



Nature's Aspirin



Science and Tenacity Can Still Heal the World by Michael Soulé

Realistic Pessimism


Modern science arrived late to the field of nature conservation. It wasn't until the nineties that conservation organizations, including zoos and game and fish agencies, acknowledged the latest biological knowledge and began to hire young, idealistic scientists. Why was science tardy to the party? My guess is fear. People and institutions generally fear what they don't understand, and nearly all conservation agencies and organizations were still stuck in the past.

But some of us biologists “had a dream.” We were certain that conservation organizations could be more successful in staunching the accelerating loss of species if they were better informed about recent, revolutionary advances in rapidly developing fields like evolutionary biology, population genetics, island biogeography, population dynamics, taxonomy and animal behavior. Several of us helped set the stage by organizing some small conferences and workshops between 1978 and 1987. It wasn't long until we decided to start a new, applied scientific discipline called Conservation Biology. Call us impertinent, but we were sure that the conservation establishment needed our enlightenment.

Did we succeed? It depends on the metric. Scores of universities now offer degrees in conservation biology, and thousands of conservation biologists are currently employed by government agencies, conservation NGOs, universities, and foundations around the world. In addition, the international Society for Conservation Biology, which was founded in 1986, became the fastest growing scientific organization in the world, its membership peaking at about 10,000. The paradigm proffered by conservation biology—and the associated lexicon—in now embedded in the grantmaking strategies of all major foundations, is embedded in new government land management initiatives, and some tenets of the field have even worked their way into the climate legislation currently in front of the Congress.

It may not be a coincidence that conservation made huge strides, at least for a while. The big groups, like The Nature Conservancy, the World Wildlife Fund and Conservation International, have spent hundreds of millions of dollars to protect nature around the globe. In Australia, for instance, where I work with the Wilderness Society, there have been huge successes; broadscale land clearing in Queensland and New South Wales has been halted, and forests are much more secure.

These are major accomplishments. Our optimism was born out by official UN statistics on the creation of new national parks. But there is a little problem. The gains of the recent decades are disappearing as we speak—like barrier islands during a hurricane. Some of these losses have been documented by a cadre of globe-slogging conservation biologists who audit national parks in developing nations. These brave scouts have received death threats for suggesting that a growing proportion of these parks are “paper parks” because



they exist only in official documents. On the ground these parks never really existed or are rapidly failing.

Sadly, many dissipative processes are at work, chipping away at much of the conservation estate, including some parks and reserves in developed nations like the U.S. What's happening? A big part of the problem is that poorly paid officials in many countries are easily bribed and they typically turn a blind eye toward illegal grazing, mining and logging enterprises. In addition, well-armed drug traffickers intimidate and murder park officers who try to protect biodiversity. Conservation laws are rarely enforced in the Third World, and conservation agencies in these countries can't afford arms, vehicles, uniforms, fuel and communications equipment for enforcement. One consequence is that vast areas in the tropics have become "silent forests" stripped of their edible birds and mammals.

In addition, populist politicians in poor nations are easily pressured into supporting new human settlements in protected areas, this policy being the newest safety valve for relieving the misery felt by millions of hungry, poor, landless people. Finally, climate change aggravates this pressure, and by itself will produce millions more ecological refugees in coming decades. Even in North America there are many social and economic drivers that are degrading wild places; among them are population growth (the fastest in the developed world), the recession driven demand for jobs, and an insatiable hunger for cheap energy.

Thus nature's safety nets are unraveling. Increasingly, species and ecosystems lacks adequate "health care," making them more vulnerable to the wounds inflicted by population growth, new technologies, globalization of markets, climate change, and systemic ecosystem degradation. Notwithstanding much chatter about sustainability and how poverty alleviation will reduce the pressure on biodiversity, the human footprint continues its crushing spread. Contrary to the popular myth, higher incomes and more education just increase the burden on a weakening ecological infrastructure, as second homes and greater numbers of motorized recreational toys infiltrate wildlands.

Most people are unaware of the cumulative effects of human progress. William Butler Yeats could have been pondering a biological apocalypse when writing the closing lines of the "Second Coming,"

*And what rough beast, its hour come round at last,
Slouches towards Bethlehem to be born?*

Rational Optimism

But I am optimistic. Why? Because there is a simple, cheap solution for treating many of nature's wounds and for stanching the hemorrhaging of biodiversity, at least in nations where environmental laws exist and scofflaws are punished. I refer to this remedy as "Nature's Aspirin." Why aspirin? Aspirin is arguably the oldest and best miracle drug, and we desperately need a miracle drug for nature. In every decade it seems that researchers find a new use for aspirin: aspirin is an anti-inflammatory; an analgesic, an anti-pyretic, an anti-coagulant, a prophylaxis and an emergency treatment for heart attacks. Recently aspirin was shown to help prevent colon cancer. I'm not proposing aerial applications of aspirin on wildlands, but it probably wouldn't hurt.

So what is Nature's Aspirin? Here is a hint. It bears the same name, function and purpose as an intervention used by psychologists to treat depression and loneliness. It is connection. Human beings are happier, healthier and live longer when they are well and comfortably embedded in social networks and organizations—such as clubs and churches.

So how does connection—or connectivity—make biodiversity ‘happy?’ First, nothing wounds nature more than being sliced and diced. The landscape cleavers include pipelines, highways, suburban sprawl, roads created by ATVs, over-grazing by livestock, and the habitat destruction caused by the extraction of fossil fuel and minerals. Severed, isolated parts of nature, like severed limbs, are dysfunctional, and reconnecting the recently isolated parts of ecosystems is clearly the treatment of choice. This is why mitigating habitat fragmentation is among the top priorities of conservationists.

