# no impact--environment

[ENVIRONMENT DEFENSE 2](#_Toc267833102)

[A2: ENV’T DESTRUCTION = DISEASE 6](#_Toc267833103)

[WARMING DEFENSE 7](#_Toc267833104)

[SPECIES DEFENSE 9](#_Toc267833105)

[HUMANS WON’T DIE 11](#_Toc267833106)

[NO SNOWBALL 12](#_Toc267833107)

[BIODIVERSITY ALT CAUSES 13](#_Toc267833108)

[A2: KEY TO MEDICINE 15](#_Toc267833109)

[A2: KEY TO AGRICULTURE 16](#_Toc267833110)

[A2: SOIL EROSION 17](#_Toc267833111)

[A2: MONOCULTURE 18](#_Toc267833112)

[A2: HONEYBEES 19](#_Toc267833113)

[A2: OZONE 22](#_Toc267833114)

[A2: AIR POLLUTION 23](#_Toc267833115)

[A2: PHYTOPLANKTON 24](#_Toc267833116)

[A2: POLLUTION 25](#_Toc267833117)

[A2: DEAD ZONES 27](#_Toc267833118)

[A2: OXYGEN 29](#_Toc267833119)

[A2: AMAZON 30](#_Toc267833120)

[A2: ETHICS 31](#_Toc267833121)

[WAR TURNS ENVIRONMENT 32](#_Toc267833122)

[BIODIVERSITY IMPACT 33](#_Toc267833123)

# ENVIRONMENT DEFENSE

**No extinction**

**Easterbrook,** senior fellow at the New Republic, **03** [“We're All Gonna Die!”, <http://www.wired.com/wired/archive/11.07/doomsday.html?pg=1&topic=&topic_set>=]

If we're talking about doomsday - the end of human civilization - many scenarios simply don't measure up. A single nuclear bomb ignited by terrorists, for example, would be awful beyond words, but life would go on. People and machines might converge in ways that you and I would find ghastly, but from the standpoint of the future, they would probably represent an adaptation. Environmental collapse might make parts of the globe unpleasant, but considering that the biosphere has survived ice ages, **it wouldn't be the final curtain**. Depression, which has become 10 times more prevalent in Western nations in the postwar era, might grow so widespread that vast numbers of people would refuse to get out of bed, a possibility that Petranek suggested in a doomsday talk at the Technology Entertainment Design conference in 2002. But Marcel Proust, as miserable as he was, wrote *Remembrance of Things Past* while lying in bed.

**Environmental alarmism isn’t a justification for taking action --- they polarize debates and prevent sound policy formation based on truth**

**Kaleita, PHD, Assistant Professor** Agricultural and Biosystems Engineering **07** [Amy, “Hysteria’s History”Environmental Alarmism in Context”, <http://www.pacificresearch.org/docLib/20070920_Hysteria_History.pdf>]

Apocalyptic stories about the irreparable, catastrophic damage that humans are doing to the natural environment have been around for a long time. These hysterics often have some basis in reality, but **are blown up to illogical and ridiculous proportions**. Part of the reason they’re so appealing is that they have the ring of plausibility along with the intrigue of a horror flick. In many cases, the alarmists identify a legitimate issue, take the possible consequences to an extreme, and advocate action on the basis of these extreme projections. In 1972, the editor of the journal *Nature* pointed out the problem with the typical alarmist approach: “[Alarmists’] most common error is to suppose that the worst will always happen.”82 But of course, if the worst always happened, the human race would have died out long ago. When alarmism has a basis in reality, the challenge becomes to take appropriate action based on that reality, not on the hysteria. The aftermath of *Silent Spring* offers examples of both sorts of policy reactions: a reasoned response to a legitimate problem and a knee-jerk response to the hysteria. On the positive side, *Silent Spring* brought an end to the general belief that all synthetic chemicals in use for purposes ranging from insect control to household cleaning were uniformly wonderful, and it ushered in an age of increased caution on their appropriate use. In the second chapter of her famous book, Carson wrote, “It is not my contention that chemical insecticides must never be used. I do contend that… we have allowed these chemicals to be used with little or no advance investigation of their effect on soil, water, wildlife, and man himself.” Indeed, Carson seemed to advocate reasoned response to rigorous scientific investigation, and in fact this did become the modern approach to environmental chemical licensure and monitoring. An hour-long CBS documentary on pesticides was aired during the height of the furor over *Silent Spring*. In the documentary, Dr. Page Nicholson, a water-pollution expert with the Public Health Service, wasn’t able to answer how long pesticides persist in water once they enter it, or the extent to which pesticides contaminate groundwater supplies. Today, this sort of information is gathered through routine testing of chemicals for use in the environment. 20 V: Lessons from the ApocalypseIronically, rigorous investigation was not used in the decision to ban DDT, primarily due to the hysteria *Silent Spring* generated. In this example, the hysteria took on a life of its own, even trumping the author’s original intent. There was, as we have seen, a more sinister and tragic response to the hysteria generated by *Silent Spring*. Certain developing countries, under significant pressure from the United States, abandoned the use of DDT. This decision resulted in millions of deaths from malaria and other insect-borne diseases. In the absence of pressure to abandon the use of DDT, these lives would have been spared. It would certainly have been possible to design policies requiring caution and safe practices in the use of supplemental chemicals in the environment, without pronouncing a death sentence on millions of people. A major challenge in developing appropriate responses to legitimate problems is that alarmism catches people’s attention and draws them in. Alarmism is given more weight than it deserves, as policy makers attempt to appease their constituency and the media. **It polarizes the debaters into groups of “believers” and “skeptics**,” so that reasoned, **fact-based compromise is difficult to achieve**. Neither of these aspects of alarmism is healthy for the development of appropriate policy. Further, alarmist responses to valid problems risk foreclosing potentially useful responses based on ingenuity and progress. There are many examples from the energy sector where, in the presence of economic, efficiency, or societal demands, the marketplace has responded by developing better alternatives. That is not to say that we should blissfully squander our energy resources; on the contrary, we should be careful to utilize them wisely. But energy-resource hysteria should not lead us to circumvent scientific advancement by cherry-picking and favoring one particular replacement technology at the expense of other promising technologies. Environmental alarmism should be taken for what it is—a natural tendency of some portion of the public to latch onto the worst, and most unlikely, potential outcome. Alarmism should not be used as the basis for policy. Where a real problem exists, solutions should be based on reality, not hysteria.

**Tech solves --- their evidence is media alarmism**

**Stossel,** Journalist, winner of the Peabody Award, anchors ABC News, **07** [John, “Environmental Alarmists Have It Backwards”, <http://www.realclearpolitics.com/articles/2007/04/how_about_economic_progress_da.html>]

Watching the media coverage, you'd think that the earth was in imminent danger -- that human life itself was **on the verge of extinction**. Technology is fingered as the perp. Nothing could be further from the truth. John Semmens of Arizona's Laissez Faire Institute points out that Earth Day misses an important point. In the April issue of [The Freeman magazine](http://www.fee.org), Semmens says the environmental movement overlooks how hospitable the earth has become -- thanks to technology. "The environmental alarmists have it backwards. If anything imperils the earth it is ignorant obstruction of science and progress. ... That technology provides the best option for serving human wants and conserving the environment should be evident in the progress made in environmental improvement in the United States. Virtually every measure shows that pollution is headed downward and that nature is making a comeback." (Carbon dioxide excepted, *if* it is really a pollutant.) Semmens describes his visit to historic Lexington and Concord in Massachusetts, an area "lush with trees and greenery." It wasn't always that way. In 1775, the land was cleared so it could be farmed. Today, technology makes farmers so efficient that only a fraction of the land is needed to produce much more food. As a result, "Massachusetts farmland has been allowed to revert back to forest." Human ingenuity and technology not only raised living standards, but also restored environmental amenities. How about a day to celebrate that? Yet, Semmens writes, the environmental movement is skeptical about technology and is attracted to three dubious principles: sustainable development, the precautionary principle, and stakeholder participation. The point of sustainable development, Semmens says, "is to minimize the use of nonrenewable natural resources so there will be more left for future generations." Sounds sensible -- who is for "unsustainable" development? But as the great economist [Julian Simon](http://www.juliansimon.com/) often pointed out, resources are manmade, not natural. [Jed Clampett](http://timstvshowcase.com/beverlyh.html) cheered when he found oil on his land because it made him rich enough to move to Beverly Hills. But his great-grandfather would have cursed the disgusting black gunk because Canadian geologist Abraham Gesner hadn't yet discovered that kerosene [could be distilled from it](http://www.sjgs.com/history.html#ancient_to_present). President Bush chides us for our "addiction to oil." But under current conditions, using oil makes perfect sense. Someday, if we let the free market operate, someone will find an energy source that works better than oil. Then richer future generations won't need oil. So why deprive ourselves and make ourselves poorer with needless regulation now? Anyway, it's not as if we're running out of oil. That's one of the myths I expose in my new book, ["Myths, Lies and Downright Stupidity"](http://www.amazon.com/Myths-Lies-Downright-Stupidity-Shovel-Why/dp/0786893931/ref=sr_1_1/002-5041762-3701609?ie=UTF8&s=books&qid=1176851054&sr=8-1). If the price of a barrel of oil stays high, entrepreneurs will find better ways to suck oil out of the ground. At $50 a barrel, it's even profitable to recover oil that's stuck in the tar sands in Alberta, Canada. Those tar sands alone contain enough oil to meet our needs for a *hundred* years. The precautionary principle, popular in Europe, is the idea that no new thing should be permitted until it has been proved harmless. Sounds good, except as Ron Bailey of Reason writes, it basically means, "Don't ever do anything for the first time." Stakeholder participation means that busybodies would be permitted to intrude on private transactions. Semmens's example is DDT, which for years would have saved children from deadly malaria, except that "'stakeholders' from the environmental quarter have prevailed on governments to ban the trade in this product." The first victims of these principles are the poor. We rich Westerners can withstand a lot of policy foolishness. But people in the developing world live on the edge, so anything that retards economic progress -- including measures to arrest global warming -- will bring incredible hardship to the most vulnerable on the planet. If we care about human life, we should celebrate Economic Progress Day.

**Their evidence is just alarmism --- no extinction risk**

**Bailey,** award-winning science correspondent for *Reason* magazine, testified before Congress, author of numerous books, member of the Society of Environmental Journalists and the American Society for Bioethics and Humanities, **2k** [ Ronald, “[Earth Day, Then and Now](http://reason.com/archives/2000/05/01/earth-day-then-and-now)

The planet's future has never looked better. Here's why.”, <http://reason.com/archives/2000/05/01/earth-day-then-and-now/4>]

Earth Day 1970 provoked a torrent of apocalyptic predictions. "We have about five more years at the outside to do something," ecologist Kenneth Watt declared to a Swarthmore College audience on April 19, 1970. Harvard biologist George Wald estimated that "civilization will end within 15 or 30 years unless immediate action is taken against problems facing mankind." "We are in an environmental crisis which threatens the survival of this nation, and of the world as a suitable place of human habitation," wrote Washington University biologist Barry Commoner in the Earth Day issue of the scholarly journal *Environment*. The day after Earth Day, even the staid *New York Times* editorial page warned, "Man must stop pollution and conserve his resources, not merely to enhance existence but to save the race from intolerable deterioration and possible extinction." Very Apocalypse Now. Three decades later, of course, **the world hasn't come to an end**; if anything, the planet's ecological future has never looked so promising. With half a billion people suiting up around the globe for Earth Day 2000, now is a good time to look back on the predictions made at the first Earth Day and see how they've held up and what we can learn from them. The short answer: **The prophets of doom were not simply wrong, but *spectacularly* wrong.** More important, many contemporary environmental alarmists are similarly mistaken when they continue to insist that the Earth's future remains an eco-tragedy that has already entered its final act. Such doomsters not only fail to appreciate the huge environmental gains made over the past 30 years, they ignore the simple fact that increased wealth, population, and technological innovation don't degrade and destroy the environment. Rather, such developments preserve and enrich the environment. If it is impossible to predict fully the future, it is nonetheless possible to learn from the past. And the best lesson we can learn from revisiting the discourse surrounding the very first Earth Day is that passionate concern, however sincere, is no substitute for rational analysis.

**The fact that we are alive now is sufficient to prove that their evidence is just alarmism --- ZERO risk of cascading environmental collapse --- wealth and tech solve**

**Bailey,** award-winning science correspondent for *Reason* magazine, testified before Congress, author of numerous books, member of the Society of Environmental Journalists and the American Society for Bioethics and Humanities, **2k** [ Ronald, “[Earth Day, Then and Now](http://reason.com/archives/2000/05/01/earth-day-then-and-now)

The planet's future has never looked better. Here's why.”, <http://reason.com/archives/2000/05/01/earth-day-then-and-now/4>]

"I'm scared," confessed Paul Ehrlich in the 1970 Earth Day issue of *Look*. "I have a 14 year old daughter whom I love very much. I know a lot of young people, and their world is being destroyed. My world is being destroyed. I'm 37 and I'd kind of like to live to be 67 in a reasonably pleasant world, and not die in some kind of holocaust in the next decade." Ehrlich didn't die in a holocaust, and the world is far more pleasant than he thought it would be. It is probably too much to hope that abashed humility will strike him and he'll desist in bedeviling the world with his dire and consistently wrong predictions. He's like a reverse Cassandra --Cassandra made true prophecies but no one would listen to her. Ehrlich makes false prophecies and everyone listens to him. There's much to celebrate on the 30th anniversary of Earth Day. Indeed, one of the chief things to get happy about is that **the doomsters were so wrong. Civilization didn't collapse**, hundreds of millions didn't die in famines, pesticides didn't cause epidemics of cancer, and the air and water didn't get dirtier in the industrialized countries. On the occasions when they admit things have gotten better, doomsters will claim whatever environmental progress has been made over the past 30 years is only a result of the warnings that they sounded. One of the more annoying characteristics of activists such as Ehrlich and Lester Brown is the way in which these prophets of doom get out ahead of a parade that has already started. When things get better, they claim that it's only because people heeded their warnings, not because of longstanding trends and increased efficiencies. As a result, there is always the danger that governments may actually enact their policies, thereby stifling technological progress and economic growth--and making the world worse off. Then the doomsters would be able to say "I told you so." So good or bad, they get to claim that they were right all along. What will Earth look like when Earth Day 60 rolls around in 2030? Here are my predictions: As the International Food Policy Research Institute projects, we will be able to feed the world's additional numbers and to provide them with a better diet. Because they are ultimately political in nature, poverty and malnutrition will not be eliminated, but economic growth will make many people in the developing world much better off. Technological improvements in agriculture will mean less soil erosion, better management of freshwater supplies, and higher productivity crops. Life expectancy in the developing world will likely increase from 65 years to 73 years, and probably more; in the First World, it will rise to more than 80 years. Metals and mineral prices will be even lower than they are today. The rate of deforestation in the developing world will continue to slow down and forest growth in the developed economies will increase. Meanwhile, as many developing countries become wealthier, they will start to pass through the environmental-transition thresholds for various pollutants, and their air and water quality will begin to improve. Certainly air and water quality in the United States, Europe, Japan, and other developed countries will be even better than it is today. Enormous progress will be made on the medical front, and diseases like AIDS and malaria may well be finally conquered. As for climate change, concern may be abating because the world's energy production mix is shifting toward natural gas and nuclear power. There is always the possibility that a technological breakthrough--say, cheap, efficient, non-polluting fuel cells--could radically reshape the energy sector. In any case a richer world will be much better able to cope with any environmental problems that might crop up. One final prediction, of which I'm most absolutely certain: **There will be a disproportionately influential group of doomsters** predicting that the future--and the present--never looked so bleak.

