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On the night Barack Obama was elected president—November feels like a lifetime ago, doesn't it?—I waited up until he took to the stage in Chicago's Grant Park; I just had to hear what he was going to say. And I'm glad I did, for I was stunned, absolutely, totally stunned, blindsided, in fact.

He was surprisingly sober, because remember, the floor had only recently fallen out of the economy, those bundled derivatives taking down giants like Morgan Stanley and Lehman Brothers, corporate sequoias crashing in the forest around him.

So here's what shocked me. Early on in the speech, he says, "For even as we celebrate tonight, we know the challenges that tomorrow will bring are the greatest of our lifetime—two wars, a planet in peril, the worst financial crisis in a century."

A planet in peril. Think about that. Obama names three things he has to worry about, and tucked right into the middle is the environment. I can't remember if I was weeping then because he put the environment right there, up front, or if I was weeping because the newly elected president could actually speak a version of English I understood. But there I was, tearing up.

For on that night, environmentalism crossed a critical threshold. We were on the short list of actions for the new president. Our job now is to never go back.

If you place your finger on the pulse of popular culture, you'll discover that the environment has been resurgent in the last two years.

Al Gore wins the Nobel Peace Prize, starts a new organization called We that is aggressively advertising on TV, and earlier this week, on the same day the House approves the stimulus package, is lecturing the Senate on the climate crisis. In that \$819 billion stimulus package, by the way, the president plans to weatherize and solarize two million American homes and 75% of federal buildings, and double carbon-free renewable energy production in only three years. He also put New Jersey's Lisa Jackson in the EPA, and instructed her to raise fuel efficiency standards.

This is all in his first week. But green roofs on green buildings are all the rage, schools want to be LEED certified, green charter schools are forming everywhere, colleges have been hiring sustainability coordinators, there's a green network on cable and the environmental news network, enn.com, on the web, Madonna sings "only got four minutes to save the world," global warming books take up two shelves in my local Borders, author Bill McKibben has started his nonprofit, 350.org, which has set that number as the target for global CO-two, and the hotel we're staying at has compact fluorescents in every room and asks us to help them conserve water and energy.

This is all good.

But if you place your finger on the pulse of the planet, this is what you'll also discover: Global surface temperatures are rising, glaciers melting, the ocean warming, rainforests burning, polar ice caps contracting, species vanishing at the highest rates since the end of the Mesozoic, coral reefs bleaching and dying, old growth forests disappearing, deserts spreading, the world's population rising. In Ecclesiastes, its author famously noted that "All the rivers run to the sea," but that's no longer true: the Yellow, the

Nile, the Colorado, the Rio Grande, the mighty Jordan are only five of many rivers that are tapped-out muddy trickles at their mouths. They literally “empty” into the sea.

While Amazon’s much-mourned rainforests suffer from decades of clear-cutting and burning, a 50-year study released only last month only last week announced that forests across the American West are dying twice as fast as they were 17 years ago, trees of all ages passing away before new trees replace them, likely due to drying, warmer climates. Western forests are also downsizing.

In environmental news, it’s one step forward, three steps back.

Yet it feels to me like environmental education is at a crossroads—that we are on the threshold of a new era, if we play our cards right and catch some lucky breaks. But then it feels like environmental education has always been at a crossroads, has never really grabbed onto its place in the American educational firmament. In fact, the first national EE conference I ever attended was as a grad student in 1980—a conference that then featured a rising young political star and ex-governor named Bill Clinton as a keynote. The theme was Environmental Education at the Crossroads. We were there then; we have been there ever since.

For we are barnacles, tenacious shelled creatures glued to the rocks at the edges of the ocean, neither fully of the ocean nor of the land, kicking our legs furiously when the tide roars in hoping to capture meager nuggets of resources drifting by. It is honest work, it is necessary work, yet it is exhausting work. While I love the edge of the ocean, I really long to fully participate in the mainstream of culture—I want to swim with the dolphins.

