

ENVIRONMENTALLY SPEAKING

Peter Schwartzman

What is 1 percent of the land good for? ...more than meets the eye

Though most of the world's surface is covered by water, since the Earth is so large relative to human horizons, there doesn't appear to be a shortage of land. However, when one begins to think of land in terms of a human resource, i.e., a producer of food, a provider of wood, an expanse for passage, one realizes that many portions are either too lacking in nutrients, too high in elevation, too prone to flooding, or too cold or ice-ridden for extensive use. Furthermore, habitable lands are becoming less abundant due to desertification (the expansion of deserts due to the misuse of land), agricultural expansions and rising sea levels. Since humans aren't the only species that need land, it isn't surprising that this resource is becoming limited for other forms of life too. In part as a result of this added stress on living things, we are also witnessing extinctions of grand proportions—at a rate of many thousands species per year. Since these losses are largely due to human actions, such as deforestation and non-native species introduction, many are beginning to pay attention to how we use and protect land. Recent ecological research has also recently provided a message of hope concerning the future well-being of life on this planet.

In the world today, scientists estimate that the Earth is losing at least 1 percent of species every ten years, and the percentage loss may be close to 5 percent. Even if only the lower rate persists, the Earth will have lost near half of its biological diversity by 2070. Can this be possible? Many esteemed scientists think so. While the future appears bleak, several recent insights tell us that we have the potential to significantly reduce what amounts to a biotic holocaust, one not witnessed on Earth for over 60,000,000 years. While there are hopeful signs in the area of human activities (such as increased acreage of nature preserves and national parks), the hope of which I speak of here stems from specific characteristics of the other forms of life which may enable us to mutually coexist in the long term.

The Earth's organisms are wonderfully varied in size, shape, function, behavior, and genetic code. One only need to consider that there are ~15,000 species of butterflies and ~50,000 species of mushrooms worldwide to begin to fathom the immensity of variety that this planet has. Yet, as different as the species come, the bulk of living things are also similar in a couple of very important ways. Most living things live in relatively small regions and do not travel far from where they or their parents were born. In fact, recent biological and ecological work has determined that most land species are very particular about where they live. As opposed to humans whose choice of home is largely driven by economic and political forces (mobility driven by availability of wealth or forced relocation), flora and fauna find themselves in locations for which they are adapted. We now know that many species of insects and plants have a very restricted range in which they found. Very few organisms are ubiquitous like we are. It goes without saying that you aren't going to find a Great Blue Heron or a Grizzly visiting Antarctica or climbing Mt. Everest; yet you might find the snow bear (recently discovered and previously known as the Abominable Snowman) doing the latter. Recognizing that most living things are rather localized during their lifetimes has profound implications, both hopeful and cautious. On the one hand, it suggests that we can learn a lot about species by parking our scientific minds in specific locations. On the other

hand, it means that if we destroy even small areas of the globe we are likely causing great and even irreversible destruction to the species that are found there.

We have also determined that there are specific locations on our planet where a disproportionate number of species live. For our species, Asia serves as the homeland for most. In fact more than 60 percent of humans live on this largest of continents (which only makes up 24 percent of the land surface on the planet). With other life forms, geographic concentrations sometimes defy description. We only recently became aware that the vast majority of terrestrial (as distinguished from oceanic or riparian) species collectively live on just **1 percent of the Earth's land surface**. (If humans lived at a comparable concentration level, we'd all have to cluster together in an area roughly the size of Antarctica or twice that of Australia.) This mind-blowing realization has prompted those that have been struggling to protect organisms a new way of thinking about such protection. They have concluded that if we humans could somehow find a way to avoid disturbing just 1-2 percent of the land surface, nearly 70 percent of the world's terrestrial species might be able to survive. Recently some conservationists have refocused their attention on these unique locations.

The regions of the globe that contain such a splendid array of biological diversity have been named "hot spots," a name that communicates their critical status. In what has to be the most beautiful books I have seen, *Hotspots* represents the collective work of scientists Russ and Cristina Mittermeier and Norman Myers as well as photographer Patricio Robles Gil. In this oversized volume, these four scholars have assembled more than three hundred vivid photographs of some of the world's endangered species and threatened ecosystems. These absolutely breath-taking images come from the what they refer to as "the 25 most critically important regions" in the world. These regions originally constituted almost 12 percent of the world's land surface but now, due to human pressure at many levels, only a little more than **1 percent** remains intact. What makes these locations, which are found on all continents except Antarctica, so "hot" is that they are home to hordes of the Earth's plants and animals and they face imminent danger from a variety of human activities. The *Hotshot* authors and others strongly believe that the global community can do wonders if these areas move to the top of our priority list.

