Wildlife Need Habitat Off-Limits to Humans!

Abstract

In 4 million years of human evolution, there has never been an area off limits to humans—an area that we deliberately choose not to enter so that species that live there can flourish unmolested by humans. Yet, our observations and intuition about wildlife suggest that most want and need such seclusion in order to survive. Recent research confirms this. Even recreation, traditionally considered harmless, is actually detrimental to wildlife. Restoring true wilderness will require rethinking and redesigning all land uses and wildlife management regimes, as well as changing how we relate to wildlife.

Keywords: wildlife, destruction of habitat, wildlife sanctuaries, sustainable future

Introduction

 Human beings think that we own, and have the right to dominate, every square inch of the Earth. That, besides being an absurd idea, is the basic reason why we are losing, worldwide, about 100 species per day. Habitat loss is at the top of every list of the primary reasons why species have become extinct or are in danger of becoming extinct.

*"Of what avail are forty freedoms, without a blank spot on the map?"* Aldo Leopold

*"For every living creature [including humans!], there are places where it does not belong." p.251 "I believe it is a public responsibility to safeguard what we can of wilderness before the great push of man's numbers; and to safeguard with it ... the shy wild ones that need man-less expanses in which to thrive." p.262. Paul L. Errington, Of Predation and Life*

*"I confess to further disquieting thoughts as to how much moral right man actually has to regard the Earth as his exclusive possession, to despoil or befoul as he will. Man has or should have some minimal responsibility toward the Earth he claims and toward the other forms of life that have been on the Earth as long as or longer than he has." Paul Errington, A Question of Values, p.153.*

*"If you want to be good to the environment, stay away from it."* Edward L. Glaeser

*"The biggest thing for habitat and grizzly bear conservation is managing human access. If you can keep people away, you can keep grizzlies safe. Over 90 per cent of grizzly mortalities in Alberta are caused by humans."* Carl Morrison

*"It is true to say that large tracts of Tropical Africa are still sealed off from settlement by man because they are occupied by the tsetse-fly"* V. B. Wigglesworth, The Life of Insects, p.311.

*"As humans we live with the constant presumption of dominion. We believe that we own the world, that it belongs to us, that we have it under our firm control. But the sailor knows all too well the fallacy of this view. The sailor sits by his tiller, waiting and watching. He knows he isn't sovereign of earth and sky, any more than the fish in the sea or the birds in the air."* Richard Bode, First You Have to Row a Little Boat, p.3.

"There is a way that nature speaks, that land speaks. Most of the time we are simply not patient enough, quiet enough, to pay attention to the story." Linda Hogan

"We need to witness our own limits transgressed, and some life pasturing freely where we never wander." *Henry David Thoreau*

"When most wild animals first encounter humans, they respond as they would to any predator -- by running, swimming or flying away." Samia et al

"As our species spread to various continents, we wiped out their large mammals; as we progressed to oceanic islands, we extinguished many mammals that were much smaller, and even more birds, especially flightless species." Paul S. Martin

People recreate outdoors because they enjoy being in the wilderness. But the more that humans insert themselves into natural habitats, the less wildlife seem to want to be there. … But Matt Shinderman, a natural resources professor at OSU-Cascades, says the thought process needs to go beyond balancing types of recreation. Sometimes, he says, the only appropriate human use is no human use. 'Striving for balance would be great,' Shinderman says. But, 'we need to start by asking ourselves, as a community, is there anything we are willing to leave alone?'" <http://www.bendsource.com/bend/near-and-mule-deer/Content?oid=2524009>

"It’s a fact that we have to share nature with dangerous animals. Whether it is by land or by sea, there could come a time when we run across a creature that is wired in such a way that it does not want us around." https://www.outdoorhub.com/news/2016/07/05/montana-bear-kills-mountain-biker/

Chiribiquete National Park is a park in the Country of Columbia that is the largest rainforest park in the world. It received World Heritage Site designation a few years ago. Columbia has it completely closed to people, except biologists who are employed to monitor and study it. It is very strictly regulated. It has some "uncontacted tribes" living there that are protected. It is a model of what can be possible if a culture/country wants it.

