the contiguous United States remains wilderness, 98% is worked over—farmed, grazed, timbered, hunted, dwelt upon, paved, or otherwise possessed. If we have only a work ethic, then failing to put the remaining wildlands to some use can seem anti-American. But a benefit of leisure is that the work ethic is exploded for the relict wildlands. Not all that we value is labored over. We want to preserve and to enjoy at leisure this pristine 2%. Likewise, when we recreate in rural woodlots, fields, and fencerows, in the semiwild lands of state parks or nature conservancies, we value at leisure what we have not worked to make: wild nature.

Both we and nature must be unoccupied—we from our work and nature from our works. In this kind of recreation, we are free to be ourselves only if natural things are free to be themselves. The preservation of nature and the presence of nature-based nature are, again, empirically and logically inseparable. If such recreation is to be realistic, the nature encountered cannot be an illusion, a fake (though it may perhaps be restored). The historical genesis of the landscape is requisite if the recreational, re-creational experience is to be authentic. We go to Disneyland when we are at leisure, but Disneyland is unreal, a fantasy land. That make-believe recreation is something different.

BENEFITS, ENVIRONMENT, AND LEISURE

Coming at these issues another way, we can explore the connections between benefits, environment, and leisure.

What is an Environmental Benefit?

In human terms, a benefit is an outcome that improves a person's quality and quantity of life, perhaps by improving the society he or she inhabits, perhaps by preventing a harm. If nature-based recreation brings health benefits, economic benefits, social benefits, aesthetic benefits, spiritual benefits, and so on, it is humans who receive these benefits. Following that logic, if nature-based recreation brings environmental benefits, this too is a humanistic benefit. Humans are helped or hurt by the condition of their environment, and thus an environmental benefit is one where an improved environment helps persons; an environmental cost is one where a worsened environment hurts persons.

But notice again (just as recreation was entwined with creation) that an environmental benefit, before it can accrue to persons, first has to happen so as to maintain or improve, or prevent degradation of the natural world. Environmental benefits differ from other outcomes affecting health, society, economics, and spirituality because the immediate beneficiary is not humans. The environment is the direct beneficiary; humans are the secondary beneficiary.

Wild animals can be better or worse off; they have a welfare, as surely as do humans. Trees can be in good or bad condition; forests are made worse by acid rain. A species can be flourishing or in danger; ecosystems can be stable or degraded. Human behaviors can hurt or help the vitality of all these things. So the environment in a generalized sense can be benefited, and the detail of this has to do with the welfare of individual animals and plants, of species populations, of ecosystems, and so on.

Human well-being is tied into the condition of these natural things. These ties are diverse and differ when humans are at work and at leisure. Often when at work, humans take natural resources by value capture. In this sense human welfare and the welfare of animals and plants is negatively correlated. To be better for humans, it must be worse for a deer or a tree—the deer is shot for food and the tree cut for shelter. The grasslands ecosystem is plowed and destroyed when humans plant wheat. In resource use in the everyday sense, when resources are taken for human benefits, wildlife, forests, species, and ecosystems suffer. In an economic sense, when humans labor, natural things must be destroyed. Industry, agriculture, and business are in conflict with preservation.

Even in the economic context, we want renewability. Minerals once mined are gone forever, though they can to some extent be recycled in the economy. Plants grown, animals raised in agriculture, forests clearcut, and water diverted for irrigation are resource uses that require conservation. Mineralogical capital has to be spent, but there is no need to spend biological capital at all. When humans labor in and on the biological world, the human use of natural resources can be by value complementarity as well as by value capture. For it to be well with humans, it must be well with at least the useful trees, and even with the whole forest system in which they grow. In this economic sense, human well-being and the well-being of natural things, so far as these are resources for labor, are positively correlated. It is hard to have an economy doing well in a sick environment. Still, there is not yet *preservation*, only *conservation*.

Preservation comes with humans at leisure. The only sort of "resources" that will be *preserved*, as distinct from being *conserved*, are those "used" at leisure. They are not really used up at all; they are not converted to anything else by labor. They are loved at leisure. Even leisure can sometimes destroy resources; wildlife can be hunted until gone, wildflowers picked until extinct, mineral specimens collected, trails and lakeside campsites trampled and trashed until degraded. So recreation has to take care that it is constrained by preservation. Nature-based recreation that really loves the creation will defer to its integrity. Meanwhile, humans at labor destroy, modify, or at best conserve. Only humans at leisure preserve their environment. Environmental benefits and leisure are more closely connected logically and practically than first appears.

