ESSAYS ON SCIENCE AND SOCIETY

Monkeys in the Back Garden

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In his country,
The summer monsoon blows flute music
Through bright beetle-holes in the waving bamboos.
Waterfalls sound dense continuous drums.
The urgent calls of sambhar stags are oboes;
Bees on the flowering slopes become lutes.
Excited by the teeming voices,
An audience of female monkeys watches in wonder
The wild peacock in the bamboo hill
Sway and strut
Like a dancer
Making his entrance on a festival stage.*

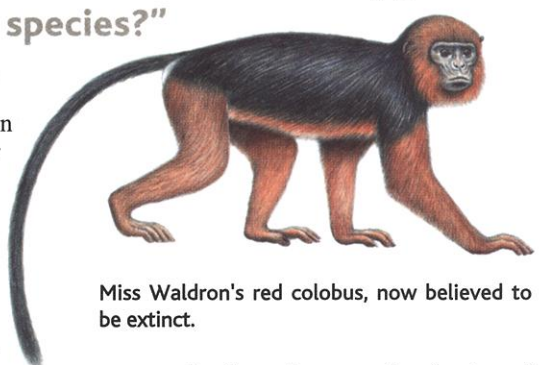
This is not the e-mail of a conservationist, raising funds from her air-conditioned office for faraway rainforests. Neither is it the mantra of a graduate student laboring over proposals to go see those she-monkeys in the wild. It is the song of a lowland woman who loves a prince from the mountain forests, composed two thousand years ago by the Indian poet Kapilar. It comes down to us in the curly Tamil script invented to write on palm leaves without tearing the fronds.

Much has been said about the importance of the present moment in time for the long term. The "long term" usually seems to mean the life-span of U.S. Supreme Court judges, or that of graying populations putting pressure on Social Security funds. But how about the next 5 million years? Love of wild nature is a universal human possibility, appearing in cultures as distant as Kapilar's time from our own. It may even be a human instinct.† Are we foreclosing that instinct, that option, not just for our grandchildren, but for the next human species? Five million years ago, we were still arboreal apes, with six or a dozen species to go before one twig on the tree of life became *Homo sapiens.* Will the human species that come after us wonder what it was like to live in a world where the chimpanzee, bonobo, gorilla, orangutan, human, could evolve?

> "Are we foreclosing [the love of wild nature] ... for the next human species?"

The loss of biodiversity that we see today rivals that of mass extinctions in the geologic past. To combat these losses, we need the help of native wildlife conservationists in developing countries. Awareness and the will to conserve cannot be imposed from the outside, but must be built on people's pride and delight in their own country's wildlife.

The fossil record suggests that after the Cretaceous mass extinction, it took 5 to 10 million years for mammals and coral reefs, and 25 million years for other marine biota, to reach their former species richness. After the far more severe Permian crash, recovery took perhaps 90 million years. Of course, we have reason to be personally grateful for mass extinctions, because the demise of the dinosaurs lifted the lid for the speciation of mammals, and let furry little ratlike creatures turn into us.



Miss Waldron's red colobus, now believed to be extinct.

Norman Myers and Andrew Knoll argue, however, that the present mass extinction will have even longer recovery times. First, we are systematically wiping out the largest vertebrates. The species that most astonish and attract us—the megafauna of elephants, tigers, and our kinfolk, the great apes—will be among the first to exit, leaving ecosystems pruned at the top. After that, our fragmentation of wild habitat means there is no space for new large animals to evolve.

Second, and much more important, we are homogenizing what is left. House sparrows, black rats, African grasses, and, among our primate relatives, the long-tailed macaque, are all rather admirable creatures. Tough and versatile like ourselves, they can live with us. Such opportunistic weed species have fared best after previous mass extinctions. Rapid reproduction, far-flung populations, and broad ecological niches mean that weed species are poised to take advantage of disturbed or newly opened environments. This time, however, the colonizers are the same set of species everywhere. We have introduced them wherever we go. The successful weeds have spread through every island and continent. As a result, the total gene pool for evolution to act upon is reduced.

Finally, we intend to stick around. Humans probably won't follow the dinosaurs soon. We are also opportunists, more like rats than like our cousins the chimpanzees. The few wild species that successfully defy our control are those we tend to call pests. We can hope, of course, for new outbursts of speciation in the

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*A. K. Ramanunjan, translator, *Poems of Love and War from the Eight Anthologies and Ten Long Poems of Classical Tamil* (Columbia Univ. Press, New York, 1985). The poems quoted in the text are by Kapilar, Akananuru No. 82 and Ainkurunuru No. 203. Reprinted by permission of the publisher.
†E. O. Wilson, *Biophilia* (Harvard Univ. Press, Cambridge, MA, 1984).
‡J. London, *White Fang* (Macmillan, New York, 1906).
§R. H. Tuttle, *Int. J. Primatol.* **19**, 1 (1998).
||J. F. Oates *et al.*, *Conserv. Biol.* **14**, 1526 (2000).

newly vacant niches, much like the abrupt, 5- to 10-million-year evolution of modern birds and mammals, but this will not happen while we undercut the scope of evolution itself.

