

PRIMATE LUST

The urge of males to dominate the sex life of more than one female may explain the size gap between the sexes

BY WILLIAM J. BROAD

From Aristotle on, thinkers have puzzled over the size difference between males and females. Males, on the average, are larger than females. This holds true not only for humans but for baboons, orangutans, gorillas — in fact, for the vast majority of known primate species. Now an anthropologist from the University of Wisconsin at Madison has come up with a provocative answer. The theory, presented in the April 13 *NATURE*, mixes eons of primate evolution with the endless urge of males to dominate the sex life of more than one female.

Anthropologist Walter Leutenegger looked at 53 primate species. In 11 of them, he found little or no size difference between the sexes. In the remaining 42 species, the males were at least 10 percent larger than the females. "The most extreme ratios are found in baboons and gorillas," Leutenegger told *SCIENCE NEWS*. "A male gorilla in the wild may weigh up to 400 pounds and a female half that."

This, in itself, was not earth-shaking. However, when Leutenegger looked at breeding systems, he found that while these same 11 species were monogamous and formed stable pairs, the 42 species with males larger than females were polygynous — a male mating with many females and often forming a harem.

The connection between size and sexual habit may have gone unnoticed in the past partially because researchers looked at captive animals, which are often under-exercised and over-fed. Leutenegger's study used weights from wild-shot or wild-trapped animals.

Why is a harem-holding male larger than a male who has sex with only one female? The answer, says Leutenegger, lies with sexual selection, an idea first put forward by Charles Darwin. Consider this situation. Suppose a stronger- and larger-than-average male monkey is born. He grows and finds he can take more than one female and defend this harem against the amorous assaults of his ho-hum competi-

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Leutenegger strikes a pose with the bones of a female and a male gorilla. The size gap also shows up in many arthropods, mammals and birds.

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tion. He will sire more offspring than the average male monkey, and these offspring, especially the males, will tend to inherit his size advantage. For generation after generation the same sexual selection will be at work. Larger males are favored. Smaller males leave behind few or no offspring. "A female's desires can also be a selection pressure," says Leutenegger. "A large male may be more attractive, and her choice reinforces the size difference." Down through the ages, the size gap between males and females becomes solidly stamped upon the genetic blueprint of the species.

Moreover, according to Leutenegger, the gap tends to increase with the overall size of the species. For example, small polygynous monkeys show minor size differences between male and female. Baboon males, on the other hand, are twice the size of the females.

And it doesn't stop there. Male sexual abandon, in fact, may be one key to overall size increases in primates. Monogamous species, including the soft-furred marmosets and tamarins of Central and South America, are much smaller on the average than their polygynous cousins. "Other factors are also at work," says Leutenegger. "When a primate species evolves to a large size, the males can better intimidate predators. But at first, size is mostly a sexual advantage."

Not everyone agrees. British biologist T. H. Clutton-Brock looked at size differences between the sexes and rejected the notion that polygyny and sexual selection are dominating factors. Pictured instead are a mixture of sexual and ecological pressures. Leutenegger, however, feels that his analysis of 53 primate species — the largest number ever for this type of study — outweighs Clutton-Brock's sample size of 42 species.

Leutenegger admits, moreover, that sexual selection can be counteracted. For

example, some polygynous monkeys who live in trees show little size difference between males and females. Although these males still vie and battle over females, the necessity of leaping from limb to limb and swinging through the forest canopy — burning up all excess body energy — has tended to hold down male size increases.

And at first sight the chimpanzee, a polygynous primate whose males are only slightly larger than the females, seems an exception. However, in this case Leutenegger believes that sexual selection may have been relaxed. Male chimps tolerate more sexual adventure by the females. Fierce competition with rival males just doesn't exist, so size doesn't mean much.

Humans are another problem. Males are only about 10 percent larger than females. Yet according to theory, the large body size of *Homo sapiens* would predict a greater gap — more like the one found between male and female gorillas.

On a hunch, Leutenegger examined some of the fossil evidence surrounding the early protohumans. The body weights of both *Australopithecus africanus* and *A. robustus* were estimated from the fossils. Differences between the sexes were at least 14 percent. "They showed more sexual dimorphism than modern man," Leutenegger told *SCIENCE NEWS*. "It is a very strong indication that these early hominids were polygynous — maybe not to the extent of baboons, where there is an extreme gradient in the mating success of the males. But some of these early humans certainly got around a lot more than others."

So why do today's humans show such a small gap between the size of males and females? Culture, says Leutenegger. Complex civilization demands monogamy and less direct competition among males for the females. "But on a biological level," he says, "I think man is still polygynous in his roots." □