**Their predictions are false –it’s all propaganda**

**Kaleita, PHD, Assistant Professor** Agricultural and Biosystems Engineering **07** [Amy, “Hysteria’s History”Environmental Alarmism in Context”, <http://www.pacificresearch.org/docLib/20070920_Hysteria_History.pdf>]

“We are moving towards the twilight of civilization,”14 and with “[a]nother century like the last, civilization will be facing its final crisis,”15 according to Fairfield Osborn in his 1948 book, *Our Plundered Planet*. Resource alarmists have been shouting statements like this for over a century. They see a severe drought and exclaim that the productive capability of the earth is dwindling and that deserts will take over the world. **They write propaganda** books like Frank Herbert’s *Dune*, meant to show society the “doom” soon to come, in the cloak of a sci-fi adventure novel.16 They take advantage of farmers who fought to survive the Dust Bowl, like a Kansas farmer who concluded that the “whole Great Plains region is already lost to desert that can not be reclaimed through the plans and labors of men.”17 The alarm was displayed prominently in a *New York Times* story titled, “World Seen Facing Food Shortage Due to Lack of Arable Lands.”18 Some hysteria was understandable during the 1940s and ’50s. America had suffered its worst productivity disaster, the Dust Bowl of the 1930s, and images of dust clouding the sun as far east as Washington, D.C., were still vivid in the public memory. The Dust Bowl was a wake-up call that spurred farmers to take greater care in their agricultural practices. Profit and surplus today are worthless if the land is underproductive or even not arable tomorrow. Because the farmers heeded that call, the Dust Bowl, far from dooming the country to famine and desert, demonstrated the ability of man to learn, progress, and overcome. The once-feared desert lands of the North American Great Plains have long since returned to productivity. Indeed, they are some of the most productive agricultural lands in the world. Yet some alarmists continue to ignore these advances. In *The Population Bomb*, Paul Ehrlich claimed that “the agricultural value of Iowa farmland, which is about as good a land as we have, is declining by 1 percent per year.”19 If this prediction had been accurate, the productivity of Iowa fields would have decreased by 40 percent since Ehrlich’s book was released in 1968. Instead, annual per-acre wheat yield has increased from 33 bushels to 66, corn yield from 89 bushels to 166, and soybean yield from 29.5 bushels to 50.5.20 Alarmists consistently ignore or deny the ability of humans to learn, grow, and advance socially and technologically. Swiss biochemist Ehrenfried Pfeiffer clearly states this alarmist view: “Production, rationalization and technicalization have reached a ‘saturation.’ They can not be increased.”21 Yet time and time again we see agricultural production records being broken. Human ingenuity and scientific advances help us better manage our acres and plant higher-yielding varieties that are drought, pest, and disease resistant. Every continent has seen an increase in yield in the last 40 years— with, of course, localized differences. Crop yield worldwide has increased for every commodity type, including fruit by 31 percent, rice by 63 percent, vegetables by 37 percent, and wheat by 148 percent.22 Though soil is one of the most important resources for human existence, another resource has become essential to almost every society and economy around the world: oil. As with food, oil is the target of dire predictions of its impending and unavoidable scarcity. If you do a Google search of “peak oil” you will find about 4.8 million entries, many dedicated to sounding the alarm of oil shortages. “Peak oil” supposedly represents the point in time when the peak of world crude-oil production will be reached, after which production will enter a terminal decline. Once we have run the pump dry, society will begin to collapse as the effects of oil shortages become a grim reality. Predictions of oil shortages have run throughout the last half-century. In 1943, U.S. Secretary of the Navy Frank Knox predicted a serious oil shortage by 1944 and oil exhaustion in the United States by 1963.23 In 1947, the *New York Times* wrote, “Every so often the fear of an oil shortage developing in the United States gains prominent mention. At present, such a campaign is in full swing.” The article explains that the unprecedented demand for oil will cause a shortage of energy.24 The same warnings were still being proclaimed more than two decades later. In 1974, *National Geographic* published “Oil, the Dwindling Treasure.” In this article, M. King Hubert, a U.S. petroleum geologist and strong advocate of the “peak oil” concept, claimed peak oil would be reached by 1995.25 Three years later, the CIA reported that peak oil would be reached by 1987, leading to higher prices and worldwide shortages of gasoline, heating oil, and jet fuel.26

**Prefer our evidence --- theirs is based on alarmism and pseudo science**

**Taylor,** director of [*natural resource studies*](http://www.cato.org/research/natur-st.html) at the Cato Institute. **2k** [jerry, The Environmental Movement: Running Out of Gas “, http://www.cato.org/pub\_display.php?pub\_id=4716 ]

Third, Americans are growing numb to the constant cries of wolf. Back in the 1960s, environmentalists told us the population explosion would cause civilizational collapse by 1990. It never happened, and even 3rd-World people are living longer, better-fed lives than ever before. In the 1970s, environmentalists told us that we would run out of oil and most other valuable resources by the turn of the century, plunging us into a new Dark Age. It never happened, and resources are cheaper today (that is to say, more abundant) than ever before. Later in the 1970s, the environmentalists told us that a new Ice Age was upon us unless we took drastic action to reduce pollution (which, we were told, clouded the skies, blocking the sun). Now we're told that it's warming, not cooling, that's the threat and that the four horsemen of the apocalypse are about to descend upon us. Yet during all this warming, crop yields are at record levels, the economy is humming along quite nicely and human welfare has never been better. If everyone's an environmentalist, then no one's an environmentalist. And that's fine with me. The environmental lobby, while it has its good points, is all too filled with pseudo science, quasi-paganism, self-righteousness and anticapitalist fervor for me to spill tears over its troubles. Its childish morality plays and economic know-nothingism too often get in the way of serious discussion about real environmental issues. Perhaps Earth Day's flop last week means that we've matured enough to have that discussion.

# A2: ENV’T DESTRUCTION = DISEASE

**Environmental destruction does not cause disease**

**GLADWELL 1995** (New York bureau chief of The Washington Post, New Republic, July 17)

The point is that the relationship between environment and disease is a complicated one. There are diseases that are caused by environmental disruption, diseases that are eliminated by environmental disruption and diseases whose rise has nothing to do with environmental disruption. The current plague paranoia is an obsession with the first category. Thus Garrett is very convincing when she talks about how the new cities of the Third World--overpopulated, vastly underserved by medical care, troubled by appalling sanitary conditions--are breeding grounds for new infections. But this is not an accurate diagnosis of all new diseases. Garrett, for example, writes a long and intelligent chapter on the worrying rise of new bacterial strains that are resistant to the antibiotics that once cured them easily. But what does this have to do with mankind's environmental responsibility? Antibiotic resistance is the result of shoddy infection control procedures in hospitals, well-meaning but ill-advised overprescription of certain drugs by physicians and the fact that the pharmaceutical industry got cocky in the late 1980s and stopped developing new classes of antibiotics. We could preserve every acre of rainforest the world over, clean up every river and stop every war, and we would still have a raging antibiotic resistance problem. Even in cases where environmental disruptions do seem to have played a role in the emergence of disease, it is not the overwhelming factor that Preston and Garret imply. HIV may have been loosed from the jungle by the upheaval in Africa during the 1970s. Still, absent epidemic levels of unsafe promiscuous sex and intravenous needle use in the West, the virus would have gone nowhere. The critical factor with AIDS, and with an awful lot of the diseases that we face, is what we do to ourselves and each other, not what we do to our environment.

# WARMING DEFENSE

**No warming, no impact; all lies**

**LEHR** **2005** (Jay, Science Director of the Heartland Institute, 1-12-2005, Yearbook of Experts)

EVIDENCE THAT THE TEMPERATURE OF THE EARTH IS NOT INCREASING SIGNIFICANTLY AS A RESULT OF MAN'S ACTIVITY ON THE PLANET 1 - Our most reliable sources of temperature data show no global warming trend. Satellite and weather balloon readings of temperatures in the lower troposphere (an area scientists predict would immediately reflect any global warming) show no warming since readings began 25 years ago, when the satellite system was first launched. Only land based temperature stations show a warming trend, and these stations do not cover the entire globe as satellite readings do, and these are often affected by heat generated by nearby urban development. 2 - All predictions of global warming are based on computer models not historical data. In order to get their models to produce predictions that are close to their designers expectations, modelers make adjustments to unknown variables that are many times greater than the effect of doubling carbon dioxide concentrations in the atmosphere. For example, knowledge of the amount of energy flowing from the equator to the poles is uncertain by an amount equivalent to 25 to 30 Watts per square meter (W/m2) of the earth's surface. the amount of sunlight absorbed by the atmosphere or reflected by the surface is also uncertain by as much as 25 W/m2. The role of clouds is uncertain by at least 25 W/m2. The heat added to the atmosphere by a doubling of CO2 is not uncertain. It is easily measured in laboratory experiments and amounts to only 4 Watts per square meter (4 W/m2) of the earth's surface. Obviously the uncertainties are many times larger than the input of energy resulting from a doubling of carbon dioxide in the atmosphere. 3 - When scientists analyzed the relationship between atmospheric CO2 levels and temperatures dating back 250,000 years in ice cores from Greenland and Antarctica, they found that sometimes concentration of CO2 was high when the temperature was low and sometime CO2 was low when temperature was high. 4 - While we hear much about one or another melting glaciers, a recent study of 246 glaciers around the world between 1946 and 1995 indicated a balance between those that are losing ice, gaining ice and remaining in equilibrium. There is no global trend in any direction. 5 - The gases in the atmosphere that absorb outgoing radiation forming the greenhouse effect are water vapor (absorbing 90% of outgoing heat), methane (4%), nitrous oxide (2%), carbon dioxide (4%). Thus a doubling of CO2 would not achieve a significant change in heat retained. 6 - Temperature fluctuations during the current 300 year recovery from the Little Ice Age which ended around 1700AD, following the Medieval Warming Period correlate almost perfectly with fluctuations in solar activity. This correlation long predates human use of significant amounts of fossil fuels such as coal, oil and natural gas. 7 - In defining the tremendous impact the sun has on climate one must really understands the actual movement of the earth around the sun. There are three variables, orbit shape, tilt and wobble which profoundly affect weather patterns. The earth's orbit does not form a circle as it moves around the sun - it forms an ellipse passing further away from the sun at the one end of the orbit than at the other end. During the 100,000 year cycle the tug of other planets on the earth causes its orbit to change shape. It shifts from a short broad ellipse that keeps the earth closer to the sun to a long flat ellipse that allows it to move farther from the sun and back again. 8 - There is no consensus of scientists in favor of human caused global warming. While opinion polls do not determine truth in science, more than 17,000 American scientists signed a petition drafted by the Oregon Institute of Science and Medicine which stated: "There is no convincing scientific evidence that human release of carbon dioxide, methane, or other greenhouse gases is causing or will, in the foreseeable future, cause catastrophic heating of the Earth's atmosphere and disruption of the Earth's climate. Moreover, there is substantial scientific evidence that increases in atmospheric carbon dioxide produce many beneficial effects upon the natural plant and animal environments of the Earth." 9 - A modest amount of global warming, should it occur would be beneficial to the natural world. The warmest period in recorded history was the Medieval Warm Period roughly 800 to 1200AD when temperatures were 7 to 9 degrees Fahrenheit warmer than today allowing great prosperity of mankind. 10 - Carbon dioxide is NOT a pollutant. On the contrary it makes crops and forests grow faster. Mapping by satellite shows that the earth has become about 6% greener overall in the past two decades, with forests expanding into arid regions. The Amazon rain forest was the biggest gainer, despite the much advertised deforestation caused by human cutting along their edges. Certainly climate change does not help every region equally, but careful studies predict overall benefit, fewer storms (not more), more rain, better crop yields, longer growing seasons, milder winters and decreasing heating costs in colder climates. The news is certainly not all bad and on balance may be rather good. 11 - Energy is the currency of technological progress. Billions of people in the Earth's poor countries are trying to lift themselves from poverty through use of simple technology. Hundreds of millions of these people are so close to the bottom rungs of the ladder of existence that loss of hydrocarbon fuels can cause their deaths. Many international elitists understand this well as they attempt to use the myth of global warming as a means of "population control". 12 - Global warming is a major industry today. Between 1992 and 2000 the U.S. Government spent $18 Billion on climate change research and now contributes $6 billion a year. This finances jobs, grants, conferences, international travel and academic journals. It not only keeps a huge army of people in comfortable employment, but also fills them with self righteousness and moral superiority regardless of the fact that real science did not support it.

**Warming is due to solar variations–research has ignored this**

**WOJICK 2005** (David, President of Climatechange.org, Electricity Daily, January 10)

U.S. climate change research policy is seriously out of whack. There is growing evidence that solar variability is responsible for most of the global warming in the last century ( ED, Dec 15,2004). Coal fired power plants are being blamed for much of this warming, but if it is actually the sun at work then we are wasting time and a lot of money trying to cut carbon dioxide emissions. Clearly the Bush administration should be looking into this solar angle. But it is not, even though its $2 billion a year Climate Change Science Program just underwent a massive review. The CCSP is doing outdated, entrenched science, that assumes humans are to blame for what may well be a natural phenomenon. The problem is that the federal science program was defined 15 years ago. It was assumed then that the climate is naturally unchanging, so humans must be the cause of the observed warming. Since then we have learned that climate, like weather, is never constant, but the research program has not changed accordingly. In the last 6-8 years the sun has emerged as a big driver of Earth s climate change. For example, consider the findings of the United Nations Intergovernmental Panel on Climate Change, which conducts massive periodic reviews of climate science. In 1995 the IPCC said that the sun was not a factor in the warming over the last century. In 2001 it concluded that more than half of that warming was solar induced, not human induced. Given that the IPCC tends to be biased toward the theory of human induced warming, this was a huge admission. The scientific trend marked by the IPCC s flip flop has continued. The research problem is that the known variations in solar energy are not strong enough to account for all of the observed global warming. But in the last five years a number of indirect, amplifying mechanisms have been identified. The result is that we now know how the sun might account for all of the warming, and there is growing evidence that it does. Research problems do not get any better, or more important, than this. The policy problem is that the CCSP has no plans to do solar-climate research. Because carbon dioxide was assumed to be the culprit, the annual CCSP budget has a $110 million carbon cycle component. But CO2 is a trace gas and the CO2 increase to date cannot explain the observed warming, without assuming a water vapor feedback, so the CCSP also includes a $150 million water-cycle component. There is no corresponding solar-cycle research, what little is done on solar is round-off error. The word solar barely occurs in the new CCSP Strategic Plan, and occurs not at all in the plan s milestones. In short, the climate research program has assumed an old, speculative answer to the warming question (humans are doing it) and is throwing vast quantities of money at that answer. Billions of dollars over the last 15 years. Now that a new answer is emerging (it s the Sun, after all) the CCSP has failed to notice. Clearly its time to put some of these big science bucks into solar climate research. U.S. energy policy hangs in the balance.

