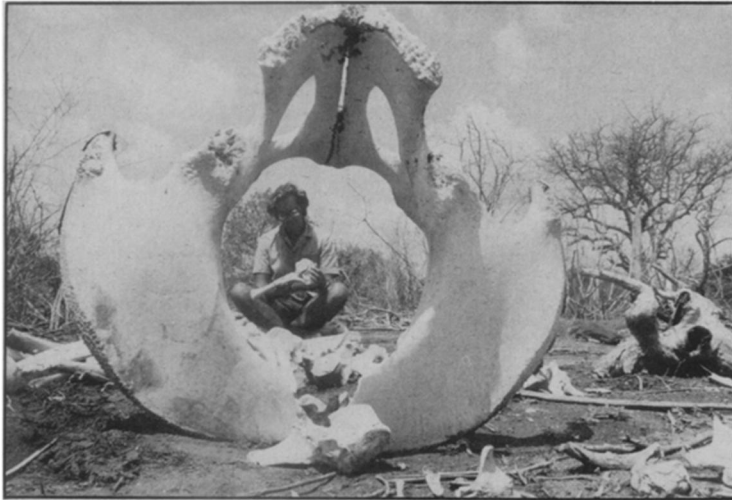


The perilous future of the elephant



Douglas-Hamilton with skeleton of mother elephant killed by poachers. Her two babies are being raised by hand.

Photos: Ona Douglas-Hamilton

A rise in the world price of ivory in recent years has led to sharply increased poaching of elephants throughout Africa. Some conservationists have suggested putting the African elephant on the list of endangered species so that imports of ivory would be banned in the United States, but others have cautioned that not enough information was available about how many elephants are actually left.

The first results are now available from an ongoing survey of African elephant populations, conducted by ecologist Ian Douglas-Hamilton for the International Union for Conservation of Nature and Natural Resources. Douglas-Hamilton reports "a minimum of one million" elephants are left in Africa, but that this number does not guarantee their security.

The problem, he told a news conference in Washington last week sponsored by the World Wildlife Fund-U.S. and the New York Zoological Society, is that the elephants are being driven from their native habitats into national parks, where severe overcrowding has resulted in some places. There, when they have eaten all the grass and stripped the leaves from acacia trees, they die of starvation. He concludes that the combined effects of poaching and starvation have now caused declines in all but five African countries (and most of these have only a small number of herds).

The probable effect of this dilemma is explained by Yale University ecologist Richard S. Miller, who has developed a computer program to model the population dynamics of long-lived animals. Elephants do show some ability to regulate their own populations according to natural conditions, Miller says, but this ability will have very little effect during the present extreme overcrowding. A "boom and bust" cycle is inevitable, he says, unless overcrowded herds are culled.

Conservation experts are thus in the difficult position of telling governments that more needs to be done to protect elephants in general but that in some areas



Elephant with radio collar for tracking.

larger numbers of animals need to be intentionally killed. They also face a tough fight trying to stimulate new restrictions on the ivory trade while convincing conservatives in their ranks that at least some trade must be allowed to continue.

Both Miller and Douglas-Hamilton oppose having the African elephant placed on the U.S. endangered species list, pointing out that the legal ivory trade is a significant income earner for some poor countries. Tanzania, for example, exports 40 to 50 tons of ivory a year, which at \$30 to \$50 a kilogram represents an important share of the country's GNP. Many of these elephants would have to be killed anyway because of the overcrowding problem.

The other side of the problem—decimation of herds from uncontrolled poaching—can be seen most vividly in Uganda. There the elephant population has apparently declined to a tenth of its previous level in just four years. To help stop the practice, Ugandan army troops have reportedly even been used to shoot poachers from helicopters.

Discrepancies in import-export figures give some indication of the magnitude of the poaching problem. In 1974, the total

legal export of ivory to Hong Kong from all of East Africa totaled 107 tons, but the import figure in Hong Kong was 461 tons. The ivory demand of Hong Kong alone is now estimated to represent a toll of 2,500 elephants killed each month.

Miller warns that in some places the population decline is so precipitous that elephants may be wiped out in these areas, and that, like the whaling industry, traders will not move toward establishing a sustained yield from economic considerations alone. Douglas-Hamilton says that one way to ensure a sustained yield of ivory from stabilized populations of elephants would be to create government monopolies in the trade. □

A chemical cause of alcoholism

Despite the tendency in recent years to label alcoholism a "disease," it has never been proven as such in medical terms. Now, however, scientists at Purdue University say that alcohol addiction indeed appears to have a neurochemical cause. Robert D. Myers, director of Purdue's Laboratory of Neuropsychology, and Christine L. Melchior, a graduate student, report they have triggered alcoholism in rats that previously shunned alcohol by injecting small amounts of alcohol metabolites into fluid space in the animals' brains.

Four similar compounds induced the rats to drink, but the most potent was tetrahydropapaveroline (THP), the researchers report in the April 29 SCIENCE. In nonalcoholics, Myers believes, THP never finds its way into areas of the brain where it could trigger addiction. But, he says, it is possible that some cellular defect in the alcoholic's brain may cause abnormal formation of THP at specific, sensitive sites.

The findings conflict with the controversial Rand Corp. study which recently reported that many dried-out alcoholics can return to moderate drinking without relapsing into addiction. The Purdue results, Myers says, indicate that the only hope for a recovered alcoholic to avoid relapse is total abstinence.

The Purdue experiments matched a control group, which received injections of cerebrospinal fluid, against rats that were injected with THP or similar compounds. Before THP injection, the rats drank predominantly water and only tiny traces of alcohol. After injection with the metabolites, the rats increased alcohol consumption as much as 20-fold, while the control group did not significantly change its drinking habits. Although the THP infusions were discontinued after 12 days, the rats continued to drink large amounts of alcohol—as much as half their daily fluid intake—up to six months later, Myers and Melchior report. □