

## ENVIRONMENTALLY SPEAKING

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## We've found bigfoot and we didn't have to look very far

Haven't you heard this BIG news? Maybe you haven't, perhaps distracted by recent headlines surrounding Trent Lott, the U.N. weapons inspectors or Santa Claus. Well, only last week more definitive evidence came forth which demonstrates that bigfoot does exist. It is we.

Yes, those of us in the U.S., on average, have the biggest feet on the planet. Surprised? I am not writing here about shoe size—the literal interpretation—but rather the individual impact that our lifestyles have on the planet. This metaphorical footprint has been shown to be a very useful way to evaluate the impact each one of us is having.

You see, several researchers have recently determined to what extent the way in which we live has a quantifiable impact on our planet. Our footprint actually has been calculated and it has the units of acres. In other words, your day-to-day activities have an impact on the quality of air, water, and land that we breathe, drink, or stand on, and these can be collectively combined and represented by a particular land area.

But what is the connection between a land area and your annual production of carbon dioxide (via driving) or your yearly dietary needs? Well it is pretty simple, according to Mathis Wackernagel and William Rees, authors of the must-read entitled, *Our Ecological Footprint*. All humans require land area for two fundamental purposes. First, land (or ocean) provides the materials that people need to live, such as food, wood, aluminum, etc. Second, land (or ocean) must also absorb and recycle the waste that our species produces. Since human life necessitates the use of resources as well as the production of waste, each one of us requires a certain acreage for our survival. But how much do we require? And is there enough for all 6 billion of us? These are seemingly difficult questions but fortunately Wackernagel and Rees have gone a long way in answering them.

Through the accumulation of hordes of data from a broad spectrum of sectors of the worldly economies, these scholars have quantified the impact every nation is having on the planet. Released this past week, the *Ecological Footprint of Nations*, an update to their first book published in 1996, provides us with some stark conclusions. The per capita ecological footprint for each nation indicates how much land is required to maintain the "average" way of life—here again, defined by resource consumption and waste production. The amount of land required is referred to as the *ecological footprint* (EF). On a global basis, the average human EF is 5.6 acres; an acre is roughly the size of a football field without the end zones.

And while this may not seem too outrageous, the eye-opening aspects of the statistics are revealed when looking both at the wide variation that exists among nations as well as at what the Earth can reasonably provide for us. Consider that the people in the United States have an EF of 9.7 acres, number two in the world behind the United Arab Emirates (an oil- and gas-rich country with a population of less than 1 percent of ours). Yet, our value isn't even twice the global average, so what is the big deal? Well our nation's EF is more than four times Brazil's, more than two times Germany's and Japan's (two of the more "developed" nations in the world), and more than ten times that of thirty other nations including India. To understand how the difference between the United States's per capita EF and India's plays out in total, consider that our nation's cumulative land requirements are nearly three-and-a-half times larger than India's despite their purportedly gargantuan population, which

is nearly four times ours. These calculations clearly implicate the U.S. as the key promoter of "environmental" overuse and illustrate the limited relative impact that "overpopulation" has on the world's environments.

Now for the second critical aspect of the impact that one's use has, i.e., biocapacity—which refers to the amount of production and waste assimilation that is realized by the biology of the world. Currently, with a world population now above six billion, Wackernagel and Rees project that the Earth's multitude of ecosystems produce 4.7 acres per capita—in the form of crops, grazing livestock, fishing, harvestable timber, zones of human habitation, and forests for storing carbon. We observe that humans are currently working with a per capita deficit of 0.9 acres (i.e., 4.7-5.6). The "true" deficit is actually larger because the numbers provided here have not accounted for land that should be set aside for use by the bulk of the millions of other species that inhabit this planet. Additionally, many activities which "systematically erode nature's capacity to regenerate"—such as, species extinction, and PCB production and use—have not been properly accounted for in the above models and thus the actual EF of nation's is expected to be higher than stated.

This deficit should grab our attention. It means that the world's current lifestyle (which includes billions of people who live on less than \$1 a day, the few that live on more than \$1000 a day, as well the billions in between) is unsustainable and "implicitly condemn[s] large segments of future generations to harsh lives" (Wackernagel et al.). It also strongly suggests that reproducing the American consumption habits globally isn't possible nor advisable if our species plans to live in harmony with what the Earth can provide us in the long term.

Yet the U.S. not only has the biggest foot among the major world nations, its territory also has a fairly large biocapacity. Unfortunately, our nation's per capita biocapacity of 5.3 acres still trails our EF by more than 4.4 acres. This disparity suggests that we are consuming materials and producing waste at nearly twice what we should be given our national resources and ecosystems. Some other industrialized countries are comparably living beyond their "fair" means—Japan is 4.1 acres overdrawn and the United Kingdom is 3.7 acres overdrawn, both on a per capita basis. And even more scary, both China and India, whose combined populations account for 38 percent of all *homo sapiens*, are also living in a deficit (0.5 and 0.1 acres respectively) despite being dramatically poorer than the "more developed" countries. In short then, nearly all of us are living beyond the Earth's capacity.