The Northwest Hawaiian Islands are off-limits to everyone except biologists. But, of course, the wildlife has a hard time distinguishing biologists from normal people.

1.5% of the land area of Russia is protected as strict Zapovednik nature reserves with very limited access. http://www.georgewright.org/181danilina.pdf

 Outright destruction of habitat (for example, paving it or turning it into farms, golf courses, housing developments, or parks) is not the only way that an area can become untenable (useless) as habitat. Anything that makes it unattractive or unavailable to a given species causes habitat loss. Have you ever wondered why most animals run away when we come near? It certainly isn't because they love having us around! Many animals simply will not tolerate the presence of humans. The grizzly bear and mountain lion are just two examples. The grizzly needs a huge territory, can smell and hear a human being from a great distance, and will avoid going near a road.

 Humans are the ants at every other species’ picnic. One of the first things that children learn about wild animals is that most of them run (fly, swim, slither, hop) away whenever we get close to them. (A few, such as mosquitoes, like having us around.) Some are more tolerant of us than others, but in any given area, there are at least some that don’t like having us around.

 Let’s take as a premise that we do not want to cause any extinctions. I think that most people agree with that. But what follows, is that we have to set aside adequate habitat for all existing species, and that much of it must be human-free. That is not understood by most people, even most biologists. We claim to believe in the Golden Rule, but we apply it only to fellow humans. It has been said that "The measure of a culture is how well it treats its least powerful members". By this, our own measure, human society is a failure in its relations with the rest of creation.

 In 6 million years of human evolution, there has never been an area off limits to humans -- an area which we deliberately choose not to enter so that the species that live there can flourish unmolested by humans. There are places called "wildlife sanctuaries", where human recreation, hunting, logging, oil drilling, or even mining are usually allowed. There are a few places where only biologists and land managers are allowed (e.g. California’s condor sanctuary). There have been places called "sacred", where only priests could go (in other words, they were "sacred" only to ordinary people). But to my knowledge, there has never been any place, however small, from which the human community has voluntarily excluded itself.

 There has been a lot of talk in recent years about looking for life on other planets. For its sake, I hope we never find it! Why, after the inconsiderate way we have treated wildlife on this planet, should we be allowed to invade the even more fragile habitats that may be found in other places? While the thought of finding such life is intriguing, I haven’t heard anyone suggest that we consider its feelings and wishes, e.g. the likelihood that it would want to be left alone (quite reasonable, considering our history!). How are we going to communicate with intelligent life on other planets, when we can’t even communicate with the intelligent life on this planet? Besides, since the laws of physics and chemistry are universal, it is unlikely that any such organisms would be dramatically different from those on Earth.

 What scientific evidence do we have that wildlife need to be free of human intrusion? Not much, probably because scientists are people, and like the rest of us are instinctively curious about everything and every place, and don’t care to be excluded from anywhere. For most of us, travel is just entertainment, but scientists probably see their livelihood and success as depending on being able to travel to any part of the globe and "collect" (i.e., kill) any organism they find there. I doubt that there are many scientific studies of the environmental harm done by the pursuit of science.

 (As recently as 1979 (Wilkins and Peterson, p. 178), we find statements like "Populations of wild animals can have the annual surplus cropped without harm". Insect field guides, e.g. Powell and Hogue (1979), also recommend collecting insects as "an exciting and satisfying hobby for anyone" (p. 359). Does that mean that collecting grizzlies or tigers is also an acceptable "hobby"?)