At first it seems odd to suggest that human leisure benefits nature. Rather, it is the other way around. The natural world benefits humans in multiple ways, both when taken as a resource and enjoyed recreationally. Human recreation is epiphenomenal to the natural world, a world that was in place for millennia before humans arrived. The natural world is what it is without benefit of humans. The "benefit" (to strain the word) is a *laissez faire* benefit. When humans are at this kind of leisure, they by conviction do nothing to interrupt spontaneous nature and may take pains to restore it. They limit their industry, labor, and development so as to leave place for wild nature. Environmental preservation results.

Leisure and Work

We cannot live by leisure alone. Every organism in nature must earn its way; and agriculture, forestry, and industry follow the natural imperative that humans must labor for food and shelter. This much of what is the case we can also

endorse as what ought to be. What nature requires (that humans work), and what is the case (that humans must work), we also command (humans ought to work). Otherwise humans cannot flourish and, in extremes, we die. That much of a bread-and-butter work ethic properly opposes a romantic naturalism that wants to leave nature untouched and enjoyed only at leisure. Natural resources must and should be put to multiple uses for the benefit of humans in their culture. Seeking goods of their kind, humans must modify the natural kinds.

But labor, industry, and business form only a part of our manifold human relations with nature. Nature as a resource to work on should not entirely preempt these other relations that are also important. After business hours, when we are at leisure and no longer consuming nature, we pursue our quality of life in ways that are recreational, residential, aesthetic, appreciative, pastoral, scientific, philosophical, and religious. Some areas should be absolutely free and others relatively free of human management and intervention. Some spaces should remain rural, some wild. There should be mockingbirds and cottontails, bobwhites and pristine sunsets, mountain vistas and canyonlands. The preservation of these things is valued for what they spontaneously are, not less than the transformation of other things into our artifacts.

Leisure and work are opposites, but not mutually exclusive categories. When we are not at work for pay, we may still be doing the chores. On vacation, we may work hard chopping wood or carrying a pack uphill. Much work has been spent on mountain cabins. Is a vacation with *Outward Bound* spent at leisure? Some persons do at work what they would nevertheless do if independently wealthy; and the really fortunate, such as an enthusiastic interpretive naturalist, or, to take my own case, a philosopher, can hardly distinguish between their leisure and their work. Leisure does not always mean pleasure, as hunters caught in a snowstorm can testify. Still, we are typically said to be at "leisure" when we are not at work drawing pay, not exploiting resources, not producing any product or service. In that sense, we can only appreciate something "for its own sake" when at leisure. If I am making a resource out of it, I am too otherwise occupied to consider it freely, objectively.

In certain respects, leisure time is superior to work time. A bumper sticker reports that a bad day fishing is better than a good day at work. Sometimes we are lazy and dislike work. But going deeper, in leisure time we are free for self-expression. At work we must do what the boss says, turn out what the customers need; but off duty we can be ourselves, self-motivated. The fortunate in work find it a vehicle of their self-expression, but even those persons also are who they are as much in their leisure as in their work. When such

self-expression occurs in enjoyment of the natural world, we must resist a tendency to think that the benefits associated with leisure must be soft. Some will say that they cannot be hard benefits, since one is not at work. One is off-duty, idle, not contributing to the gross national product. But all work and no play makes Jack a dull boy; at worst, it also degrades environments, and at best can go no further than conserving them.

At leisure we do not utilize; rather, we participate. We figure out who we are and where we are. This benefit of leisure is, if you like, mature character coupled with environmental appreciation and thus environmental protection. Those who join the Audubon Society, the Wilderness Society, the Siena Club, or the National Wildlife Federation do so not to work on wildlands but to enjoy them, entwined with the preservation of the wild for us and for what they are in themselves. Leisure and preservation are entwined.

LIFE SUPPORT BENEFITS

When humans recreate in nature in pensive moods, they learn again that culture remains tethered to the biosystem. The technosphere of their work is coupled with the biosphere they enjoy at leisure. The options within their built environments, however expanded, provide no release from nature. Our economic wealth may be labored, but our ecologic welfare has deeper, natural roots. Humans depend on airflow, water cycles, sunshine, nitrogen fixation, photosynthesis, food chains, decomposition bacteria, fungi, the ozone layer, insect pollination, earthworms, speciation and reproduction, climates, polar ice caps, oceans, and genetic materials.

Forests and soil, sunshine and rain, rivers and sky, the everlasting hills, the rolling prairies, the cycling seasons—these are superficially pleasant scenes in which to recreate at depth the surrounding creation that supports life. The central goods of the biosphere were in place long before humans arrived. They are the timeless natural givens that support everything else. An ecology always lies in the background of every culture. Some sort of inclusive environmental fitness is required of even the most technically advanced civilization.