**Cooling now**

**Taylor 2009** (James, Senior Fellow @ Heartland Institute, “Global Cooling Continues,” March 1, http://www.heartland.org/publications/environment%20climate/article/24739/Global\_Cooling\_Continues.html)

Continuing a decade-long trend of declining global temperatures, the year 2008 was significantly colder than 2007, and global temperatures for the year were below the average over the past 30 years. The global temperature data, reported by NASA satellite-based temperature measurements, refuted predictions 2008 would be one of the warmest on record. Data show 2008 ranked 14th coldest of the 30 years measured by NASA satellite instruments since they were first launched in 1979. It was the coldest year since 2000. (See accompanying figure.) Satellite Precision NASA satellites uniformly monitor the Earth’s lower atmosphere, which greenhouse gas theory predicts will show the first and most significant effects of human-caused global warming. The satellite-based measurements are uncorrupted by urban heat islands and localized land-use changes that often taint records from surface temperature stations, giving false indications of warming. The uncorrupted satellite-based temperature measurements refute surface temperature station data finding 2008 to be one of the top 10 warmest years on record. “How can an ‘average year’ in one database appear to be a [top 10] warmest year in another?” asked meteorologist Joe D’Aleo on his International Climate and Environmental Change Assessment Project Web site. “Well, the global databases of [surface station reports] are all contaminated by urbanization, major station dropout, missing data, bad siting, instruments with known warm biases being introduced without adjustment, and black-box and man-made adjustments designed to maximize [reported] warming,” explained D’Aleo. Warming Trend Overstated “The substantial and continuing La Niña cooled the Earth quite a bit in 2008, to the point that it was slightly below the 30-year average [1979-2008] but slightly above the 20-year average [1979-1998],” said John Christy, distinguished professor of atmospheric science and director of the Earth System Science Center at the University of Alabama in Huntsville (UAH). “From research we have published, and more to come soon, we find that land surface air temperatures misrepresent the actual temperature changes in the deep atmosphere—where the greenhouse effect is anticipated to have its easiest impact to measure. Surface thermometers are affected by many influences, especially surface development, so the bulk atmospheric measurements from satellites offer a straightforward indicator of how much heat is or is not accumulating in the air, for whatever reason,” Christy explained. “Recent published evidence also supports the long-term trends of UAH as being fairly precise, so the observed rate of warming is noticeably less than that projected by the IPCC ‘Best Estimate’ model simulations which, we hypothesize, are too sensitive to CO2 increases,” Christy added.

# SPECIES DEFENSE

**Even conservation biologists agree that species loss is slow and there's no impact**

**SIMON 1998** (Julian, world-renowned economist, The Ultimate Resource II, Feb 16 <http://www.juliansimon.com/writings/Ultimate_Resource/TCHAR31.txt>)

Starting in the early 1980s I published the above critical analysis of the standard extinction estimates. For several years these criticisms produced no response at all. But then in response to questions that I and others raised, the "official" IUCN (the World Conservation Union) commissioned a book edited by Whitmore and Sayer to inquire into the extent of extinctions. The results of that project must be considered amazing. All the authors - the very conservation biologists who have been most alarmed by the threat of species die-offs - continue to be concerned about the rate of extinction. Nevertheless, they confirm the central assertion; all agree that the rate of known extinctions has been and continues to be very low. I will tax your patience with lengthy quotations (with emphasis supplied) documenting the consensus that there is no evidence of massive or increasing rates of species extinction, because this testimony from the conservation biologists themselves is especially convincing; furthermore, if only shorter quotes were presented, the skeptical reader might worry that the quotes were taken out of context. (Even so, the skeptic may want to check the original texts to see that the quotations fairly represent the gist of the authors' arguments.)

**No impact—mass extinctions will be followed by recovery, not collapse**

**RUSE 2002** (Michael, Philosopher and Author, The Globe and Mail, August 24)

Let me say straight out that this is the most egregiously mislabelled book I have ever encountered. The author follows in the footsteps of the late Jack Sepkoski, a Chicago paleontologist (and incidentally a sometime student of Gould's), who performed brilliant mega-analyses of the fossil record, gathering together huge amounts of data about past species (and higher taxa) and using computers to extract hitherto-unseen trends and salient features of life's history. Specifically, Sepkoski found that there are times of evolutionary breakthrough, rises in numbers of certain forms of life, followed by cooling-off periods and then rapid decline. Together with his colleague David Raup, Sepkoski also investigated the massive extinction episodes that we find in the fossil record - one of the most recent and famous being the time 65 million years ago, when a comet hit the earth and finished off the dinosaurs. Yet fascinatingly, although Sepkoski argued that extinction is incredibly important in life's history - the mammals would hardly have taken over the world if the dinos were still around - he concluded that in the long run, the overall patterns seem impervious to the extinctions. Life has a tempo of its own, apparently, and can continue despite disruptions..

**Robust peer reviewed evidence indicates ecosystems are resilient**

**McDermott, 09** [ Tree Hugger.Com,” Good news: most ecosystems can recover in one lifetime from human induced or natural disturbance”, <http://www.treehugger.com/files/2009/05/most-ecosystems-can-recover-from-disturbance-in-one-lifetime.php>]

There's a reason the phrase "let nature take its course" exists: New research done at the [Yale University School of Forestry & Environmental Science](http://environment.yale.edu/) reinforces the idea that **ecosystems are quiet resilient and can rebound** from pollution and environmental degradation. Published in the journal [PLoS ONE](http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0005653), the study shows that most damaged ecosystems worldwide can recover within a single lifetime, if the source of pollution is removed and restoration work done: **Forests Take Longest of Ecosystems Studied** The analysis found that on average forest ecosystems can recover in 42 years, while in takes only about 10 years for the ocean bottom to recover. If an area has seen multiple, interactive disturbances, it can take on average 56 years for recovery. In general, most ecosystems take longer to recover from human-induced disturbances than from natural events, such as hurricanes. To reach these recovery averages, the researchers looked at **data from peer-reviewed studies over the past 100 years** on the rate of ecosystem recovery once the source of pollution was removed. Interestingly, the researchers found that it appears that the rate at which an ecosystem recovers may be independent of its degraded condition: Aquatic systems may recover more quickly than, say, a forest, because the species and organisms that live in that ecosystem turn over more rapidly than in the forest.

**Robust peer reviewed evidence indicates ecosystems are resilient**

**McDermott, 09** [ Tree Hugger.Com,” Good news: most ecosystems can recover in one lifetime from human induced or natural disturbance”, <http://www.treehugger.com/files/2009/05/most-ecosystems-can-recover-from-disturbance-in-one-lifetime.php>]

There's a reason the phrase "let nature take its course" exists: New research done at the [Yale University School of Forestry & Environmental Science](http://environment.yale.edu/) reinforces the idea that **ecosystems are quiet resilient and can rebound** from pollution and environmental degradation. Published in the journal [PLoS ONE](http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0005653), the study shows that most damaged ecosystems worldwide can recover within a single lifetime, if the source of pollution is removed and restoration work done: Forests Take Longest of Ecosystems Studied The analysis found that on average forest ecosystems can recover in 42 years, while in takes only about 10 years for the ocean bottom to recover. If an area has seen multiple, interactive disturbances, it can take on average 56 years for recovery. In general, most ecosystems take longer to recover from human-induced disturbances than from natural events, such as hurricanes. To reach these recovery averages, the researchers looked at **data from peer-reviewed studies over the past 100 years** on the rate of ecosystem recovery once the source of pollution was removed. Interestingly, the researchers found that it appears that the rate at which an ecosystem recovers may be independent of its degraded condition: Aquatic systems may recover more quickly than, say, a forest, because the species and organisms that live in that ecosystem turn over more rapidly than in the forest.

**Biodiversity loss is overstated**

**Bailey,** award-winning science correspondent for *Reason* magazine, testified before Congress, author of numerous books, member of the Society of Environmental Journalists and the American Society for Bioethics and Humanities, **2k** [ Ronald, “[Earth Day, Then and Now](http://reason.com/archives/2000/05/01/earth-day-then-and-now)

The planet's future has never looked better. Here's why.”, <http://reason.com/archives/2000/05/01/earth-day-then-and-now/4>]

Worries about declining biodiversity have become popular lately. On the first Earth Day, participants were concerned about saving a few particularly charismatic species such as the bald eagle and the peregrine falcon. But even then some foresaw a coming holocaust. As Sen. Gaylord Nelson wrote in *Look*, "Dr. S. Dillon Ripley, secretary of the Smithsonian Institute, believes that in 25 years, somewhere between 75 and 80 percent of all the species of living animals will be extinct." Writing just five years after the first Earth Day, Paul Ehrlich and his biologist wife, Anne Ehrlich, predicted that "since more than nine-tenths of the original tropical rainforests will be removed in most areas within the next 30 years or so, it is expected that half of the organisms in these areas will vanish with it." There's only one problem: Most species that were alive in 1970 are still around today. "Documented animal extinctions peaked in the 1930s, and the number of extinctions has been declining since then," according to Stephen Edwards, an ecologist with the World Conservation Union, a leading international conservation organization whose members are non-governmental organizations, international agencies, and national conservation agencies. Edwards notes that a 1994 World Conservation Union report found known extinctions since 1600 encompassed 258 animal species, 368 insect species, and 384 vascular plants. Most of these species, he explains, were "island endemics" like the Dodo. As a result, they are particularly vulnerable to habitat disruption, hunting, and competition from invading species. Since 1973, only seven species have gone extinct in the United States. What mostly accounts for relatively low rates of extinction? As with many other green indicators, wealth leads the way by both creating a market for environmental values and delivering resource-efficient technology. Consider, for example, that one of the main causes of extinction is deforestation and the ensuing loss of habitat. According to the Consultative Group on International Agricultural Research, what drives most tropical deforestation is not commercial logging, but "poor farmers who have no other option for feeding their families than slashing and burning a patch of forest." By contrast, countries that practice high yield, chemically assisted agriculture have expanding forests. In 1920, U.S. forests covered 732 million acres. Today they cover 737 million acres, even though the number of Americans grew from 106 million in 1920 to 272 million now. Forests in Europe expanded even more dramatically, from 361 million acres to 482 million acres between 1950 and 1990. Despite continuing deforestation in tropical countries, Roger Sedjo, a senior fellow at the think tank Resources for the Future, notes that "76 percent of the tropical rain forest zone is still covered with forest." Which is quite a far cry from being nine-tenths gone. More good news: In its *State of the World's Forests 1999*, the U.N.'s Food and Agriculture Organization documents that while forests in developing countries were reduced by 9.1 percent between 1980 and 1995, the global rate of deforestation is now slowing. "The developed countries in the temperate regions appear to have largely completed forestland conversion to agriculture and have achieved relative land use stability. By contrast, the developing countries in the tropics are still in a land conversion mode. This suggests that land conversion stability correlates strongly with successful economic development," concludes Sedjo, in his chapter on forestry in *The True State of the Planet*, a collection of essays I edited. In other words, if you want to save forests and wildlife, you had better help poor people become wealthy.

**Alt cause—pesticides—also causes endocrine disruption**

**LYONS 1999**

(Gwynne, Toxics and Policy Advisor to WWF-UK, Pesticide News, December, http://www.pan-uk.org/pestnews/actives/endocrin.htm)

The effects that can be seen in an organism exposed to an endocrine disrupting chemical (EDC) depend on which hormone system is targeted. For example, if an organism is exposed to sex hormone disrupting pesticides in the womb, then the sort of effects that may be evident include effects on sexual behaviour, structural deformities of the reproductive tract, including intersex type conditions and undescended testes, deficits in sperm counts, and effects on sex ratios. However, if the primary action is on the thyroid hormones, then as these hormones are responsible for metabolism and normal brain development, exposure in the womb may cause effects on intelligence and growth. Laboratory tests have confirmed that endocrine disrupting chemicals do indeed cause such effects in exposed animals, but all the effects listed above have also been noted in wildlife or humans heavily exposed to endocrine disrupting pesticides or industrial chemicals. Some endocrine disruptors may exert their action by interfering with the brain's release of hormones, which in turn regulate the production of other hormones that control the growth and the activity of many other endocrine glands. Indeed, the pituitary has been termed the conductor of the endocrine orchestra, and pollutants that cause the pituitary region in the brain to malfunction may therefore have multiple effects. Pesticides that are POPs There is particular concern about endocrine disrupting pesticides that are lipophilic (fat loving), resistant to metabolism, and able to bioconcentrate up the food chain. This is because these substances become stored in body fats and can be transferred to the developing offspring via the placenta or via the egg. Predator animals (and humans) feeding at the top of the food chain are at increased risk, particularly mammals because during breast feeding contaminants are again mobilised and transferred to the new born infant. Marine mammals may be most vulnerable, because not only do they carry large amounts of body fat, but also the oceans are the final sink for many persistent pollutants. Some persistent pollutants, including several pesticides, are carried in air and in water over several hundred miles, and so even wildlife and people living far away from where these substances are used are under significant threat. Some areas are especially vulnerable because these substances are redistributed to the colder northern regions in a process termed 'global redistillation' or the grasshopper effect. This transboundary nature of pollution has led to the negotiation of a global agreement to control persistent organic pollutants (POPs), which is due to be finalised in 2001. The United Nations Environment Programme Convention on POPs will initially focus on 12 substances, including the following pesticides: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, HCB, mirex, and toxaphene. Public interest coalitions such as the International POPs Elimination Network (IPEN), the Pesticides Action Network and WWF are pushing for the production and use of these POPs to be eliminated as soon as possible.

# HUMANS WON’T DIE

**Mass extinctions will not include humanity—we can isolate ourselves from collapsing environments**

**POWERS 2002** (Lawrence, Professor of Natural Sciences, Oregon Institute of Technology, The Chronicle of Higher Education, August 9)

Mass extinctions appear to result from major climatic changes or catastrophes, such as asteroid impacts. As far as we know, none has resulted from the activities of a species, regardless of predatory voracity, pathogenicity, or any other interactive attribute. We are the first species with the potential to manipulate global climates and to destroy habitats, perhaps even ecosystems -- therefore setting the stage for a sixth mass extinction. According to Boulter, this event will be an inevitable consequence of a "self-organized Earth-life system." This Gaia-like proposal might account for many of the processes exhibited by biological evolution before man's technological intervention, but ... the rules are now dramatically different. ... Many species may vanish, ... but that doesn't guarantee, unfortunately, that we will be among the missing. While other species go bang in the night, humanity will technologically isolate itself further from the natural world and will rationalize the decrease in biodiversity in the same manner as we have done so far. I fear, that like the fabled cockroaches of the atomic age, we may be one of the last life-forms to succumb, long after the "vast tracts of beauty" that Boulter mourns we will no longer behold vanish before our distant descendants' eyes.

**We don’t need animals to keep us alive—human evolution guarantees that we will never wipe ourselves out by destroying the environment**

**SIMON 96** (Julian, Robert H. Smith School of Business, University of Maryland, The Ultimate Resource II: People, Materials, and Environment, http://www.rhsmith.umd.edu/faculty/jsimon/Ultimate\_Resource/)

Let us begin by going beyond the trends in particular resources. The greatest and most important trend, of which these particular trends are a part, is the trend of this earth becoming ever more livable for human beings. We see the signs of this in our longer life expectancy, improved knowledge of nature, and greater ability to protect ourselves from the elements, living with ever more safety and comfort. But though this larger trend buttresses the particular resource trends, it still provides no causal explanation of the phenomenon we seek to understand. Evolutionary thinking, however, and (more specifically in economics) the sort of analysis suggested by Friedrich Hayek, offers an explanation of the observed long-term trend. Hayek (following upon Hume) urges upon us that humankind has evolved sets of rules and patterns of living which are consistent with survival and growth rather than with decline and extinction, an aspect of the evolutionary selection for survival among past societies. He assumes that the particular rules and living patterns have had something to do with chances for survival--for example, he reasons that patterns leading to higher fertility and more healthful and productive living have led to groups' natural increase and hence survival-- and therefore the patterns we have inherited constitute a machinery for continued survival and growth where conditions are not too different from the past. (This is consistent with a biological view of humankind as having evolved genes that point toward survival. But no such genetic evolution is presupposed by Hayek, in part because its time span is too great for us to understand it as well as we can understand the evolution of cultural rules. It may be illuminating, however, to view mankind's biological nature as part of the long evolutionary chain dating from the simplest plants and animals, a history of increasing complexity of construction and greater capacity to deal actively with the environment.) Let us apply Hayek's general analysis to natural resources. Such resources of all sorts have been a part of human history ever since the beginning. If humankind had not evolved patterns of behavior that increased rather than decreased the amounts of resources available to us, we would not still be here. If, as our numbers increased (or even as our numbers remained nearly stationary), our patterns had led to diminished supplies of plants and animals, less flint for tools, and disappearing wood for fires and construction, I would not be here to be writing these pages, and you would not be here to be reading them.