 However, there is recent research (e.g. Knight and Gutzwiller, 1995) showing that recreation, even activity traditionally thought of as harmless to wildlife, can be harmful, or even deadly: "Traditionally, observing, feeding, and photographing wildlife were considered to be 'nonconsumptive' activities because removal of animals from their natural habitats did not occur.... nonconsumptive wildlife recreation was considered relatively benign in terms of its effects on wildlife; today, however, there is a growing recognition that wildlife-viewing recreation can have serious negative impacts on wildlife" (p. 257). "Activities [involving] nonmotorized travel ... [have] caused the creation of more ... trails in wildlands.... These activities are extensive in nature and have the ability to disrupt wildlife in many ways, particularly by displacing animals from an area" (p. 56). "Recreational disturbance has traditionally been viewed as most detrimental to wildlife during the breeding season. Recently, it has become apparent that disturbance outside of the animal's breeding season may have equally severe effects" (p. 73). "People have an impact on wildlife habitat and all that depends on it, no matter what the activity" (p. 157). "Perhaps the major way that people have influenced wildlife populations is through encroachment into wildlife areas" (p. 160). "Recreationists are, ironically, destroying the very thing they love: the blooming buzzing confusion of nature.... The recreation industry deserves to be listed on the same page with interests that are cutting the last of the old-growth forests, washing fertile top soils into the sea, and pouring billions of tons of greenhouse gases into the atmosphere" (p.340). (Note: wildlife has a hard time distinguishing between biologists and recreationists!)

 In other words, if we are to preserve the other species with which we share the Earth, we need to set aside large, interconnected areas of habitat that are entirely off limits to humans ("pure habitat"). Our idea of what constitutes viable habitat is not important; what matters is how the wildlife who live there think. When a road is built through a habitat area, many species will not cross it, even though they are physically capable of doing so. For example, a bird that prefers dense forest may be afraid to cross such an open area where they may be vulnerable to attack by their predators. The result is a loss of habitat: a portion of their preferred mates, foods, and other resources have become effectively unavailable. This can reduce population sizes, cause inbreeding, impoverish their gene pool, and impair their ability to adapt to changing circumstances (such as global warming). It can lead to local (and eventually, final) extinction. Small, isolated populations can easily be wiped out by a fire or other disaster. Other species are not as flexible as we are. We can survive practically anywhere on Earth, and perhaps other places as well!

What Wildlife Need

 Wildlife are not that different from us. Chimpanzees, for example, are genetically 98% identical with us. Therefore, we should expect that they need just what we need: a place to live that contains all necessary resources (food, water, shelter, potential mates, etc.). It is not too hard to tell when animals are dissatisfied -- they vote with their feet; they die, or leave. The key is to look at things from the wildlife’s point of view. As simple and obvious as it sounds, it is rarely done. For example, how often do road builders consider how wildlife will get across the road? My cat communicates clearly what he wants: when he wants to go out, he whines and then goes to the door and stares at the doorknob; when he is hungry, he leads me to the refrigerator or his dish. We are proud of our power of empathy, but rarely apply it to wildlife. We don’t want to be bothered by wildlife in our homes; wildlife apparently feels the same.

"Pure Habitat"

 Go to any library, and try to find a book on human-free habitat. Apparently, there aren’t any! There isn’t even a subject heading for it in the Library of Congress subject index. I spent two days in the University of California’s Biology Library (in Berkeley), a very prestigious collection, without success. The closest subject is probably "wilderness", but wilderness is always considered a place for human recreation. So-called "wildlife sanctuaries" encourage recreation, and often allow hunting, logging, oil drilling, or even mining. The category "animal-human relationships" should contain such a book, but doesn’t. The idea is conceivable, because I just did it, but apparently no one has even considered it important enough to write about, since we "own the entire Earth".

 I once read Dolores LaChapelle’s Sacred Land Sacred Sex (1988), hoping to learn what sacred land is. I didn’t find an answer in the book, but I took the fact that sacred land is often restricted to the "priesthood" to imply that sacred land is honored by not going there! So we could say that human-free habitat is "sacred" land, except to priests and scientists (a type of "priest"), who are always allowed to go there. (This is another indication that science desacralizes whatever it touches. Ironically, it is science that has proven the need for sacred land!) Probably the simplest term is "pure [wildlife] habitat", but "wilderness" and "wildlife sanctuary" should be synonymous with it. ("Wildlife" is "all non-human, no domesticated species", and thus doesn’t include us.)

 (Note: I am not talking about de facto human-free habitat, that is off-limits simply because it is difficult to get to, such as the inside of a volcano or the bottom of the ocean. Such areas will all be visited in time, as technology becomes available that makes them accessible. The key is the conscious decision of the human community to restrain itself from going there.)

Why Create Pure Habitat?

