

# Studying longer-term effects on elephants from poaching

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A female elephant and calf in Samburu National Reserve, northern Kenya.  
Credit: Robbie Labanowski/Save the Elephants

Poaching has longer-term effects on elephant populations than originally thought, according to a pair of studies published recently by researchers

at Colorado State University and Save the Elephants. This new research shows that orphaned juvenile elephants have less chance of survival in a herd, and that losing them has a significant impact on population growth or decline.

Conservation efforts have traditionally been informed by macro-scale research of populations, said George Wittemyer, lead author of a study published in *Ecosphere* and a professor at CSU.

The research team analyzed how the survival of different age groups affect elephant population trends. Because older male [elephants](#) tend to reproduce more than younger ones, and older females are the leaders of family groups and social units, conservation biologists long assumed that the older age group was most important to population trends. But the study showed that's not the case.

## **Research teams used 20 years of data**

Wittemyer and colleagues from Save the Elephants examined 20 years of data collected in Samburu National Reserve in northern Kenya and looked at how mortality of elephants at different ages impacted populations.

Juvenile elephants who are just starting to become independent of their parents are the most important to elephant population dynamics, said Wittemyer.

"If they're surviving well, the population is pretty buffered from decline," he said. "If they start to decline, then you're in deep trouble."

The data also showed that [human activity](#)—specifically, wounding or killing elephants—decreased survival of all ages in a population.

"Even for calves, which we don't think of as being targeted by humans for ivory, their survival was really strongly driven by [human impact](#) on the population," Wittemyer said. "Human impacts dominate anything else going on in the population in terms of affecting survival."

Wittemyer said if conservationists or governments want to implement more targeted actions, they need to know which animals in the population are driving increases or decreases, which is why these studies are important.

## **Orphans left behind struggle to survive**

Jenna Parker, who recently received a doctoral degree in ecology from CSU, was the lead author of a study published in *Current Biology* that showed poaching adult elephants not only directly lowers [population growth](#), but indirectly lowers it as well through the lowered survival of their orphaned offspring.

Parker is currently a postdoctoral researcher at the San Diego Zoo Wildlife Alliance.

"For social populations, poaching has a larger impact than originally thought, because you have to account for the orphans who are left behind who struggle to survive because they don't have a mother," Parker said.

Parker and her research team examined 20 years of monitoring data collected by Save the Elephants and compared survival of young elephants who were orphaned by poaching with those who were not.

They found that orphans had lower survival probabilities, and that lowered orphan survival further exacerbated declines in populations caused by poaching. And when poaching was more frequent, the effect

of orphan survival on these populations was greater. Even orphans who were no longer dependent on their mother's milk had a lower survival rate than their peers with a living mother, the study found.

"The total impact of poaching is greater than was originally recognized," Parker said. "In populations that we think have undergone a lot of poaching, even as the poaching slows, we still need to consider its residual effects."

The two studies highlight the impacts of poaching on elephant behavior, and in turn, on elephant demographics.

"Killing an elephant is not removing one elephant from a population; killing an elephant has downstream effects on those elephants that are bonded to it," Wittemyer said. "These papers give us high-resolution information on elephant demographics that help us to better understand the decline and recovery processes of elephant populations."

**More information:** Jenna M. Parker et al, Poaching of African elephants indirectly decreases population growth through lowered orphan survival, *Current Biology* (2021). [DOI: 10.1016/j.cub.2021.06.091](https://doi.org/10.1016/j.cub.2021.06.091)

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