**Humans won’t go extinct**

**ROSE 2004** (Michael, UC Irvine, The Historian, Sept 22)

He may well be right about our immediate extinction, but this bookdoes not amount to a lawyer's brief for his conclusion. One would have to accept his Spenglerian sense of inevitability to be affrighted by his reasoning. It is important to realize that his morbid inference applies with equal force to every ungulate, great ape, and bear on the planet. Boulter's interpretation of the fossil data is that all large mammals are about to go extinct, including humans. He does not address the substantial difference between humans and other large mammals with respect to adaptability. He hardly considers the alternativeview that the human species is an ineradicable scourge for the planet, given our ability to live in a wide diversity of habitats while feeding on a broad spectrum of species, from vegetables to vertebrates.Boulter repeatedly fails to address obvious arguments against his thesis. This is a pity because there is no more important issue than the continued survival of our species.

# NO SNOWBALL

**Species loss doesn’t snowball**

**MOORE 1998** (Thomas Gale, Senior Fellow at the Hoover Institution at Stanford, Climate of Fear, 98-99)

Nevertheless, the loss of a class of living beings does not typically threaten other species. Most animals and plants can derive their nutrients or receive the other benefits provided by a particular species from more than a single source. If it were true that the extinction of a single species would produce a cascade of losses, then the massive extinctions of the past should have wiped out all life. Evolution forces various life forms to adjust to change. A few may not make the adaptation but others will mutate to meet the new conditions. Although a particular chain of DNA may be eliminated through the loss of a species, other animals or plants adapting to the same environment often produce similar genetic solutions with like proteins. It is almost impossible to imagine a single species that, if eliminated, would threaten us humans. Perhaps if the *E. coli* that are necessary for digestion became extinct, we could no longer exist. But those bacteria live in a symbiotic relationship with man and, as long as humans survive, so will they. Thus any animal that hosts a symbiotic species need not fear the loss of its partner. As long as the host remains, so will parasites and symbiotic species.

**The “rivets-on-the-airplane” analogy is wrong—most species don't matter and they aren't distinct from animals that will survive**

**SIMON 1998** (Julian, world-renowned economist, The Ultimate Resource II, Feb 16 http://www.juliansimon.com/writings/Ultimate\_Resource/TCHAR31.txt)

6. Yet one more difficulty is that the conservation biologists have the disconcerting propensity to offer metaphors rather than data in discussions of these matters. For example, in response to the fact that some extinctions are unknown, as indeed the species themselves are unknown, one ecologist (Thomas Lovejoy) supposedly likened species extinction to a library being burned before the books had even been cataloged, and therefore there may still be loss even though we don't know what it is. But such a metaphor can be entirely misleading. The example may hold for the library in Alexandria that burned 2000 years ago; there were irreparable losses because we have never found other copies of the books. But a better analogy for species extinction may be a newsstand burning down when we have every reason to believe that there are other copies of the publications on the stand in many other places. Obviously the only way to distinguish which is the appropriate analogy is by empirical study. 7. One of the arguments for preserving all existing species - and therefore for preserving tropical and other wild habitat - is that we do not know what valuable biological properties might be lost, and something that might be lost "could come in handy sometime". This argument reminds me of my father saving every old piece of string from packages, and every piece of junk he found on the street, because "it could come in handy sometime". I still have coffee cans taking up shelf space in my basement full of the used bent nails that he extracted, straightened (more or less), and saved until he died. But the truth is that most of this stuff saved indiscriminately does not come in handy. And it takes up valuable space, and costs valuable energy to haul it from one house to another. With the same amount of effort, my father could have built something useful. And with the same space and time cost, I could have done something better. The argument for saving all habitat in order to save all possible species that might be lost is even weaker than the argument for my father's savings. He at least knew what the pieces of string were, whereas we are being asked to save things whose identify and nature - or even existence, in many cases - or possible usefulness we do not know. And in some cases we are asked to save things that are so trivially different from others that their values can only be esthetic - for example the "three most endangered species of birds in North America", according to E. O. Wilson: Bachman's warber, Kirtland's warbler, and the Red-cockaded woodpecker. Would anyone contend that the germplasm in these birds is sufficiently different than that in other warblers and woodpeckers - or even birds at large - that losing them would have ill material consequences for humanity in the future?

# BIODIVERSITY ALT CAUSES

**Biodiversity loss is empirically denied and there is a litany of alternate casualties**

**Bruno,** associate **professor** UNC **Chapel Hill,** **10** [John F., May 3, “[Biodiversity Loss Continues Unabated Despite International Efforts](http://www.huffingtonpost.com/john-f-bruno/biodiversity-loss-continu_b_561699.html)”, <http://www.huffingtonpost.com/john-f-bruno/biodiversity-loss-continu_b_561699.html>]

Betting on biodiversity loss is a pretty sure thing. The earth's plant and animal species are disappearing at a sobering rate due to pressures including habitat loss, climate change, pollution and over-harvesting. Despite a few success stories and steps in the right direction, we are falling far short of stemming these losses. [Biodiversity](http://www.unep.org/iyb/about_iyb.asp#biodiv) is the entire range of biological variety in the world, including the diversity of genotypes, species and ecosystems. It can be measured on levels from DNA molecules all the way up to broad taxonomic categories such as families and phyla. Monitoring the fate of any of these aspects of biodiversity at a global scale is a daunting task. Thus, we know little about the rates and patterns of biodiversity loss or the effectiveness of global mitigation plans such as the [2002 Convention on Biological Diversity.](http://www.iucn.org/iyb/iucn/convention_on_biological_diversity/)   [Dr. Stuart Butchart](http://www.unep-wcmc.org/latenews/PressRelease.htm) of the [UNEP World Conservation Monitoring Centre](http://www.unep-wcmc.org/) and [BirdLife International](http://www.birdlife.org/) tackled the problem by assembling an international team of conservation scientists (that I was part of) to calculate trends in global biodiversity. The idea was to assemble several dozen indices that we had sound, long term data for including population trends for birds and other vertebrates and the loss of habitats such as forests, seagrass beds and coral reefs. As we recently reported in *Science* magazine, our analysis indicates that **biodiversity has continued to decline over the past four decades** with no detectable abatement for most indices. This is largely due to increased pressures resulting from human population growth, economic development and globalization but it also seems clear that our international response to the biodiversity crisis has been inadequate. Every aspect of biodiversity on earth is unique. The species that we have already driven extinct, from the [Dodo](http://en.wikipedia.org/wiki/Dodo) to the [Tasmanian Tiger](http://en.wikipedia.org/wiki/Thylacine), can never be resurrected or replaced. As a field ecologist, I have been lucky to experience and work on some truly wondrous examples of the earth's biodiversity from the tide pools of the Pacific Northwest to rainforests in Costa Rica to alpine habitats in the Rocky Mountains. The downside of my otherwise fantastic job is that I witness the degradation of nature firsthand. The coral reefs of the Florida Keys of today bear little resemblance to the underwater jungles patrolled by large sharks that I snorkeled over as a kid 35 years ago. Over the last two decades I have observed and documented striking biodiversity losses even on isolated and seemingly untouched reefs.

**They don’t solve farming, city expansion or the growth in infrastructure --- biodiversity is damned if we do and damned if we don’t**

**Telegraph, 10** [January, “Human expansion leading to 'extinction crisis', UN warns”, <http://www.telegraph.co.uk/earth/environment/biodiversity/6964798/Human-expansion-leading-to-extinction-crisis-UN-warns.html>]

Dignitaries including UN chief Ban Ki-moon and German premier Angela Merkel will speak at the launch in Berlin. Mr Ban will say that human expansion is wiping out species at about 1,000 times the "natural" or "background" rate, and that "business as usual is not an option", the BBC reports. The expansion of human cities, farming and infrastructure is **the main reason** behind the drop in biodiversity. The Secretary-General is expected to argue that world leaders must find effective ways of protecting forests, watersheds, coral reefs and other ecosystems. The UN will say that as natural systems such as forests and wetlands disappear, humanity loses the services they currently provide for free, such as the purification of air and water, protection from extreme weather events and the provision of materials for shelter and fire. The rate of species loss leads some biologists to say that we are in the middle of the Earth's sixth great extinction, the previous five stemming from natural events as asteroid impacts. In the UN Convention on Biological Diversity (CBD), governments agreed to achieve a "significant reduction" in the rate of biological diversity by 2010. But despite some regional successes, the target is not going to be met; some analyses suggest that nature loss is accelerating rather than decelerating. "We are facing an extinction crisis," Jane Smart, director of the biodiversity conservation group with the International Union for the Conservation of Nature (IUCN), told the BBC.

**The most conclusive study indicates that biodiversity is decreasing now due to external factors**

**Green, 10** [Cool, Mother Nature Network, April, “New study: Biodiversity continues to decline worldwide”, http://www.mnn.com/earth-matters/wilderness-resources/stories/new-study-biodiversity-continues-to-decline-worldwide]

Species continue to be lost at steady rates across nearly every habitat type on Earth — this despite an international commitment eight years ago to significantly reduce the rate of such losses by 2010, according to a new study coauthored by a Nature Conservancy scientist. The study, [published today in Science magazine](http://www.sciencemag.org/cgi/content/abstract/science.1187512), is the first to comprehensively measure progress toward achieving the goals of the [Convention on Biological Diversity](http://www.cbd.int/) (CBD), a treaty that pledged to significantly reduce 2002 rates of biodiversity loss by this year toward the end of alleviating global poverty. The study’s authors found that virtually all of the indicators of the state of biodiversity — everything from species’ population trends to extinction risk to habitat conditions — have declined since 2002. Alarmingly, these declines have continued despite increases in policies and funds to promote biodiversity, write the authors. The drivers for these declines include invasive alien species, the impacts of climate change and aggregate human consumption of Earth’s ecological assets. To go deeper into the numbers, Cool Green Science talked with two of the study’s authors — Dr. Stuart H. M. Butchart of the United Nations Environment Programme and BirdLife International, and Dr. Carmen Revenga, a senior scientist with [The Nature Conservancy’s Global Marine Team](http://www.nature.org/initiatives/marine/), who contributed the indicator on river fragmentation: Cool Green Science: We’ve been hearing for a while that biodiversity worldwide is in decline. What’s new in this study? Butchart: Although the findings are no surprise to those of us who work in the field, I often find that the general public are surprised to discover this. Decision-makers and politicians are also insufficiently aware of the issue, I suspect. What is new here is that governments in 2002 made a specific commitment to address the issue and meet a milestone by 2010. We have shown for the first time that they failed. Further, we found that the gap between the intensifying pressures and the responses put in place is widening. Among the declines in biodiversity indicators cited in the study, which are the most dramatic and indicative? Or is the totality of the declines that should catch our attention? Butchart: There are dramatic declines in animal populations (which have declined by one-third since 1970) and coral reef condition (by 40 percent since 1980), but it is the consistency of the results that is most alarming. Humanity is destroying nature in all corners of the planet. Carmen Revenga: For me, the aggregated indices of species and population trends give a clear signal that we have not made progress reducing the rate of biodiversity loss. And it’s very worrisome that pressures on resources are increasing at the same time — these trends should really raise people’s eyebrows, because the conservation community has spent a lot of energy and resources trying to reverse these trends and calling attention to them. How much do these rates of loss have to get before we take them seriously? Can we afford those rates of loss getting higher, especially given the uncertainties of climate change impacts and the capacity for ecosystems to recover or adapt? Some of the indicators are for Europe alone. Can we extrapolate from these indicators to a global portrait of, say, bird population responses to climate change? Butchart: There is one indicator which is based only on European bird populations (climate impacts) and another based only on North American and European data (the Wild Bird Index), but the others are global in coverage. While there are no other groups or regions yet in which it is possible to show an indicator testing the impacts of climate change on the population trends of a whole suite of organisms, there is plenty of other evidence that climate change is having severe impacts on organisms across the planet.

**Alternate cause --- population growth and urban expansion**

**Henry, 01** [Deb, Sustainable Population Australia, “Population Growth Fuels Biodiversity Loss: Lowe (Apr)”, http://www.population.org.au/index.php/media/media-releases/94-media-releases-2001/284-population-growth-fuels-biodiversity-loss-lowe-apr]

Unless we arrest human population growth, SEQ residents will continue to lose the values that they cherish warns world reknown sustainability expert, Professor Ian Lowe. Addressing a gathering of over 100 people at the Grand View Hotel as guests of the SEQ Branch of Sustainable Population Australia (SPA) Inc, Professor Lowe made it quite clear that population growth is the basis of many of our environmental problems**.** According to Lowe, Australia's number 1 environmental problem is biodiversity loss and this is has particular relevance for 'mega-rich' SEQ. "The fauna and flora of Australia is unique worldwide. We lose it here, and it's lost forever. This loss is no longer due to the mindless murdering of marsupials or the callous killing of koalas, but to the destruction of habitat." This destruction, says Lowe, is due to our unusually high human population growth and associated demands for more houses, roads, schools, shops, other infrastructure and resources such as food. And, while our consumption is recognised as a major contributor to our environmental problems it continues to increase, per capita, despite efforts at reduction. "If we have a greater population we do more damage to the natural environment. If we have more population we also put more pressure on our social structures". And warns Lowe, social sustainability is essential for economic sustainability, a reality that planners, politicians and economists are urged to accept.

# A2: KEY TO MEDICINE

**Species preservation doesn’t matter for medical research and any extinction will be solved by adaptation from another species**

**MOORE 1998** (Thomas Gale, Senior Fellow at the Hoover Institution at Stanford, Climate of Fear, 100-101)

Being skeptical about the vital importance of maintaining every single species is tantamount to being against motherhood—at least before Paul Ehrlich convinced the world that babies were bad—so one is reluctant to question the importance of species diversity. Nevertheless, the usefulness of any one species, at least as a potential pharmaceutical, is probably low. Although the number of species on the globe is unknowable, it is certainly large: it has been estimated to be at least 10 million, of which scientists have identified about 1.4 million, about half of which are insects (Simpson et al. 1996, 176; UCS 1997). Among plants, there is considerable duplication in the production of chemical substances. Many creatures and plants have similar needs and consequently manufacture comparable compounds. The number of other plants or animals that produce like chemicals affects the worth of any one species. If many varieties of plants produce the same compound, the importance of any one kind is minimal. On the other hand, if very few code for therapeutic chemicals, the cost of discovery becomes excessive and the prediscovery desirability of any single species, negligible. Moreover, if a species is found over a wide range, its value in any one area will be limited (Simpson et al. 1996). If all animals or plants in that species produce the chemical, additional individual members are redundant. Consequently, the worth of preserving any particular region that harbors the valued plant or creature may be very small. A new substance’s contribution toward more effective medical treatment determines its ultimate benefit, but it has to compete with existing drugs. Alternative drugs may be equally effective in dealing with medical problems. Even if plant variety is unique, it may still provide no additional benefits over substances already known. Thus chemicals isolated from new species must compete with like substances found in other species and with existing known drugs. Finally, synthetic drugs based on inorganic chemicals often can be just as effective.

**Microbiology research solves the impact—humans won’t be part of the extinction**

**HEATH 1999** (Jim, Orchids Australia, December, http://www.orchidsaustralia.com/whysave.htm)

So maybe we do need them. Could the information in them have practical uses? A hard fact glares. Pharmaceutical companies can now put together their own molecules. Anyway, the economics of searching for medicines in “baleful weeds and precious-juiced flowers” has always been poor. Spending the money on molecular biology gives much better odds than spending the money on saving species.