 Some wildlife is sensitive to the presence of people. In order to preserve them, we need to create areas off-limits to humans.

 It’s educational. Publicity about areas where people aren’t allowed teaches people about what wildlife need, and how to preserve them.

 Some animals are more dangerous to people or livestock than humans are willing to accept (e.g. tigers or grizzlies). The only way we can preserve such species is to grant them a place to live where there are no people or livestock. Otherwise, whenever they attack someone, we kill them, as recently happened to a tiger that attacked a zoo employee in India.

 The more accessible an area is to people, the less it is respected. "Sacred" land is accorded the highest respect. "Terra incognito" was not even mapped. A map tells people (nonverbally) that it is okay to go there. So do trails. Roads, which are built by bulldozer, "say" that we can do anything we want to the land. Many park trails are now created by bulldozer. Even when bikes aren’t allowed there, it is hard to keep them out, because the use of a bulldozer indicates that the land is not important, and that rough treatment won’t hurt it. Part of being sacred is the feeling of mystery. Mapping, roads, and other aids to human access destroy much of that feeling of mystery. For example, a map trivializes all areas and reduces them to a few lines and colors on paper. Beauty (except for some "scenic highways") and biodiversity are generally ignored.

 Wildlife generally prefer human-free habitat. Since they are so similar to us (98%, in the case of the chimpanzee, and probably a similar large percentage for every other species), we have very little excuse to treat them differently. If we deserve to be unmolested in our homes, so do they.

 There are too many species on the Earth, and too little time, to study them all and determine their precise habitat requirements. The only safe course is to assume that they all need at least the habitat that they now occupy, and preferably, access to their traditional territory. Or, as Aldo Leopold said, we need to "save all the pieces".

 Obviously, we need to experience wilderness in order to appreciate it. But equally obviously, we need to practice restraint, if we are to preserve that wilderness. Having areas completely off-limits to humans will remind us of that need to practice restraint. It is a reminder of the importance of humility, like the practice of saying grace before meals.

 It is the right thing to do. Why not ask for what we want?

Practical Considerations

 Parks, because they already provide some protection, are a good place to start building a network of wildlife sanctuaries. They provide the "seeds" of a "full-function" habitat-and-corridor matrix designed to preserve our biological heritage. But they need to be changed and renamed, because "parks" are, by definition and practice, places for pleasuring humans. Many parks should be allowed to revert to wilderness, and wilderness should be a place that we enter rarely, reverently, and on its own terms.

 It is obviously nearly always impractical to maintain an area free of people by force. Probably the best that we can do is to remove all human artifacts, including nearby trails and roads. (This should be done soon, because it will become enormously more expensive, as soon as we run out of oil!) Then a few people may be able to enter the area, but at least it will be at their own risk (no helicopter rescues!). If we aren’t going to go there, then we don’t need to retain the area on maps; they can be "de-mapped" and replaced with a blank spot and the words "terra incognito".

 Roads and other rights-of-way are a particular problem. Due to the fragmenting effect of any such corridor, where it cannot avoid crossing a habitat area, it should, if possible, tunnel under the wildlife area, so that wildlife can travel freely across it.

Where Should Wildlife Sanctuaries Be Located?

 Everywhere. In large wilderness areas, there should be large wildlife sanctuaries, but even in cities, and back yards, where there is less viable habitat available, some of it should still be set aside for the exclusive use of wildlife, because (a) it is fair, and (b) it would serve to remind us to always keep wildlife in mind, just as indoor shrines in Japanese homes (and photos on our fireplace mantels) serve as a constant cue to remember gods and deceased relatives. After all, most human habitations are located on land that was also attractive to wildlife (e.g., near a source of drinking water). (Remember, we are 98% identical ....) And cities form significant barriers to wildlife travel.

 Having pure habitat nearby is very educational. I am experimenting with setting aside a 20 x 20-foot area in my back yard as pure habitat. It gives me a good opportunity to learn how to cope with my feelings of curiosity about what is going on there, desire to "improve" it as habitat, the need for a way to maintain its pristinity in perpetuity, etc. Creating travel corridors is a major difficulty. However, recently I have heard that some San Francisco residents are tearing down their backyard fences in order to make it easier for wildlife to travel across the city.

