

Biodiversity in China - Challenges and Opportunities

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In May of 2006, The European Environment Agency embraced a concept whose time is long overdue: that of “halting the loss of (global) biodiversity by 2010.”¹ In so doing, the EEA announcement echoed the avalanche of data and widespread alarm throughout the world’s scientific communities by firmly acknowledging that we are now in the midst of the Earth’s sixth massive extinction spasm in the known 4.5 billion history of life on Earth, with an acceleration in species extinctions occurring 1000 times more rapidly than the presumed ‘natural rate’ of extinctions (which is estimated to be 1 out of every million species, or, between 10 and 100 extinctions annually). The rate of loss varies from location to location. In some areas we could be looking at literally hundreds-of-thousands of species wiped out forever in a day.²



As species disappear, their link to other populations is shattered, thus triggering larger and larger collapse of habitat, migratory viability, and the critical genetic robustness of interdependent communities, all of whose breakup can happen as rapidly as in a forest fire, or the calving of an ice shelf in Antarctica, where the root causes are deep within the texture, often beneath the radar screen of detection. “Whether it’s forests, marine systems, grasslands, you name it, they are in disrepair. For the sake of the planet, the biodiversity science community has to create a way to get organized, to coordinate its work across disciplines, and together with one clear voice advise governments on steps to halt the potentially catastrophic loss of species already occurring,” said Dr. Watson, former chairman of the Intergovernmental Panel on Climate Change (IPCC).³

Along with the EEA, China, too, has begun to embrace this environmental calling. On numerous fronts the nation is engaged in significant ecological restoration. From its recent National Strategy for Plant Conservation⁴ aimed at safeguarding the future of nearly 5,000 threatened plants within the country, to its efforts to expand its network of protected areas. China’s massive 10-year reforestation project is aimed at covering 97% of the country, the largest initiative of its type in any country in history. Initially, an area twice the size of Colorado was planted.⁵ By 1998 commercial logging in China’s one designated biological hotspot –the Hengduan Shan, or Mountains of the Southwest- had been halted.⁶ But, to date, many continue to ignore the government ban and data suggests that as little as 5% of the overall forests in Hengduan Shan remain.⁷ Similarly, in spite of major botanical restoration work with endemics and floristic medicinals, it is likely that Chinese wild rice could disappear in little over a decade from now.⁸

The crisis of disappearing biodiversity cannot be understated: it is the core loss that a nation and her people must fear the most, lest they end up like the extinct culture of Easter Island. As with every economy, China's spectacular growth is altogether dependent on the vast treasure troves of her natural heritage, no matter how hard she, or any other country, tries to cover-up in situ depletion by trying to import natural resources from outside her political borders, a syndrome ecologists call "the Netherlands Fallacy": an equation that correlates sustainability with carrying capacity. Should China see her natural heritage go bankrupt, which is possible, she would be bereft of more than her soul: China herself would be lost. History has not been kind to the twenty-two great civilizations of the past that ignored the ecological warning signs, as outlined all too clearly by such notable historians as Arnold Toynbee and Jared Diamond.⁹ In **Collapse**, Diamond points to three developmental leviathans in China that together emblemize "the world's largest development projects, all expected to cause severe environmental problems." They are the Three Gorges Dam in Hubei Province, the South-to-North Water Diversion Project, and the runaway development of Western China.¹⁰

The People's Republic has as much or more to lose in terms of biodiversity than any country in history. Consider some of the nation's "basal ecological metabolism": nearly 18% of the country remains clad in forest, or 175 million hectares (420 million acres or nearly 700,000 square miles). Within that vast and scattered canopy exists at least 6347 vertebrate species including 581 mammals, 1244 bird species, 284 species of amphibian, 376 species of reptile and at least 20,000 marine species.¹¹ In addition, nearly 8% of the Earth's plant species are represented in China, or some 30,000, a third of which are endemic (found nowhere else). From the summit of Everest to the Turfan Depression 154m below sea level, China's altitudinal variations are the largest in the world, ensuring an astonishing turnover rate of species diversity across the vast arrays of China's numerous mountain ranges, deserts, tropical, temperate and marine biota.

Among the country's most critically endangered iconic species are not only the highly threatened Giant Panda, but lesser known creatures, not least of which, the "greatest concentrations of endangered primate species," including the sub-nosed monkeys of the genus *Rhinopithecus*, and the Hainan gibbon.¹² Other astonishing "Chinese citizens" include Yangtze river dolphins and Père David's deer, snow leopards, Chinese alligator, and the world's largest number of endemic pheasants, not to mention a quarter of the world's unique *Rhododendron* species, plus some of the most diverse lichens, ferns and other Bryophytes on Earth.