These ecological values contribute positively to human experiences, and so humans want to preserve them for their beneficial consequences. But the ecological processes also are there apart from humans being here. Nature is an evolutionary ecosystem, with humans a late add-on. Nature is an objective value carrier; when humans work they cash in on, and spend, what is naturally given. Earth is a fortunate, fertile place, a place where life has been nourished. This

concept begins to value nature not simply as a resource for human life support, but for nature's exuberant support of all the fauna and flora. Earth can seem a satisfactory place because humans have found it a prosperous place to reside and work, but also because a myriad of species have found satisfactory environments, life-supporting niches into which they are well-fitted.

The "benefits," the good consequences, within this earthy life-support system are not really just matters of late-coming human interests (though it may seem so when we are actively on the job). At leisure, we are less naive. We are able to consider the living landscape for what it is without human labor. Earth is historically a remarkable, valuable place prior to the human arrival, culture, and industry. The human part in the drama is perhaps the most valuable event of all, and human labor does produce things of value unprecedented in spontaneous nature. But it seems parochial, as well as uninformed ecologically, to say that the human part alone in the drama establishes all its worth and is the only benefit to consider. Ecology is not something subjective, not something that goes on in the human mind. It is not something produced by human agriculture or business. Ecology is objective in the world; it must and ought to be preserved as the foundational support of all life, both human and nonhuman.

At work, one needs to be in the black; but at leisure, one knows that the most important color on Earth is green.

AESTHETIC BENEFITS

What is preserved in a park, a wilderness, a wildlife refuge, a water gap, an offshore island, a mountain on the skyline is not merely the life-supporting environment; we preserve the natural world with its possibility for dynamic aesthetic encounter. There is a large aesthetic component in all preservation of landscapes and wildlife. We want clean air not simply to breathe for life support but also to see through when enjoying scenery, and hence we amended (in 1977) the Clean Air Act to set air quality standards higher in scenic areas. Recreation and preservation are entwined again.

Sometimes people recreate in nature to show what they can do; they want game to shoot, a cliff sound enough for pitons, a snow-packed trail to ski. Sometimes they recreate to be let in on nature's show; they want to enjoy the aerial skills of the hummingbird at the bergamot, the scenic beauty of the Grand Tetons, to listen to wolves howl. The one activity uses nature as an outdoor gymnasium; the other activity—really more contemplation—uses nature as an

outdoor theatre. Now it is not life's support in the landscape so much as it is beauty in life and landscape that recreates. Nature's show must be there to be enjoyed.

A critical difference between aesthetic appreciation of art objects and of natural history is that the one is of human craft and the other of spontaneous nature. We are enjoying aesthetic creativity in nature, and if we discover that the supposed natural spontaneity has in fact been engineered by human ingenuity, the aesthetic experience collapses. At the cinema, the play, the symphony, the audience response is carefully controlled. In the field, the wildlife is organic form in locomotion, on the loose, without designs on the human beholder. The animal does not care to come near, sit still, stay long, or please. At this theatre we are not beholders of a programmed performance but of spontaneous nature—an eagle soaring, a snake slithering, a coyote on the run, the fiddleheads of ferns, purple mountains' majesties, the roar of cataracts, expansive seascapes.

At leisure, we may enjoy television wildlife programs and wildlife art and photography. Compared with direct experience in the wild, these are poor substitutes for the real thing, because we begin to admire the artist's brush strokes, and the photographer's skill as they have captured the wildlife. The event in nature is not presented but represented. Interest in the art form mingles with interest in the wildlife or scenery depicted. We admire the workman who entertains us in our leisure. Aesthetic experience of spontaneous nature requires the preservation of the wild in itself. We cannot benefit aesthetically on the scene, unless the integrity of natural history is maintained.

At leisure we may visit the zoo, but, again, compared with direct experience in the wild, zoos do little to preserve wildlife aesthetically. We may forget the bears we have seen in a zoo; we do not forget bobcats we by chance encounter in the wild. At leisure in the city park, we may enjoy a walk with our dog, but a thousand such walks are less than the howl of a wolf heard when returning to camp at dusk.

At leisure in wild nature, we sometimes enjoy a sense of the sublime. The sense of abyss overlooking a gorge is aesthetic, as is the eerie chill when, nearing a stormy summit, one's hair stands on end in the charged air. Such experiences are unlikely to be had in built environments, whether at work or at leisure. They are unlikely to be had in factories, or even at the Metropolitan Museum. For such experiences, we must have environments that are primeval and pristine.

After seeing the mating dance of the woodcock, Aldo Leopold concluded, "The woodcock is a living refutation of the theory that the utility of a game bird is to serve as a target, or to pose gracefully on a slice of toast. No one would rather

hunt woodcock in October than I but since learning of the sky dance I find myself calling one or two birds enough. I must be sure that, come April, there will be no dearth of dancers in the sunset sky" (Leopold 1969:34). His aesthetic experience of the dance demanded the preservation of the birds he so much enjoyed. It constrained how far he could enjoy the hunt

At such moments of leisure we realize that our economy, benefited so much from what we produce at work, is surely rich enough that we can afford to keep wild things; it is not so rich that we can afford to lose them.