# A2: KEY TO AGRICULTURE

**Genetic engineering will solve hunger—species don’t matter**

**SIMON 96** (Julian, Robert H. Smith School of Business, University of Maryland, The Ultimate Resource II: People, Materials, and Environment, http://www.rhsmith.umd.edu/faculty/jsimon/Ultimate\_Resource/)

The possibilities already shown to be feasible are astounding. For example, one might insert into a potato genes from a moth that affect the potato's coloring. Other genes might make proteins in a potato with the full complement of amino acids that humans need - giving the benefits of meat and potatoes by eating the potatoes alone. Please keep in mind that this technology has been developed after only a few decades of work on the topic, and only a little more than a century after the first scientific knowledge of genetics. Potential progress in the future - even within the next few decades and centuries - is awesome. Doomsaying forecasts about population growth outstripping the food supply that take no account of these possibilities surely are seriously inadequate.

**Alt cause—air pollution**

**GRIFFITHS 2003** (Heather, Integrated Pest Management Modelling Specialist/Ontario Ministry of Agriculture Food & Rural Affairs, “Effects of Air Pollution on Agricultural Crops,” June, http://www.omafra.gov.on.ca/english/crops/facts/01-015.htm)

Air pollution injury to plants can be evident in several ways. Injury to foliage may be visible in a short time and appear as necrotic lesions (dead tissue), or it can develop slowly as a yellowing or chlorosis of the leaf. There may be a reduction in growth of various portions of a plant. Plants may be killed outright, but they usually do not succumb until they have suffered recurrent injury. Oxidants Ozone is the main pollutant in the oxidant smog complex. Its effect on plants was first observed in the Los Angeles area in 1944. Since then, ozone injury to vegetation has been reported and documented in many areas throughout North America, including the southwestern and central regions of Ontario. Throughout the growing season, particularly July and August, ozone levels vary significantly. Periods of high ozone are associated with regional southerly air flows that are carried across the lower Great Lakes after passing over many urban and industrialised areas of the United States. Localized, domestic ozone levels also contribute to the already high background levels. Injury levels vary annually and white bean, which are particularly sensitive, are often used as an indicator of damage. Other sensitive species include cucumber, grape, green bean, lettuce, onion, potato, radish, rutabagas, spinach, sweet corn, tobacco and tomato. Resistant species include endive, pear and apricot. Ozone symptoms (Figure 1) characteristically occur on the upper surface of affected leaves and appear as a flecking, bronzing or bleaching of the leaf tissues. Although yield reductions are usually with visible foliar injury, crop loss can also occur without any sign of pollutant stress. Conversely, some crops can sustain visible foliar injury without any adverse effect on yield.

# A2: SOIL EROSION

**Alt cause—crop subsidies**

**PERSON 2005** (Stacey, J.D. Candidate, Georgetown University Law Center, Georgetown International Environmental Law Review, Winter)

Subsidy programs have also generally encouraged monoculture, or raising the same crop year after year on the same plot of land, because benefits are tied to crop yields on a specified acreage planting base. 36 Large scale monoculture contributes to soil erosion and consumes water and energy in large amounts. Monoculture also depletes nutrients in the soil because the same crop drains a particular nutrient from the soil year after year without any opportunity for replenishment. Nutrient depletion forces farmers to intensify their use of fertilizers in order to get maximum yields of single commodity program crops. 37 In addition to increased use of fertilizers, farmers must also increase their use of pesticides because erosion and nutrient depletion of the soil increase the vulnerability of plants to diseases and pests. 38 These pesticides and fertilizers are the leading causes of contaminated surface waters. Another consequence of the current farm program structure is that it favors certain crops. Rather than developing naturally, agricultural markets develop solely in specialized sectors for subsidized crops because those sectors are where farmers reap the most economic gain. 39 Farmers must also invest more and more in subsidized sectors due to those crops being less risky. 40 This specialization and non-natural development of agricultural markets causes environmental harm by contributing to monoculture and making it financially uncertain for farmers to diversify because markets for alternative crops are poorly defined. 41 Generally, the types of crops the farm program encourages are row crops rather than fields of grasses, which could be used to feed livestock, in addition to corn, soybeans, and wheat. 42 Grasslands create a better habitat for wildlife, prevent soil erosion, and require fewer agricultural chemicals; but some economists estimate that thirty million acres of grassland have been shifted to cropland as a result of farm program policy benefits accruing only to specified commodities. 43 There are also large federal subsidy programs dedicated to supporting and developing farm irrigation infrastructure and supply. 44 These subsidies encourage [\*313] increased demand for overuse of groundwater sources, leading to such environmental catastrophes, such as desertification, destruction of natural springs with their wildlife habitats, and saltwater intrusion. 45

# A2: MONOCULTURE

**Monoculture is stable—it is just an extenstion of plant mono-dominance that occurs in nature**

**AVERY 2003** (Dennis, Founder of the Center for Global Food Issues, “Mimicking Nature to Eat Well,” March, http://www.cgfi.org/materials/articles/2003/mar\_28\_03.htm)

Tropical inter-planting is also ecologically alien to the lands where most of humanity lives. Why would eco-activists reject the ecological insights of the cereal farmers who created sustained human success throughout Asia (rice), the Near East (wheat), Europe (wheat), and most of the Americas (corn and later wheat)? Their agricultural systems clearly mimic naturally evolved stands of mono-dominant plants. The current eco-activist advice to abandon monocultures violates virtually every ecological precept.

**U.N. program solves the impact to biological diversity worldwide—this will also create future cooperation**

**UNITED NATIONS 9-12-2007** (UN Press Release, http://www.scoop.co.nz/stories/WO0709/S00277.htm)

Delegates from 109 countries at a United Nations-backed conference have adopted the first internationally agreed framework, including financing for developing states, to halt the erosion of the genetic diversity of livestock, seen as crucial in mitigating the effects of global warming and protecting the world's food supply. "This is a milestone in international efforts to promote the wise management of the world's animal genetic resources for food and agriculture," UN Food and Agriculture Organization (FAO) Assistant Director-General for Agriculture and Consumer Protection José María Sumpsi told the closing session of the first International Technical Conference on Animal Genetic Resources in Interlaken, Switzerland. "It will provide the framework for action and international cooperation for many years to come. It is a visible sign of the urgency that all countries and regions give to ensuring the survival of these crucial resources, and to improving their use to achieve global food security and sustainable development."

**Monocultures are natural and science proves they’re safe**

**WOOD 2002** (Dr. Dave, ecologist from UK who has lived in India for the past few years, “One Hand Clapping: Organic Farming in India,” December 12, http://www.cgfi.org/materials/articles/2002/dec\_12\_02\_wood.htm)

The reality of monocultures is the exact opposite: all our important Old World cereals have immediate wild relatives growing in vast monodominant natural grasslands throughout Asia and Africa. These natural monocultures were a key source of gathered food before farming; seem to have been maintained and toughened by seasonal fire or flood disturbance (reducing functionally-surplus biodiversity); are the ecological antithesis of 'primeval forest'; and provide exact monoculture models to early farmers for tree-free cereal fields. Thus there is sound applied ecology underpinning our cereal monocultures. The historical and robust ecological benefits of cereal monocultures directly derived from 'primeval grassland' continue to this day, providing most of our food [see the peer-reviewed Wood, D. and Lenné, J. 2001 Nature's Fields: a neglected model for increasing food production. Outlook on Agriculture 30, 165-174].

**Seed banks solve the impact of monoculture**

**NATIONAL BIOLOGICAL INFORMATION INFRASTRUCTURE 2007** (“Ex situ Conservation of Agricultural Genetic Resources,” Last Modified 10-15, http://www.nbii.gov/portal/server.pt?open=512&objID=406&&PageID=590&mode=2&in\_hi\_userid=2&cached=true)

Genetic diversity is preserved through a variety of in situ (in position or in-field) agricultural practices described above. In addition, there are a number of organizations that enlist teams of local farmers to grow native varieties, particularly those that are threatened by extinction due to lack of modern-day use. There are also local, national and international efforts to preserve agricultural genetic resources through ex situ (off-site) methods such as seed and sperm banks. Some of the major germplasm storage efforts include: \* The Consultative Group on International Agricultural Research (CGIAR) is a consortium of International Agriculture Research Centers (IARC) and others that each conduct research on and preserve germplasm from a particular crop or animal species. The CGIAR and the IARCs are funded by donor countries (including a significant contribution from the United States), private foundations, and international and regional organizations. The CGIAR holds one of the world's largest ex situ collections of plant genetic resources in trust for the world community. It contains over 500,000 accessions of more than 3,000 crop, forage, and agroforestry species. The collection includes farmers' varieties and improved varieties and, in substantial measure, the wild species from which those varieties were created - CGIAR website, 2003 \* National germplasm storage centers including the U.S. Department of Agriculture's National Center for Genetic Resources Preservation, India's National Bureau of Animal Genetic Resources (NBAGR), the Taiwan Livestock Research Institute, and the Australian Network of Plant Genetic Resource Centres. \* Organizations such as the World Resources Institute (WRI) and the World Conservation Union (IUCN) are non-profit organizations that provide funding and other support to ex situ and in situ conservation efforts.

# A2: HONEYBEES

**Honeybees are not key to survival**

**INTERNATIONAL HERALD TRIBUNE 5-2-2007** (http://www.iht.com/articles/ap/2007/05/03/healthscience/NA-SCI-US-Honeybees-Weird.php)

The scientist who wrote the paper, Stefan Kimmel, e-mailed The Associated Press to say that there is "no link between our tiny little study and the CCD-phenomenon ... anything else said or written is a lie." And U.S. Department of Agriculture top bee researcher Jeff Pettis laughs at the idea, because whenever he goes out to investigate dead bees, he cannot get a signal on his cell phone because the hives are in such remote areas. Also on the Internet is a quote attributed to Albert Einstein on how humans would die off in four years if not for honeybees. It is wrong on two counts. First, Einstein probably never said it, according to Alice Calaprice, author of "The Quotable Einstein" and five other books on the physicist. "I've never come across it in anything Einstein has written," Calaprice said. "It could be that someone had made it up and put Einstein's name on it." Second, it is incorrect scientifically, Pettis said. There would be food left for humans because some food is wind-pollinated.

**No impact to honeybee dieoff**

**SMITH 2007** (Heather, Slate, July 13, http://www.slate.com/id/2170305/pagenum/2)

But is CCD such a tragedy? The honeybee may be the only insect ever extended charismatic megafauna status, but it's already gone from the wild (and it wasn't even native to North America to begin with). Sure, it makes honey, but we already get most of that from overseas. What about the $14.6 billion in "free labor"? It's more expensive than ever: In the last three years, the cost to rent a hive during the California almond bloom has tripled, from $50 to $150. Good thing the honeybee isn't the only insect that can pollinate our crops. In the last decade, research labs have gotten serious about cultivating other insects for mass pollination. They aren't at the point yet where they can provide all of the country's pollination needs, but they're getting there. This year the California Almond Board two-timed the honeybee with Osmia lignaria—the blue-orchard bee: Despite CCD, they had a record harvest.\*

**Impact is empirically denied—massive dieoffs have occurred in past**

**OLDROYD 2007** (Dr. Benjamin P. Oldroyd is with the Behaviour and Genetics of Social Insects Laboratory, School of Biological Sciences, University of Sydney, PLoS Biology, June, http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1892840)

Some winter losses are normal, and because the proportion of colonies dying varies enormously from year to year, it is difficult to say when a crisis is occurring and when losses are part of the normal continuum. What is clear is that about one year in ten, apiarists suffer unusually heavy colony losses. This has been going on for a long time. In Ireland, there was a “great mortality of bees” in 950, and again in 992 and 1443 [3]. One of the most famous events was in the spring of 1906, when most beekeepers on the Isle of Wight (United Kingdom) lost all of their colonies [4]. American beekeepers also suffer heavy losses periodically. In 1903, in the Cache valley of Utah, 2000 colonies were lost to a mysterious “disappearing disease” following a “hard winter and cold spring” [5]. More recently, there was an incident in 1995 in which Pennsylvania beekeepers lost 53% of colonies [6].

**Bees are useless**

**A) Wheat is key to global food consumption**

**CARTER 2001** (Colin Carter is with the Department of Agricultural and Resource Economics, UC Davis, CIMMYT World Wheat Overview and Outlook, www.cimmyt.org/Research/Economics/map/facts\_trends/wheat00-01/pdf/wheat00-01\_part3.pdf)

Wheat is the primary grain consumed by humans around the globe. About 75% of the world’s wheat is consumed directly, 15% is consumed indirectly in the form of animal products, and another 10% is used for seed and industrial use. The global consumption of wheat doubled in the last 30 years to reach nearly 600 million tons per year in recent years (Figure 1). Rising population and incomes, along with increased urbanization and its associated changing dietary patterns, caused consumption to increase by about 5.6 million tons yearly in the last decade. Future growth in wheat consumption is expected to originate mainly in developing countries, which also account for the recent growth in global wheat consumption. According to the United Nations, population is growing by about 1.5%/yr in developing countries, compared to almost zero growth, on average, in developed countries. In addition, urbanization is a phenomenon that is largely confined to the developing world.

**B) Bees aren’t key to that**

**GERBER 2007** (Richard, On Health Blog, March 23, http://blog.targethealth.com/?p=58)

While a few crops, such as corn and wheat, are pollinated by the wind, bees help pollinate more than 90 commercially grown field crops, citrus and other fruit crops, vegetables and nut crops. Without these insects, crop yields would fall dramatically and some tangerines and pecans would cease to exist. Agronomists estimate Americans owe one in three bites of food to bees.”

**No single factor is key—alt causes exist**

**GERBER 2007** (Richard, On Health Blog, March 23, http://blog.targethealth.com/?p=58)

The unusual phenomenon was first noticed by eastern beekeepers starting last fall. Researchers, including some connected with the Penn State University College of Agricultural Sciences, have identified some of the possible contributors, but have not yet found a single cause. Initial studies on bee colonies experiencing the die-offs have revealed a large number of disease organisms, with most being “stress-related” diseases but without any one agent as the culprit. Climate chaos and extreme weather seem to be a major factor. It is hard to tell if wild honey bee populations have been affected by the CCD disorder because Varroa mites have “pretty much decimated the wild honey bee population over the past years,” said Maryann Frazier of The Pennsylvania State University Department of Entomology. “This has become a highly significant, yet poorly understood problem that threatens the pollination industry and the production of commercial honey in the United States… Because the number of managed honeybee colonies is less than half of what it was 25 years ago, states such as Pennsylvania can ill afford these heavy losses.” Dennis van Engelsdorp, acting state apiarist with the Pennsylvania Department of Agriculture said “Every day, you hear of another operator, It’s just causing so much death so quickly that it’s startling.” Lee Miller, director of the Beaver County extension office, said the deaths appear to be stress-related, but that stress could come from several sources. Dennis van Engelsdorp of the Pennsylvania Department of Agriculture said that initial studies found a large number of disease organisms present, with no one disease being identified as the culprit. And while studies and surveys have found a few common management factors among beekeepers with affected hives, no common environmental agents or chemicals have been identified.

**Weather is key**

**GERBER 2007** (Richard, On Health Blog, March 23, http://blog.targethealth.com/?p=58)

University of California Davis entomologist Eric Mussen specializes in bees. He thinks the answer lies in last summer’s lack of wild flowers, nationwide. Janet Katz, a beekeeper in Chester, NJ, says the weather is having a major impact, “The weather last season was not cooperative,” she said. “Over the course of the season it was too wet, too dry, too hot and too cold, all at the wrong times.” Bees store honey every autumn — a hive needs 60 pounds to survive the winter — but with this year’s warm weather, they ate a lot, and beekeepers had to supplement with sugar syrup.

**No single factor is key—weather outweighs all of the others**

**GERBER 2007** (Richard, On Health Blog, March 23, http://blog.targethealth.com/?p=58)

There are several unusual things about the phenomena and one common factor that cannot be attributed to be the direct cause but may be an “aggravating other conditions” factor and that is temperature fluctuations.