Like the countries of the European Union, the People's Republic has committed to halting biodiversity loss by 2010, but to do so, she will have to seize the opportunity of collaborations to ensure that her runaway economic gains do not leave the country barren. Write the authors of **Hotspots** in their assessment of China, "...time is short...pressures on fragmented natural habitats from grazing, clearance, hunting, and collection of forest produce remain, and new threats, such as dam building on all main rivers in the hotspot, mining, and unplanned mass tourism development accompanied by road expansion and wildlife consumption are emerging. This means that the extinction of many of the restricted-range species of plants and animals is a realistic and immediate possibility."¹³



All indicators regarding China's sustainability provide little confidence, at present, that the country has fully realized the vulnerability, or spectacular global scope and importance of her indigenous flora and fauna. (No one even has a clue as to invertebrate diversity but preliminary indications suggest an even more astonishing array of creatures yet to be discovered). The 2005 Environmental Sustainability Index (ESI) ranked China 133 out of 146 (with North Korea being 146).¹⁴ By 2008, the Environmental Performance Index showed some improvement: China had risen to a ranking of 105 out of 149 nations listed. China fell behind Myanmar and was just barely ahead of Uzbekistan.¹⁵

The approximated cost/benefits accompanying ecological damage in a country the size of China is unambiguous. With net annual losses far exceeding the nation's US\$10 billion monthly trade surplus average¹⁶ and a general

demographic reversal in terms of increasing preferred family size (2 rather than 1), consumerism in China is taking a terrible toll, in spite of the country's trillion dollar + "cash hoard."¹⁷ Metropolitan statistical areas, with their tally of low sulfur coal-fired power plants, spring up virtually overnight, and the fast-growing number of automobiles is outstripping even the human population explosion. Increasingly, more and more landscapes are being converted to sacrifice areas.

There is discussion of targeting China's growing surplus at a pension fund for the country. But an environmental safety net is no less critical. While Xinhua, the official press agency, has cited the Chinese deputy prime minister, Zeng Peiyan, as declaring "coal, iron and oil" to be the purchases of choice with all that money¹⁸ two other looming realities must sound a wake-up call for the country: 1.45 billion Chinese by 2050, a large percentage of whom will be elderly; and vastly truncated natural capital.¹⁹ These represent a potentially lethal combination for biodiversity.

Conversely, all of this could pose the greatest opportunity in Chinese history to conserve biological heritage so as to guarantee all the basics for a huge population: clean water, clean air, healthy soils, ample storehouses of grain, home grown fruits and vegetables, not to mention a legacy of ecological nonviolence and enthrallment for future generations. With such opportunities come the most exciting and noteworthy prospects for ecological entrepreneurs ever, within any country.

For this to happen, Chinese conservation and business need to work hand-in-hand, while the Government must continue to adopt nation-wide strategies for identifying biodiversity rarity; setting priorities for large scale ecosystem protections to mitigate corresponding economic progress; allocating significant ecological resources; distributing the “green benefits” of virtuous engagement with the natural world; implementing national “polluter pays” protocols and precautionary principles; and exacting much stricter monitoring and enforcement of current environmental and animal rights legislation.

The challenges are exacerbated by the time-frame, which is short. China’s position vis à vis other countries is one of significant loss: among those nations with the largest number of threatened and endangered plant and animal species, China is one of the worst, ranking 14th and 7th from the bottom, respectively.²⁰ And while the country has focused considerable attention on the prospects of ecotourism, it has done so without any overall sustainability plan.²¹

Conversely, with her increasing economic success, and vast opportunities for international carbon credits by mitigation within China, the economics of environmental remediation suggest an industry that will transcend all others in the country, thus providing a win-win for one of the last standing aggregates of critical biodiversity on Earth. In this spirit, China’s National Environment Protection Agency has long avowed that “the survival of mankind cannot be separated from that of other species.”²²



Endnotes:

*1 See <http://epaedia.eea.europa.eu/pag.php?pid=584>

*2 This draconian assertion is born of three empirically driven sets of data. First, the astonishing revelations of Terry L. Erwin. In a study of one hectare (2.4 acres) of Ecuador's Yasuni National Park tropics, Erwin and colleagues extrapolated a reliable index of invertebrate abundance, and determined as many as 60,000 different species per hectare, many of them endemic within those very few acres of rainforest., "The Tropical Forest Canopy: The Heart of Biotic Diversity," in E.O.Wilson, ed., *Biodiversity*, Washington, D.C.: National Academy Press, 1988, pp.123-129; See also, Terry Erwin, "Biodiversity at Its utmost: Tropical Forest Beetles, In *Biodiversity II*, ed. by M.L.Reaka-Kudla, D.E. Wilson, and E.O.Wilson, Washington, D.C.: Joseph Henry Press, pp.27-40. Add to Erwin's findings the inevitability of biological co-dependents. Navjot Sodhi and Lian Pin Koh of the National University of Singapore, in a study focusing on some 12,200 plants and animals that are threatened or endangered, discovered that for every endangered species (often an invertebrate) two other known species appear to be equally imperiled. See <http://www.planetark.com/dailynewsstory.cfm/newsid/27082/story.htm> September 13, 2004, Reuters News Service. Place this remarkable combination of species vulnerabilities beside the fires and bulldozers of development now accounting globally for as much as 200,000 acres of rainforest lost every day, and the loss in this generation becomes incalculably large. See "Rainforest Facts," www.rain-tree.com/facts.htm; See also, "Rainforests and Mass Extinction," by Tim Keating, Sayta Journal, Nov/Dec.,2000, www.satyamag.com/novdec00/keating.html