The scale of the human-induced change thus needs the largest possible scale of response. We all know some actions to take, but the root question is one of belief and will. Does our own worldwide species actually care about the survival of others? Here, I want to turn to just one group among all the players: the field biologists of developing countries.

These extraordinary people stand at a three-way intersection. They would not be field biologists at all if they were not thrilled by being immersed in nature. In Jack London's words, they are "puny adventurers embarked upon a colossal adventure."[‡] Their intellectual community, however, is global science: the science that counts and classifies species, and champions conservation. Like other scientists, they want to publish in international journals. Living in poorer countries, they are desperate for grants from the pool of international research funding (the salary of a full professor in Madagascar is $100 a month). They, far more than rich world colleagues, need the personal contacts made at international congresses, but they are far less likely to find the airfare. The third strand is their own national cultures. From where they live, the Western conservation ethic can seem like economic imperialism, built up on a slimy morass of Western hypocrisy. And the far-off romance of the wild may translate for them into monkeys in the back garden.

For Emilia Yamomoto of Natal in Brazil it does, literally. Common marmosets, with their white tufty ears, banded tails, and faces like tiny pug dogs, turn up to raid her avocado tree and her passion fruit vine. She is currently concerned for a stroppy adolescent male in the marmoset group, who is far too bold around her family dogs. Most fruit growers are not so tolerant, but some are, in the field site where she studies this same species. They tell her that both the fruit and the little monkeys come from God.

Hantanirina Rasamimanana, who organized the scientific program of the 1998 International Congress of Primatology in Antananarivo, Madagascar, e-mails the same thought: "The Malagasy tradition is to look on wild nature as wealth (riches) given by God. So people can exploit it as they want, they should use it for their life, they take from nature their food, medicine, dress, and so on. The only thing they do not know is how to exploit this richness endlessly. Because it is a God gift, so they believe it should be endless by nature. You teach them to conserve it, they will do as you say since you are there. You leave them; they come back to their old habits."

Rich countries share a spectrum of opinions, whether nature is to be admired as a place apart, to be used and lived in, or just to be used up. But the voices for science and conservation in the North at least are loud and comparatively well financed, and can even be heard in Brazil, howling in horror at the proposed onslaught on the Amazon forest called "Advance Brazil." We can be heard in Madagascar, announcing that that poor country's magnificent biodiversity is its only fish-hook to catch international aid. We demand war news about the gorillas of Rwanda, the bonobos of the Congo, orangutans in the forest fires of Indonesia. For the conservationists and scientists within these countries, the strains are often intolerable, and work in the wild, an unaffordable dream. The only hope they have of support is from the community of science beyond their country's borders.

"So much the better if people's pride and wonder combine to say it is in all of our self-interest to save biodiversity."

Yamomoto has analyzed the number of Latin American papers on primatology that reach international journals. She concludes that the productivity of those scientists who break through to international recognition is as high in Latin America as in France or Great Britain. However, far fewer scientists manage to reach this state. Even for those who do, their papers are also far less quoted. Does this mean their quality is lower (it often is, for obvious reasons), or is there also systematic prejudice against papers with Third World addresses? Russell Tuttle, editor of the *International Journal of Primatology*, reaches a similar conclusion.[§] Brazilian and Malagasy voices are much harder to hear in Western seats of power, yet Western ideals of wilderness in someone else's back yard will never be implemented if the call only comes from foreigners. Only people speaking out in their own country can actually shape opinion. This is not a question of pure science—science that tells us what a species is, its population and reproductive rate, and what the threats to its survival are. But it is raw emotion which tells us that this matters.

The International Primatological Society has just held its 2001 Congress in Adelaide, Australia. Under its outgoing president, Toshisada Nishida of Kyoto University, it resolved to promote the designation of great apes as World Heritage Species, or as an appropriate equivalent. Incoming President Dorothy Fragaszy of the University of Georgia appointed a committee to further this effort, chaired by Professor Nishida with officers of the society and members from great ape habitat countries. A bureaucratic name in itself will not save even one chimpanzee from being shot for bush-meat, but the effort to save our nearest relatives must, in the end, begin with people who care—people in the countries where apes live, people at the intersection of world science and local need.

Between 1900 and 2000, there was no recorded loss of a primate taxon. Now, at the turn of the millennium, John Oates of Hunter College, New York, and his collaborator Michael Abedi-Lartey of the Ghanaian Wildlife Department, report that there is no sign of survival of a spectacular black-and-red monkey called Miss Waldron's red colobus (see illustration previous page).[‖] Ghanaian conservationists hope that it still exists—it would be almost an insult to their country if they are the first to lose a modern primate. All the better if national pride is at stake, in Ghana, Indonesia, Brazil, and Madagascar, as well as the powerful countries of the North. So much the better if people's pride and wonder combine to say it is in all of our self-interest to save biodiversity. Miss Waldron's monkey has every chance of being only the first in a long procession into oblivion, soon to include chimpanzee and bonobo and gorilla and orangutan, our nearest kin.

Their like may not return for at least 5 million years. The next human species may never understand what the Tamil woman sang when she came down from the hill-forest so long ago:

> Sweeter than milk
> mixed with honey from our gardens
> is the leftover water in his land,
> low in the waterholes,
> covered with leaves
> and muddied by animals.*