



July 7, 2003

Home Menu

Local News

SportsDay

Business

ClassifiedCenter

Search

DallasNews.com  
The Archives

- Break Room
- City-by-City
- Collin County
- Columnists
- Education
- Entertainment
- Health/Science
- House/Garden
- Lottery | Pets
- Nation | World
- Obituaries
- Opinion/Letters
- Photography
- Punchbutton
- Religion
- Special Reports
- Texas Living
- Traffic
- Texas | Politics
- Travel | Food
- Weather
- Corrections
- .com Store

## Health/Science

### Blood ties

**In Africa, the killing of chimps and other primates for food may be spreading AIDS-like viruses, threatening species**

07/29/2002

By SARAH GOFORTH / The Dallas Morning News

Deep within the forests of sub-Saharan Africa, a grim enterprise poses twin threats to the fight against AIDS.

The hunting of certain wild animals for food in Africa is causing broad human exposure to new strains of HIV-like viruses, researchers caution. As a result, some African populations may be at serious risk of disease from the very thing that sustains them. At the same time, the so-called bushmeat trade has grown to a level that threatens to extinguish dozens of primate species across Africa. By allowing the newly commercial trade in primate bushmeat to continue, "we are destroying the same animals that may help us understand HIV/AIDS," says Eric Chivian, director of Harvard's Center for Health and the Global Environment.

Most scientists agree that HIV emerged when simian immunodeficiency viruses, HIV cousins that are carried by nonhuman primates, spread to people in west-central Africa. But new evidence indicates there is greater SIV diversity, and the virus is more widespread, than previously thought.

In a landmark study published in 2000, Beatrice Hahn and her colleagues at the University of Alabama-Birmingham described AIDS as a zoonosis, a disease spread to humans by other animals. By that time, Dr. Hahn says, it had become clear that HIV-1 – the virus responsible for most of the world's 50 million cases – first spread to humans from contact with chimpanzees. And HIV-2, a form of the virus that remains confined to Africa, originated in another African primate species, the sooty mangabey.

#### Bushmeat connection

No one knows exactly how the original transmissions occurred. But Martine Peeters, a virologist at the Laboratoire Retrovirus in Montpellier, France, has shaped her career around the mystery. In her 20 years in Africa, Dr. Peeters noticed a disturbing trend: the increasing reliance on primate bushmeat as a food source in the cities and villages of the Congo basin.

Bushmeat has always been a dietary staple in Africa's forest communities, and for centuries, people hunted wild animals at sustainable levels. But as human populations soared in the 20th century (and wars disrupted the region), domesticated sources of meat became less and less available in the continent's burgeoning cities. As a result, hunting now occurs everywhere, even in national parks, where it is illegal.

In many areas – urban and rural – few, if any, alternative protein sources are



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available. In some communities, bushmeat makes up 80 to 90 percent of the population's protein intake. And only recently has the bushmeat industry become essential commerce, and a basic source of income for thousands of families.

Since bushmeat hunters and traders often come into contact with primate blood, Dr. Peeters says, she began to wonder whether transmission of viruses through bushmeat handling was a possibility.

Dr. Peeters and her collaborators studied monkeys and apes – nearly 800 animals in all – that had been hunted in the rain forests of Cameroon. More than 20 percent of the animals contained some detectable amount of the SIV virus, the researchers reported in May. Thirteen of the 16 species that were studied showed signs of infection. Of these, some were already known to harbor the virus, but four were not. Dr. Peeters' team included Dr. Hahn and other researchers at the University of Alabama-Birmingham, the Ministry of Environment and Forestry from Cameroon, and Project PRESICA (Prevention of AIDS in Cameroon).

The researchers took the SIV samples into the laboratory and identified five new SIV lineages, bringing the number of known varieties to more than 30.

To gauge the risk SIV poses to human health, scientists need to know where, and at what level, the virus exists in primate populations. Since previous studies relied on surveys of captive monkeys and apes from zoos or homes, scientists could only guess at infection levels in wild populations before the new study.

"From other preliminary data on captive animals, we suspected already that many primate species are infected and also that SIV prevalence could be high," Dr. Peeters says. "But it was still a surprise to find such a high prevalence among animals to which humans are exposed each day."

Since primate-to-human transmissions have been documented in the past, Dr. Hahn suspects they are likely to occur again. "We have now over 30 different SIVs that have been identified, and it almost looks like every primate species in that part of the world ... all harbor their own species-specific version," Dr. Hahn says.

