Chapter 12 - The Land

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Land For Wildlife, Saving the Day, The Fight For Life, The Big Sink, Take and Scrape, Shake and Quake, Dam It, Preserving the Future, Heat Wave, Destroyed by Wildfire, Well? References

Land For Wildlife

Of the 2.4 billion acres of total land in the United States, we humans have commandeered 90% of it, leaving a measly 9.5% of land for wildlife. Clearly, this is a long way from the minimum goal of 30% of space for wildlife, much less the significantly more effective target of 50%. This 9.5% of land that's set aside for wildlife includes small portions of National refuges, conservation areas and wilderness that's been officially set aside, that doesn't allow grazing, logging, mining or drilling. In addition, wildlife does live in other types of federal lands, such as National Forests, National Parks, National Monuments and Bureau of Land Management (BLM) land. However, extensive exploitation, including logging, mining, drilling and cattle grazing are also allowed in most cases, so the land definitely isn't really land for wildlife, since these activities are destroying their habitat, interfering with their activities and generally harassing them.[2] These lands are also threaded with roads that severely interfere with the natural movement of wildlife. As mentioned already in Chapter 7, if grazing is allowed, then livestock is displacing wildlife, and ranchers and Wildlife Services see fit to murder any wildlife that happens to be in the way as well, particularly predators who dare to hunt and eat prey that remains in their previous habitat. Think about that.

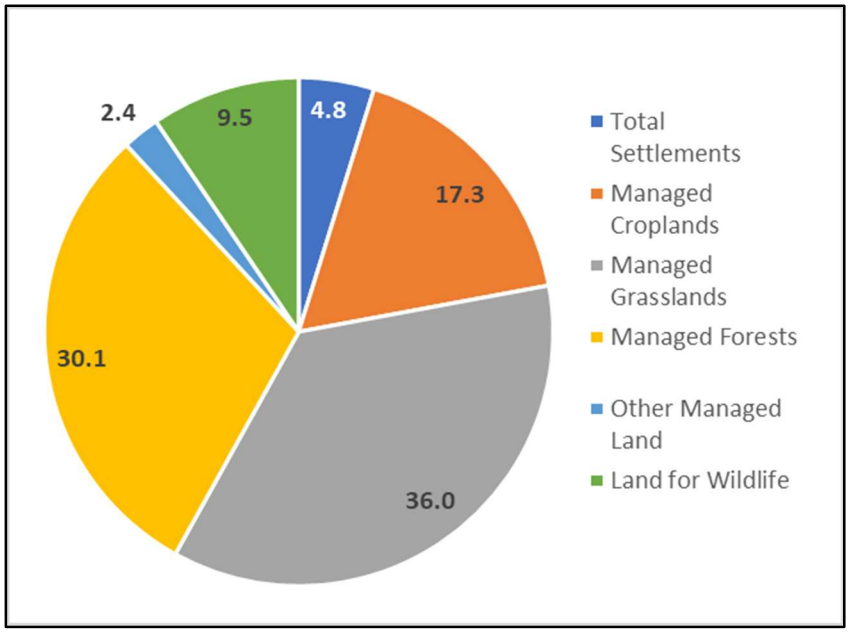


Figure 1 - Distribution of U.S. Lands[1]

Also, while actual human settlements make up 4.8% of total U.S. land, meaning land that is physically occupied by buildings that house humans and our infrastructure, like homes, apartments, stores, buildings and factories, as well as the networks of roads and parking lots that accompany all that, the land for wildlife is less than 10%. All the other land is managed by humans, including land for growing crops, grasslands for grazing livestock and forests for logging, as well as various forms of human outdoor recreation, like skiing, hiking, biking and snowmobiling. These managed lands make up about 85% of U.S. land, or nearly 20 times as much land as the human

settlements that we actually live in, as well as 10 times as much as the land for wildlife. So this is what I mean by our actual footprint reaching out far beyond our apartments and homes. By a long shot. This is a huge way that our extreme population is killing our planet and our wildlife.

In addition to providing homes for wildlife, land also absorbs some portion of the CO_2 that we can't seem to stop spewing into the atmosphere. This means that, obviously, if plant life on healthy land is encouraged, then this helps mitigate some of the carbon-driven temperature increase that's warming our planet. Carbon absorption is due to the fact that plants operate essentially the opposite of animals. While animals take in oxygen when they breathe, and exhale CO_2, plants take in CO_2 and exhale oxygen in a remarkable sun-driven process called photosynthesis.

In the likely event that you didn't pay attention in seventh grade biology class, Figure 2 will remind you what photosynthesis is. In this process, plants utilize CO_2 to produce carbohydrates needed to grow cell mass, which stays in the plant, such as a tree, as part of its mass of trunks, branches, leaves and grasses, and the reaction results in extra oxygen that is released back into the atmosphere. Think about that. Not only do plants absorb CO_2, they release oxygen that animals, including humans and wildlife, need to breathe. If left to function naturally, it's a very balanced, symbiotic and sustainable system.

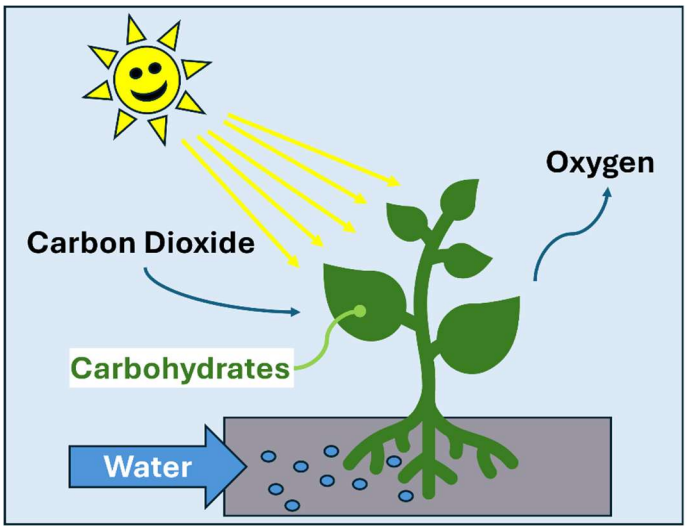


Figure 2 - Photosynthesis

The problem is, we're not leaving it alone. We've removed so many trees that we've swayed the balance in the direction of CO_2 with destruction of forests, which are the biggest absorbers of CO_2, and replacing forests with agriculture that adds CO_2 to the atmosphere, mainly because of the industrial practices used to grow crops. And worse, global warming caused by the extra CO_2 is increasing wildfires all over the planet, which not only destroys the ability of the trees to absorb CO_2, but also releases all the CO_2 that was stored in the trees over decades and sometimes centuries, into the atmosphere along with the smoke from the burning. Does that sound like we're once again between a rock and a hard place? It does to me.

Saving the Day

As with everything else on this planet, we have good news and bad news when it comes to land. Table 1 is a comparison of land use strategies that can either drive wildlife to extinction or save our wildlife while offsetting some of our carbon emissions. We may as well start with the bad news. That way, we can hope that some better news may follow. The first column of numbers shows the current distribution of land in the United States as a percentage of total land. This aligns

with the Pie Chart in Figure 1, showing that most of the land in the U.S. is managed by humans, leaving a measly 9.5% for the wildlife. Managed forests are threaded with roads, are logged, and grazed and many allow noisy, mechanized vehicles on remote paths. Croplands are croplands. Managed grasslands also allow pretty much everything, except by definition there's not much logging since it's grassland and not forest. Settlements is the land we live on and occupy with our buildings and infrastructure, so technically some wildlife can live there, but we don't make it easy for them. Managed Other includes mines, petrochemicals, refineries and gas processing plants, as well as landfills, while Unmanaged Other is rock, dirt and ice with no vegetation, which is technically open to wildlife, but not very useful to them, since there's no plant life.[3] At the bottom of the column, we can see that this land distribution allows 9.5% of total land for wildlife, existing in little sprinkles of disconnected spaces among the managed lands. Because of how we manage these lands, currently they provide a carbon uptake that amounts to about 13% of our carbon emissions in the United States. Not much, but better than nothing.