Environmental education’s history has been told and retold in many shapes and forms over the years by people better qualified to recount that history. But allow me to simplify that history for a moment. Its roots stretch back into the nature study movement of Victorian times (a movement paralleled by the birth of the Sierra Club and Roosevelt’s startling environmental presidency), then into mid-century’s conservation education, with outdoor education weaving in and out of the story. But the beast we now call environmental education really began as a response to a wave of environmental concerns that captured public and media attention in a magical decade extending from the mid-Sixties through the mid-Seventies.

My own organization, the Lower Merion Conservancy, began in 1974 when a high school science teacher wanted to restore native trout to our highly suburbanized streams. My own career began as a response to Earth Day in 1970; reading about DDT and Rachel Carson and egg-shell thinning and the Santa Barbara oil spill and Cleveland’s Cuyahoga River catching fire and phosphates in detergents and lead in gasoline grabbed my imagination and never let go. The phrase “environmental education” entered the lexicon at that same time, and interpretive naturalists morphed, often uneasily, into environmental educators, with many nature centers undergoing name changes at about the same time. This was the first wave of environmental education, halcyon days us gray-haired barnacles look back on with misty eyes, and it did not last long enough.

The second wave erupted circa 1988 when medical waste began washing up on shorelines, hot summers shattered temperature records, severe drought gripped huge sections of the country, Yellowstone burned, that garbage barge of Philadelphia ash made its world tour, and NASA scientist Jim Hansen told a Senate committee chaired by then-Senator Al Gore that the earth was warming from the burning of excessive amounts of fossil fuels. In 1988, instead of its usual Man of the Year, as it was called then, TIME magazine named Earth the Planet of the Year, one of its more interesting picks for the year’s biggest newsmaker. The biggest selling environmental book of all time—50 Simple Things You Can Do to Save

the Earth—is published at this same time, as are dozens of spin-offs and knock-offs. The 1970s-era volunteer recycling centers all closed up shop because there was suddenly—amazingly—curbside recycling. Dolphin-safe tuna is invented. CFCs are banned from refrigerators and air conditioners. Al Gore pens “Earth in the Balance” and is soon elected vice president. These were also heady days: Gore wrote that the environment should be the central organizing principle for western civilization, and was soon only a heartbeat and a couple of hanging chads away from the presidency.

My life and career eerily parallels these waves, as in 1989 I was asked to host a weekly radio show on Philadelphia’s public radio station on environmental issues and interviewed people like Gore and Hansen, even Paul Ehrlich and Barry Commoner, my idols from the first wave. I also helped organize Philadelphia’s 1990 Earth Day festival, where 120,000 people descended on the city’s park for a strange hybrid of teach-in and rock concert. But my future wife was one of the volunteers for that Earth Day, so I personally owe my career to the first Earth Day and my family to the 20th anniversary edition.

Well, the thing about waves is they crest, and the late 80s version crashed in the early 90s as the economy and the Internet bubble heated up. My radio show was cancelled in 1994 after a 5-year run; even with St. Albert of Gore as vice president, there was little hope for the passage of the Kyoto accord on global warming.

Careful listeners might have already picked up that I’m not telling the history of environmental education at all; rather, I am describing the history of the environmental movement itself. But EE has always piggybacked on the environmental movement, and the histories are very closely connected. Funding for EE appeared during these waves, funding that dried up as the waves peaked. This is an overly simplistic analysis for sure, but works, I believe in broad brush strokes—in the modern era, we have seen two waves of both environmentalism and environmental education.

Now, some 40 years after the first wave began, we have crossed a generational divide. This year marks the 40th anniversary of the formal definition of environmental education in Volume 1 Number 1 of the Journal of Environmental Education. It was written by Bill Stapp, the gentlemanly Michigan professor, and that definition has been referenced on page 1 of thousands of EE theses ever since. Bill is no longer with us, nor is Gaylord Nelson, the former Wisconsin Senator credited with starting 1970’s Earth Day as a national teach-in. The torch is being passed to the next generation-- us barnacles, what Obama calls the Joshua generation-- whether we like it or not, and the question for us to consider is how the terrain ahead of us looks.