SCIENTIFIC BENEFITS

Most of us think that science is work, not leisure. Certainly professional scientists must work for pay. During their leisure, they produce no scientific benefits. So what can be the connection between leisure and scientific benefits? Sometimes amateur scientists study ferns or birds. We might not want to call such serious concerns recreational at all. Such pursuits are perhaps not for pay, but neither are they exactly play. They involve curious humans at work figuring out what goes on in the natural world. They are a kind of recreation gone in pursuit of creation. In that sense, persons at such leisure studies produce scientific benefits, Kenneth Kent Mackenzie, who produced the major taxonomic study of *Carex*, was a New York City corporation lawyer by trade (Mackenzie 1940). Fred Hermann made some of the major moss collections in Colorado on weekends and after he retired as Curator of the Forest Service Herbarium in Fort Collins.

Recreation, since it requires creation, is compatible with those sciences that are conducted in the field. Professional biology also requires the natural world. Although much activity in recent science requires elaborate instrumentation and analytical equipment in indoor laboratories (electron microscopes and ultracentrifuges), the subject matter of all natural science lies first and fundamentally in field natural history. Any big scale biology still requires its laboratories outdoors. When and where humans at leisure resolve to leave the natural world as it spontaneously is, we have such an outdoor laboratory. The great primeval theatre of nature, which provides life support, which is enjoyed aesthetically, can also be studied scientifically; and no matter whether this is done by persons at work or at leisure.

The answers to great unanswered questions lie hidden in the spontaneous natural environment. Despite ecology's progress in recent decades, it is still the most juvenile natural science. Scientists have little idea how evolution takes place at ecosystem levels. Successive levels of biochemical organization have properties that cannot be predicted from

simpler levels, and the least known level of biological organization is that of landscape ecology. We are not yet clear about what the natural successions were, or are, over a few hundred years in many regional systems. We do not yet know all the effects of the big predators on their ecosystems, the extent to which wolves regulate the ungulates which regulate the condition of the range.

Scientists do not know why the balds in the Southern Appalachians are there or why treeline in the alpine Rocky Mountains varies as it does. Scientists debate whether and how insects regulate forest productivity, uncertain whether insects are detrimental to trees or have coevolved with them to the mutual benefit of both. In analogous ways, insect outbreaks may provide beneficial effects such as those of fire that we have only lately come to recognize. The answers to these questions are likely to come from the same wild lands as those on which people recreate, where preservation simultaneously serves recreational and scientific needs.

Nor are the connections between recreators at leisure and scientists at study simply from the happy coincidence that both want pristine nature. The kinds of recreational experience that humans enjoy on wild lands is often more or less science-based. Everyone who stands on the rim of the Grand Canyon is at leisure, and not one of them understands the Grand Canyon unless it is seen through a scientist's eyes. We learn that the Canyon is five thousand feet deep and was within fifty feet of its present depth when *Homo sapiens* arrived on the planet. That kind of experience endorses Teddy Roosevelt's plea, "Leave it as it is. You cannot improve on it, The ages have been at work on it, and man can only mar it" (Roosevelt 1903).

Tens of thousands of persons drive over Trail Ridge Road in Rocky Mountain National Park each season and visit the interpretive center there, with their experiences enriched by what each learns from scientists about the alpine life and its harsh processes. Experience of such tenacious and fragile life, aided by interpretive naturalists, feeds in turn a resolution to preserve the tundra. The recreational experience and the scientific interpretation team up to produce preservation of the natural system; and the natural system, preserved, feeds back to produce future benefits for science and recreation alike.

HISTORICAL BENEFITS

These scientific benefits are entwined with historical benefits of two kinds: cultural and natural. Few persons are professional historians. History is something most of us learn at leisure. But without history we cannot know who we are and where we are. As we first learn it, history is cultural history, that of politics and kings, of the wars and migrations

of peoples. Even this cultural history can benefit from preserving wild lands, New World cultures remain close to the memory of a primitive landscape. Forests, prairies, and ranges ought to be preserved as souvenir places for each generation's learning (however secondarily or critically) our forefather's experiences, learned there quite as much as in the Minuteman Historical Park. They provide a lingering echo of what we once were, of a way we once passed. There is nothing like the howl of a wolf to resurrect the ghost of Jim Bridger. Experience of the wild mixes the romance and the reality of the past in present experience. It is impossible to understand American history without an appreciation of the continent that Americans settled; and some of that continent, preserved, yet wild, will feed this sense of history.

