

VII. VANISHING SPECIES: THINGS WRONG BETWEEN MAN AND NATURE*

Loss of species is the key issue of conservation. Contrary to misuse of land which is visible to anybody with eyes to see, the issue of extinction is sly, treacherous, and open to clear perception only for experts. It touches on quality, and reaches far out in time: hard things to grasp for non-biologists. Thus an extra responsibility devolves on those who are in a position to know and to speak.

The value of the genetic resource base has been set forth in e.g. the book by O.H. Frankel & E. Bennett, Genetic resources in plants (1970), and in the BIOTROP symposium edited by J.T. Williams e.a., South East Asian plant genetic resources (1975); Myers adds many striking facts: half the prescriptions in the U.S.A. contain a drug of natural origin. The cardiac drug reserpine, from *Rauvolfia*, costs \$ 1.25 per gram to synthesize, \$ 0.75 from natural sources. The anti-polio vaccin was developed in experiments in chimpanzees. The Amerindians in Amazonia know 750 medicinal plant species. Now the possibility of massive destruction of tropical forests — where most species are located — casts some frightening shadows on the future. The question how to cope with the threat appears to be connected with human ethics and the international order. Consequently, most publications on the subject suffer from a partial lack of maturity: don't look to Myers for ethics, nor to the Routleys for biology. It seems therefore advisable that on the part of all disciplines a common fund of knowledge and insight be built up. In my efforts, great stimulation was received from correspondence with Dr. Willem Meijer (Botany, University of Kentucky, Lexington, Ky. 40506, U.S.A.), who in his disinterested manner never fails to come up with things true and shocking.

One of the most interesting features of Myers' book is the interdependencies between countries it reveals. The principal cocoa-growing nations are located in West Africa, while the genetic resources on which modern cocoa plantations depend for their continued productivity are found in cocoa's original source-areas, the forests of Central and South America. The principal banana-growing nations are in Central America and the West Indies, while the genetic base is in the forests of Southeast Asia. "A decline in global grain supplies especially in the world's main bread basket, North America, induces more peasants in tropical countries to break new land on which to plant their subsistence crops. In turn, expanding subsistence agriculture eliminates wild or primitive forms of

* This is an essay review of three fine publications: Erik E c k h o l m, Disappearing species: the social challenge, 38 p. (1978, World Watch Institute, 117 Massachusetts Avenue NW., Washington, D.C. 20036, U.S.A.), price \$ 2.00; Norman M y e r s (Box 48197, Nairobi, Kenya), The sinking ark / A new look at the problem of disappearing species, xiii + 307 p. (1979, Pergamon Press), price, bound, \$ c. 15; Richard & Val R o u t - l e y (School of Social Sciences, ANU, Box 4, Canberra, A.C.T. 2600, Australia), Human chauvinism and environmental ethics, 94 p. of typescript, in press.

crop genetic resources that are needed to maintain the productivity of North America's croplands." But developed countries are far more aware of the interdependence: 61% of the people in western Europe, 29% in Brazil.

With these common interests in a wise use of nature interferes the system of free enterprise. Liberalism put faith in freedom and tolerance, even respect towards fellow-man. Free enterprise would bring out what is best for society. Initiatives are to be encouraged, provided it does no harm to others. I may log the forests, as long as I keep off my neighbour's plot. To keep the stream of initiatives going in the (economic) interest of society, a playground is therefore needed, an area where things are up for the grabs, to make possible a variety of actions without harming others. Thus under the system of free enterprise, nature must be 'free for all'. A clear line separates man from nature. To what consequences this might lead is now shown by a simple analogy.

Suppose the Dutch government plans a sale of the paintings in the Amsterdam Rijksmuseum. Money is needed for a large construction program of houses to meet the demands of the poor, which are vehemently expressed. Oil sheiks in Arabia and businessman in Japan are already stirring. Objections from art-lovers are answered with a reference to the many fine colour prints of the paintings already published, and otherwise brushed aside as impeding the national peace and progress. Barbaric? The analogy with the current sell-out of tropical forests is striking enough to wonder about the lenient public attitude towards non-human creations. A genuine double standard is applied. How is such a paradox to be understood?

The Routleys, philosophers by training, come up with this answer: man has learnt systematically to discriminate everything that is not man or man-derived. This tenet is one of the unquestioned pillars under our system of norms, meanings, and values. All legal systems, comprising man in a web of rights and duties, under the tacit exclusion of the plant and animal world, strengthen it. It seems indeed that the societies with the strongest, most elaborate structure of laws have the least regard for nature.