Let’s cycle back to the opening: I do believe that global surface temperatures are rising, glaciers melting, the ocean warming, rainforests burning, species vanishing, coral reefs bleaching and dying, old growth forests disappearing, and so on. But I also believe that environmentalists like Ehrlich have been frighteningly, maddeningly wrong in their doomsday scenarios for life on Earth.

Ehrlich’s population bomb, for example, never went off the way he predicted. This has left the environmental movement, which has cried wolf perhaps one time too often, vulnerable to dismissal by critics currently once in cultural ascendancy, critics like Rush Limbaugh. I’ve come to believe that the earth is simultaneously fragile and resilient, and in our zealous sincerity we have over-emphasized the fragility while, as our former president might have said, “misunderestimate” its resilience.

Nonetheless, the four horsemen of the coming global apocalypse are bearing down upon us, and I feel like the entire environmental landscape will be radically transformed in the coming decade or so. Global warming, species extinction, water scarcity and that long overdue but inexorably ticking population time bomb will at some point soon converge—and all hell will break lose. I believe that Al Gore will be

right—at some point, the environment will become the central organizing principle for civilization, and April 22's Earth Day will become the first international nonreligious holiday.

When I first gave this talk three years ago at an ANCA, the Association of Nature Center Administrators, conference, I said the following: Like 1970 needed endangered eagles and the Cuyahoga River catching fire, like 1990 needed Yellowstone's fire and beached dolphins washing up alongside used needles, there will at some point be a large, mediagenic event that will trigger the third wave: the calving of a huge iceberg off Antarctica, perhaps, or the poaching death of the last mountain gorilla or black rhino or orangutan, or a new Exxon Valdez, or a massive Amazonian wildfire pointing its plume at both global warming and species loss.

I saw a third wave coming then, but could not see the impending economic collapse on its way, and am struggling to see how this might forestall the arrival of the third wave. Still, I think the economy will cycle out of this, not easily, not smoothly, not quickly—God knows how many nonprofits will drown in this economic tsunami...

Even so, the resurgence is still building. Think back to the fall presidential debates. Obama was directly and pointedly asked what programs he'd give up because the economy is eroding—if funding is drying up, what ideas or programs would you give up? His immediate and first answer—not his energy program, because he saw the green-collar economy as one road out of the economic quagmire.

Back to the third wave. Remember, the wave we are discussing is the public response to huge environmental issues—so people are poised for an outpouring of support when the telegenic moment hits. Of course, it might be too late to actually do much about global warming in 2012, but we are talking about positioning ourselves for when the wave of public opinion and interest in action hits.

Consider the 2004 tsunami. When that tidal wave hit South Asia, there was a corresponding tsunami of saturating press coverage, the media descending on the beaten countries to cover the story live. Our media-driven culture thrives on crisis, needing crisis to glue us to the electronic town square inside that little box. In fact, media routinely manufactures crisis to lure us into the tube, assuming we will dutifully follow Rod Blagojevich to every single TV show he chats up.

But remember what also happened with the tsunami: as with 9/11, billions of dollars poured into relief organizations, giving them the resources they needed to make sure the health crisis that might have been was not. There was no outbreak of malaria or typhoid, as widely predicted, because the resources were there to address human health needs.

For we are counter-punchers by nature. We have a very hard time taking the precautions needed to prevent chronic, long-term issues like global warming from occurring, and the media has a devil of a time covering a story like global warming that takes decades to unfold and has no one compelling image. But when we are struck by a large disaster, we respond in an extraordinary way. Last year, for example, when gas prices pushed towards \$5 a gallon, we were finally having an energetic discussion about energy policy and Hummer sales finally tanked-- we are counter-punchers.

We did that the first wave, inventing environmental education, establishing numerous nonprofits to deliver that education, and passing a raft of environmental legislation. The second wave of environmental concern created an outpouring of books, magazines like E and Garbage, TV specials, the Earth Summit, and a renewed Earth Day. This will happen again: the third wave will be a tsunami of popular outpouring for environmental issues and concerns. My guess is this tsunami will be larger than the first two waves, as the issues are larger, and this time the tsunami will be global. Here in the states, the

environment at some point will become a key issue in a presidential election, something it thought about doing in 2008—but it has always been the economy, stupid. Someday it will be the ecology: 2016 looks good, and tips that election to the first woman president, who will not be surnamed either Clinton or Palin. There will be a resurgent interest in not just environmentalism, but environmental education.