History is natural history—not as we first learn it, but as history really first took place. Beyond cultural history, wild lands as natural history provide the profoundest historical museum of all, a relic of the way the world was in 99.99% of past time. The natural tale, how things are, how they came to be, is a story worth telling, and natural history is the textbook from which it can be deciphered and taught. Human roots lie in it and humans find the story a delightful intellectual pursuit. That history too has an epic quality—the eras of the dinosaurs, of the glaciers, of the inland seas, of the Appalachian miogeosyncline, of Lake Bonneville, of the Rocky Mountain orogeny, of bison ranging across the plains.

Tourists at Yellowstone learn that anaerobic bacteria still present in those steaming pools exist in an optimal thermal habitat that survives little changed from the time when life evolved in an oxygen-free atmosphere, and that further studies might furnish clues to the origins of life on Earth. Such recreation has touched creation, touched history, and, after vacation, we return to work with a better sense of place and perspective. We need more than a little leisure to think across a billion years, and, afterward, we return to our own work with less hurry and more patience.

ENDANGERED SPECIES/ ECOSYSTEMS BENEFITS

When recreation takes place in the presence of endangered species (and few pristine areas are without their rare species), leisure mixes with serious preservation. Recreation again touches creation. Such concerns appear in the Endangered Species Act of 1973, where Congress lamented the lack of adequate concern for and conservation of threatened and endangered species" and mixed this with "esthetic, ecological, educational, historical, recreational, mid scientific value to the Nation and its people" (U. S. Congress

1973, sec. 2), National parks, wildlife refuges, forests, wildernesses — for whose benefit are these preserved? An old and still good answer is that they are for the multiple uses of the people, including their recreational use. A new and powerful answer is that these are the habitats of grizzly bears and whooping cranes, of *Trillium persistens* and the palila, and that these endangered species have something like a biotic right to exist. The deeper good being preserved is life itself, indeed the highest of priorities.

The order of priority is preservation first, which ipso facto benefits the wild species, and, secondly, recreation (or education, aesthetics, science), as it may benefit humans. These types of recreational benefits are unavailable unless these rare species are there, but such recreational benefits defer to the preservation of species. In Rocky Mountain National Park, at lakes containing mineral salts frequented by bighorn sheep, a Park Service sign cautions visitors not to approach too closely because harassment of the sheep can result in their death; it concludes, "Respect their right to life." Visitors enjoy seeing the bighorns, but only at more distance than they might otherwise prefer, because such distance respects their life. Indeed, the Specimen Mountain trail is closed entirely during lambing season. Mountaineers have long enjoyed climbing Lumpy Ridge there, but no longer during nesting season. The area is closed as prime habitat for endangered peregrine and prairie falcons.

Unfortunately, those who recreate outdoors in the United States no longer see 500 species and subspecies that have become extinct since 1600 (Opler 1976). Unfortunately, they rarely see another 500 species that are (officially or unofficially) threatened and endangered. People enjoy seeing these things of course, and they do so at leisure. No one is paid to go and visit the Devil's Hole with its pupfish, or to take a field trip to the endangered Arizona hedgehog cactus, *Echinocereus triglochidiatus* var. *arizonicus*. We do not save these things because they are of economic benefit. They are of no use to anybody at work. To the contrary, the list in the Endangered Species Act does not even mention economic benefits. It blends such things as recreation, science, aesthetics, ecology, and history. If anyone wants to plead economic benefits against the preservation of an endangered species, that case must be argued before a special high-level committee.

A bird watcher spots a pair of whooping cranes in a flock of sandhill cranes and never thereafter forgets the rare birds, a vanishing life form of beauty. In the months and years following, reading of an increase or decrease in their numbers, he hopes for their recovery and fears their extinction, hopes above all that humans will not cause their extinction. An ingredient in this hope is the memory of how once he shared aesthetically a moment of wonder, of reverence for

life. His leisure experience—if "leisure" is the right word for such experience—is inseparably entwined with the preservation of species. Notice always that the presentation comes first and the leisure follows. People want these things there whether they or anybody else sees them or not.

RELIGIOUS/PHILOSOPHICAL BENEFITS

We are having trouble with what counts as leisure activity—studying *Carex*, learning one's ecology, re-contacting the primeval creation. Being religious and philosophizing are not activities that many engage in for pay. A philosophy degree is worthless for getting a job. On the other hand, religion is too vital in life to think of as recreational. Yet rest from work and the sabbath are closely connected in the Judeo-Christian tradition. Six days we are to work, but the seventh is a sabbath for worship and rest. We can think of those who are religious in the out-of-doors as being, if you like, on sabbath. Recreation once more blends with creation.