Table 1 - Impact of Land Use on Carbon Emissions and Wildlife

Land Type	Current Disturbed	Undisturbed	30% Land for Wildlife	50% Land for Wildlife
Managed Forests, %	30.1	27.8	19.8	9.8
Managed Croplands, %	17.3	17.3	17.3	17.3
Managed Grasslands,%	36.0	33.7	25.7	15.7
Managed Other, %	2.4	2.4	2.4	2.4
Settlements, %	4.8	4.8	4.8	4.8
Wetlands, %	4.6	9.2	4.6	4.6
Wildlife Other, %	1.1	1.1	1.1	1.1
Wildlife Grasslands, %	2.8	2.8	13.1	23.1
Wildlife Forests, %	0.9	0.9	11.1	21.1
Uptake of Total CO_2 Emissions, %	13	45	21	27
Land for Wildlife, %	9.5	14.1	30	50

The second column of numbers shows a theoretical original undisturbed state, with very similar land distribution. The main difference is that we're not impacting any of the forests or grasslands with our destruction, which increases the carbon uptake of those lands to the maximum extent. Forests take up a lot more carbon when they're not logged, and grasslands take up a lot more carbon when they're not overgrazed by cattle. I've also doubled the wetlands to account for the fact that we've taken out at least half the original wetlands, which are extremely important habitats for wildlife, and have the highest carbon uptake capacity of any land type. In this undisturbed state, the amount of land for agriculture is the same, but instead of the huge carbon emissions that result from our destructive agriculture practices, this is changed to carbon uptake, as if we were actually utilizing the regenerative practices that can and should be used in farming.[4] In this undisturbed state, which is really a "less" disturbed condition, the land can offset 45% of our current carbon emissions, more than three times our current uptake, which would go a long way towards mitigating global warming. Also, land for wildlife increases to about 14%, due to the doubling of the wetlands land area.

In the third and fourth columns, we can see the impact of setting aside 30% and 50% of land for wildlife. In these cases, portions of land have been reallocated from forests and

grasslands, to wildlife. Also, the carbon uptake of the land for wildlife has been increased to a natural, undisturbed level, while the carbon uptake for the managed land is at the lower levels for disturbed land. The agricultural land has been reset to a carbon emissions source, assuming destructive agricultural practices are the same as they are now, so the only changes are giving land back to wildlife. When 30% of land is given back to wildlife, carbon uptake increases enough to offset 21% of our annual carbon emissions, and when 50% of land is given back to wildlife, carbon uptake increases to 27% of our emissions. This demonstrates that giving back land to wildlife not only helps wildlife, it also reduces global warming. Think about how powerful this opportunity is, to help mitigate two important issues at once.

Agriculture and forestry have caused the most damage to ecosystems, which isn't a surprise, given the masses of land involved. The next biggest culprits are oil, gas, coal mining and mining of metals and minerals. Our roads and settlements don't help, and we could make a huge difference with yards planted with native plants instead of lawns. Native plants increase carbon uptake, don't require poisons or massive quantities of water to maintain, and are hospitable to wildlife, as opposed to our current backwards practices of maintaining flat green lawns using excessive water and toxins to maintain, as well as mowing, which runs over wildlife, grinds them up and wastes energy while blasting the neighborhood with nerve-rattling noise and smelly fuel emissions. Remember, if you can smell it, it's in your body.

Table 2 shows global land status at three points in time, year 1, 1700 and 2017.[5] Globally, there's only about 34% of wild or barren land, and only half of that, at most, is of use to wildlife, because the barren land, including ice, desert and rock, can't support significant life. To put it into perspective, we've razed a land mass the size of the African continent to raise livestock, and even more to feed them. At this point, there's literally no part of the world that's not impacted by climate change. It's obvious that humans have taken over the planet, and squeezed wildlife off their land. Cities and villages, which make up settlements globally, make up about 10% of total land, which is more than in the U.S. Croplands are also more, as forests in the Amazon, the most biologically diverse on the planet, are scraped to make way for livestock and feed to feed our glutinous consumption in the U.S. and other wealthy countries. The boreal forests in northern Canada and Siberia contain expanses of original wildlands and are among some of the last intact forests left on the planet, though we're hacking our way through those pretty quickly these days.

Table 2 - Global Distribution of Land Over Time

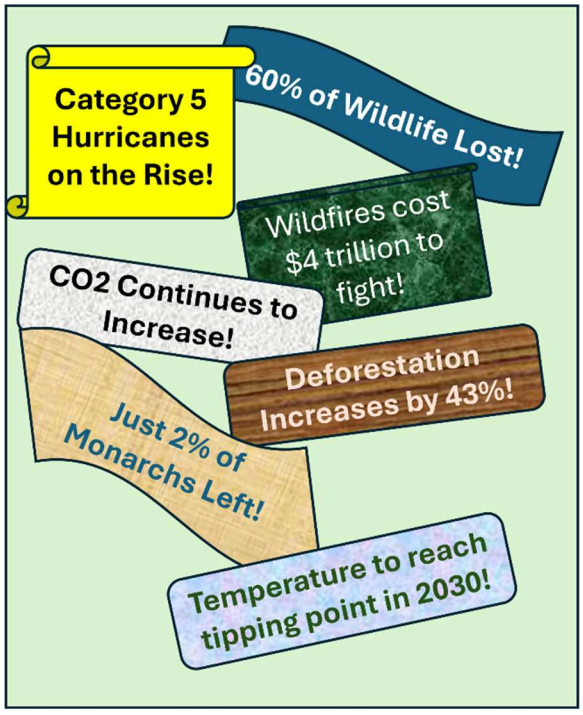
	Percent of Global Land		
Land	1	1700	2017
Wild Lands	70	65	30
Woodlands	30	30	15
Rangelands	2	10	30
Croplands	2	5	20
Cities and Villages	0	2	10

The Fight For Life

Given the urgency and realities of our current dilemma, you'd think that common sense would prevail when it comes to giving wildlife the land that they need, knowing what a win-win it is

not only for wildlife, but humans, and not only for the U.S., but also for the world. Not so much. Not with all the spoiled, snot-nosed entitled ranchers, loggers, miners, drillers and such in the west, who are used to getting those great deals from the rest of us. And want to keep it that way. I guess I can't really blame them all that much. After all, if you have a great free ride, whose gonna want to turn in the car? Meanwhile, the rest of us permit them to continue unchecked, basically by overconsuming their products that we really don't need, at the end of the day. Also, we're paying our taxes to help subsidize their abuse on our land. Think about that. Think about what suckers we really are.

Fighting over land in the U.S. is nothing new. It's been going on since we came over from Europe after overrunning that land with our sheer numbers centuries ago, and stealing north American land from the natives who already lived here. In the 1800's, as the nation expanded west, the government figured it would be great for growth to give the land to anyone who was willing to exploit it. This included all the homesteaders, miners, railroads, and livestock barons that now occupy or control the land. And even back then, when there were only 5 million people in the country, we managed to trash the land in almost no time, reducing magnificent old-growth forests to stumps with logging.



Evidently the government got a clue at some level in the late 1800's, and starting the process of setting aside pristine land while there was still some left, beginning with Yellowstone National Park in 1872. Currently the federal government owns about 640 million acres, or about 26%, of U.S. land. Naturally, any efforts to keep land wild has met with resistance at every turn from the greedy and entitled white parasites in the west, who shouldn't even be there in the first place. They've been allowed to exploit the land, and now believe it's their God given right to take all they want, for the sake of humans, without regard to any other life. They fight with lawsuits and protests, sometimes armed, referring to reserves as "fiendish", "disgraceful" and "nefarious". They've even planted bombs. This is what it looks like when petulant little spoiled brats stomp their little feet and throw themselves on the ground and hold their breath as they resist the logical voice of their mother telling them they can't have another cookie. Think about that.