And when that third wave hits, where will you be? Will you bob along and let it pass you by, will you drown in the undertow as it crashes over you, or will you surf the coming green wave to a whole new place? That's the question you should be asking yourself, your staff, for center and nonprofit people, your board, your volunteers, your membership, your principal, your students, your PTA. How can you surf the wave to take environmental education to a whole new plateau in public consciousness—ironically, of course, after nature has taken that first, hardest punch? A more interesting question: preemptively, how can your environmental education work lay the foundation for the green wave to come even sooner than it might, as people will be looking for it?

So here's only the beginning of a shopping list of actions we need to take to take to surf the coming green wave, subtitled, the Seven Habits of Highly Effective Surfers.

One, become culturally fluent. Two, tell better stories. Three, know one big thing. Four, offer authentic experiences. Five, deepen your programming. Six, use the media. Seven, embrace technology

There are certainly other actions to take, too, and I've spent the last three years arguing with myself over whether or not this really is the list. With that as a caveat, let's dive in.

1. Become culturally fluent

People who do environmental work tend to have anti-cultural biases. After all, popular culture is a relentless juggernaut dedicated specifically and solely to the marketing of product. Since the juggernaut is anti-environmental, we reject it, or try to. But EE exists within the culture, as culture is the air we breathe and water we drink. We cannot surgically remove environmental education from education or from culture.

During the first wave of environmentalism, several environmentalists became embedded in mainstream culture. Paul Ehrlich made innumerable appearances on Johnny Carson—he was fluent, passionate, urbane, interesting, had a distinct point of view, and as he lived in California, it was easy for him to get to Carson's Burbank studios. Rachel Carson cracked the culture barrier, but her legacy was cut short as she died of cancer, of all things, soon after *Silent Spring* was published.

The closest thing we have to an Ehrlich these days is Al Gore, whose *Inconvenient Truth* remarkably became the second most-watched documentary of all time, behind only Michael Moore's *Fahrenheit 911*. Al has become chief spokesperson for the environment, with a single-minded focus on climate. Fine. But that's also the role you can play in your community. You are the local spokesperson for the environment—you speak for the trees for the trees have no tongues, and when the wave hits, local media will be desperately seeking angles, and you want them to easily find you, and you will have a compelling message you can state in direct, digestible elements.

We have to be able to use the shared language of culture to talk to the mainstream. If we are unable or unwilling to embrace—and even exploit—the culture in which we live, the wave will pass us by.

2. Tell better stories

People are storytellers—we like the complex world broken down into digestible storylines. Currently, there are two competing environmental stories in the global psyche jockeying for attention, and since there are only a small handful of storylines to lean on, both are ancient, even biblical, and both are familiar.

The first is the go forth and multiply story, the have-dominion-over-the-earth story. The second, the worldview most of this room likely adheres to, is the one of perfect creation, the first sin, and the fall from grace. The natural world is an Eden that humankind is killing, and our job in protecting the environment is to restore paradise. Or as the song goes, “we've got to get ourselves back to the garden.” This is a powerful story that enjoys a strong toehold in public imagination. A significant group of people have always wanted to do the right thing, and so we have nationwide curbside recycling, dolphin-safe cat food, ecotourism, hybrid cars, and on and on. But Woodstock nation grew up into adults buying gas-swilling SUVs and building some of the largest homes in the history of humankind. So guess which storyline ultimately won?

Environmental educators have never fully taken advantage of the power of storytelling. Take global warming. Without expressing an opinion about global warming, we can say that historically the earth's atmosphere contained 300 ppm of carbon dioxide, that through the use of fossil fuels we are now approaching 500 ppm. Many computer models indicate the following effects from a rising of the amount of atmospheric carbon: rising oceans, loss of farmland—and so it goes. Take the issue, and turn it into a story. Interpret it. The culture needs someone to hold its hand and walk it through large, complex issues—until now, it has always been environmentalists like the Sierra Club to which the culture has turned, but it naturally should be the job of educators, not activists.