Difficulties

 What will wildlife and wildlands "managers" do for a living? Not all wildlife habitat will be closed to humans. They can manage the remainder. For those that will be closed, they can remove all human artifacts and invasive non-native species, restore the area to its "wild" condition, and educate the public about what they are doing.

 Roads, as we discussed, fragment habitat. How can it be prevented? Probably most major roads should be replaced by rail lines, which are much narrower in relation to their carrying capacity, and present much less of a barrier to wildlife. For example, the time between trains is much greater than the interval between motor vehicles on a road. Besides, we will soon be running out of oil, and won’t be able to justify keeping so many lane miles of roadway open for the dwindling number of cars and trucks.

 Many people may have to move. But compared to wildlife, people can pretty well take care of themselves. Wildlife, if we are to preserve them, must be given priority. They cannot protect themselves from us.

 "People will not appreciate what they can’t see and use". This is an obvious myth. Many people appreciate and work to protect areas that they may never experience directly. I don’t need to visit every wilderness area in the world, to know that they need to be protected. I don’t need to see every Alameda whipsnake to want to save the entire species. Why cater to, and hence promote, selfishness? Besides, we need to protect many areas (e.g. Antarctica and the bottom of the ocean) long before we are able to bring people there to learn to appreciate them directly. The relationship between the number of visitors, and the degree of protection given the area, is not linear!

 We have an instinct to explore; if an area is closed to us, that is exactly where we want to go! There are many areas of life where we need to practice restraint, and where we all benefit from it -- for example, in our relations with our family, friends, and community. Margulis and Sagan (1986) argue convincingly that cooperation (e.g. between eukaryotic cells and their symbiotic mitochondria), just as much as competition, has been responsible for our successful evolution. If we compete with other species, we will surely "win" -- and then doom ourselves to extinction, just like a symbiont that destroys its host. We don’t have to indulge all of our "instincts"; in fact, we are better off if we don’t!

 We still need access to wilderness in order to learn to appreciate it, but since we aren’t closing all wilderness to people, that need can still be satisfied. In fact, all children should be taken to see wilderness soon after they are born, because it is the only place they can see how things are supposed to be in this world! If they grow up around nothing but concrete, then concrete may become their ideal!

How Pure Habitat Benefits Us

 It preserves species that are an essential part of our own ecosystems, and on whom we are dependent for essential (e.g. foods) or desired (e.g. a variety of foods) products and services. It provides a source of individuals to repopulate or revitalize depleted local populations (assuming that connecting wildlife corridors are maintained).

 Knowing that wildlife is safe and healthy gives us a feeling of safety and security (like the canary in the mine), as well as the satisfaction we get from cherishing others (satisfying our "maternal/paternal" instincts?). We must carry a heavy load of guilt when we learn that our lifestyle is causing the suffering, death, or even extinction of our fellow Earthlings (e.g. from clearcutting tropical forests)!

 Wildlife, even if we don’t utilize it directly, can teach us by giving us an independent view of reality and examples of different values (assuming that we listen).

 For the sake of the environment, for our own health and happiness, and for our children, we need to move toward a more sustainable lifestyle. The primary obstacle is our reliance on technology. Coincidentally, the primary threat to wildlife is also technology -- e.g. tools that make wildlife habitat more accessible, such as maps, GPS sensors, satellites, bulldozers, 4-wheel-drive vehicles, mountain bikes, rafts, climbing equipment, night-vision goggles, etc. Banning the use of such technologies in order to protect wildlife can at the same time help us move toward a more sustainable future.

 Perhaps the greatest benefit of all, is distracting us from our selfish, petty concerns, and giving us something more meaningful to work on. Remember "We Are the World"? People from all over the world united to come to the aid of a third party: the world’s starving children. While working together, they were able to forget their own needs, and focus wholly on rescuing children who were in trouble. Well, wildlife is in even more trouble! We all (according to E.O. Wilson) instinctively love nature. Why not focus on this common value, work together to rescue the large proportion of the world’s wildlife that are in serious danger (according to the IUCN, one fourth of the world's animals are threatened with extinction), and put aside our relatively petty squabbles -- e.g. those causing wars all over the world?