And then there's the nasty bullies who feel so entitled that they take it to yet another extreme, maintaining that they don't even have to pay the tiny pittance that the Federal Government undercharges for letting their cattle trash our public lands. A particularly disgusting example is Nevada rancher Cliven Bundy and his sons, who somehow think they're better than the rest of us, and have natural-born rights to exploit our land, since they happen to be the spawn of the original thieves who stole it. Personally, I don't like my land exploited. It really pisses me off. They're just a bunch of parasites with a violent bent who refuse to pay the rent, and I would love to see these

freeloaders kicked to the curb. They owe us millions of dollars in unpaid leasing fees, while I pay bank for my property taxes. And they and their friends armed themselves against our government when they tried to collect. It's a disgrace that these panhandlers aren't in jail. Why don't I just sit on my front porch with a shotgun and threaten the tax collectors if they try to enforce? Why don't we all do that? Think about that.

In parts of the west, we have far too many corrupt sheriffs, nicknamed sagebrush rebel sheriffs, because they support the rebels. All this nonsense so that we can eat too much beef. Think about that. If we all boycotted beef for even a year, what that would do for our country and our world. It would put these thugs out of business. I'm pretty sure they wouldn't do very well without an income. We'd also be able to give back cropland to wildlife, since we wouldn't need it to grow all that corn, soy and grain to feed the beef. So logical and sensible. Yet here we are. If we can't even do this one little thing our wildlife is going down, and us along with it.

Ask yourself, where do you stand on this? Are you capable of boycotting irresponsible beef and dairy for a year? To be clear, it wouldn't mean you can't eat beef or dairy at all. You'd simply be sticking with responsible grass-fed beef that's raised on land that's actually owned by the ranchers instead of beef that's grazed on federal lands that we citizens own, by sagebrush mafia families like the Bundys. And yes, you pay more for responsible beef at the grocery store, but we're all paying for irresponsible beef with our tax dollars anyway. So that's just a question of pay me now or pay me later. Who do you support, all life on our planet or freeloading ranchers?

With Staircase-Escalante national monument, the same kind of fight is with the greedy coal companies.

And then there are the mining companies. Because of an outdated 150 year old law that's still in force, all a mining company has to do to get a claim is show that there are minerals there, and pay a fee of $225 per claim to get it processed and filed.[6] Now, in addition to gold and silver that's typically been mined, the mining companies are looking for metals needed for electric vehicles and renewable energy, such as lithium, cobalt, copper and rare earth elements. Also, uranium for potential future nuclear reactors. Just what we need. Basically, these are yet more examples of why we're not going to save the planet or our wildlife if we don't stop growing our population. Renewable energy isn't going to save the day on its own. It's not a magic bullet, and the technology requires raw materials just like anything else. Yes, it can get rid of fossil fuels, but the resources to build them don't come out of thin air. And, the mining companies don't even pay royalties for their production, while they make about $34.4 billion annually from their sales. So there's another rip-off on our lands. At least oil companies pay royalties.

The Big Sink

At the end of the day, global warming and its mitigation are a global problem, and humanity needs to come together and act globally if we want to save our planet from cooking us all. Currently, forests cover about one third of the planet's land surface, and forests and vegetation absorb up to a third of the CO_2 we are emitting from burning fossil fuels.[7] 60% of global trees are young trees that have been planted by humans in the past 35 years. Keep in mind that young trees

have a much lower impact than more mature trees, but it's a start, and better than nothing. Also, replanting doesn't directly replace old-growth forests, because the true biodiversity of old growth forests can't be replaced immediately by simply planting trees, but, again, it's a move in the right direction, and we absolutely must plant trees to recover our carbon sink, and hope that the biodiversity follows, at least in part, over the next few centuries. Yes, I said centuries. It could take even longer than that. Which is why we need to leave what tiny little parcels of old-growth forest that are left alone, in hope that the abundance of diversity that exists in these meager "preserves" can expand and re-establish diverse populations in larger areas as they are returned to wildlife.

Globally, per the Trillion Tree Campaign, we need to plant one trillion trees by 2030, and the United States had agreed to help, at least before Trump from hell got elected. This actually works out to 100 billion trees per year, slightly more than what I've modeled in Chapter 3, where I have us planting 50 billion trees per year, but my model runs to 2050, and also accounts for cutting the population, while the Trillion Tree commitment is more aggressive over a shorter time period. Another possible reason for more trees is to make sure that 50 billion per year (half those planted) actually survive, given all the ways trees can die, like fire, drought, pests and disease, all of which are increasing because of the climate change that is happening concurrently with the tree planting efforts.

An organization sponsored by the German government and the International Union for Conservation of Nature, is enlisting countries to reforest 865 million acres by 2030, and Pakistan has its Ten Billion Tree Tsunami Programme. There are companies that are offering "buy one, plant one" deals. For my part, at the end of each year, I tally up the carbon footprint of travel for my husband and I, and donate to "One Tree Planted" to offset the carbon we spew, at $1 per tree.

When we think of forests, at least when I think of them, I envision woods on land, but it turns out that mangrove trees are huge carbon sinks, and we've trashed most of those, too. The rate of mangrove loss has been slowing a little in recent years, which might simply because we have less mangroves to lose. Replacing global mangroves would play a key role in reducing global CO_2 emissions. Mangroves also help in more ways than CO_2 reduction, because they protect coastal lands from erosion, and reduce flooding. Coastal communities in Ghana are planting 200,000 mangrove trees and shrubs as part of the country's Green Ghana project to gain these added ecological benefits, which are just as important to them as the carbon reduction.

Other communities are leveraging trees for flood control, finding it cheaper and more efficient than engineered sea walls, because the trees allow a portion of water through, diluting the pressure and stress, compared to walls. An example is in Virginia Beach, Va, where they are planting hundreds of trees to help protect coastal neighborhoods. Indonesia, the world's largest source of palm oil, has succeeded in stopping deforestation through a moratorium on clearing primary forest, and a freeze on permits for oil palm plantations. China, after decades of deforestation, has managed to muster the discipline to increase its forest cover, by a commendable 6% as of 2020. Go China! I'm glad somebody's getting ahead of it.

It's encouraging to see all this global love for trees. Even if the U.S. jacks it up, with the entire world behind the effort, we might just get where we need to go despite our loser leaders in this country. I'm also heartened that the planet is going for a more aggressive goal than I've modeled, because it makes me feel like my model isn't that far-fetched as far as maybe getting this

done. However, for this to work, we need to stop the deforestation that's cancelling all this effort. And reduce our population. Are you noticing a repeating message here?

Take and Scrape

Keep in mind that we've been planting trees for years, yet forests have declined. Why would that be? Well, kind of like population growth cancelling out improved efficiencies, we can't expect to increase our forest cover and our carbon sink if we continue to clear-cut forests faster than we're planting trees. Remember your 3rd grade math. Since the UN 2014 agreement to reduce the rate of deforestation by 50% by 2020, we've instead increased the rate by 43%, as we currently clear 64 million acres per year.[8] This is just stupid, and we are all to blame or not, with every consumer choice we make. Forests are important for diversity and wildlife as well as our carbon sink. The majority of biodiversity on the planet is in forests, including more than 70,000 species of trees. As I've mentioned so many times already, we really have to do EVERYTHING at this point to save our planet for real, not just a little here and a little there. It ALL matters.

> "No people went through an environment faster, and more destructively and wastefully, than Americans have gone through America". Donald Worster, Environmental Historian, Distinguished Professor of American History, University of Kansas

Rainforests play a huge role in stabilizing global climate. Even though they only cover about 6% of the earth's surface, more than half the planet's surface carbon is locked up in them. Think about that. If trees take in CO_2 from the air, where do you think that carbon goes? Um, duh. It stays in the tree as cells, as the tree grows. This is why bigger trees store more carbon. When their leaves drop onto the ground in a healthy rainforest, they remain there and hold that carbon, insulating the ground and controlling erosion as they slowly decay to compost that feeds the trees in a closed carbon cycle.

In an intact rainforest, the trees also impact the weather, because they extract deep soil water through their roots and pump about half of it back into the atmosphere, feeding distant regions with rainfall, that would otherwise be arid. And here we are, turning rainforests, which are one of nature's greatest defenses against climate change, into a threat by burning them down for cattle, agriculture and logging.