How can we maintain ecological connectivity (the technical term is ‘landscape permeability’)? We do this in several ways. It begins with knowing a little about the four varieties of animal movement; these are foraging, migration, breeding and dispersal. For example, a female wolf may forage many miles in search of ungulate prey. At another season she may migrate a hundred miles when following a herd of caribou. The next winter she may travel to her favorite birthing den in a distant mountain range. Later, her young may disperse a hundreds of miles when seeking a place to live and mate.

Conservation professionals have to consider these diverse needs when they set out to restore landscape links that were broken by development. If the barrier to movement is a highway, then the solution might a vegetated overpass. If the obstacle is a new subdivision that isolates a colony of prairie dogs or a population of quail, then the cure might be fence removal or creating a dog- and cat-free green belt. In some places volunteer conservationists help amphibians cross roads during the breeding season by funneling them into culverts with drift fences or putting up road signs that read “When it Rains, Regard the Frogs.” These are small scale, or local-scale examples.

At the regional scale, organizations are working together to identify what a functional network of connected conservation areas should look like, and that usually requires planning that is not subject to political boundaries like state or county lines. Some places within the region will need to become new parks, while other places will need to be protected as wildlife linkages for dispersing and migrating animals.

The continental scale is where truly exhilarating visions for nature protection are possible. Imagine if activities at the local level to remove fences and build wildlife overpasses were part of regional scale campaigns to create large parks and linkages, and if these regional scale campaigns were then linked together in a continuous chain along the Rocky Mountain range from Mexico to Alaska, a “great American wildlife corridor.”

In coming decades, climate change may become a major cause of species extinction. Here, too, Nature’s Aspirin is key because it is the most economical way to help wild creatures adapt. As climate belts shift over seas and continents, animals and plants will have to move long distances or perish from drought, floods, or heat waves. We won’t need to carry them on our backs or in trucks if we restore severed landscape connections.

Finally, Nature’s Aspirin is essential for the recovery of key “disappeared” ecological actors—keystone species. A keystone species is a plant or animal whose presence helps maintain the diversity and resilience of ecosystems. Just as a well-equipped and fully staffed medical facility is key to the health and well-being of a human community, so does the health of a natural community depend on the persistence of key players.

The best known keystone species are large and ferocious, like lions and wolves, but termites, ants, and prairie dogs are also keystones. The removal of such keystone species triggers the unraveling of ecological communities—an ecological cascade, just as the yanking of keystone in an arch causes the arch to collapse. When the wolf was exterminated in Yellowstone National Park in the early 20th century, the result, decades later, was the virtual disappearance of diverse ecosystems such as beaver wetlands and riparian woodlands in areas where hungry elk populations exploded and over-browsed the vegetation.

Landscape connectivity counteracts such ecological dissolution, by allowing dispersal and migration of keystone species over large areas, restoring ecological diversity and resilience to the lands and waters. It is our job to support the repatriation of missing keystone species, including large predators. The most efficient, economical means for doing this is by restoring ecological connectivity, often in the form of ecological corridors. The point is that Nature's Aspirin lets nature heal herself, greatly reducing the need for human interference and "management."

In summary, the integrity of ecosystems in North America and in many other parts of the planet requires the restoration of connectivity. At the risk of oversimplification, nature protection without nature connection is similar to sky diving without a parachute; the exhilaration ends suddenly and disastrously. Fortunately, though, connectivity's stock is rising at all levels of government and there is cautious hope among nature advocates for a biodiversity comeback.

Subjective Possibilism

I write this while on a wilderness whitewater trip in Desolation and Gray Canyons on the Green River in Utah. The main canyon inspire awe, but the smaller side canyons invite more contemplative exploration. These narrow slots pull us upward, eventually surrounding us with walls of red sandstone. Cretaceous fossils and Tertiary shales challenge our climbing skills and dignify small beings like wildflowers and beetles. Bighorn sheep look down with suspicion from the overhanging cliffs and rimrock. This is mountain lion country, and cat tracks punctuate the muddy banks of creeks, and bone-filled caves on the canyon walls testify to the hunting prowess of these powerful cats. Beauty and fierceness mingle here.

Lizards are my favorites. Every boulder in the arroyo seems to be a perch for bobbing and hunting. Side-blotched Lizards bask on privileged rocks in the arroyo, spaced 20 feet apart to minimize territorial spats. Less abundant Spiny lizards, the heavyweight in these parts, wait for the unwary cricket. Nervous Tiger Whiptails flow and sprint around and under the boulders, sniffing out termites in the leaf litter. Acts of midget violence abound.

It is quiet.

The longer we linger in these canyons, the quieter and happier we become, but I wonder how long such wild places will persist. Will my two-year old granddaughter be able to find sanctuary here in 50 years, as my hiking partner and I do today? Will the future flora and fauna be as stunning and self-willed? Will this place remain wild, beautiful and fierce?

Our struggle against the desecration of nature is epochal. Conservationists are determined to restore vigor to the world. We may fail. It is likely. But we must not give up, because nothing like our planet's magnificent plants and animals will evolve again. The evolution of new species larger than shrimp and sparrows is finished as long as human beings maintain their hegemonic grip on Earth's lands and waters. There is no return.

Our new dream is a dream of freedom; freedom for all creatures to roam, find refuge, and adapt to a rapidly changing world. Initiatives like The Spine of the Continent (www.wildlandsnetwork.org) are blazing the way and forging new links among people and wild places. The most economical means to achieve this dream is restoring networks of movement passageways. Nature's Aspirin must be prescribed.