 Human groups often fight over things so subtle that outsiders have trouble understanding what all the fuss is about. For example, Canadians have long been bickering over which language to speak, while their forests are being clearcut and their water contaminated with mercury! Language and culture are important, but not in comparison to what wildlife have to endure, including extinction!

Conclusion

 The existence of life on the Earth is probably inevitable, given the laws of chemistry and physics and the range of conditions and elements available here. However, at the same time, the life of any given individual is exceedingly fragile. A hair’s breadth separates the living state from the dead. In fact, there is apparently no difference between living and inanimate matter.

 The proof is a seed. Take, for example, one of the seeds that germinated after being in an Egyptian pyramid for 3000 years. What was that seed doing for 3000 years? Obviously, nothing! If it did anything, it would consume energy, and use up its store of nutrients. Therefore, it was "alive" (viable), but undetectably so. (Similarly, there are frogs that yearly survive being frozen solid! Viruses and prions are two other examples of dead matter that engages in processes usually associated only with being alive.) In other words, life is simply a process, like the flowing of water, that can stop and start. (Or perhaps we should say that we are all dead, but sometimes undergo processes that are usually associated with, and called, "being alive".) And it also follows that we are essentially indistinguishable from inanimate matter.

 As I discussed earlier, we are also essentially indistinguishable from other organisms. Every lever by which we have attempted to separate ourselves from other species has, in the end, failed. So how should we treat them? We have no rational basis for treating them any different from ourselves. We need a place to live that is satisfactory to us, and wildlife need, and deserve, the same.

 When I enjoy nature, I feel that I incur a debt. What better way to repay that debt, than to grant wildlife a human-free habitat -- to which they were adapted and accustomed for 4 billion years?! Are we big (generous) enough to give other species what they want and need, and share the Earth with them? Do we really have a choice?!

References:

Boyle, Stephen A. and Fred B. Samson, Nonconsumptive Outdoor Recreation: An Annotated Bibliography of Human-Wildlife Interactions. Washington, D.C.: U.S. Department of the Interior Fish and Wildlife Service Special Scientific Report -- Wildlife No. 252, 1983.

Clinchy, Michael, Liana Y. Zanette, Devin Roberts, Justin P. Suraci, Christina D. Buesching, Chris Newman, David W. Macdonald. **Fear of the human "super predator" far exceeds the fear of large carnivores in a model mesocarnivore.** Behavioral Ecology, 2016; arw117 DOI: [10.1093/beheco/arw117](http://dx.doi.org/10.1093/beheco/arw117)

Ehrlich, Paul R. and Ehrlich, Anne H., Extinction: The Causes and Consequences of the Disappearances of Species. New York: Random House, 1981.

Errington, Paul L., Of Predation and Life. Ames, Iowa: Iowa State University Press, 1967.

Errington, Paul L., A Question of Values. Ames, Iowa: Iowa State University Press, 1987.

[Fennell](https://onlinelibrary.wiley.com/authored-by/Fennell/Mitchell%2BJ.%2BE.), Mitchell J. E., [Adam T. Ford](https://onlinelibrary.wiley.com/authored-by/Ford/Adam%2BT.), [Tara G. Martin](https://onlinelibrary.wiley.com/authored-by/Martin/Tara%2BG.), [A. Cole Burton](https://onlinelibrary.wiley.com/authored-by/Burton/A.%2BCole), Assessing the impacts of recreation on the spatial and temporal activity of mammals in an isolated alpine protected area. https://onlinelibrary.wiley.com/doi/full/10.1002/ece3.10733, November 28, 2023.

Foreman, Dave, Confessions of an Eco-Warrior. New York: Harmony Books, 1991.

Grumbine, R. Edward, Ghost Bears. Washington, DC: Island Press, 1992.

Hammitt, William E. and David N. Cole, Wildland Recreation -- Ecology and Management. New York: John Wiley & Sons, 1987.

Harrod, Howard L., The Animals Came Dancing. Tucson: University of Arizona Press, 2000.