At this point, our extreme demands have caused the loss of more than 15% of the Amazonian rainforest, and degraded another 10%. Destruction continues at a rate of 1.5 million acres per year, an increase of 30% since anti-environmental President Jair Bolsonaro was elected, and deforestation rates continue to increase.[9] If 20 – 25% of this forest is lost, or an additional 5 – 10% beyond what we've already taken, the ecosystem could reach a tipping point at which the southern and central Amazon could turn into a savanna-like ecosystem, after which we can kiss the rainforest goodbye for reals.[10]

Not only does burning the forests remove the carbon sink for good, it also releases all the carbon that was stored there for centuries. Again, think about this. Where do you think the stored

carbon goes when it burns? Um, again, duh. Up into the atmosphere. Hello? Doesn't that mean that instead of carbon absorbers, we've turned the forests into carbon emitters? Followed by carbon nothings after the smoke settles. That can't be good, can it?

In Africa, the devastation is even worse in the west and central parts of the continent. The Congo Basin's rainforest is the second largest expanse of rainforest on the globe, holding about 30% of global peatland carbon. Now it's getting trashed too, because of local overpopulation clearing land by slashing and burning for subsistence farming, and farming of cacao and other products as well as endless logging for exports. Obviously, there are too many people who are desperate for food and money there. This is a great example of why it's so very important that we, as a developed country, should be providing family planning education and contraceptives to help women reduce their family sizes to control population growth before we lose the entire forest.

Worldwide, no forest has been left unscathed. From Borneo to the Yucatan, the Canadian boreal forests, South America, Paraguay, Madagascar and New Guinea, we are clear-cutting forests for logging, palm oil used in processed foods and personal care products, cattle ranching, mechanized agriculture, subsistence farming, soy beans, fuels like wood and wood pellets, rubber and development for constantly growing populations to live. In Southeast Asia, rapidly increasing urban development is dominating landscapes, as India's population continues to grow, and is likely to surpass China as the world's most populous country in the next few years.

Even grasslands aren't safe. In the U.S., we've long since taken over grassland habitats for farms and pastures. The world's most biodiverse grassland, the Cerrado in Brazil, is down to only 20% of its original native vegetation, with the wildlife gone as well. This has been mainly for soy and beef. Grasslands, like forests, are carbon sinks, though not as powerful as forests, and when we take them out for croplands, we turn them into carbon emission sources with our destructive farming practices.

In the Western U.S., we're losing 1.3 million acres per year of the sagebrush steppe to croplands, and have lost about half of it so far, about 115 million acres.[11] And it, too, is a carbon sink that supports a huge array of unique wildlife. And the really stupid thing is that when we farm and graze this arid land, it not only can't support very many cows, it also isn't great for farming, and requires huge amounts of water that would be better used in more productive regions. Expanding across thirteen western states, this land is also key for migration routes of many species of wildlife. So here we are trashing all this land that wildlife needs for relatively little gain for humans. There's just no end to our stupidity, is there?

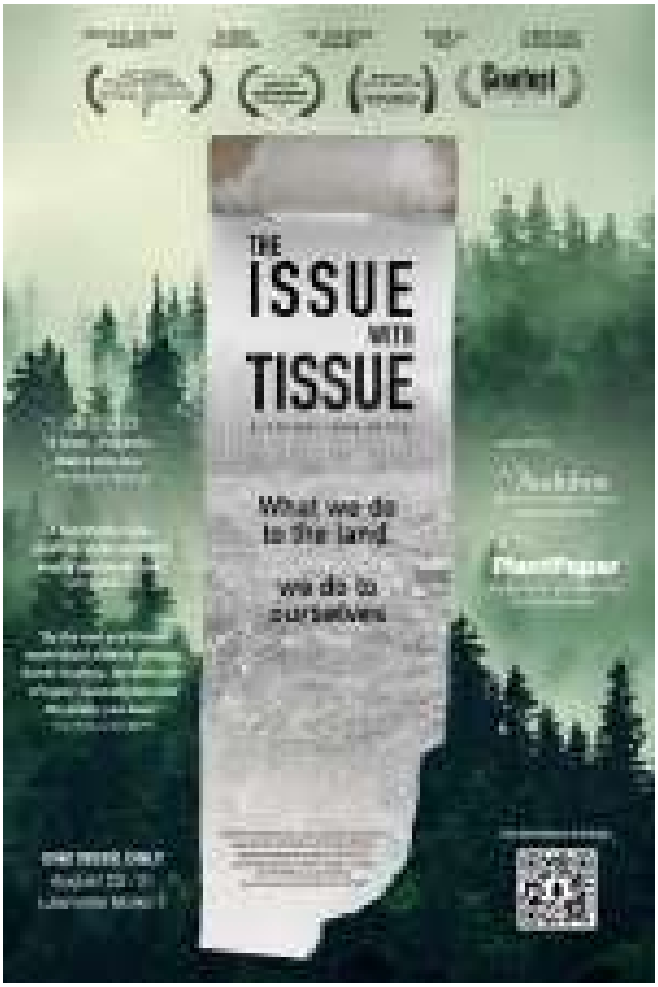
The single biggest cause of deforestation globally is palm oil, followed by cattle for dairy and beef, growing food to feed overpopulated countries, fuel for cooking and heating, and other vegetable oils, like coconut oil and soybean oil. Again, the general drivers are the same, overpopulation and overconsumption of meat and dairy. Vegetable oils are also a huge driver, but they are directly due as always to overpopulation. We as consumers, however, can certainly choose to avoid products with palm oil, in particular, since most of these products are things we don't really need, and aren't good for us, like prepared foods and such, when, as I mentioned before, we can help a lot by eating local, whole foods. Avoiding or at least severely reducing meat and dairy at this point in this book should be a no-brainer. Ya think?

So, have you heard what the biggest carbon polluter in Oregon is? In case you haven't, it's logging. It's true. Of course, we hear about the wildfires in the news, and the smoke is unhealthy and widespread, and the devastation and carbon emissions are horrific, but they still don't compete with the impacts of logging. It turns out that the elimination of the carbon sinks and the million tonnes of logging emissions are worse than the smoke. Who knew? The forests were able to soak up more than 70% of the state's emissions until 2015, but not anymore. [12]

Logging is also taking out huge portions of forest in Canada, fragmenting mountain caribou habitat so thoroughly that there are only about 1000 left. In Canada, they're even cutting down trees that they don't even need, known as "bycatch", because they are in the way, and the clear cut isn't a true clear cut if there are any trees left. I mean, what good is a clear cut if it's not clear? Hello! This horror is driven by pure profit and greed by both big corp and the government, that strives to maintain revenue from clear cuts above $1 billion per year. How's that for disgusting?

And who do you suppose is to blame for all this horror? Look in the mirror. Unless you have managed to avoid all forms of single-use paper made by with virgin timber by the ugly companies highlighted in the box. Ask yourself when was the last time you even bothered to notice if post-consumer waste was used to make your paper. And if you're willing to pay the slight extra cost for the more responsibly produced paper? Do you avoid using paper you don't need? Think carefully. Do you use paper towels? Paper napkins? Paper bags? Kleenex? Toilet paper? Do you take steps to stop junk mail? Do you recycle or compost every scrap of paper that ends up in your home? If not, then you are responsible for at least half of this destruction, the other half being for construction and other wood products. Construction is driven by overpopulation, so if you're not supporting population control efforts, then you are also personally responsible for that. We have to all do our part to stop this.

Try using kitchen cloths instead of paper towels. Try using cloth napkins instead of paper napkins. How hard is that? When I was working I used to take in my own cloth napkin, towel and food service to avoid the disposable ones that were provided for employees. Responsibility shouldn't just be at home. We do it when we're on vacation too, and we keep our own sustainable to-go containers that we clean and put back in the car. And, it's cheaper too. You only buy cloth once, instead of paying big corp for yet more paper every time you go to the grocery store so they can keep trashing our forests while making their profits.



