

# Human Pubic Lice Acquired from Gorillas Gives Evolutionary Clues

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Humans acquired pubic lice from gorillas several million years ago, but this seemingly seedy connection does not mean that monkey business went on with the great apes, a new University of Florida study finds.

Rather than close encounters of the intimate kind, humans most likely got the gorilla's lice from sleeping in their nests or eating the giant apes, said David Reed, assistant curator of mammals at the Florida Museum of Natural History on the UF campus, one of the study's authors. The research is published in the current edition of the *BMC Biology* journal.

"It certainly wouldn't have to be what many people are going to immediately assume it might have been, and that is sexual intercourse occurring between humans and gorillas," he said. "Instead of something sordid, it could easily have stemmed from an activity that was considerably more tame."

About 3.3 million years ago, lice found on gorillas began to infest humans, Reed said. That they took up residence in the pubic region may have coincided with humans' loss of hair on the rest of their bodies and the lack of any other suitable niche, he said.

Reed and his co-workers' research stemmed from their fascination with humans' unique position among primates in being host to two different kinds of lice: one on the head and body (*Pediculus*), which has become the bane of many schoolchildren, and pubic or crab lice (*Phthirus*). In contrast, chimps have only head lice and gorillas pubic lice.

Understanding the history of lice is important because the tiny insects give clues about the lifestyles of early hominids and evolution of modern humans, Reed said. Because the human fossil record is patchy and finding early DNA samples is extremely difficult, parasites such as head lice, pubic lice, tapeworms and pinworms that have existed for millions of years provide valuable clues, he said.

“These lice really give us the potential to learn how humans evolved when so many parts of our evolutionary history are obscure,” he said. Lice also can serve as a model in understanding how parasites move from one species to another, Reed said.

“If you look at emerging infectious diseases that affect humans all over the world, most have their origins on some other host before threatening humans,” he said. “Studying what it takes for a parasite to be successful in switching hosts adds to our knowledge about what makes a good host for the spread of disease.”

Working with other scientists who collected lice from primates in Ugandan wildlife sanctuaries, the research team extracted DNA from the lice and used fossil data from humans and gorillas to estimate how long ago these two types of lice shared a common ancestor.

In particular, the researchers looked at whether pubic lice developed on their own in humans or whether humans acquired them from gorillas. They believed humans were more likely to have had lice all along because this was a simpler explanation than acquiring lice from gorillas, but they were proved wrong.

It is not unusual for lice to switch hosts, with this occurring in both birds and mammals, Reed said. Lice that lived on the passenger pigeon before it became extinct persist today because they switched to another species

of pigeon, he said.

Lice need either direct physical contact or very recent contact to switch hosts, Reed said. In this specific case, the parasite might have been transmitted to humans sleeping in a depression in the ground where a gorilla had slept and nested the night before or even by humans feeding on gorillas, he said.

“Unfortunately, even today among modern humans there’s a bush meat trade where gorillas are killed for their meat,” he said. “If archaic humans were butchering or scavenging those animals 3.3 million years ago, it would be a simple thing to transfer those lice from prey to predator.”

Because humans and gorillas are so closely related and have so many potential interactions of a nonsexual nature, it would have been less likely for the lice to have been transmitted through sexual intercourse, he said.

Reed did the study with postdoctoral researcher Jessica Light at the Florida Museum of Natural History and zoology graduate students Julie Allen and Jeremy Kirchman.

“This paper makes one’s imagination run wild, giving graphic new meaning to that ‘800 pound gorilla,’” said Dale Clayton, a University of Utah biology professor. “However, as the authors point out, the inferred host switch of pubic lice from gorillas to humans did not require sexual contact. Human pubic or ‘crab’ lice get transmitted between people on bath towels all the time. So it is easy to imagine that gorilla lice could have transmitted to humans via shared sleeping quarters, or predation, as the authors suggest.”

Source: University of Florida

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