We not only need better stories, we need bigger stories.

The culture also hates talking about serious issues for too long—it's too exhausting. So we need an Angelina Jolie or Britney Spears or Lindsay Lohan to distract us from the real world. We can't end the cult of celebrity, but we can, I think, exploit the cult of celebrity by weaving pop cultural references into the work that we do, adding humor and softening the difficulty of the larger environmental story—while ourselves becoming environmental celebrities.

3. Know one big thing

There is an Aesop's fable about a very sly fox who runs into a very dull hedgehog and winds up with a face full of quills—the fox knows many things, sums the fable, but the hedgehog knows one big thing. I think often of that story and of the importance of knowing one big thing.

Go back to the idea of becoming better storytellers. To tell the story of global warming, for example, you have to first know the story of global warming, and know it so well that you can tell it from multiple angles and offer the highlights reel of most important information. Why, for example, did global temperatures drop between 1940 and 1970, not increase as you'd expect during an era of no pollution controls? Critics of global warming wield that question as a bludgeon to crush global warming models, but you can simply present it as a wonderful question that needs further understanding. Another question: do clouds reflect sunlight and lessen global warming, or do clouds, comprised of water vapor, which is another greenhouse gas, exacerbate the warming trend? Even experts aren't sure—and that enlivens the story. But to tell the story, we need to know some information.

All environmental educators I've met over the years are graduates of degree programs, and many possess advanced degrees. Yet as the decades progress, I've never been sure what environmental educators know. 20, 30 years ago, they could take you for a walk through the forest and recite an encyclopedia's worth of knowledge—names, life spans, economic uses, folk histories. When natural history morphed into environmental education, we became confused as a field as to what information was now important, so many of our programs teach that the environment is good, is important, and we all should do some subset of things to protect, preserve, even save the earth. Certainly environmental education agrees that students should understand large-scale processes—cycles, say, and energy flow—but beyond that, we seem to lose interest. We even seem anti-intellectual sometimes. We want people to love the earth, but is that enough? What do we want them to know about the earth?

In short, the knowledge we possess as a field has diminished greatly. We need to beef up our knowledge base, and one possible way is for a region's environmental educators to specialize in issues. This educator here understands the global water crisis, while that one there studies species loss. When the press needs a comment on one issue, they know who to call—and each refers the press to the other.

We all can't know all of this. But we can all master one big thing.

And environmental educators need to be inviting professional scientists to their conferences to get the latest info on the science aspects of these issues to enrich our storytelling.

4. Offer authentic experiences

“Think of our life in nature,” wrote a passionate Thoreau in his posthumously published *The Maine Woods*, “daily to be shown matter, to come in contact with it—rocks, trees, wind on our cheeks! The solid earth! The actual world! The common sense! Contact! Contact! Who are we? Where are we?” More than a century later, we still need to answer that question, now even more so.

Environmental education offers an increasingly rare commodity: real connection to the real world, the world of dirt and trees and bugs and birds and clouds and flowers, things many parents understand their children desperately miss. Sell that connection. I understand you've been talking a lot about the extinction of experience, and I've just finished Richard Louv's intriguing new book, *Last Child in the Woods*, wherein he coins the phrase *nature deficit disorder* to explain what he sees as the impact of the extinction of experience on children's psychological, emotional and physical health. It's an important read, but most interesting for me was his disinterest in using the phrase “environmental education,” substituting instead the phrase “environment-based education” or even “experiential education.” Nonetheless, he's onto something.

A couple of summers ago, my family finished a three-week vacation on Deer Isle off the coast of Maine just west of Acadia. We whale watched out of Bar Harbor, kayaked a cove, ventured aboard a lobster boat to participate in a marine education program, threw lobsters back into the ocean, watched barnacles feed, and I personally took a pelagic birding cruise to see two life birds, puffins and razorbills. We paid a fair amount for these experiences, and we were never alone on any of them. People want contact with nature, and real people—bankers, bookkeepers, bakers, butchers, second graders—we all want nature.