There happens to be some hope in this dismal portrayal. For one, a nation's (or an individual's) EF is a dynamic variable, meaning that it can be changed through natural or conscious influences. Given that fossil fuel burning accounts for more than half of many industrialized nation's EFs; a move towards renewable energies—such as solar, wind and hydrogen—and away from carbon based energies—such as coal, oil, and natural gas—would do wonders to reduce them. Also, a sizable lessening of our EF could come by becoming much less wasteful with the energy that we do use. This can be done at the individual level through the use of more efficient transportation vehicles, the consumption of proportionally larger quantities of fruits and vegetables (when compared to meat and dairy products), and the abandonment of our materially crazed lifestyle. It also can be accomplished at local and national

levels through the development of urban complexes that reduce the need for individual vehicles via their support of public transportation and the increase in local food consumption. Unfortunately, the continued expansion of suburban sprawl, which is flourishing particularly in the West today, is a movement in the completely wrong direction. However, there is some solace in recognizing that there are certainly things that we **could** do and these things **do** matter.

Also, the world's biocapacity has the potential to increase as well, reducing the disparity between it and the world's EF. However, the odds are that biocapacity will diminish rather than grow over the next fifty years due to the effects of climate change and continued destruction of ecosystems with expanding populations and profit-driven economies; both of these phenomena reduce nature's capacity to provide us services. And while other technologies might improve biocapacity some, one shouldn't assume that "enhancements" to our industrialized agricultural methods will help. Earlier gains during the "green revolution" have produced larger yields but at great costs in terms of energy, water, fertilizer, and pesticides. (Unfortunately, we haven't learned how to produce food that will grow without water and proper soil nutrients.) Also, given that world populations are planning to expand to over ten billion this century, biocapacity (per capita) is clearly going to go down as well, which will only increase our deficit.

Given the importance that EF's seem to have relative to our continued presence on the planet, it is instructive to look more closely at the substance behind them. Nearly any activity that we engage in can be broken down into its components and its impacts. A brief example will illustrate how complex and, consequently, demanding, our lives have become. This example represents the performance of relatively a mundane, every-day task. If tasks like the one mentioned here can be shown to require extensive material and energy, then one can begin to see how a full picture of one person's lifestyle might have impressive (and oppressive) impacts on the environment.

The example concerns the laundering of one's clothes. It is safe to say that nearly everyone in the United States washes their clothes regularly. A washing machine now serves as the dominant piece of equipment to use to complete this task. A typical load of laundry requires a surprising amount of energy (obtained in the form of electricity and/or gas) and water. A clean wash necessitates more than water, it requires soap as well. And since soap, and the accompanying bleach, often has chemicals which are harmful to other forms of life—such as phosphates and chlorine—even seemingly small amounts of detergents must be critically examined. Additional energy inputs come by way of driving to and from a laundromat (if necessary) or by way of utilizing a dryer. In fact, a dryer is really necessary as hanging will usually do the trick, but dryers have become a cultural imperative because our lifestyles don't permit the wait or the accompanying wrinkles that often accompany natural drying. Also, a washing machine has a limited number of washes that it can handle before it begins to break down and become dysfunctional. At this point, a new machine may be warranted or replacement parts necessary. More often than should be the case, a new machine is cheaper and less "hassle" than repairing a broken one, so "old" machines find their way to the landfills earlier than necessary—the acceptable final resting place in an economy that

greatly undervalues reusing materials that still may have utility. (How many washing machines or dryers that find themselves in our landfills are there because one measly part, which weighs a fraction of the machine's total weight, has gone bad? Who knows? But more importantly, does anyone seem to care?)

This example clearly demonstrates that even seemingly routine tasks require sizable allotments of resources. On a typical day, most people in the "developed" world perform many of these tasks. When one person's cumulative activities are considered they are substantial. When the activities of all of the people inhabiting the "developed" world are considered, the resources needed seem tremendous. And when we add all the other people in the world, the resources required appear humungous. Yet every day, all of us participate in these activities without thinking about the larger consequences of doing so.

If you are wondering what your individual ecological footprint is, you can go to the following website and find out (upon answering a few questions): <<http://www.rprogress.org/programs/sustainability/ef/>>.

If you come to find out, as did I, that you are living "high on the hog," you might want to pick up one of the following titles this holiday to give you ideas on how you might reduce your footprint: *A Reasonable Life: Toward a Simpler, Secure, More Humane Existence* by F. Mate; *Choosing Simplicity: Real People Finding Peace and Fulfillment in a Complex World* by L.B. Pierce & V. Robin; and *Affluenza: The All-Consuming Epidemic* by John De Graaf et al. If you not convinced that we are living beyond our needs you might want to pick up one of these titles first: *Luxury Fever* by R. Frank; *Living it Up* by J. Twitchell; *The Overspent American* by J. Schor; and *Credit Card Nation* by R. Manning. Happy reading.

An honest and careful look at our nation's footprint indicates that *bigfoot* is a deserving epithet. As its citizens we are the "little" bigfoots that are collectively contributing to overuse and misuse of resources on a massive scale. Yet, as dismal as our current position, we also have the capacity to change. Our institutions and industries have the potential to promote the most humane virtues of equality, fairness, camaraderie, wisdom and ingenuity all within the guidelines prescribed by our planet. It is incumbent upon us to provide the will and the resolve to see that they do so. History has shown that it won't happen without our persistence and dedication. Perhaps next year, our footprints will be the major topic of discussion in our media. There is my wish for the New Year.

## References:

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