But what will have to happen for these spots to be protected? There are no simple answers to this central question. Unfortunately, those of us in the United States who have the luxury of time to even ponder such questions, face many obvious difficulties. First, nearly all of the hotspots are located outside of our territorial boundaries, exceptions being the forests of Oregon and California as well as portions of Southern Florida (namely the Keys and the Everglades). Key hotspots are found in New Zealand, Madagascar, and Indonesia as well as the continental parts of south-east Asia. Obviously we cannot expect that we will be able to force other countries to enact and enforce laws that will greatly reduce biological degradation. Yet, while many other countries have ratified the Biodiversity Treaty that was drafted at the 1992 Rio Earth Summit, it has never reached the floors of the U.S. Congress for a vote; Canada, Japan, and the European Union are



among those to ratify it. By this inaction our nation apparently lacks the wherewithal to support global conservation efforts as a matter of principle. However, given that the wealthy nations in concert with international banks promote unsustainable extraction of resources in the world's developing countries, it would appear that we have an obligation to do so.

If our national policy makers are unwilling to commit themselves to the protection of global ecosystems and species, we still have ourselves to look to for sources of positive change. All of us have tremendous purchasing power, especially in comparison to the majority of the other human residents on this planet; Barry Bearak, a Pulitzer Prize-winner journalist who recently spoke at Knox College's convocation, referred to the residents of the United States as "filthy rich," a conclusion he came to after spending a great deal of time in the poorer regions of the world, particularly Afghanistan and India. What we buy makes a difference. The environmental campaign to support shade coffee rather than sun coffee is just one of many attempts for the consumer to support sustainable practices in regions of great ecological diversity. According to the Northwest Shade Coffee Campaign, shade coffee agricultural allows for the extraction of a desired resource but at the same time allows between 3-8 times as many birds species to persist not to mention many more mid-size mammals as well as amphibians and beetles. Coffee is also a particularly important commodity in terms of the health of ecological systems because the countries that produce the bulk of it are precisely the same countries that are home to the majority of the world's species; the countries of Brazil, Bolivia, Indonesia, Vietnam collectively produce ~40 percent of the 17 billion pounds of coffee that are harvested each year (folks, that's more than 3 pounds per person!). Burdensome debts also force many developing countries to endlessly delay infrastructure investment. Debt-for-nature swaps, an idea proposed by Dr. Thomas Lovejoy of the World Wildlife Federation in the mid-1980s, have enabled poor countries to relieve foreign debt and international nongovernmental organizations (NGOs) to increase

commitment to conservation programs both at the same time. In these swaps, NGOs pay off a poor country's debt to a bank or well-to-do country at greatly reduced costs in order to establish agreements for investment in national parks, for example. While not a cure-all, these efforts have begun the paradigm shift from unabated expansion and unhealthy extraction to one supportive of saving natural ecosystems and securing the health and welfare of all human populations.

Yet with human consumption levels growing and human populations increasing exponentially, it doesn't seem possible that much of the planet's landscape could go unaltered. In fact, from an ecological viewpoint, no location on the surface can now be characterized as unaltered, since detectable amounts of human made chemicals are found virtually everywhere. So unaltered is an impossible goal. However, as noted earlier, there are many locations that still are teeming with extraordinary levels of the Earth's life forms. If these locations can be given the attention they deserve huge numbers of species can avoid extinction. The clock is ticking though. Many scientists are telling us that time is running out as we speak. It is incumbent upon our species to take advantage of this truly momentous occasion.

Threats to these locations represent massive scale intrusions taken by societies found on every continent. Unfortunately, there is so much that will be lost if these "special" places aren't quickly protected from future degradation. On the bright side though, so much of the world's genetic diversity lives in just a couple handfuls of "hotspots" that if these locations were saved hordes of species would be able to persist into the next millennium. The time is now to respond to this fairly recent observation and insight. It is time for the world to begin to act like a civilized 21st Century society. It is incumbent upon us, those with time and wealth, to maintain the momentum that others have started. The masses of life forms are relying on us to make the best attempt at this daunting yet critical task. Hopefully our species will be sensible enough to leave at least **1 percent of land** alone, so that other life forms may continue to exist. Do we need all 100 percent?

References

Chiras, D.D. (2001). *Environmental Science: Creating a Sustainable Future*. Sudbury, MA: Jones and Bartlett, 730 pp.

Mittermeier, R.A., N. Myers, P.R. Gil, & C.G. Mittermeier. (1999). *Hotspots*. Japan: CEMEX, 430 pp.

Peter Schwartzman, a resident of Galesburg since 1998, is chair of the Environmental Studies Program at Knox College. He is a research climatologist with several peer-reviewed publications in the area of climate change and human population growth and he is currently writing two environmental books focused on bringing environmental understanding to a wider audience. He encourages responses to his writings.

LACY ENGLAND AGENCY INSURANCE
HOME • AUTO • LIFE • HEALTH • BUSINESS • FARM
131 N. Side Public Square
Knoxville
(309) 289-4137