Nature generates poetry, philosophy, and religion, and at its deepest educational capacity we are awed and humbled by staring into the stormy surf or the midnight sky, by overlooking the canyonlands, or by an overflight of migrating geese. Mountaintop experiences, sunsets, canyon strata, or a meadow of dogstooth violets can generate experiences of "a motion and spirit that impels ... and mils through all things" (Wordsworth 1798). The natural environment becomes some thing like a sacred text, a cathedral. For wilderness purists intensely, and for most persons occasionally, outdoor settings provide religious experiences. The wilderness elicits cosmic questions, differently from town. Some of the most moving experiences attainable are to be had there. Encounter with nature integrates people, protects them from pride, gives a sense of proportion and place, teaches them what to expect and what to be content with, and comforts them with the natural certainties.

Nature is a vast scene of birth and death, springtime and harvest, permanence and change, of budding, flowering, withering away, of pain and pleasure, of success and failure, of beauty giving way to ugliness and again to beauty. From the contemplation of it all there comes a feeling valuing life's transient beauty sustained over chaos. There is a music to it all, even when in a minor key. It is wild lands above all that carry this signature of time and eternity, and their preservation and enjoying these religious experiences are inseparably entwined.

A forest wilderness is a sacred space. "The groves were God's first temples" (Bryant 1825). There we recognize God's creation, or the Ultimate Reality, or a Nature sacred

in itself. I become astonished that the forest should be there, spontaneously generated and regenerated on its own, astonished that I should be there, immersed in it and struggling to come to terms with it. There are no forests on Mars or Saturn; none elsewhere in our solar system, perhaps none elsewhere in our galaxy. But Earth's forests are indisputably here, an archetypal expression of the creative process. There is more operational organization, more genetic history, more of interest going on, in a handful of forest humus than in the rest of the universe, so far as we know. The forest is presence and sacrament of ultimate sources. The forest is primal ground, as nearly as we can encounter this in phenomenal experience. The wilderness works on a traveler's soul as much as it does his muscles.

The forest is where the "roots" are, where life rises from the ground. A wild forest is, after all, something objectively there—there without benefit of human subjectivity. The phenomenon of forests is so widespread, persistent, and diverse, appearing almost wherever moisture and climatic conditions permit, that forests cannot be accidents or anomalies, but rather must be a characteristic, systemic expression of the creative process. Some experiences in old-growth forests are simply unavailable elsewhere.

If we must put it so, overworking the term, nature is a philosophical "resource," as well as bringing scientific, recreational, aesthetic, or economic benefits. But, using a better word, a word that combines the protectionist attitude with the religious mood, we want a wildlife or wilderness "sanctuary." At these sacrosanct, holy places we can get near to ultimacy. Humans are programmed to ask why, and the natural world is the cradle of our spirituality. The unexamined life is not worth living, said Socrates, and no one pays us to examine life; that must be done at leisure. Contrary to Socrates—less wise when he lamented that trees and fields could not leach him anything—life cannot be fully examined until examined in its ecology and evolutionary history.

It profanes such experiences and nature alike to see an archetypal natural world and then to take no interest in its preservation. The life that examines itself in its evolutionary ecosystem finds that what we are subjectively experiencing lies within something objectively miraculous. When we argue for preservation, such values will again be said to be "soft" beside the "hard" values of commerce. They are vague, philosophical, subjective, impossible to quantify, or demonstrate. Perhaps. But it does not follow that such values are either unreal in human experience or unreal in the forest. What is really meant is that such values lie deep. We want to keep our roots.

INTRINSIC NATURAL VALUES

Pointed in this direction already by concerns for endangered species and their biotic right to exist, by the wish to leave some wilderness untrammelled by humans, by philosophical and religious experiences in encounter with creation, those who recreate in the natural environment reach beyond human benefits to intrinsic values in the natural order. Wild creatures are of value in themselves, not just as resources for our use and pleasure. Encountering the creation, past concerns of recreation, we discover that values have been created in nonhuman lives. At leisure we resolve to preserve environmental benefits in the nonhuman sense.

The wild creatures defend their own lives, because they have a good of their own. Animals hunt and howl, seek shelter, build nests and sing, care for their young, flee from threats, grow hungry, thirsty, hot, tired, excited, sleepy, seek out their habitats and mates. They suffer injury and lick their wounds. They can know security and fear, endurance and fatigue, comfort and pain. Even plants have biological needs—water, nutrients, sunlight; they can be injured and suffer stress, despite the fact that they feel no pain.

Indeed, in this sense, every organism defends its own life. Every genetic set has a program it is set to execute; a life is a spontaneous motion toward such a goal. Every organism resists dying and assimilates environmental materials to its own needs, struggling for health and resisting disease. Each organism has goods of its kind independently of the question whether these are goods for humankind. Humans recreating outdoors may enjoy being let in on these goods of a nonhuman kind. Beyond this enjoyment, one of the benefits to be preserved outdoors is these nonhuman goods—the flourishing in rural and wild places of these lives other than our own. These creatures, too, prefer their wild outdoors, and we want the natural environment preserved not simply because it is good for us, but because it is good for eagles and bighorn sheep, good for an everglades ecosystem or a salt marsh. Just so far as the environmental integrity is incomplete, the experiences sought are incomplete.