Hilty, Jody A., Annika T. H. Keeley, William Z. Lidicker Jr., and Adina M. Merenlender, Corridor Ecology - Linking Landscapes for Biodiversity Conservation and Climate Adaptation. Washington, D.C.: Island Press, 2019.

Knight, Richard L. and Kevin J. Gutzwiller, eds. Wildlife and Recreationists. Covelo, California: Island Press, c.1995.

LaChapelle, Dolores, Sacred Land Sacred Sex -- Rapture of the Deep. Durango, Colorado: Kivaki Press, c.1988.

### Larson, CL, SE Reed, AM Merenlender, KR Crooks, [Effects of recreation on animals revealed as widespread through a global systematic review](https://scholar.google.com/scholar?oi=bibs&cluster=4609144077744887933&btnI=1&hl=en). December 8, 2016, <https://doi.org/10.1371/journal.pone.0167259>

Liddle, Michael, Recreation Ecology. Chapman & Hall: London, c.1997.

Life on the Edge. A Guide to California's Endangered Natural Resources: Wildlife. Santa Cruz, California: Bio System Books, 1994.

Monkey-Only Hot Springs: <http://uverse.com/watch/c___YNtMk2hcJW3i?ref=yfp>

Margulis, Lynn and Dorion Sagan, Microcosmos -- Four Billion Years of Microbial Evolution. Berkeley, California: University of California Press, c. 1986.

Martin, Paul S. Twilight of the Mammoths – Ice Age Extinctions and the Rewilding of America. Berkeley: University of California Press, c.2005.

### [Merenlender,](https://ucanr.edu/News/?facultyid=1521) Adina M., Enjoy nature, but don't love it to death. <https://ucanr.edu/News/?routeName=newsstory&postnum=24115>, May 18, 2017.

Myers, Norman, ed., Gaia: An Atlas of Planet Management, Garden City, NY: Anchor Books, 1984.

Noss, Reed F., "The Ecological Effects of Roads", in "Killing Roads", Earth First!

Noss, Reed F. and Allen Y. Cooperrider, Saving Nature's Legacy: Protecting and Restoring Biodiversity. Island Press, Covelo, California, 1994.

Powell, Jerry A. and Charles L. Hogue, California Insects. Berkeley: University of California Press, c. 1979.

Pryde, Philip R., Conservation in the Soviet Union. London: Cambridge University Press, 1972.

Reed, Sarah E. and Adina M. Merenlender, "Quiet, Nonconsumptive Recreation Reduces Protected Area Effectiveness". Conservation Letters, 2008, 1–9.

Samia, Diogo S. M., Shinichi Nakagawa, Fausto Nomura, Thiago F. Rangel, Daniel T. Blumstein. **Increased tolerance to humans among disturbed wildlife.** Nature Communications, 2015; 6: 8877 DOI: [10.1038/ncomms9877](http://dx.doi.org/10.1038/ncomms9877).

Stone, Christopher D., Should Trees Have Standing? Toward Legal Rights for Natural Objects. Los Altos, California: William Kaufmann, Inc., 1973.

Terborgh, John, Carel van Schaik, Lisa Davenport, and Madhu Rao, eds., Making Parks Work. Washington, D.C.: Island Press, 2002.

Vandeman, Michael J., <http://www.imaja.com/as/environment/mvarticles> and [https://mjvande.info](http://mjvande.info/), especially "Wildlife and the Ecocity" and "‘Harmless’ Recreation Kills Wildlife!"

Ward, Peter Douglas, The End of Evolution: On Mass Extinctions and the Preservation of Biodiversity. New York: Bantam Books, 1994.

Weiner, Douglas R., A Little Corner of Freedom. Russian Nature Protection from Stalin to Gorbachev. Berkeley: University of California Press, 1999.

"The Wildlands Project", Wild Earth. Richmond, Vermont: The Cenozoic Society, 1994.

Wilkins, Bruce J. and Steven R. Peterson, "Nongame Wildlife", in Wildlife Conservation: Principles and Practices, Richard D. Teague and Eugene Decker, eds. Washington, D. C.: The Wildlife Society, c. 1979.

Wilson, Edward O., The Diversity of Life. Cambridge, Massachusetts: Harvard University Press, 1992.