This is not news. The difference is that I think we need to increase the sophistication with which we both choose and market our authentic experiences. The nature walk is not enough. If I lead a group to see, say, the annual red knot migration on the Delaware Bay, I need to know something about that migration, introduce the program's participants with researchers, let the participants perhaps participate in some

piece of the research, deepen the complexity of the experience. That's the authenticity we need. And can sell. And they will buy.

5. Deepen our programming

Directly related to offering authentic experiences is deepening our programming. As I just mentioned, we've leaned too heavily on standard tricks like the nature walk and the nature craft. Looking at the calendars of a variety of nature centers, there is a similarity to them that is almost startlingly bland, almost cookie cutter in approach.

We need to break the old tired mould. Try new things. Look at what zoos, science museums, art museums, and other cultural institutions offer—and adapt generously. Invite a chamber music ensemble to play a nature-inspired piece of classical music outside at the peak of fall colors while local celebrities read selections from Thoreau and Emerson. Discuss lobster ecology over a fundraising lobster dinner, noting the adaptations of the various body parts while actually devouring them. Have Philadelphia Eagles co-lead a trip to visit bald eagle nesting sites. On Earth Day, get a thousand kids to stand together and recite the Declaration of Interdependence. Here's a controversial idea: team up with a church or synagogue to offer a nature walk discussing Noah—measure the ark as you walk, discuss biodiversity.

We have to work harder to find programming that captures the imagination of the community and attracts larger, different segments of the community, creates a buzz around your center and what you are up to. You are the place people want to go to because everything you do is so interesting—relevant, up-to-date, hip even, impossible to miss in the incredibly cluttered landscape of nonprofit educational opportunities. When the wave hits, people will come to you automatically.

6. Understand and use the media

One day circa 1991 I received a phone call by the host of a Philadelphia TV talk show—I was talking to a local TV celebrity. I was very excited, and thought I had finally arrived. Turns out he was doing a show on global warming, and wanted a guest with a strong environmental viewpoint, someone to say unequivocally the world was heating, we were all going to die soon, the other side is fiddling while Rome burns. Biting my tongue, I told him that wasn't what I would say—I'd say here's what we know so far, here's what we haven't figured out yet, here's even some interesting anomalies that we just don't understand. I built up to my big point—this is arguably the largest experiment in world history. He passed on me as a guest. For the media wants two viewpoints, Strong A and Strong B, and the two have to be directly contradictory—As Dan Akroyd's *Saturday Night Live* character would yell, “Jane, you ignorant slut.” That's why TV talk shows have been left to the activists, to the Paul Ehrlichs and Barry Commoners, because this is just not how education operates.

Still, this is a media-centric culture obsessed with image, and environmental educators are routinely left out of this culture, except for the occasional Earth Day story or maybe the occasional photo-op of kids collecting in ponds or holding a snake. One of my educators was assigned the responsibility of being our public relations person as well, and I only realized this year I'd been doing it all wrong. She learned from me that that responsibility entailed simply writing weekly press releases about what was new—not establishing regular, routine, ongoing contact with local press officials to court them and cultivate their interest in possibly bigger stories.

We don't work the press the way we should. Maybe we occasionally hire consultants to do our public relations with us, and maybe that experience isn't successful. But when the wave hits, the media will be

looking for stories and local angles. And you want them to find you—you the center, you the director, you the cool staff member, you the great teacher with the exciting program.

The media covers people far more than it covers issues, so we discuss the war in Iraq when we have a Cindy Sheehan camped out on the president's doorstep. You want the media to know who you are, to know that you have strong opinions about things, and to seek you out when the wave hits and they want the local story. There are up sides and down sides to becoming the story yourself—after all, your center, its mission and the land you preserve is the larger story. But often the person is the gateway to the larger story, the access point, the portal.

Your center is the antidote to global warming and species loss; you are the yin to the dark story's yang. Positive media coverage can only result in stronger program response, larger membership, more volunteers, perhaps even stronger foundation support.

7. The hardest one of all to promote-- Embrace technology

The average American child spends something like 30 hours per week staring at a screen of some kind, screens usually loaded with commercial content. Given that we are now putting TV screens into the back seats of SUVs, it seems that number is only going to go up. Technology is a powerful force, its own tidal wave that has already altered the cultural landscape—we have become a global village as technology flattens the world and enables China and India to become the new economic powerhouses.