SOURCES AND RESOURCES

The word *source* is embedded in the word *resource*, like the word *creation* is embedded in *recreation*. With soil, timber, or game, the meaning of "resource" is clear enough. Humans tap into spontaneous nature, dam water, smelt ores, domesticate, manage, and harvest, redirecting natural courses to become our resources. We wanted potatoes, but the fields grew worthless brush. We wanted logs dovetailed around us

as a home, but the world gave only standing trees. We rearrange natural properties creatively to meet our needs. Molybdenum serves as an alloy of steel. Vincristine and vinblastine, extracted from a Madagascar periwinkle, are used to treat Hodgkin's disease and leukemia. Such resource use can persuade us that the benefits carried by nature almost always come when humans work at it, make over natural sources into our resources.

But after work, we also find that at leisure we want some nature preserved and pristine. If one insists on the word, we can still think of nature as a resource, but resources now seem to be coming in two kinds: the ordinary kind which are rearranged into artifacts; and the extraordinary, wild type which we impact as little as possible. Contrary to typical resource use, recreational visitors come to the Teton wilderness on its own terms and do not reform it to theirs. Humans ordinarily value resources they can make over, but here value what they will not disturb lest they devalue it, although they do wish to visit it

Well, some will reply, nature offers some resources that take no redoing or consuming, only looking and enjoying. Most are commodities to be drawn upon, but others are amenities left as is. Everything is a resource, really—if it is worth preserving at all. The argument cites how humans redirect nature to their benefit, and then turns to apparent nonresources. Nevada authorities labor to save the Devil's Hole pupfish, which requires reduced water drawdown for ranching. Southwest developers agree not to build the Marble Canyon Dam, and members of the Wilderness Society contribute money to save wildernesses, some nearby which they expect to visit, and some remote, as in Alaska, which they do not. But some humans are fascinated by the pupfish, run rafts down the Grand Canyon, visit the Indian Peaks, enjoy knowing the Alaskan wilds are there, and hope their children may visit them. What we want is high quality wilderness experience that improves human life.

But perhaps the resource orientation is only a half-truth and afterward logically misguided, because man is the only measure of things. Everything is defined in relation to us. One is not so much looking to *resources* as to *sources*, seeking relationships in an elemental stream of being with transcending integrities. Our place in the natural world necessitates resource relationships, but there comes a point when humans want to know how we belong in this world, not how it belongs to us. We want to get ourselves defined in relation to nature, not just to define nature in relation to us. A powerful emotion when leaving culture and our works to return to nature and its works is the sense of entrance into a natural scene that is there and flourishing independently of any human works, resources, or managerial control. The forces by which these run are not human forces; they are the

biological and physical sources that have generated the world. They ought to and must be preserved. This larger appreciation of nature, with appropriate conduct, is what we figure out at our leisure.

PERSONAL RESIDENCE IN NATURAL HISTORY

When free from the demands of work, at leisure we realize an attachment to landscape. Whatever our options in culture, however we rebuild our environments by our labors, the world is not just our resource but also our residence, where we dwell for a lifetime. If our residence is a house, the house must be some place, and even if in a city, the city, too, must lie on a landscape. In wilderness areas humans may resolve to be only visitors who do not remain, but we have to reside somewhere. On the 98 percent of the continent that humans occupy, sooner or later our residence must be and ought to be natural not in the pristine sense but by keeping much of the rural and the wild about the places where we live. There is entwined residence.

The art of life, if we wish to use the term "art" for something we humans make, is to reside with an appropriate culture embedded in the continuing natural world. We enjoy the seasons, the vital regenerative powers of life, the life support, the proportions of time and place. We realize something of the richness and integrity of what is taking place on the landscape. We must not think of leisure as only activities that take place trivially when we are idle; leisure in the broad sense is lifestyle larger than work. Leisure in the ecological sense is our being at home in this world in which we reside. Human habits also need a habitat.

There follows a sample test of your sensitivity in your resident environment. The items are only suggestive; some will apply at particular seasons and places and to particular persons. Notice how again and again this sense of personal residence requires and results in an abiding natural world as well.

- Name a half-dozen wildflowers currently in bloom in a nearby natural environment you frequently visit. Where can violets first be found in the spring? What will be the last flowers of autumn?
- Recall an experience appreciating nature aesthetically—a sunset, a cumulus cloud, a snowflake, the flair of an elm, a flight of geese over head—within the last week.