No single cause drought chemicals/pesticides, mites, bacteria, a fungus or virus seems to be common to all the events or even indicated as a cause in any single event. Extreme weather and temperature fluctuations seem to play a major role stressing the bees and weakening their immune systems.

**Hurricanes killed bees—collapse is inevitable without massive federal support**

**GERBER 2007** (Richard, On Health Blog, March 23, http://blog.targethealth.com/?p=58)

A series of hurricanes in 2004, including Katrina in 2005, destroyed thousands of honey bee colonies, decimating the vital Gulf Coast bee industry. Many of the pollinators for other parts of the country traditionally came from these beekeepers. The economic impact of these storms, especially Katrina is yet to be determined.

“Replacing the Gulf Coast bee colonies, although highly important, is not enough. It is obvious that the huge losses suffered during the past 16 years must be dealt with to provide security for our future honey bee-dependent food supplies. It will take a well-defined series of coordinated efforts by all components of the beekeeping industry and the involvement of local, state and federal governmental entities to solve this potentially disastrous situation,” says John Roberts, a beekeeper and President of Nature Technics Corporation.

**Alt cause—disease**

**SAN FRANCISCO CHRONICLE 4-26-2007** (http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2007/04/26/MNGK7PFOMS1.DTL)

A UCSF researcher who found the SARS virus in 2003 and later won a MacArthur Foundation "genius grant" for his work thinks he has discovered a culprit in the alarming deaths of honeybees across the United States.

Tests of genetic material taken from a "collapsed colony" in Merced County point to a once-rare microbe that previously affected only Asian bees but might have evolved into a strain lethal to those in Europe and the United States, biochemist Joe DeRisi said Wednesday.

**Alt cause—pollination and transport**

**OLDROYD 2007** (Dr. Benjamin P. Oldroyd is with the Behaviour and Genetics of Social Insects Laboratory, School of Biological Sciences, University of Sydney, PLoS Biology, June, http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1892840)

The honey price is currently depressed. Urbanization and more intensive agricultural practices are reducing honey yields nation wide. These twin factors lead many beekeepers to seek alternative income streams beyond honey production. Chief among these is the leasing of colonies for pollination, particularly almond pollination—a crop that is totally dependent on honey bee pollination. Many crops cause nutritional stress to the bees, or the transport or staging of colonies in holding yards may cause stress. When bees are moved out of these crops, they must feed on high quality pollen to restore body protein levels. This can be achieved by trucking the bees to a location with excellent floral resources or by feeding them. Presumably this is not always done. Anecdotal evidence suggests that CCD is more common in businesses in which bees are trucked large distances and rented for pollination. Bees also need to feed on high-quality pollen in fall in order to produce long-lived bees that can survive winter [52]. In the US, goldenrod (Solidago virgaurea) is very important in this regard, and the flowering was poor in 2006 in the northeast. Perhaps this contributed to CCD in the following spring.

**Alt cause—genetic diversity and disease**

**OLDROYD 2007** (Dr. Benjamin P. Oldroyd is with the Behaviour and Genetics of Social Insects Laboratory, School of Biological Sciences, University of Sydney, PLoS Biology, June, http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1892840)

Some researchers are wondering if commercial honey bee stocks are based on too narrow a genetic base—and that this makes them vulnerable to diseases. Honey bee colonies comprise a large number of related animals that live at high densities and exchange food by mouth; these are ideal conditions for the development of epidemics [61]. Workers have numerous defences against disease, including an innate immune system [62] and behaviors in which some workers seek out disease brood and remove it from the colony [63,64]. To be effective, behavioral defences in particular require a high level of genetic variation within colonies. This allows colonies to respond resiliently to the variety of pathogenic and other challenges they face. If all workers are the same, they may solve one problem brilliantly but be more vulnerable to others. Honey bee queens mate on the wing with 10–30 drones [65], and this is a major means by which they generate genetic variability in their workers [66]. Some scientists have suggested that because Varroa has seriously reduced the number of feral honey bees (see main text), commercial bees are more likely to mate with close relatives than they were in the past, potentially leading to reduced genetic diversity within colonies. Furthermore, imports of honey bees from around the world may mean that commercial honey bees are not well adapted to the local current pathogens and conditions in the US.

**Alt cause—viruses**

**WIRED SCIENCE 9-7-2007** (http://blog.wired.com/wiredscience/2007/09/mass-honey-bee-.html)

For months, the headlines have been increasingly worrisome: Honey bees around the United States are dying out in huge numbers, endangering agriculture, and perhaps portending larger environmental problems. Now a group of genetic researchers say they may at last have at least part of the explanation for this so-called Colony Collapse Disorder (CCD). As published on Science's Web site yesterday, researchers say they've isolated a particular virus, called Israeli Acute Paralysis Virus (IAPV), in a large sample of bees affected by CCD. The virus, which has appeared in Israel, as well as in samples taken from Australia, paralyzes bees, often outside their hives.

# A2: OZONE

**Ozone depletion inevitable**

**TIMES EDUCATIONAL SUPPLEMENT 1-16-2004**

Without this protection, there would be little life on Earth. So, ozone is formed by UV, destroyed by UV, and in the process it protects us from UV. What this means is that there is an "ozone balance" -a state in which ozone is being created and destroyed at equal rates -which keeps the ozone layer in being. The balance is naturally fragile and fluctuating, and anything that upsets it and increases the rate of ozone destruction is potentially life-threatening -hence the worry, since the 1980s, about the effect of the release into the atmosphere of chlorofluorocarbons (CFCs), such as those used in aerosols, refrigerators and air conditioners. These interfere with the ozone balance by promoting complex chemical reactions that speed up the breakdown of ozone. The problem is aggravated by the fact that CFCs were used for many years in the belief that they were inert, with no environmental penalties. Their very stability, however, means that even after they have been phased out, they will remain in the atmosphere for a long time.

**The black market makes CFC use inevitable and undercuts the Montreal protocol**

**SINGER 1997** (S. Fred Singer, a geophysicist and emeritus professor of environmental sciences at the University of Virginia, is the founding president of the Science & Environmental Policy Project, Washington Times, April 22)

Stratospheric Ozone and Skin Cancer: 1996 was the first year of the ban on CFC ("freon") production - in the United States and other Western countries. Russia, India and China continue to produce CFCs to meet the growing demand. The predictable outcome has been a lucrative smuggling and black-market business, which keeps the FBI, EPA and IRS very busy. In the meantime, U.S. motorists have been paying hundreds of dollars to get their air conditioners fixed and recharged without knowing whether they were buying illegal substitutes that could harm the system.

**And, this means stratospheric ozone depletion is inevitable**

**CLOSE AND PLAYFORD 1997** (James Close, an environmental specialist, and Greg Playford, an air pollution meteorologist, are with DEC's Division of Air in Albany, NEW YORK STATE CONSERVATIONIST, JUNE)

Even if production of CFCs and halons ceased tomorrow, the full destructive effect on the ozone shield would still be felt years into the future. Even now, releases over the past several decades of the long-lived chemicals are making their way up toward the stratosphere. Worldwide CFC and halon production peaked in 1974 at nearly a million tons per year, declined slightly during the later 1970s, then by the late 1980s had again increased to near the million ton mark. Beginning in 1987, scores of nations, including the United States, entered into international agreements to reduce the production of ozone-depleting chemicals. Without these changes -- and a substantial reduction in greenhouse gas emissions -- scientists project that stratospheric ozone could be depleted by between five and nine percent during the next century, with an accompanying increase in ultraviolet exposure at the earth's surface of 10 to 18 percent.

# A2: AIR POLLUTION

**No health impact**

**COMMUNITY PHARMACY, MAY 2000** (Lexis)

Exposure to levels of ozone of about 120 parts per billion over one hour may increase sensitivity to aeroallergens. It is well known that the single most important risk factor for asthma is sensitisation to the major domestic allergens. These include dust mites and cat and dog hair. Evidence that ozone and other pollutants, such as nitrogen dioxide, enhance this immune response could be a mechanism of pollutant- induced asthma exacerbation. Lung-function studies using spirometry have shown that exposure to levels of ozone of 100 parts per billion or above for several hours may lead to airways inflammation and small decrements in lung function, although there is no clear evidence that this results in ill health. However, there is wide individual variability to lung-function ozone susceptibility and, surprisingly, people with asthma were not found to be more susceptible. Furthermore, the evidence seems to show that the effects are short-lived and repeated exposure leads to resistance to ozone.

**No health impact**

**CORDATO 2003** (Roy, Vice president for research and resident scholar at the Locke Foundation. From 1993 to 2000 he served as the Lundy Professor of Business Philosophy at Campbell University, Ground-Level Ozone: Myths, Facts, and Politics, Published by the John Locke Foundation, March)

When setting ozone standards, then, the public policy issue is one of comparative risks. That is, are the risks that will be avoided in terms of “pulmonary degradation” by any given ozone standard, be greater or less than the risks that will be incurred in terms of skin cancers and cataracts? There have been several studies that have looked at this question and attempted to quantify the results. In the paper by Lutter and Wolz, cited above, it was concluded that the 80 ppb standard would generate no net health benefits. “Our preliminary analysis suggests that the value of increased UV-B-related health effects from tropospheric ozone reductions may be similar in magnitude to the value of decreased respiratory health effects.”20 In prepar-ing extensive comments on the 80 ppb ozone standard for the Center for the Study of Public Choice at George Mason University, Susan Dudley concluded that “the proposal could result in negative health benefits of $282 million” per year.21 That is, the 80 ppb standard as adopted by North Carolina could actually be generating net harm. Since the state does not officially recognize the fact that ground-level ozone generates any benefits, it is not surprising that the Division of Air Quality did not consider these benefits when choosing to adopt the 80 ppb threshold. Likewise, the legislature, in adopting the Clean Smokestacks bill, made no inquir-ies regarding the effects of the legislation on skin cancer or cataracts. In fact, there was no cost-benefit analysis of any kind to justify enactment of the legislation. North Carolina is not alone in ignoring the full health effects of ground-level ozone. The Federal Clean Air Act (CAA) sets a clear standard for the EPA in its efforts to evaluate the health effects of new regulations. In setting emission standards, the EPA must submit a “Cri-teria Document” that evaluates “all identifiable effects on public health or welfare which may be expected from the presence of such pollutants in the ambient air.”22 But in setting its crite-ria, the EPA not only presented no quantitative analysis of the UV-B effects of ozone but, in its official Criteria Document, it did not even mention these effects. In other words, when con-sidering the health impacts of its proposed standard, the EPA looked only at the benefits and ignored the costs. In doing so it insured the conclusion that the new standard would be justi-fied.

**Trees are key to air pollution—they overwhelm industrial sources**

**NEW SCIENTIST 2004** (October 17, http://www.newscientist.com/article.ns?id=dn6526)

Industry has dramatically cut its emissions of pollutants, called volatile organic compounds. But those cuts have been more than offset by the amount of VOCs churned out by trees. The revelation challenges the notion that planting trees is a good way to clean up the atmosphere. When fossil fuels used in industry and automobiles fail to combust completely, they generate VOCs, which react with nitrogen oxides and sunlight to form poisonous ozone in the lower atmosphere. In the past few decades, the introduction of more efficient engines and catalytic converters has dramatically reduced these emissions. But trees also produce VOCs, which tend to be ignored by scientists modelling the effects of ozone on pollution. So a team led by Drew Purves at Princeton University investigated the impact of newly planted forests on VOC levels in the US. The researchers used the US Forest Service Industry Analysis, a database of 250,000 randomly sampled forest plots around the country, and the known VOC emission rate for each tree species for the study. They calculated that vegetal sources of monoterpenes and isoprene rose by up to 17% from the 1980s to the 1990s – equivalent to three times the industrial reductions.

# A2: PHYTOPLANKTON

**It’s inevitable**

**A) Ozone depletion inevitable**

**TIMES EDUCATIONAL SUPPLEMENT 1-16-2004**

Without this protection, there would be little life on Earth. So, ozone is formed by UV, destroyed by UV, and in the process it protects us from UV. What this means is that there is an "ozone balance" -a state in which ozone is being created and destroyed at equal rates -which keeps the ozone layer in being. The balance is naturally fragile and fluctuating, and anything that upsets it and increases the rate of ozone destruction is potentially life-threatening -hence the worry, since the 1980s, about the effect of the release into the atmosphere of chlorofluorocarbons (CFCs), such as those used in aerosols, refrigerators and air conditioners. These interfere with the ozone balance by promoting complex chemical reactions that speed up the breakdown of ozone. The problem is aggravated by the fact that CFCs were used for many years in the belief that they were inert, with no environmental penalties. Their very stability, however, means that even after they have been phased out, they will remain in the atmosphere for a long time.

**B) Destroys phytoplankton**

**DEPARTMENT OF ENVIRONMENTAL PROTECTION 2007** (Montgomery County MD DEP, “Ground Level Ozone,” August 13, http://www.montgomerycountymd.gov/deptmpl.asp?url=/content/dep/aq/ozone.asp)

As the stratospheric ozone layer is depleted, higher UV-b levels reach the earth’s surface. Increased UV-b can lead to more cases of skin cancer, cataracts, and impaired immune systems. Many of our essential crops, such as corn, barley, hops, wheat and soybeans, may become damaged, decreasing their yield. Phytoplankton, a plant in the ocean, also is affected. Depletion of this important link in the marine food chain could reduce the number of fish in the ocean. It also can increase the level of carbon dioxide in the atmosphere because phytoplankton absorbs carbon dioxide in their food and energy making processes.

# A2: POLLUTION

**Ignore their pollution arguments—fear of pollutant risks would justify wiping out all of humanity and perfect safety is impossible**

**SIMON 96** (Julian, Robert H. Smith School of Business, University of Maryland, The Ultimate Resource II: People, Materials, and Environment, http://www.rhsmith.umd.edu/faculty/jsimon/Ultimate\_Resource/)

A safety-minded person might say, "With regard to pollutant X, perhaps the additional risk that is induced by a larger population is a small one. But would it not be prudent to avoid even this small possibility?" This question is related to the issue of risk aversion discussed in the section on nuclear energy in chapter 13. To state the problem in its most frightening form: In an advanced technological society there is always the possibility that a totally new form of pollution will emerge and finish us all before we can do anything about it. Though the incidence of general catastrophes to the human race has decreased from the time of the Black Death onwards, and though I'd bet that it is not so, the risk may have begun to increase in recent decades - from atomic bombs or from some unknown but powerful pollution. But the present risk of catastrophe will only be known in the future, with hindsight. The arguments in Part I about non-finite natural resources cannot refute the possibility of some explosive unknown disaster. Indeed, there is no logical answer to this threat except to note that life with perfect security is not possible - and probably would not be meaningful. It might make sense to control population growth if the issue were simply the increased risk of catastrophe due to population growth, and if only the number of deaths mattered, rather than the number of healthy lives lived. A flaw in this line of reasoning is revealed, however, by pushing it to its absurd endpoint: One may reduce the risk of pollution catastrophe to zero by reducing to zero the number of persons who are alive. And this policy obviously is unacceptable to all except a few. Therefore we must dig deeper to learn how pollution ought to influence our views about population size and growth.

**Pollution is overhyped—instinctive aversion to waste has prevented rational assessments**

**SIMON 96** (Julian, Robert H. Smith School of Business, University of Maryland, The Ultimate Resource II: People, Materials, and Environment, http://www.rhsmith.umd.edu/faculty/jsimon/Ultimate\_Resource/)

Perhaps there is an instinctive esthetic reaction to wastes as there seems to be to snakes or blood. Revulsion to excrement is seen in the use of such words as "crap" for anything we do not like. It may be that this instinct makes it difficult for us to think about pollution in a cool and calculating fashion. Indeed, nowadays washing dishes pertains mainly to esthetics rather than disease, though we "feel" that uncleanness is unhealthy. Another relevant analogy is that pollution is like sin; none is the ideal amount. But in economic thinking the ideal amount of pollution is not zero. It is no easier to wean environmentalists from the ideal of no radiation and no trace of carcinogens than it was to persuade the Simon kids that we should simply dilute the dirt to an acceptable extent. This mind-set stands in the way of rational choice on the path to the reduction of pollution.