Toilet paper is also simple to avoid. In Covid when we had the toilet paper panic my sister in law, who's from Guatemala, rolled her eyes and said, "we don't even need that." You can get 100% post-consumer recycled toilet paper that keeps all the paper in a circular loop and avoids killing trees. Better yet, you can use pee cloths that you only buy once and avoid any form of paper. Try installing a bidet for brown. These cost about $30 and are easy to install on any toilet. It's a lot cleaner and easier to wipe the water off your butt than sticking toilet paper up your anus with your finger and never really feeling clean. Think about that. We don't need to kill 8.2 million trees each year in boreal forests teeming with wildlife just to wipe our pathetic little bungholes. Or do we? If we don't knock this off we're going to run through the forests anyway, and there won't be any for anybody. So why not use a little common freaking sense and get it figured out now, while we still have a few wild animals left? [13]

Shake and Quake

Human impacts on land are so extreme that we're now accelerating geologic processes. That's right. Geologic processes that typically take hundreds of millions of years are being condensed into just a few centuries. So how, you ask, could we possibly be shaking the earth beneath our feet? Well, basically from extraction of fossil fuels and water. And, it shouldn't be too much of a shock, if you think about it. After all, when we extract all our oil and natural gas from deep beneath the surface, incredible amounts of pressure are released, so something's gotta give. Some of these quakes, like a 4.4 magnitude quake in Alberta in January, 2014, are frac related. Most of the non-frac quakes are from disposal of oilfield water through underground injection. Most of these quakes are in Colorado, New Mexico, Wyoming and Utah, but a big one in Pawnee, Oklahoma was so strong that it was felt all the way to Des Moines, Iowa. I mean, if this isn't evidence that we're our own worst enemies, then what is? If that isn't a call for immediate action to knock it off with fossil fuels to save ourselves, what then will it take?

We also need to knock it off with groundwater pumping, which will be a definite challenge until we start reducing our population. In the 17-year period from 1993 to 2010, humans pumped 2,150 gigatons of groundwater which was enough to shift Earth's tilt by 31.5 inches. How's that for

a lot? It turns out that, among climate-related causes, the redistribution of groundwater actually has the largest impact on the drift of the rotational pole.[14] In central California, the land is sinking at a rate of 1.6 ft per year, due to over extraction of ground water to meet demands of over population, made worse by prolonged drought.[15] Eventually, water quality and cost of extracting it could get to the point where it is no longer possible to pump it economically, making it unavailable. This might be a slight problem, since the region provides about 8% of U.S. agricultural output. Ya think?

Arizona, another chronically overpopulated state with an extremely hot, dry climate, is also seeing land subsidence and earth fissures due to overextraction of groundwater.[16] The fissures, open gaps as much as two miles long, are swallowing livestock and infrastructure.[17] That's when you know it's bad. Again, we've backed ourselves into a corner with our demands, we have too many people and too much agriculture and industry water hogs in a region that can't come close to supporting it.

Arizona was too hot and dry for industrial agriculture to begin with, and now global warming has made it even hotter and dryer. The hotter climate causes the plants that shouldn't be there to begin with to suck up yet more water, dropping the water table even faster. Yet they're so stupid that they're still continuing to grow, farm, mine and develop as if all is good. They tried to save the day by extracting more water from the Colorado River, but there's not enough of that to go around either. Like, duh. And if you try to google the truth about water availability in Arizona, you get the runaround, with a bunch of baloney about how Phoenix is just fine, and gets all the water it needs from the Colorado River. I shit you not. I guess it makes sense if you think about it. How can they develop if nobody wants to live there, and who in their right mind would want to live there if they could google the truth about the water supply?

Some of the larger U.S. coastal cities, like New York and New Orleans, are sinking noticeably faster than others due to land subsidence from a combination of the weight of buildings, pumping of groundwater and plate tectonics.[18]

Dam It

There was a time when I honestly thought that hydropower was the greatest. After all, what could possibly go wrong with using the flow of water to generate electricity? Such blissful naivety. What can I say? What did I know? I imagine a lot of us felt that way, and maybe still do. And, to be clear, there are some really valid ways to leverage the power of water to generate electricity. My uncle spent his life installing microhydro in the northeastern mountains of the U.S., but those are completely different, and on the right kind of property, these small systems can be great, and they don't interfere with wildlife. I even looked into it when I worked at Coors, to use the gravity feed of piped wastewater from the brewery, about 5 million gallons daily, to drive a microturbine, but we didn't have enough elevation.

The big dams throughout the west, however, are a whole different kind of monster. Not only do the dams themselves mess up the flow of water, making it impossible for fish like salmon to swim upstream to their spawning grounds, and driving them to near-extinction, the reservoirs required to supply the dams flood massive amounts of land, typically wild lands, taking yet more land from wildlife. And, since there are so many of us, we've gone silly crazy with dams, and choked up pretty much every big river to supply our endless needs for electricity, as well as for water. Even worse, the methane outputs from the septic bottoms of these reservoirs account for more than 1% of global warming.

We've begun to come to our senses, and since 1999, more than 850 dams have been removed from U.S. rivers.[19] Most of these were obsolete and not even in use any more. Several recent dam removals from northwestern rivers like the Klamath are freeing them up to help salmon recovery. The concept of busting down the Glen Canyon Dam is being floated, which would be huge. The water feeding the reservoir is so overallocated and drought has reduced the water level so much that it barely works anyway. To make things worse, 50 years of sediment have built up in Lake Powell, to the tune of hundreds of millions of tons, and it may be so toxic with agricultural runoff, mining waste and uranium that it's probably eligible for superfund status. Now, with global warming causing even higher temperatures, and population growth of about 40% in the past 20 years alone, demand for electricity for air conditioning is higher than ever, with about 5.8 million homes powered by the electricity from the dam. Do ya think they might be between a rock and a hard place in Phoenix? I don't know about you, but I sure as hell wouldn't want to live there. I guess they'd better move to solar sooner than later!

Preserving the Future

The summary in Table 3 shows that U.S. public lands comprise about 26% of the total land in the U.S. These are federal lands that belong to all of us as citizens, and are administered with our tax dollars and any additional fees that we may pay when we use them. As you can see, pretty much all public lands allow some level of exploitation by humans in addition to hiking and general recreation, including grazing, drilling and mining. This is why we can't simply assume that public lands are lands for wildlife. They're not. They're mostly land for humans, while wildlife, to some extent, is allowed to live there, sort of. However, wildlife seldom, if ever, lives in peace and harmony on these lands, for the reasons described previously. My point is that if we simply outlawed all industrial exploitation on these lands alone, that would be enough to give wildlife 30% of the land. We wouldn't even need any privately owned land at all. As I've mentioned before, I think 50% is actually what's needed, but 30% would be a great start!

Table 3 - U.S. Public Lands[1]

Category	Acres	Percent of U.S. Land	Notes
BLM	242,428,116	9.94	Allows logging, extraction of natural resources and grazing.
National Monuments	15,500,000	0.64	Managed by different agencies, logging, mining and drilling usually not allowed, grazing sometimes allowed if it already existed.

National Parks	85,000,000	3.49	Managed by national park service, no hunting, logging, disturbing wildlife, grazing, or mining, except pre-existing leases.
National Forests	193,000,000	7.92	Managed by forest service, allows extraction, grazing and logging.
National Wildlife Refuges	95,000,000	3.90	Managed by Fish and Wildlife Service, grazing sometimes allowed.
Other	9,071,884	0.37	Historic Sites, Landmarks, etc.
Total	640,000,000	26.25	

Currently, the land that is set aside for wildlife in the U.S., the "unmanaged" land and wetlands in Table 1 is about 9.5% of total U.S. land, which is obviously not nearly enough. Global wilderness depends on how it's defined by different organizations, with one fairly reliable source stating that 25% of global land is wilderness.[20] In another, we see an estimate that 15% of land and 7% of oceans are protected, and this is probably also true, given that, from the above table, Wilderness doesn't actually mean that the land is set aside exclusively for wildlife, as in the U.S., where grazing is allowed. Also, in the U.S., wilderness is scattered throughout the various categories of federal lands, so anything could be happening in there. When a land is defined as a "refuge" or "protected", it may be safe (sort of) to say that it's land for wildlife, and may or may not be wilderness. Very confusing at the end of the day. But that's just me.