Environmental educators share a neo-Luddite bent, interested in getting kids away from computers and into nature, away from the virtual world and into the real one, out of the web and into the web of life. Fine.

But the public is technologically sophisticated, possesses very high visual literacy, expects technology everywhere, and not only knows how to use technology to understand the world, but wants to use technology for that purpose. We need to practice a very delicate balancing act, wielding technology as a tool to educate, illuminate, and perhaps entice. It also makes us relevant.

One fast footnote about the third wave: I'm looking to see if one portion of the wave is generated by the aftershocks of Richard Louv's *Last Child in the Woods*. The book received a surprisingly positive response in the larger culture, and has begat a movement organized by the Children and Nature Network, a web-based organization (www.childrenandnature.org) that reports a wide variety of data and activities related to repairing the nature deficit disorder. The group's website showcases data illuminating the educational benefits of immersing students in the outdoors and environmental education experiences. And there's tons of it.

The American Institutes for Research conducted a study of the impact of weeklong residential outdoor education programs where most of the participants were at-risk youth. They found a significant increase in measured mastery of science concepts, plus enhanced cooperation and conflict resolution skills, higher self-esteem, and gains in problem-solving, motivation, and classroom behavior.

A Canadian study found that children who experience school grounds that include diverse natural settings are more physically active, more aware of nutrition, more civil to one another, and more creative. Children playing in green settings reduced the impact of attention-deficit disorder. The more studies are published, the more they agree: Exposure to nature raises test scores, increases creativity, cooperation, and self-confidence, reduces stress, and enhances cognitive abilities.

In short, all teaching should be done outside.

Another response to Louv's book and the No Child Left Behind legislation is a raft of efforts loosely organized under the clever title "No Child Left Inside." The efforts include a growing partnership of more than 1,000 nonprofits with almost 50 million members that have launched a variety of efforts, like the National Audubon Society pledging to place a family-oriented nature center in every Congressional district. Connecticut's governor launched a special "No Child" web site promoting state parks, an idea copied by many other states, and Congress itself is working on a "No Child Left Inside" act that amends No Child Left Behind legislation to provide federal funding to create environmental literacy plans to ensure that high school graduates are environmentally literate, and offers funds to states to train teachers in model EE programming, including outdoor learning.

If passed, this would be incredibly meaningful.

Taken together, I'm struck by the significant public response to these efforts to green education—maybe our kids will generate the next wave.

In 1970, the stated goal of the newly emergent field of environmental education was to create an enlightened citizenry who understood the environmental implications of their actions. Almost 40 years later, while there have been notable successes, while we have won a few battles, we have essentially lost the war: our citizenry is as ecologically illiterate as ever, maybe even more so, given the decline in our relationship to land and the bewildering complexity of environmental issues.

What we need is a sustained period of interest in the environment—a plateau—a permanent paradigm shift. My hope is that when the third wave hits, it lasts, because the issues are not going to go away, the science is only going to tell us harder realities, we have a White House able to say the word greenhouse with a straight face, and there will be a resurgent interest in action.

To circle back to the beginning, two questions remain: will you be ready? And will the cultural counter punch be enough—or is it too late already?

H. G. Wells, better known for classics like *War of the Worlds* and *Time Machine*, wrote several nonfiction books, including *The Outline of History* in 1920. "Human history," he wrote in a widely quoted remark, "becomes more and more a race between education and catastrophe..." But we rarely quote the next sentence that follows: "Yet, clumsily or smoothly, the world, it seems, progresses and will progress."

The world progresses, perhaps clumsily, and I want environmental education to be an integral part of that world and that progress. When the environment becomes the central organizing principle for civilization, I want to be there, and I want us in this room to be there, ready to offer the world the kinds of opportunities it not only deserves, but will be craving.

So the four horsemen of ecological apocalypse are bearing down on us even as I speak. Let's get ready to surf that very large and very scary wave bearing down right now, and change the world. Can we do it? Yes we can.

Thank you.