As the Routleys formulate it: the prevalent ethics is one of species loyalty: a power group of all humans. But based on what superior quality or intention to distinguish us from all other creatures? This is a painful question, and the Routleys find it hard to see how the privileges of civilization justify "the substantially unfavourable treatment allotted those falling outside the privileged class" — in this case, plants and animals. The result of their search for a criterion of higher order uniting with the rest of mankind the sickly, the senile, the idiots, to stand out at the top of the creation, is negative. A species-centred ethic finds no more justification than does any moral code based on nationality, sex, race, or religion. No basis of greater validity than these rather barbaric criteria could be discovered by the Routleys in their analysis.

Such considerations would seem theoretical, until one remembers the many conservationists who fall silent against claims made on nature in the name of the poor people. As if everything on earth exists for man, plant and animal species having no right to continue their existence! In times past, when man did not have the power to destroy nature at a cal-

culated scale, the problem never presented itself, and the call to go out and to cultivate the earth carried nothing but positive intentions. Now that we have the power, no adequate ethical system is available to regulate the relation between man and nature. If there were, the demise of the tropical rain forest would be unthinkable. The loggers and shifting cultivators operate, and are allowed to operate, in an ethical vacuum.

Anybody's claim on natural resources must be granted, whether or not this leads to species extermination — isn't this the rule? What underlies the claim is the innate goodness of man. In biblical times, man was essentially wicked: from birth, he carried inherited sin; consequently he had no rights but duties. No more. Man is good by nature, and we see the results. Whatever a good person demands, he must have — who is in a position to refuse? The lack of a counter-argument thus leads to ecological disasters. Paradoxically, these disasters suggest man's innate wickedness: excessive procreation, inability to take care of his land, indifference towards the long-term future, and greediness or worse where it suits him; in addition to the leniency towards all these evils in others.

The lack of a common regulating principle makes itself also felt in the world-wide absurdities in ecological profit and waste. Myers reports that citrus growers in Florida saved their branch \$ 25-35 million a year through a one-time outlay of \$ 35,000 for the importation of three types of parasitic wasps for biological control. On the other hand, the Brazilian government gives tax facilities to corporations who convert the rain forest into pastureland for beef export. Instead of marketing the wood, it is burnt, accounting for a loss to date of \$ 7.7 billion of timber value. In Ivory Coast, for every cu.m of logs removed, one hectare of forest disappears at the hands of the follow-on cultivator.

Myers himself runs into inconsistencies where he seems inclined to approve of Weyerhaeuser's activities in Indonesia. This corporation strictly abides by the rules, and is therefore better than nearly all others. For a moment, he seems to lose sight of the sad fact that to the forest and its species it does not make difference whether they are destroyed for good or for bad reasons.

The Routleys are right in calling for a new environmental ethic. Not being biologists, however, they do not arrive at the heart of the issue: that the species of plants and animals have their own authentic, inalienable right to exist. Who is man to dispute this right? Let him justify his own position with arguments. It seems the only condition to balance man against nature, and to provide a clear guidance for man's dealings. No species must be permitted to go extinct as a result of human action. This principle is strong enough to indict those who act against it.

Eckholm's wise words may be remembered when it comes to deal with the problem at an international level: "Once mainly the concern of animal lovers and bird-watchers, the worldwide loss of species now poses a major ecological and social challenge. If allowed to occur, the massive biological impoverishment projected for the next few decades will change the nature of life on this planet for all time."

Eckholm rightly views habitat destruction as the main cause of extinction. Narrowing in one region the biological basis which supports man

will make its inhabitants more a burden to others. As does Myers, he points out many cases where an ecological approach would easily save millions of dollars. He also perceives that most protection efforts on a species-by-species basis are ineffective to cope with the massive threat.

As for distributing the cost of conservation, Eckholm has sensible things to say. "In a general sense, of course, a development process protective of natural diversity is likely to bring the greatest lasting benefits to a nation: biological conservation is enlightened self-interest. Furthermore, some of the destruction of tropical trees and animals is simply a consequence of the greed of well-off entrepreneurs; such destruction requires law enforcement, not international compensation." On the other hand, "if the world's extant species and gene pools are the priceless heritage of all humanity, the people everywhere need to share the burdens of conservation according to their ability to do so. Not only do people in developed countries share the long-term benefits of tropical conservation, but they also, because of their penchant for consuming tropical agricultural and forest products, share responsibility for tropical ecosystem destruction. Moreover, international corporations and investors are major agents and beneficiaries of tropical forest exploitation".