### **Not all survive**

Not all SIV strains would be able to survive and cause disease in human cells. But some could infect humans, go unrecognized, and lead to further epidemics, Dr. Hahn warns. And even though many of the cross-species contacts may go nowhere, the introduction of SIV into a person with an existing HIV infection could create new strains of the virus. Countries such as Cameroon, where nearly 8 percent of the population is HIV-infected, may be a breeding ground for the emergence of new strains.

"There is a natural SIV reservoir out there, and people are coming into contact with infected blood," says Dr. Hahn. "This is a fact. This is happening every day in multiple places."

Primate bushmeat is hunted and sold on a vast scale. The Durrell Wildlife Conservation Trust has calculated that about 5 million tons of the meat is taken every year from the Congo basin alone, where most of the population lives in the bush.

Such figures are estimates at best, because much locally consumed bushmeat

is not recorded. But even conservative estimates reflect a sudden increase in the trade in recent years.

Some conservationists see the growing trade in African bushmeat as one of the greatest threats to some of the world's rarest animals. Harvard University's Eric Chivian believes the trade is "an act that is unmatched for its ignorance and its self-destructiveness."

Bushmeat commerce, he says, is a double-edged sword. The handling of primate flesh is a direct threat to human health, as evidenced by Dr. Hahn's study. At the same time, Dr. Chivian says, the trade is responsible for extensive species loss in some of Africa's most biodiverse forests. And as an answer to hunger, it is a temporary solution at best.

Scientists hope to learn how species like the chimpanzee remain unharmed by SIV. Such knowledge about humans' closest genetic relatives could be parlayed into treatments – or even a vaccine – for HIV.

But whatever new clues the animals hold could be lost in a generation. If primate populations continue to decline as they have in recent years, scientists warn that all of the great apes – including chimpanzees and gorillas – could be nearly extinct in 10 years. And some monkey populations have also suffered sharp losses.

The Miss Waldron's red colobus monkey became extinct two years ago. Scientists say the animal, one of West Africa's hallmark species for centuries, was obliterated by the bushmeat trade. No other primates are known to have become extinct during the 20th century, but Dr. Chivian warns that only immediate, sweeping changes in how the bushmeat trade is managed will prevent many more from sharing the same fate in the 21st.

### **Logging opens access**

In many regions of the Congo basin, European mining and logging companies have introduced access roads, and vehicles that traverse them, into deep forest areas. These companies, Dr. Chivian says, are central to the commercial bushmeat trade. Logging trucks carry tons of meat out of the forests every year.

It is valuable merchandise. Now a multibillion-dollar industry, the meat is sold in villages and cities, hauled across national borders, and sometimes shipped over the ocean to illegal international markets.

"These logging concessions in central Africa have become the de facto managers of land," says Heather Eaves, director of the Bushmeat Crisis Task Force based in Silver Spring, Md.

And the region's perpetual civil wars have supplied weapons that hunters can use to hunt larger animals, such as great apes, in greater numbers.

"The amount of money that would be necessary to buy out all this logging and mining isn't all that great," Dr. Chivian says. "Groups like Conservation International and The Nature Conservancy are raising money for just that purpose."

But to do so would be only a partial solution, one that could leave thousands of African families without income, and even more without food.

"The bushmeat trade is a symptom of a much bigger problem," Ms. Eaves says, adding that most Africans involved – and most African governments – recognize that it's an unsustainable practice. But it's also a matter of survival

for many Africans, she says.

Members of the task force testified this month at a hearing of the House Subcommittee on Fisheries Conservation, Wildlife and Oceans led by Rep. Wayne T. Gilchrest of Maryland.

"We live in a world filled with bad news, especially the news which comes from much of central Africa," said Richard Carroll, director of the West and Central Africa Program of the World Wildlife Fund, at the hearing.

But there has been progress, Dr. Carroll said: In a 1999 meeting in Yaonde, Cameroon, African governments and industry leaders met to discuss ways to monitor protected forest areas and create alternative food programs. It is too early to say whether the group's efforts have been fruitful, but Dr. Carroll is optimistic. "The results demonstrated from the Yaonde Summit represent a great glimmer of hope for the forest, wildlife and people of the region, and the world should come to their aid," he said.

In the meantime, the international team of scientists who put numbers to the presence of SIV in African primates has new ambitions. Only after strain-specific tests are developed for each SIV lineage will public health officials be able to say whether – and in what magnitude – the diseases have penetrated human populations. "Once we've developed these tests," says Beatrice Hahn, "we'll see where we stand."

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