According to an awesome watchdog organization called Public Employees for Environmental Responsibility (PEER), about 40 million acres of BLM land don't even meet required land-health standards to begin with. These standards define the minimum quality needed to maintain functional and sustainable landscapes for threatened and endangered species. Talk about a filthy house. The degradation is mainly due to overgrazing of cattle on land that's leased for grazing. Shockingly, or maybe not, when PEER shared its findings in a meeting with top BLM agency officials, it turned out that a lot of them didn't even know there was grazing within wilderness areas.[21] Really???

As we continue to log, slash, burn and build, we've lost about 10% of the world's wilderness in the past 25 years, and it could be completely gone within the next century, if not sooner, if we don't knock it off. In addition to all the other horrible outcomes, habitat destruction is a driver to pathogen "spillover", so preservation and restoration efforts can help prevent future pandemics.[22] Ironically, wilderness has actually contributed hugely to big pharm, which manages to exploit without the destruction of the other industries, by exploring and collecting specimens of microbes, plants and animals that have provided 35% of all pharmaceuticals, from aspirin to cancer drugs. So, we really don't want to lose the last of it, not only because of the huge carbon sinks and wildlife, but also because we never know what we're going to find out there to help humanity, without doing significant destruction.

Luckily, at least at this point when we still have a little wilderness left, it actually recovers pretty well if we get out of the way and leave it alone. New research is providing a blueprint of the most important areas to conserve next. The goal is to preserve existing hot spots of diversity, that could help save millions of species and mitigate climate change. Examples include Brazil's Cerrado savanna, the Amazon, Southeast Asia and the Congo Basin.

Under Biden, the U.S. had joined more than 90 countries in a pledge to combat climate change and species extinction by safeguarding 30% of Earth's land and water by 2030. Preserving 30% of the nation's most essential wildlife habitat could protect 99% of its mammals, birds, reptiles and amphibians. In Biden's 2024 Earth Day Speech, he noted that he brought the U.S. back into the Paris Climate Accord that Trump had pulled out of. He put the nation on track to conserve more lands and waters than any previous President, and worked with the international community to slash methane emissions and restore degraded forests. Too bad that so many U.S. voters were ignorant enough to be conned into voting for a has-been reality show host from fairyland. I guess we can kiss Biden's hard work to protect our environment goodbye.

> "Something will have gone out of us as a people if we ever let the remaining wilderness be destroyed; if we permit the last virgin forests to be turned into comic books and plastic cigarette cases; if we drive the few remaining members of the wild species into zoos or to extinction; if we pollute the last clear air and dirty the last clean streams and push our paved roads through the last of the silence, so that never again will Americans be free in their own country from the noise, the exhausts, the stinks of human and automotive waste. And so that never again can we have the chance to see ourselves single, separate, vertical and individual in the world, part of the environment of trees and rocks and soil, brother to the other animals, part of the natural world and competent to belong in it. Without any remaining wilderness we are committed wholly, without chance for even momentary reflection and rest to a headlong drive into our technological termite-life, the Brave New World of a completely man-controlled environment. We need wilderness preserved, as much of it as is still left, and as many kinds – because it was the challenge against which our character as a people was formed. The reminder and the reassurance that it is still there is good for our spiritual health even if we never once in ten years set foot in it. It is good for us when we are young, because of the incomparable sanity it can bring briefly, as vacation and rest, into our insane lives. It is important, that is, simply as idea." Wallace Steger Letter, 1960. Voices for the Wilderness, Sierra Club, Editor William Schwarz, Ballantine Books, New York, New York, 1970.

Despite the politics, conservation happens to be a truly bipartisan issue in the U.S., which could save the day at a local level at least. However, the problem then becomes how to actually get it done, with the NIMBY (not in my backyard) syndrome that also interferes with progress. Nobody wants a nuclear power plant in their backyard, but they also don't want to give up their personal rights to exploit and degrade public lands, e.g., you guessed it, by grazing, mining, drilling, etc. On the other side of the fence, where I stand, strict conservationists aren't going to want to count working lands, waters and city parks towards the 30% the U.S. has committed. After all, we have plenty of working land right now that we could count, as our wildlife continues to decline, so we already know that won't solve the problem, if we're honest about it. Basically, it would mean doing nothing, just taking credit for land that's already ruined for wildlife. Like the way big corp tosses carbon credits back and forth like ping pong balls to make themselves look more responsible. When they're not. Thanks, but no thanks.

To be truly effective, lands set aside for wildlife must be FOR WILDLIFE, and not worked for anything else, in order to do any good. And, land set aside must include every native ecosystem, without leaving any out, to safeguard all of Earth's natural processes, of which we still remain mostly clueless. After all, if we don't know what we don't know, better safe than sorry. This means,

that every system from grasslands to forests to sagelands to coastal lands to high mountain steppes to deserts. Not just forests, not just grasslands. ALL.

If I were to pick one group of Americans who are most likely to get it right, my vote would be for Indigenous communities. Right now, nearly 18% of the Yukon region is protected from development, and more than a quarter of those lands are managed or co-managed by Indigenous communities.[23] Indigenous populations were in balance with the land and wildlife to begin with, before us white trash came along. I'm truly glad that they're getting their land back and am confident that they'll do better than we ever will, with all our fussing and fighting and nonsense that constantly detracts from the real prize, which is saving our planet and our wildlife and ourselves. In case you forgot.

In Oklahoma, long stolen land was finally returned to the natives by vote of the supreme court, which amounted to almost half the state, 43%, which is now recognized as the Muscogee (Creek) Nation reservation. Native American tribes have shown time and again that their sovereignty over water rights, and other areas is beneficial for the state. My own feeling is that it's about time, and I wonder what the long-term impacts on the land will be. It will be interesting to see how the natives steward the land, and the water. Will the land improve on their watch? Will water tables rise? What will they do with the land? With they move back to more of a hunter culture, at least with respect to meat, rather than raise cattle? Or some of both? I'm hoping to see improvements in land for wildlife that can be held up as an example for the rest of the country, and for the world. I'm assuming they're not planning to kill all the prairie dogs. I hope I'm right.

Without the support of the Federal government, we're going to need local governments to step up and, luckily a few are. California, for example, has committed to the 30-by-30 plan for California, and they're considering a 50-by-50 plan to follow.[24] In Arizona, voters showed overwhelming bipartisan support for the creation of a national monument next to the Grand Canyon, which would prohibit uranium mining and energy development on about 1 million acres of Federal land. In Minnesota, they've actually taken 250,000 acres of *farmland* and converted it back to wetlands, prairies and woods. Like, really? New Jersey is also trying to recover the white cedar forests that they've lost in extreme weather events, about 125,000 acres, but are challenged by continued severe weather and sea-water encroachment from rising sea levels, so it might be a little too late.

It's nice to see individual states doing conservation, because historically when Federal land is handed back to states, they tend to dole it out to the highest industrial bidder and it's lost forever. I guess at the end of the day it depends on the state. In a recent famous example, when Utah, the ultimate human-greed themed state, was given control of Federal lands, they immediately handed them off for profit, including Bears Ears National Monument and other protected lands. In response, Peter Metcalf moved the gigantic annual Outdoor Retailer Trade Show out of Salt Lake City. This show brought about $50 million per year into the state. Way to get 'em by the balls Peter! And the bad press probably impacted the $12 billion per year and 120,000 jobs the outdoor industry brings to the state. At least I hope so. Good thing it's only money! Sadly, after a few years they went back to Salt Lake City. Oh well.

In the end, it's all our fault when public lands are reduced, and when public access is reduced. Why would a US administration sell off public lands and break up historical monuments?

Simple greed. These decisions are being driven by politicians who were funded by corporations who want the land, so they can exploit it for profit. Duh. And as long as we vote for politicians who will whore themselves to big corp, and as long as we buy the products the big corps extract from the land, we are all creating a demand, we are willing customers of these entities, and we are collectively responsible for the destruction of our lands. We are all guilty. As long as we continue to drive our cars and heat our homes with fossil fuels, grow the population so demand continues to increase, buy crap we don't need and eat industrial toxically grown food and red meat, we are all guilty.