**The environment is getting cleaner—pollution only looks bad because our standards are higher**

**SIMON 96** (Julian, Robert H. Smith School of Business, University of Maryland, The Ultimate Resource II: People, Materials, and Environment, http://www.rhsmith.umd.edu/faculty/jsimon/Ultimate\_Resource/)

What about more recent trends? Is our environment getting dirtier or cleaner? Shifts in the pollutions that attract people's attention complicate the discussion of trends in the cleanliness of our environment. As we have conquered the microorganism pollutions that were most dangerous to life and health - plague, smallpox, malaria, tuberculosis, cholera, typhoid, typhus, and the like - lesser pollutions have come to the fore, along with improvements in technical capacity to discern the pollutants. And some new pollutions have arisen.

**No impact to pollution—we panic over nothing**

**SIMON 96** (Julian, Robert H. Smith School of Business, University of Maryland, The Ultimate Resource II: People, Materials, and Environment, http://www.rhsmith.umd.edu/faculty/jsimon/Ultimate\_Resource/)

The extraordinary improvement in the cleanliness of the environment may be discerned from the types of pollutants that Americans now worry about - substances of so little harm that it is not even known whether they are harmful at all. Alar was a notorious false alarm, as was DDT (discussed in chapter 18 on false environmental scares). In 1992 alarm was raised over crabmeat from Canada, and anchovies from California, which supposedly contain an acid that might cause Alzheimer's disease. The substance in question is a natural one, and has always been there. We are only aware of it because, as the New England District Director of the Food and Drug Administration said when commenting on this issue, "There is equipment today that allows you to find a whole lot of nasty things in the food we eat". This does not imply that these substances hurt us. "The U.S. has a zero pathogen tolerance."

**No impact to solid waste—landfills solve**

**SIMON 96** (Julian, Robert H. Smith School of Business, University of Maryland, The Ultimate Resource II: People, Materials, and Environment, http://www.rhsmith.umd.edu/faculty/jsimon/Ultimate\_Resource/)

5. If all the U.S. solid waste were put in a landfill dug 100 yards deep or piled 100 yards high - less than the height of the landfill on Staten Island within the boundaries of New York City - the output for the entire 21st century would require a square landfill only 9 miles on a side. Compaction would halve the space required. Compare this 81 square miles to the 3.5 million square miles of U.S. territory. The area of the U.S. is about 40,000 times larger than the required space for the waste. Nine miles square is a bit less than the area of Abilene, Texas, the first city in the alphabetical list, and a bit more than the area of Akron, Ohio, the second city alphabetically. If each state had its own landfill, the average state would require only about 1.5 square miles to handle its next century's entire waste. I chose the period of a hundred years because that is ample time for scientists to develop ways of compacting and converting the wastes into smaller volumes and products of commercial value - twice as long as the time since we got rid of household coal ash.

# A2: DEAD ZONES

**Alt cause—livestock—outweighs their internal link**

**WRI 2008** (Lisa Raffensperger, World Resources Institute, “Livestock Sector Drives Increasing Water Pollution”, http://earthtrends.wri.org/updates/node/279, WEA)

Gulf of Mexico Dead Zone Anyone who's ever seen a cow pasture would likely recognize some of the most immediate environmental impacts of large-scale livestock farming--trampled ground, eroded stream banks, lots of manure. However, a less visible but equally worrisome effect appears thousands of miles from the Midwest's muddy cow pastures, in the tropical waters of the Gulf of Mexico. Amidst increasing concern for the growing 'dead zone' where the Mississippi River flows into the Gulf, livestock farming practices are increasingly coming under scrutiny. In fact, the FAO says, **the livestock sector is the major driver of increasing water pollution** in most geographical areas. The Mississippi's Loaded Waters The Mississippi River drains 41 percent of the contiguous United States into the Gulf, a drainage basin that includes almost all the country's industrial livestock farms and livestock feed production. Rainwater runoff, treated sewage, and other wastewater add to the river's nutrient load. When dumped into the Gulf, these nutrients are consumed in explosive algal blooms, driven largely by nitrogen and phosphorous. When the blooms die and sink to the bottom, they are decomposed by bacteria on the ocean floor. In the process, these bacteria drain the water of its dissolved oxygen, forcing fish, shrimp, and other marine life to relocate to survive. The dead zone in the Gulf of Mexico is the second biggest in the world, comprising thousands of square miles where the dissolved oxygen is so low that the water can support only the most minimal life.

**Alt cause—China CAFOs**

**Ellis 2007** – produced as part of the China Environment Forum’s partnership with Western Kentucky University on the USAID-supported China Environmental Health Project (Linden, Wilson Center, “Environmental Health and China’s Concentrated Animal Feeding Operations”, China Environmental Health Project Research Brief, http://www.wilsoncenter.org/index.cfm?topic\_id=1421&fuseaction=topics.item&news\_id=225795, WEA)

Many of China’s environmental crises—from industrial contamination to desertification—have become government priorities and made news around the world. One serious pollution issue that is not yet heavily prioritized or making headlines is the waste produced in the country’s 14,000 factory farms (a.k.a. concentrated animal feeding operations, CAFOs) that threaten the environment and human health.[1] In 2003, it was estimated that 90 percent of animal farms in China lacked any kind of pollution controls and less than 10 percent had conducted any form of environmental impact assessment (EIA).[2] China’s CAFOs produce 40 times more nitrogen pollution and 3.4 times the solid waste of industrial factories. Besides emitting solid waste that degrades the land and water, CAFOs create choking air pollution. These problems underscore the need for stricter regulation of CAFOs.[3] and highlight an area for greater international cooperation with China, as many countries struggle with similar waste problems. Of global concern is the fact such factory farms have been associated with the spread of pandemic human diseases, such as Avian Influenza. CAFOs and total livestock have expanded rapidly in China since 1990 as incomes and demand for meat have risen. Strikingly, 80 percent of the large- and medium-sized CAFOs are located near major cities on the east coast—closer to the market—rather than in rural areas where manure could be spread on land. Notably, in some rural areas with highly polluting CAFOs, some local governments have created subsidies and partnered with industry and communities to build large-scale biogas digesters that turn the manure into energy to fuel the factory and supply the surrounding farm communities, as well as create an odorless fertilizer.[4] Growing Threat to Water Resources Only about five percent of animal waste is treated in China.[5] Excess waste from over saturated fields, with naturally high levels of nitrogen and phosphorus, ends up primarily in water, where it poses a number of human and environmental health threats. Heavy rains or accidents can cause lagoons where liquefied animal waste from CAFOs is stored to break or leak into the surrounding soil and watersheds, releasing dangerous levels of trace metals and bacteria into drinking and irrigation water. Health affects include contracting bacterial infections, such as e-coli and salmonella, as well as increasing the risks of cancer, miscarriage, and “blue-baby syndrome.” Water Ecosystems Waste from CAFOs is already severely impacting the water quality of the Yangtze River. In China’s three largest lakes—Dianchi, Chaohu, and Taihu—agricultural runoff is responsible for 70, 60 and 35 percent, respectively, of the pollution.[6] The growing level of organic pollution from CAFOs is also blamed for the toxic algae blooms, called red tides, which have affected much of the east coast of China since the 1990s. The People’s Daily stated that as of the year 2000, the country had suffered $240 million in direct damages from red tides.[7] Other types of algae blooms also increase with the increased nutrient content of the water, which can create vast “dead zones” in lakes, rivers, and coastal waters where almost nothing can survive in the low levels of dissolved oxygen. The resulting mass die offs of fish and plants throughout the ecosystem exacerbate biodiversity losses and food insecurity.[8] Information on the amount of hormones present in the animal waste in China is scarce. However, experts believe that the prohibitive cost has probably kept usage lower than in developed nations for the time being.[9] Such hormones are used heavily in some feeds at U.S. CAFOs to increase weight gain in livestock. At least one study suggests that hormones in runoff from U.S. CAFOs have led to serious reproductive repercussions in freshwater fish populations.[10]

**Alt cause—energy**

**Forres 2009** – WRI media officer and former environmental investigative reporter for Natural Resources News Service (7/21, Jessica, World Resources Institute, “World’s Waters Choking from Meat Consumption and Other Human Activities”, http://www.wri.org/press/2009/07/worlds-waters-choking-meat-consumption-and-other-human-activities, WEA)

The report also suggests that the demand for energy will increase eutrophic conditions worldwide. Total global energy consumption is expected to rise by 50 percent by 2030 and a majority of that will be in the developing world. “Though renewable energy sources are being developed, fossil fuels such as coal, oil and natural gas, are expected to continue meeting 86 percent of global energy needs,” said Selman. “When fossil fuels are burned, they release nitrogen oxides into the atmosphere, which are then deposited to land and water through rain and snow.” Some studies have found that atmospheric sources of nitrogen are a significant source of coastal pollution, particularly in industrialized countries with high NOx emissions. In the Chesapeake Bay, atmospheric deposition accounts for 30 percent of the nitrogen pollution found in the watershed. “Because there are so many pathways, sources, and drivers of nutrient pollution, the policies that address eutrophication cannot be limited to traditional environmental regulations,” said Selman. “Instead, policymakers must look more broadly at agricultural, energy, land use, and public health policies and find ways that these policies can be designed to mitigate nutrient pollution.”

**Studies solve**

**Buck 2006** – Specialist in Natural Resources Policy Resources, Science, and Industry Division (updated 9/20/2006, Eugene, CRS report for Congress, “Marine Dead Zones: Understanding the Problem”, http://ncseonline.org/NLE/CRSreports/06Oct/98-869.pdf, WEA)

In response to a January 1995 petition from the Sierra Club Legal Defense Fund (currently known as Earthjustice Legal Defense Fund) on behalf of 18 environmental, social justice, and fishermen’s organizations, the Gulf of Mexico Program 39 held a conference in December 1995 to outline the issue and identify potential actions. Following that conference, Robert Perciasepe, Assistant EPA Administrator for Water, convened an interagency group of senior Administration officials (the “principals group”) to discuss potential policy actions and related science needs. Subsequently, this “principals group” created a Mississippi River/Gulf of Mexico Watershed Nutrient Task Force. Additionally, the White House Office of Science and Technology Policy’s Committee on Environment and Natural Resources (CENR) conducted a Hypoxia Science Assessment at the request of EPA. The CENR assessment was peer-reviewed, made available for public comment, and submitted to the task force to assist in developing policy recommendations and a strategy for addressing hypoxia in the northern Gulf of Mexico. In response to an integrated scientific assessment of hypoxia in the northern Gulf of Mexico by the multi-agency Watershed Nutrient Task Force,40 a Plan of Action for addressing hypoxia was released in January 2001.41 Estimates based on water-quality measurements and streamflow records indicate that a 40% reduction in total nitrogen flux to the Gulf is necessary to return to average loads comparable to those during 1955-1970. Model simulations suggest that, short of this 40% reduction, nutrient load reductions of about 20%-30% would result in a 15%-50% increase in dissolved oxygen concentrations in bottom waters. Strategies selected focus on encouraging voluntary, practical, and cost-effective actions; using existing programs, including existing state and federal regulatory mechanisms; and following adaptive management. A reassessment of progress on implementing this action plan was initiated in 2005.42

**Alt cause—climate change**

**Turner et al 2009** – PhD in zoology, distinguished professor of environmental studies at LSU (Nancy N. Rabalais, R. Eugene Turner, Robert J. Diaz, Dubravko Justic, ICES Journal of Marine Science, 66:1528-1537, “Global change and eutrophication of coastal waters”, https://blog.uwgb.edu/bachelen/wp-content/uploads/bachelen/2009/08/hypoxiapaper.pdf, WEA)

Climate change and increased anthropogenic nutrient loading will make coastal ecosystems more susceptible to the development of hypoxia through enhanced stratification, decreased oxygen solubility, increased metabolism and remineralization rates, and increased production of organic matter. All these factors related to global change may progressively result in an onset of hypoxia earlier in the season and possibly an extended duration of hypoxia, as predicted for Chesapeake Bay (Boesch et al., 2007). In some shallow-water, well-mixed eutrophic estuaries, the natural diel cycle of dissolved oxygen varies from supersaturation during the day to hypoxia or near-anoxia during the night. The long-term trends (1986–2004) in the well-mixed Skidaway estuary, and in other lower reaches of rivers and estuaries of Georgia, indicate a reduction in both surface and bottom dissolved oxygen saturation (no obvious increase in surface water temperature) that is attributed to increases in ambient concentrations of increased inorganic and organic nutrients, chlorophyll a, bacterial and heterotrophic community metabolism. Calm weather conditions and extended periods of cloud cover (i.e. less light), which reduces production of oxygen by primary producers, often exacerbate the problem of hypoxia in these systems (Verity et al., 2006; Tyler and Targett, 2007).

**Hurricanes check**

**Turner et al 2009** – PhD in zoology, distinguished professor of environmental studies at LSU (Nancy N. Rabalais, R. Eugene Turner, Robert J. Diaz, Dubravko Justic, ICES Journal of Marine Science, 66:1528-1537, “Global change and eutrophication of coastal waters”, https://blog.uwgb.edu/bachelen/wp-content/uploads/bachelen/2009/08/hypoxiapaper.pdf, WEA)

The 2005 tropical storm season for the Gulf of Mexico is notorious for the devastating effect of hurricanes Katrina (in August) and Rita (in September) on the Louisiana coast. However, two additional earlier storms—hurricanes Cindy and Dennis— generated sufficiently high wave and windfields to disrupt hypoxia on the Louisiana shelf in July, before the scheduled cruise that maps the extent of midsummer hypoxia took place. The subsequent size of the hypoxic area was smaller (11 840 km2) than predicted by the nitrate–N load in May (16 083 km2) based on the Turner et al. (2006) model (Figure 5). However, hypoxia had re-established across a larger area by August (NNR, unpublished data), when Hurricane Katrina crossed the southeastern Louisiana coast. The variability in the changes of oxygen conditions near the bottom in a 20-m water column is illustrated by the 2003 hurricane season (Figure 6). The passage of several tropical storms and hurricanes in June–August 2003 disrupted stratification and hypoxia, but to varying degrees. The path of Tropical Storm Bill was very close to station C6C, but it passed rapidly north and the wave field was insufficient to re-aerate the bottom waters. Although it passed well to the south of station C6C, Hurricane Claudette generated a field of 30-knot winds at the site of the observing system, as it moved slowly towards the west. As with Hurricanes Cindy and Dennis in 2005, which resulted in a smaller area of hypoxia than predicted for the spring nitrate–N load, the effect of Hurricane Claudette in 2003 was sufficient to reduce the size of the bottomwater hypoxia to 8560 km2, which was 2.5% less than the predicted size of 20 000 km2. Tropical Storms Erika and Grace had opposite effects. The former had no effect on hypoxia former, whereas the latter caused an increase in bottom oxygen.