- Do you have a sense of seasons passing (beyond calendar dates), a sense of the day passing (beyond o'clock)? Do you ever check time by looking at sun or sky, or think seasons by looking at a flower or bird that has arrived, or disappeared? When was your last experience of geological time?
- Recall a natural place—a swimming hole, a waterfall, a tree or boulder in the meadow, a mountain summit, a country road, a shoreline, a bay—that you enjoyed as a child, one to which you could not return without bringing goose pimples or a lump to your throat.
- Name a half-dozen birds now resident in, or migrating through, your environment. Where is the nearest active bird's nest? What birds now present will leave, come winter or summer?
- What large mammal did you last see in the wild? Small mammal?
- What encounter with an animal, bird, or plant recently took you by surprise, so much so that you turned aside from what you were doing to observe it?
- What fauna and flora inhabited the landscape on which your home is located before humans lived there? Where is the nearest that each of these can now be found? Can you name your native ecosystem?
- What species are especially characteristic of your ecosystem—not found or more difficult to find when you travel further north, south, east, or west? What is your state animal, flower, bird?
- What species are endangered in your state? Which are not officially listed but ought to be?
- What local natural area that you formerly enjoyed has been so much degraded by development that you are disappointed when you return there?
- If all the human-made noises were to cease, what cries, calls, or natural sounds could you expect to hear after dark at your home or in a nearby natural area?
- Where is the nearest wild or semiwild area large enough that it would take a day on foot to cross it? How much time have you spent in this area?
- What part of your local natural environment—birds, flowers, insects, trails, fishing spots, tackle, flies and baits to use, hunting areas, drainage patterns and names of streams, types of flowers and vegetables that grow best in your climate—do you know particularly well, so much so that others seek you out for information?

- Recall a recent newspaper story or television feature dealing with biological or environmental conservation.
- When did you last write a congressman or other official about a matter of environmental concern? Of what conservation group are you a member? Have you made any recent contribution toward environmental conservation?
- What was the most recent natural area in your state to be protected by federal, state, or private designation? For what areas is protection still being sought?
- What is the next outing you plan that will increase your familiarity with your natural environment? What has been your most memorable such outing this year?
- How many hours did you spend last week with your feet on the ground? With the sky over your head?
- When did you last act, or refuse to act, in encounter with nature out of moral conviction?
- When was your last encounter with birth or death in the natural world? When did you last pause with a sense of mystery before nature? With a sense of assurance, or a shudder? Recall a recent experience of the sublime, or religious experience outdoors. Where, if you could, would you most like to be buried?

These are all activities of leisure in that they do not occur when we are at labor; they do not belong to commerce, industry, agriculture, or business. They belong to a proper named person who lives in Montana, Utah, Newfoundland, on the tall grass prairie, or the Cape Cod coastline.

KEEPING LIFE WONDERFUL

We ought to keep life wonderful, and so we must keep a natural wonderland, In more subdued language, we ought to keep life natural, and only by keeping nature around us can we keep life natural. Experiences of wonder take place for most persons when they are at leisure; not many find much that is sublime in the office or at the factory. Since there is no wonder present in nature apart from humans, we could say that humans preserve nature as a catalyst for human wonder, valued for its capacity to elicit these experiences. Humans desire an environment sophisticated enough to match their wonderful brains. From another perspective, we ask whether such wonder (taking place in wonderful brains)

can be generated except in the presence of something worthy enough to induce it, which suggests that nature is intrinsically a wonderland. Such a natural wonderland generates not only wonder in humans, but also their resolution to preserve it. Natural wonders keep human life wonder full when humans keep a world full of such wonders.

LITERATURE CITED

Bryant, W. C. 1825. *A forest hymn*.

Cole, G. F. 1969. Elk and the Yellowstone ecosystem. Yellowstone National Park. 14 p.

Houston, D. B. 1971. Ecosystems of national parks. *Science*. 172:648-651.

Leopold, A. 1969. *A Sand County almanac*. New York, NY: Oxford University Press. 226 p.

Mackenzie, K. K. 1940. *North American cariceae*. New York, NY: New York Botanical Garden.

Opler, P. A. 1976. The parade of passing extinctions: a survey of extinctions in the U. S. *The Science Teacher*. 43 (9):30-34.

Roosevelt, T. 1903. Address at the Grand Canyon, recorded in *The New York Sun*. May 7.

U.S. Congress. 1872. Yellowstone Act. 17 Stat 82 (Boston, MA: Little Brown, and Co. 1873).

U. S, Congress. 1964. Public Law 88-577. Wilderness Act. 78 Stat. 891.

U, S. Congress. 1973. Public Law 93-205. Endangered Species Act. 87Stat. 884.

Wordsworth, W. 1798, *Lines composed a few miles above Tintern Abbey*.