While I do maintain that land for wildlife needs to be untouched by humans, other than hiking and licensed hunting, that doesn't mean that I don't think we shouldn't bother with urban lands. I definitely think we should do all we can with urban landscapes to make them friendlier for wildlife. First and foremost is stop dumping toxic pesticides all over them. It turns out that 40% of the pesticides applied to lawns in the U.S. are banned in other countries. This is because other countries seem to believe the more than 75 documented studies that verify the connection between lawn pesticides and lymphoma, as one example. These studies also show that children and pets are most at risk because they spend the most time rolling around in the grass.[25] So how insane is that? We're poisoning our own children and pets to keep our lawns flat and green? And, in the west, we piss away about 60% of our precious water to water them? Think about that.

Beyond that, native plants grown regeneratively can make a huge difference for local wildlife, mainly the little guys, which, after all, make up most of our wildlife by far, supporting the entire web of life from the bottom up. Regenerative practices avoid disrupting soil that the microbes and insects live in, and native plants provide homes and food for native insects and birds that are often specialized locally. In the arid western states, native yards also don't demand water, other than the natural amount of rainfall that they evolved with, saving precious water.

I already mentioned that we have done this in our yard, completely replacing the original flat lawn with native plants, including more than 30 species of grasses and an endless array of wildflowers and shrubs. We find that the natives are either perennial, lying dormant in winter and waking back up in the spring, or naturally self-seeding, eliminating the need for buying plastic pots of annuals in the spring, while saving time in planting and money in buying. If more of us create these oases in urban areas, it will help a lot, since currently about 2% of U.S. land is currently flat green lawns. To wildlife, these flat green lawns are alien deserts, unsuitable for any kind of insects, pollinators, birds and other small creatures. Particularly when we mow everything flat, grinding up any of the tiny life that dares to venture onto the premises. With the help of big corp lawn product manufacturers, those who make the toxic chemicals and lawnmowers, we have been sadly brainwashed into a misguided bias towards flat and green, and against natural, wild and unruly, which is what our wildlife needs. Think about that.

In Golden, I'm encouraged by a movement in the right direction, with more natural landscapes displacing the flat green lawns. If this movement takes hold, it will help the wildlife a lot. If even half of us did this, in the U.S. we could restore ecosystems for about 20 million acres, which would be huge. There's even an organization founded by Doug

"First and foremost, I urge you to stay on the path you've chosen, and to travel on it as far as you can. The world needs you – badly."— E.O. Wilson from Letters to a Young Scientist

Tallamy, the author of "Nature's Best Hope"[25] called Home Grown National Park, that encourages and educates about natural yards that support wildlife with a map of all the participating yards in the U.S., at www.homegrownnationalpark.org . In Colorado, more than 700 yards have been converted, for 375 acres. Now, that's what I call activism!

Within urban areas, we can also help with innovative nature-based infrastructure, some of which we're already doing, and need to do more. In Denver, our son is a botanist who is focused on replacing non-native annuals with native plantings in Washington park. In Kansas City, Missouri, they're replacing non-native annuals with native perennials on city roadways, and finding that it reduces maintenance and water requirements, as well as hosting more native microfauna. Paved surfaces cover about 30% of urban land in the U.S. and organizations like Depave are working to change that by ripping up impervious surfaces one by one. In addition to helping mitigate flood risk, it's better for biodiversity, largely soil microbes, and for plants, making a huge difference for trees, and it lowers the high temperatures caused by urban heat effect.

- In Coa Valley, Portugal, they refer to grazing wild cattle as "fire brigade" because they keep wildfires at bay by creating natural fire breaks with grazing.
- In the Apennine Mountains, Italy, removing obsolete fencing helps wildlife move freely.
- Restored peatlands, rivers, and wetlands, as well as flood mitigation and dam removal, bolster water sources.
- Bringing back critical species and their ecological functions helps habitats sustain themselves.
- Predators restore balance and maintain biodiversity, strengthening community ties with nature.
- A network of pathways between habitats would facilitate movement of animals across the landscape, and help prevent extinction of flora and fauna.

The Half-Earth project seeks to connect existing wild lands through urban natural spaces to give wildlife a means of moving about and migrating unimpeded, which is key to their survival.[26]

In Europe, where wild land is even scarcer than the U.S., the 2024 Nature Restoration Law aims to protect 20% of the European Union's degraded land by 2030. Non-profits are working on some really huge rewilding projects. With 2 billion dollars spent on the voluntary carbon market in 2022, it's emerging as a major driver for rewilding, along with tourism. In the U.K., large animals that haven't been seen for centuries, including elk, water buffalo, bison, beavers, and other large herbivores are being introduced. They are finding that these restoration projects are also providing additional benefits, like flood and erosion control, restoring water tables, supplying pollinating insects for farming, as well as microbes, insects and other microfauna.[27]

A rewilding project on 3500 acres of unprofitable farmland allowed thorny scrub to grow in the fields, then introduced red and fallow deer, old English longhorn cattle as a substitute for their ancestor, extinct aurochs, Exmoor ponies for the tarpan, and Tamworth pigs for wild boors, and the biodiversity developed in short order, including some of the U.K.'s rarest species of birds and butterflies. Now, instead of a defunct farm, they have a thriving ecotourism destination with 80 employees, that does safaris, has a restaurant, and meat sales from the free-roaming animals. The land is now a significant carbon sink instead of a source. We should be doing that in the U.S., particularly in the West.

Heat Wave

When it comes to trees, at least for some species, global warming is bringing both good news and bad news, at least for now. Unfortunately the bad news outweighs the good news. By a lot. Starting with the good news, as the planet warms, some of the estimated 73,000 tree species are pushing towards the south and north poles, and up slopes, to escape the heat, and they are dragging other life with them.[28] Because of this, we now have trees in previously barren lands, which is providing a temporary additional carbon sink that's helping to absorb our emissions. However, that doesn't mean things are fine.

In Australia, 39 million mangroves died of thirst after years of stress from high heat and drought. The brutal El Nino of 2015-16 finished them off with a temporary drop in sea level, which was enough to dry out the weakened trees' roots. The same El Nino killed nearly a third of mangroves that were also stressed on the southeast coast of Brazil. In Europe, annual mortality rates are rising for all the continent's main tree species due to drought, heat waves, and invasive pests, with 4.8% lost so far. It sounds like we may as well get used to stronger storms, since hurricanes draw their strength from the warmth of surface waters, which are obviously getting warmer.

In California, the Joshua trees are slowly disappearing, with less seedlings because of high temperatures and drought, making it very unlikely that the million trees lost in the Dome fire will ever grow back. In Canada, quaking aspen, North America's most widespread tree, is dying in droves, as drought and high temperatures make them more susceptible to disease and insects that are out of balance because of - you guessed it – the heat. And Joshua trees aren't the only ones going down over insects, in the Western states, the mountain pine beetle has decimated about 80 million acres of pine trees in the past 20 years, a direct outcome of global warming, as the beetles don't die off in winter any more, because the temperatures aren't cold enough. As we warm, we can expect more of these kinds of unpleasant surprises.

In New Mexico, increased evaporation from the heat is causing crops to require more irrigation water, initial signs of desertification to come. It also means that less water from rain and snow is likely to reach waterways, so we can expect streams and rivers that supply downstream users like irrigation for crops and cities to dry up. We've again found ourselves stuck in the middle, between a rock and a hard spot, haven't we?