# A2: OXYGEN

**No impact to oxygen—even if every tree in the world was burned oxygen levels would remain high**

**NOWAK et al 2007** (David J. Nowak, Project Leader, USDA Forest Service, Northern Research Station 5 Moon Library; Robert Hoehn, Biological Science Technician, USDA Forest Service Northern Research Station 5 Moon Library; Daniel E. Crane, Information Technology Specialist USDA Forest Service Northern Research Station 5 Moon Library. Arboriculture & Urban Forestry, May, http://nrs.fs.fed.us/pubs/jrnl/2007/nrs\_2007\_nowak\_001.pdf)

The reason the oxygen production value of urban trees is insignificant has to do with the large amount of oxygen within the atmosphere (approximately 21% of the atmosphere’s volume is oxygen). As stated by Miller (1979): “We have a large number of serious ecological problems, but suffocation from lack of oxygen is not one of them (Broecker 1970; SCEP 1970). The oxygen content of the atmosphere remains essentially constant with the oxygen consumed by all animals, bacteria, and respiration processes roughly balanced by the oxygen released by land and sea plants during photosynthesis. The present atmospheric oxygen content seems not to have changed since 1910 (SCEP 1970). Furthermore, because air is about 20 percent oxygen, the total supply is immense (Broecker 1970).” Our atmosphere has such an enormous reserve of oxygen that even if all fossil fuel reserves, all trees, and all organic matter in soils were burned, atmospheric oxygen would only drop a few percent (Broecker 1996). Also, waters of the world are the main oxygen generators of the biosphere; their algae are estimated to replace ≈90% of all oxygen used (Encyclopaedia Britannica 1994). Thus, although urban trees do produce significant amounts of oxygen, it is not a significant ecologic benefit given the global nature of oxygen and the sheer volume of oxygen in the atmosphere.

# A2: AMAZON

**No impact—a) the Amazon is recovering and b) even if it was totally destroyed there’s no impact**

**NEW YORK POST 6-9-2005** (Posted at Cheat Seeking Missiles, date is date of post, http://cheatseekingmissiles.blogspot.com/2005/06/stop-global-whining-2.html)

"One of the simple, but very important, facts is that the rainforests have only been around for between 12,000 and 16,000 years. That sounds like a very long time but, in terms of the history of the earth, it's hardly a pinprick. "Before then, there were hardly any rainforests. They are very young. It is just a big mistake that people are making. "The simple point is that there are now still - despite what humans have done - more rainforests today than there were 12,000 years ago." "This lungs of the earth business is nonsense; the daftest of all theories," Stott adds. "If you want to put forward something which, in a simple sense, shows you what's wrong with all the science they espouse, it's that image of the lungs of the world. "In fact, because the trees fall down and decay, rainforests actually take in slightly more oxygen than they give out. "The idea of them soaking up carbon dioxide and giving out oxygen is a myth. It's only fast-growing young trees that actually take up carbon dioxide," Stott says. "In terms of world systems, the rainforests are basically irrelevant. World weather is governed by the oceans - that great system of ocean atmospherics. "Most things that happen on land are mere blips to the system, basically insignificant," he says. Both scientists say the argument that the cure for cancer could be hidden in a rainforest plant or animal - while plausible - is also based on false science because the sea holds more mysteries of life than the rainforests. And both say fears that man is destroying this raw source of medicine are unfounded because the rainforests are remarkably healthy. "They are just about the healthiest forests in the world. This stuff about them vanishing at an alarming rate is a con based on bad science," Moore says.

**Amazon does not regulate oxygen—their argument doesn’t factor decomposition which consumes all the oxygen rainforests create**

**NEW WORLD ENCYCLOPEDIA 2009** (“Rainforest,” date is last mod, March 27, http://www.newworldencyclopedia.org/entry/Rainforest)

It is commonly believed, erroneously, that one of the key values of rainforests is that they provide much of the oxygen for the planet. However, most rainforests do not in fact provide much net oxygen for the rest of the world. Through factors such as the decomposition of dead plant matter, rainforests consume as much oxygen as they produce, except in certain conditions (primarily swamp forests) where the dead plant matter does not decay, but is preserved underground instead (ultimately to form new coal deposits over enough time).

**Amazon is not key to oxygen—decomposition makes it net neutral**

**LOMBORG 2001** (Bjorn, adjunct professor at the Copenhagen Business School, director of the Copenhagen Consensus Centre and a former director of the Environmental Assessment Institute in Copenhagen, The Skeptical Environmentalist, p. 115)

There are two primary reasons for viewing the tropical forests as a vital resource. In the 1970s we were told that rainforests were the lungs of the Earth. Even in July 2000, WWF argued for saving the Brazilian Amazon since “the Amazon region has been called the lungs of the world.” But this is a myth. True enough, plants produce oxygen by means of photosynthesis, but when they die and decompose, precisely the same amount of oxygen is consumed. Therefore, forests in equilibrium (where trees grow but old trees fall over, keeping the total biomass approximately constant) neither produce nor consume oxygen in net terms. Even if all plants, on land as well as at sea, were killed off and then decomposed, the process would consume less than 1 percent of the atmosphere’s oxygen.

**Amazon is not key to oxygen**

**LA TIMES 6-8-2005** (https://listserv.umd.edu/cgi-bin/wa?A2=ind0506b&L=ecolog-l&D=1&P=2745)

Even without the massive burning, the popular conception of the Amazon as a giant oxygen factory for the rest of the planet is misguided, scientists say. Left unmolested, the forest does generate enormous amounts of oxygen through photosynthesis, but it consumes most of it itself in the decomposition of organic matter. Researchers are trying to determine what role the Amazon plays in keeping the region cool and relatively moist, which in turn has a hugely beneficial effect on agriculture - ironically, the same interests trying to cut down the forest. The theory goes that the jungle's humidity, as much as water from the ocean, is instrumental in creating rain over both the Amazon River basin and other parts of South America, particularly western and southern Brazil, where much of this country's agricultural production is concentrated. "If you took away the Amazon, you'd take away half of the rain that falls on Brazil," Moutinho said. "You can imagine the problems that would ensue." A shift in climate here could cause a ripple effect, disrupting weather patterns in Antarctica, the Eastern U.S. and even Western Europe, some scholars believe. This is what worries ecologists about the continued destruction of the rain forest: not the supposed effect on the global air supply, but rather on the weather. "Concern about the environmental aspects of deforestation now is more over climate rather than [carbon emissions] or whether the Amazon is the 'lungs of the world,' " said Paulo Barreto, a researcher with the Amazon Institute of People and Environment. "For sure, the Amazon is not the lungs of the world," he added. "It never was."

# A2: ETHICS

**Humans are super awesome—we should not have to live in equilibrium with nature because it only stifles innovation**

**SIMON 96** (Julian, Robert H. Smith School of Business, University of Maryland, The Ultimate Resource II: People, Materials, and Environment, http://www.rhsmith.umd.edu/faculty/jsimon/Ultimate\_Resource/)

We hear calls that humankind should live in equilibrium with nature. The last time we were in equilibrium is when our numbers were small and not growing - nomad tribes. Then we did not change the environment much from century to century. But growth in numbers, civilization, and alteration of the environment went together. Humans ceased to be like other animals, and began to make. Equilibrium then necessarily was left behind. Creating is not consistent with equilibrium. Overall, human creation is greater than human destruction, in the sense that our environment is becoming progressively more hospitable to humankind - a basic theme of this book. The movement away from equilibrium is a movement toward safety and sustenance. This progress carries with it some undesirable features for a while, but eventually we get around to fixing them.

**The environment has no intrinsic value—it is only a means to the ends of human achievement**

**BERLINER 2009** (Michael, Ph.D., Ayn Rand Institute, “Against Environmentalism,” Last Mod 2-25-09, http://www.aynrand.org/site/PageServer?pagename=objectivism\_environmentalism)

Nature, they insist, has “intrinsic value,” to be revered for its own sake, irrespective of any benefit to man. As a consequence, man is to be prohibited from using nature for his own ends. Since nature supposedly has value and goodness in itself, any human action which changes the environment is necessarily branded as immoral. Environmentalists invoke this argument from intrinsic value not against lions that eat gazelles or beavers that fell trees; they invoke it only against man, only when man wants something. The environmentalists’ concept of intrinsic value is nothing but the desire to destroy human values. “The intrinsic theory,” charges Ayn Rand, “divorces the concept of ‘good’ from beneficiaries, and the concept of ‘value’ from valuer and purpose—claiming that the good is good in, by, and of itself” (Capitalism: The Unknown Ideal, p. 21). But, in fact, she observes, “The concept ‘value’ is not a primary; it presupposes an answer to the question: of value to whom and for what?” (The Virtue of Selfishness, p. 16) Values exist in a hierarchy, some being pursued only because they are means to other, higher ends. This implies the existence of an ultimate end that grounds the hierarchy. “Without an ultimate goal or end, there can be no lesser goals or means. . . . It is only an ultimate goal, an end in itself, that makes the existence of values possible” (The Virtue of Selfishness, p. 17). Things qualify as good or evil, valuable or detrimental, only insofar as they serve or frustrate the ultimate value; and the ultimate value is one’s life. “Man must choose his actions, values and goals by the standard of that which is proper to man—in order to achieve, maintain, fulfill and enjoy that ultimate value, that end in itself, which is his own life” (The Virtue of Selfishness, p. 27).

# WAR TURNS ENVIRONMENT

**War destroys the environment**

**McNEELY 2002** (Jeffrey, Chief Scientist at IUCN, Conserving the Peace, www.iisd.org/pdf/2002/envsec\_conserving\_overview.pdf)

War, and preparations for it, has negative impacts on all levels of biodiversity, from genes to ecosystems. These impacts can be direct—such as hunting and habitat destruction by armies—or indirect, for example through the activities of refugees. Sometimes these impacts can be deliberate, and a new word has been added to the military vocabulary: “ecocide,” the destruction of the environment for military purposes clearly deriving from the “scorched earth” approach of earlier times. Westing (1976) divides deliberate environmental manipulations during wartime into two broad categories: those involving massive and extended applications of disruptive techniques to deny to the enemy any habitats that produce food, refuge, cover, training grounds and staging areas for attacks; and those involving relatively small disruptive actions that in turn release large amounts of “dangerous forces” or become self-generating. An example of the latter is the release of exotic micro-organisms or spreading of landmines (of which over 100 million now litter active and former war zones around the world—Strada, 1996).

**Nuclear war destroys the environment**

**NISSANI 1992** (Moti, Professor at Wayne State, Lives in the Balance: The Cold War and American Politics 1945-1991, <http://www.is.wayne.edu/mnissani/pagepub/CH2.html>)

There will be fewer people and less industrial and commercial activity long after the war, hence some serious environmental threats will be ameliorated. By killing billions and destroying industrial infrastructures, nuclear war might, for instance, halt or slow down the suspected trend of global warming. On balance, however, the war's overall environmental impact will almost certainly be on the negative side. Radioactive fallout will contaminate soils and waters. We shall probably learn to adjust to these new conditions, perhaps by shunning certain regions or by carrying radioactivity meters everywhere we go the way our ancestors carried spears. Still, this will lower the quality of human life. Nuclear explosions might create immense quantities of dust and smoke. The dust and smoke might blanket, darken, and cool the entire planet. Although the extent of the damage is unclear,24 it would be far more severe during the growing season-late spring and summer in the northern latitudes. One Cassandran and controversial prediction sounds a bit like the eerie twilight described in H. G. Wells' *The Time Machine*. This "nuclear winter" projection forecasts freezing summertime temperatures,25 temporary climatic changes (e.g., violent storms, dramatic reductions in rainfall), lower efficiencies of plant photosynthesis, disruption of ecosystems and farms, loss of many species, and the death of millions of people from starvation and cold. However, even these pessimists expect a return to normal climatic conditions within a few years.26a,27

# BIODIVERSITY IMPACT

**Biodiversity loss extirpates ecosystems --- causes extinction**

**Young,** PhD coastal marine ecology, **10** [Ruth, “Biodiversity: what it is and why it’s important”, February 9th, <http://www.talkingnature.com/2010/02/biodiversity/biodiversity-what-and-why/>]

Different species within ecosystems fill particular roles, they all have a function, **they all have a niche**. They interact with each other and the physical environment to provide ecosystem services that are **vital for our survival**. For example plant species convert carbon dioxide (CO2) from the atmosphere and energy from the sun into useful things such as food, medicines and timber. Pollination carried out by insects such as bees enables the [production of ⅓ of our food crops](http://www.talkingnature.com/2010/01/biodiversity/bees-pollination/). Diverse mangrove and coral reef ecosystems provide a wide variety of habitats that are essential for many fishery species. To make it simpler for economists to comprehend the magnitude of services offered by biodiversity, a team of researchers estimated their value – it amounted to $US33 trillion per year. “By protecting biodiversity we maintain ecosystem services” Certain species play a *“keystone”* role in maintaining ecosystem services. Similar to the removal of a keystone from an arch, the removal of these species can result in the collapse of an ecosystem and the subsequent removal of ecosystem services. The most well known example of this occurred during the 19th century when sea otters were almost hunted to extinction by fur traders along the west coast of the USA. This led to a population explosion in the sea otters’ main source of prey, sea urchins. Because the urchins graze on kelp their booming population decimated the underwater kelp forests. This loss of habitat led to declines in local fish populations. Sea otters are a keystone species once hunted for their fur (Image: Mike Baird) Eventually a treaty protecting sea otters allowed the numbers of otters to increase which inturn controlled the urchin population, leading to the recovery of the kelp forests and fish stocks. In other cases, ecosystem services are maintained by entire functional groups, such as apex predators (See [Jeremy Hance’s post at Mongabay)](http://news.mongabay.com/2010/0202-hance_toppredators.html). During the last 35 years, over fishing of large shark species along the US Atlantic coast has led to a population explosion of skates and rays. These skates and rays eat bay scallops and their out of control population has led to the closure of a century long scallop fishery. These are just two examples demonstrating how biodiversity can maintain the services that ecosystems provide for us, such as fisheries. One could argue that to maintain ecosystem services we don’t need to protect biodiversity but rather, we only need to protect the species and functional groups that fill the**keystone roles**. However, there are a *couple of problems with this idea*. First of all, for most ecosystems **we don’t know which species are the keystones!** *Ecosystems are so complex* that we are still discovering which species play vital roles in maintaining them. In some cases its *groups of species* not just one species that are *vital for the ecosystem*. Second, even if we did complete the enormous task of identifying and protecting all keystone species, **what back-up plan would we have** if an unforseen event (e.g. pollution or disease) led to the demise of these ‘keystone’ species? **Would there be another species to save the day** and take over this role? Classifying some species as ‘keystone’ implies that the others are not important. This may lead to the non-keystone species being considered ecologically worthless and subsequently over-exploited. Sometimes we may not even know which species are likely to fill the keystone roles. An example of this was discovered on Australia’s Great Barrier Reef. This research examined what would happen to a coral reef if it were over-fished. The “over-fishing” was simulated by fencing off coral bommies thereby excluding and removing fish from them for three years. By the end of the experiment, the reefs had changed from a coral to an algae dominated ecosystem – the coral became overgrown with algae. When the time came to remove the fences the researchers expected herbivorous species of fish like the parrot fish (Scarus spp.) to eat the algae and enable the reef to switch back to a coral dominated ecosystem. But, surprisingly, the shift back to coral was driven by a supposed ‘unimportant’ species – the bat fish (Platax pinnatus). The bat fish was previously thought to feed on invertebrates – small crabs and shrimp, but when offered a big patch of algae it turned into a hungry herbivore – a cow of the sea – grazing the algae in no time. So a fish previously thought to be ‘unimportant’ is actually a keystone species in the recovery of coral reefs overgrown by algae! *Who knows how many other species are out there with unknown ecosystem roles!* In some cases it’s easy to see who the keystone species are but in many ecosystems seemingly unimportant or redundant species are also capable of changing niches and maintaining ecosystems. The **more biodiverse** an ecosystem is, the more likely these species will be present and the **more resilient** an ecosystem is to future impacts. Presently we’re only scratching the surface of understanding the full importance of biodiversity and how it helps maintain ecosystem function. The scope of this task is immense. In the meantime*, a wise insurance policy for maintaining ecosystem services would be to conserve biodiversity*. In doing so, we increase the chance of maintaining our ecosystem services in the event of future impacts such as disease, invasive species and of course, climate change. This is the international year of biodiversity – a time to recognize that biodiversity makes **our survival on this planet** possible and that our protection of biodiversity maintains this service.