*3 See "Earth facing 'catastrophic' loss of species," China Daily, 07/21/2006. http://english.biodiv.gov.cn/zyxw/200609/t20060904_92241.htm; See also: "Mass Extinction Underway, Majority of Biologists Say," by Joby Warrick, Washington Post, April 21, 1998: "A majority of the nation's biologists are convinced that a 'mass extinction' of plants and animals is underway that poses a major threat to humans in the next century, yet most Americans are only dimly aware of the problem, a poll says, quotes Warrick. See <http://www.well.com/~davidu/extinction.htm>

*4 See "China Launches 'Mammoth' Plan to Halt Biodiversity Crisis," www.bgci.org/china_en/news/0376/

*5 See Major Reforestation Project Announced," www.china.org.cn/english/2002/May/32599.htm; see also "Paulownia, the Tree of Choice in China," www.fadr.msu.ru/rodale/agsieve/txt/vol14/issue1/1.html; See also, "UTC and CI partner to support reforestation in China," www.eurekalert.org/pub_releases/2006-09/ci-uac091406.php

*6 A "hotspot" so defined refers to a region that has at least 1500 endemic vascular plants (indicator species) in terrain of which at least 70 percent has been lost from its original extent.

*7 See *Hotspots Revisited –Earth's Biologically Richest And Most Endangered Terrestrial Ecoregions*, by Russell A. Mittermeier, Patricio Robles Gil, Michael Hoffmann, John Pilgrim, Thomas Brooks, Cristina Goettsch Mittermeier, John Lamoreux and Gustavo A. B. Da Fonseca, Cemex, 2004, p.160.

*8 "Chinese wild rice will become extinct in fifteen years," says Peking University Professor Dr. Lu, in a new report detailing the country's fast disappearing natural heritage and just some of what is at stake. See "China's Turtles, Emblems of a Crisis,"

by Jim Yardley, The New York Times, December 5, 2007:

www.nytimes.com/2007/12/05/

[world/asia/05turtle.html?_r=1&ref=science&pagewanted=print&oref=](http://www.nytimes.com/2007/12/05/world/asia/05turtle.html?_r=1&ref=science&pagewanted=print&oref=)

*9 A. Toynbee, *Mankind and Mother Earth*, New York: Oxford University Press, 1976, and J. Diamond, *Collapse –How Societies Choose To Fail Or Succeed*, New York: Viking Press, 2005.

*10 *ibid.*, Diamond, p.367.

*11 See China's *Third National report On Implementation Of The Convention On Biological Diversity*, State Environmental Protection Administration Of China, Sept., 15, 2005, p.7.

*12 See *Megadiversity: Earth's Biologically Wealthiest Nations*, by Russell A. Mittermeier, Patricio Robles Gil and Cristina Goettsch Mittermeier, Foreword by Edward O. Wilson, Agrupacion Sierra Madres, S.C., Mexico, Cemex, 1997, p.263 and 267.

*13 See *Hotspots Revisited*, *ibid.*, p.164.

*14 See www.infoplease.com/ipa/A0930889.html

*15 "2008 Environmental Performance Index Summary for Policymakers," Yale Center for Environmental Law and Policy; Center for International Earth Science Information Network, Columbia University, In Collaboration with the World Economic Forum, Geneva, Switzerland, and Joint Research Centre of the European Commission, Ispra, Italy; <http://epi.yale.edu>.

*16 See "Parsing China's Trade Surplus, by Nicholas Lardy, Business Week, January 13, 2008, www.businessweek.com/bwdaily/dnlash/jan2006/nf20060113_8659_db053.htm;

See also "Imports cut China's trade surplus,"

<http://news.bbc.co.uk/1/hi/business/7341962.stm>

*17 See "Spending China's cash hoard," by Andy Mukherjee, International Herald Tribune, www.ihf.com/articles/2007/01/09/bloomberg/sxmuk.php

*18 *ibid.*

*19 See "China's reverse population bomb," by Scott Zhou, who writes, "China is getting older faster than it's getting richer." See Asia Times, November 1, 2006, www.atimes.com/atimes/china/HK01Ad01.html

*20 See Population Reference Bureau Data Comparisons:

<http://www.prb.org/Datafinder/Topic/Bar.aspx?sort=v&order=d&variable=92>, and 93

*21 See "Ecotourism in China's Nature Reserves: Opportunities and Challenges, by Han Nianyong and Ren Zhuge, Journal of Sustainable Tourism, Vol.9, No.3, pp.228-242, Channel View Publications, 2001.

*22 See *China's Biodiversity: A Country Study*, Beijing: National Environment Protection Agency of China, 1998: http://bbsp-neca.brim.ac.cn/books/cntrysdy_cn/index.html

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