Sea level rise from global warming is killing massive numbers of coastal trees. Louisiana's marshlands near the Mississippi River are likely to disappear within the next 50 years from climate change and rising sea levels. In North Carolina, seawater seeping into aquifers and freshwater wetlands along the Cape Fear River are killing vegetation and cypresses. Coastal trees on the coasts of India and Bangladesh are also going down, including the world's largest mangrove forest, for the same reasons.[29]

Destroyed by Wildfire

In contrast to fires set on purpose to clear forests, wildfires either start through natural forces or accidentally. Sadly, the natural forces that are accelerating wildfires of late aren't so natural any more. Researchers from the University of Idaho and Columbia University estimate that human-caused climate change has doubled the amount of forest burned in the Western U.S. since 1984.[30] Climate change is making wildfires bigger, fiercer, and deadlier. Recent fires in the American West are far from normal. Sparked by freak thunderstorms and fueled by record heat and brutal winds, California's fires in recent years have grown into conflagrations of astounding size and intensity. Fires in the past few years killed up to a fifth of the largest sequoias in California, some more than a thousand years old. Per California Governor, Gavin Newsom, "Climate change is real. If you are in denial about climate change, come to California." This is when you know it's bad.

October, 2017, Tubbs Fire Obliterates 5,600 structures and kills 22!

November, 2018, Camp Fire destroys Paradise, California, kills 86!

October, 2019 – Kincaid Fire burns 120 square miles!

"The hots are getting hotter, the dries are getting drier," Gavin Newsom, California governor.

August Complex burns 877,000 acres!

3.2 million acres burned across California!

A million acres burned in Oregon – 10 deaths!

600,000 acres burned in Washington!

Hundreds of thousands of acres burned in Colorado!

December, 2021 – Colorado Marshall fire burns 1084 homes!

Get used to it. The increased heat and delayed rains caused by global warming are leading to increased and more intense fires, even in lands like Western Oregon, where it's historically been too wet for wildfires. Ironically, warmer air carries more water, leading to heavier spring rains that causes more vegetation growth that dries up during the hot summer and provides more fuel for fires the following fall, making the fires ever hotter. Yet another unexpected consequence of our dangerous overconsumption. It's to the point that there doesn't seem to be a beginning or an end to fire season anymore. Case in point: the Marshall fire in Colorado on December 30, 2021.

With our excesses, we humans have literally doubled the natural rate of wildfires. Also, wildfire fighting costs have increased 16-fold from about $250 billion in 1985 to more than $4 trillion in 2021. So, we're definitely paying for our excesses, in addition to trashing the air, increasing our emissions even further, and eliminating wildlife as we go.[31]

In Russia, in 2021, fires burned four times the average amount of land, 21 million acres, above the arctic circle, where it's historically been too cold for extreme fires. These fires released massive amounts of carbon that was stored in permafrost for millennia, and transforming forest into grassland.[32] Russia has lost more intact forest than any other country, from development in addition to wildfires.

Unlike the fires themselves, which burn in a geographical area, we all suffer the impacts of the smoke and haze, which spreads far and wide, creating a blanket of thick, gross air for us all to

breathe, as smoke from fires in Canada, California and Arizona extend all the way to the eastern U.S., and even as far as Europe. And, while many of us can don face masks or go inside when the air is dangerous, the wildlife can't. They have to live with it. Or die with it in the fires, for the most part, while most humans evacuate. So, a million acres of land and forest lost to fire is a million acres of wildlife lost. Think about that.

Smoke also impacts surface water, and in the U.S. about 89% of US lakes over 25 acres in size are impacted by wildfire smoke for at least 30 days every year. At this point, we have no idea how smoke affects food webs, lake ecology or what the future of these systems will be if there's an increase in lake-smoke days.[33]

It also impacts weather patterns and increases the severity of the fires. Scientists have found that wildfire can create a dense layer of heat that combines with winds to feed fires, and smoke from wildfires in Southeast Asia generated cyclones that blocked monsoon rain from reaching the flames.[34]

In Australia, the megafires of 2020 killed 33 people, but it also killed a billion animals, including 60,000 koalas. How's that for a wildlife to human death ratio? It's estimated that the fires have increased Australia's list of endangered animals species by 14%. They also spewed between 650 million and 1.2 billion metric tonnes of CO_2 into the atmosphere. This doubled or tripled Australia's annual CO_2 emissions of 531 million metric tons. The damage is estimated at $7.2 billion. In California, the estimated release of CO_2 in the 2020 fire season was about 107 million metric tons.[35] Of course, when these amounts of CO_2 are spewed into the sky from burning the trees in a given season, a similar amount of CO_2 sink from the same trees is lost for several years to follow, until the forest grows back, if it ever does. Fires also foul the water supplies, since the run-off, made worse by erosion due to lack of foliage, carries ash, silt and detritus into waterways. What a mess!

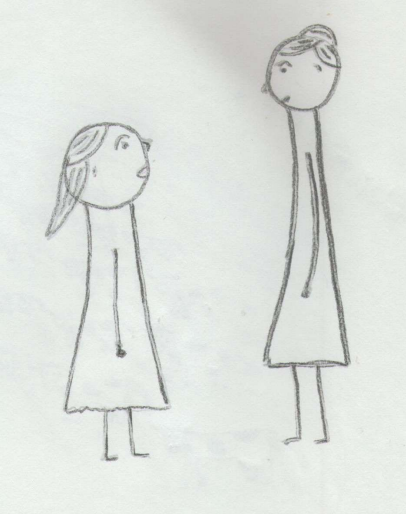
In Australia, the runoff from the fires were full of dangerous levels of heavy metals, which trashed the aquatic ecosystems, and compromised drinking water treatment. In California, heavy rains after one fire sent 300,000 tons of sludge into the Rubicon River, polluting the drinking water source for Auburn, California, that doubled treatment energy requirements and costs for several years. To make it worse, benzene and other nasty volatile and semi-volatile organic compounds are higher in drinking water supplies after a fire, most likely because of exposure of the PVC pipes to the heat, when pipes are located near or above ground.

Well?

So, how are you doing with all this bad news? Are you feeling overwhelmed and apathetic, or does this make you want to change? Do you feel inspired or hopeless? Do you get how the various elements of our climate crisis are all linked? How everything we do either helps or makes it worse? How big corp has brainwashed us into thinking we need things that we don't? If single-use containers and paper make up 6% of our carbon footprint, why not avoid them completely? If phantom electricity is 8% of our electricity, why not simply turn off and unplug things you aren't even using? If beef and dairy are ruining so much land and aren't even good for us, why consume it

in excess? If fruits and vegetables have a far lower carbon footprint, why not eat those, and why not buy whole vegetables that don't have a bunch of unhealthy ingredients that come from scraped rainforests far away, and aren't in single-use packaging? Why not just take your own cloth bag to the store and put the produce in there? When it's better for you and better for the planet?

"Grandma, why can't you stop using toilet paper? If I can, then why can't you?"



If half our food goes to waste, why not restrict your purchases to only what you can actually consume? If processed and packaged foods have higher carbon footprints and land demands than raw foods, why not cook with raw foods? Please don't tell me you're too busy. I'll call bullshit. Our family has consumed strictly raw foods for 30 years, and during that time I worked full-time, earned two college degrees, one a master's degree, and was active in my professional organizations. I also got my Professional Engineer's license, "A" Operator Certifications for Water, Wastewater and Industrial Wastewater treatment, a diploma in Brewing, and certifications in Energy Engineering and Project Management. I was even a volunteer band-mom. While also building a climbing resume, doing plenty of biking, hiking, camping, gardening, skiing and family time. Think about how you spend your extra time, and where you could take an hour per day to eat more responsibly and healthier. Share the work with your S.O.. When you prepare things regularly, you get really fast. I'll make an entire week's worth of chili or soup sometimes, and either me or my husband can crank out a wonderful soup or salad or stir fry or just about anything for dinner in minutes.

Think about the stuff you buy, and if you really need it. Challenge yourself to only buy what really needs to be replaced, and only buy from thrift stores. Can you do that for a year? Or even a month? Think of the money you can save. And use that money to buy organic food instead of conventional industrial.

We all contribute to the mass destruction of our lands and wildlife with our excesses and our enormous population. Are you thinking about how you can reduce your carbon footprint? Are you thinking about how you can support population reduction through contraception and smaller families? Do you intend to do something? I hope so. I'm doing my best, but I can't make much difference by myself. We ALL have to do it.

We can keep paying big corp to destroy our planet, right down to the end, or we can force them to knock it off by not giving them our money. This is called boycotting, and it works. It's the simplest form of activism, and we can all do it. It's up to us.