And he concludes: "All over the world, developers and conservationists have long been at loggerheads, but this will have to change. Economic progress and stability are threatened by the degradation of the earth's living resources. Yet keeping the biosphere in good order will not be possible unless people's basic needs are satisfied and population growth is quickly slowed. The eventual tripling in human numbers projected by many demographers would simply be incompatible with the preservation of needed natural diversity. Locally and internationally, economic orders must be created that are at once ecologically and socially sustainable. Developers and conservationists need each other if the ultimate goals are either to be met, for biological impoverishment and human impoverishment are inextricably intertwined".

This having been said, how can we protect the forests in such a way that a maximum number of species will survive in them, ad infinitum? Most conservationists see a consensus as the only possible means to secure protection: owing to the common will of all parties, the decision is reached not to have all rain forest destroyed. Part of the forests will go for exploitation, part will be conserved. This can be explained in two ways, however. Either, we can decide to allow modest, controlled exploitation in all the forests, or we can decide to sacrifice part of the forests altogether and to save another part intact.

What to do? Plant ecology provides the answer. Cut down an oak in an oak forest and it will be replaced by another oak. This is not so in a rain forest with hundreds of species on a hectare, which means: few individuals of one species on a hectare. Since a low percentage, perhaps 4-10 %, of the species is commercial, the chance that a commercial tree after removal will be replaced by a non-commercial one is proportionally greater. Thus exploitation may affect the species composition. Besides, all species in a forest exist in biological relations of feeding, pollination, and dispersal. The whole multitude of relations is balanced by each other but, different from the situation in a few-species forest, all

dependent on very few individuals. In northern Sumatra, a large *Heritiera* provided the orang-utan population with food during several critical weeks of low fig supply (page 3082). This tree was the only one in 150 ha. Imagine the ecological consequences when such a lone tree suddenly ceased to produce. Very small removals in absolute numbers could substantially affect population size of dependent species, and long-term snowball effects of decrease and extinction could be set in motion, invisible first, irreversible nevertheless, proving the expectation false that limited exploitation would yield sufficient protection. Even Myers is therefore in error, when in his unfortunate 13th chapter he is inclined to admit "some very light and careful logging".

On biological grounds it is obvious that only absolute protection of rain forest will prevent species erosion. Even if we could control exploitation, we could not control the possible after-effects of progressive extinction. This means that if a consensus is to be reached, it should be one about what to exploit and what not to exploit. To be exploited are the modified forests and more degraded vegetations. Now that the natural balances have been disturbed, man might as well continue to apply his influence. Not to be exploited are those forests which are the least disturbed. They contain the largest numbers of species to be saved.

As for exploitation possibilities, poverty of the soil — devoid of minerals in these everwet climates — will in most cases be the limiting factor. Little margin may be available for products to be carried off. Overharvesting will bring degradation, also in population numbers, and eventually loss of species. But where Myers holds up a cornucopie of exploitation possibilities, which can be realized "with trifling disruption for forest ecosystems", he sounds like a politician campaigning. Oils, gums, resins, waxes, latex, tannins, alkaloids, drugs and medicines, dyes, edible and oil-bearing nuts, spices, fruits, rattans, bamboos, guanos, bark products, forage, perfumes are freely promised us — as if not dipterocarps, *Agathis* and jelutong are easily killed through overtapping, while rattan collectors may do serious damage. A spectrum of "innovative approaches could encourage the exploiter to make more efficient and systematic use of tropical forests. Apart from fuelwood, they offer scope to generate energy of sorts that would benefit many developing countries". One ton of tropical wood can yield almost a book full of chemical compounds, to hear Myers tell it.

True, the rain forest, being the greatest storehouse of species, is also the best-stocked shopping centre for variety in natural products. But this huge capital delivers interest only in tiny quantity. Here we hit upon another thing for the conservationist to be avoided: the raising of false expectations. This may be difficult since such enormous promises have been made to people in underdeveloped countries during the last decades... many of them at the cost of the environment. It is another sign of the mis-appreciation of nature by man. Time has arrived for shedding ideas of progress, and for critical concentration on the question what can be saved in terms of surviving species.