



Botswana - Vultures

Lead in Vulture Blood

How a Hypothesis Becomes False News

Text and Photos: Rolf D. Baldus

Biologists in Africa have a difficult time. Generally, not many people are interested in their work. That is, unless they are capable of producing exquisite television documentaries about charismatic species, or make headlines with spectacular or shocking research results. Jobs are also scarce, and there is always the risk of unemployment after a research project is completed. Sometimes researchers go to great lengths to make headlines in an effort to acquire fresh funding.

A Weak Conclusion

For four years, between 2012 and 2015, a six-member research team from ornithological and zoological institutes in South Africa, Botswana, and the USA travelled through Botswana's scenic hinterland, camped in the shadow of liverwurst trees, and took blood samples from 566 white-backed vultures (*Gyps africanus*), which had been captured with nets. One-third of the vultures were found to have elevated levels of lead in their blood, the source of which was unknown.

In order to discover the source, one could have, for example, analyzed the food of these scavengers. This would certainly have been a difficult undertaking, but it wasn't even attempted. Whether the lead levels in the blood were actually harmful to the vultures also wasn't established. The researchers did however compare the differences in the lead levels of birds caught in hunting blocks and from hunting-free areas. These correlations were for the most part weak, and not statistically significant. However, it was notable that lead levels increased significantly after Botswana issued a hunting ban in January of 2014.

The Consequences

Normally, only a handful of scientists might take notice of this study, and the world would have remained completely unaware of the researchers' four-year safari, if it weren't for the astounding conclusion put forth that was based on a weak empirical basis. "The pattern of our results strongly supports the hypothesis that elevated BLLs (lead levels) in white-backed vultures in Botswana resulted from the ingestion of spent Pb (lead) ammunition." That was the only logical explanation, according to the team.

A few press releases calling for a ban on lead-based hunting ammunition were enough, and the story went viral. Hundreds of newspapers, press outlets, and blogs all over the world picked it up. The message was that hunters in Africa killed elephants and other game with lead ammunition, that vultures fed on the carcasses, and consequently died. With a few notable exceptions, the fact that the message was based on an unproven hypothesis, didn't make a bit of difference to the media. Thus to the uninformed public, an unproven hypothesis became a fact. "Hunters Kill Twice," was a headline used, which skillfully summed up the message. Even a popular American hunting magazine jumped on the bandwagon, as they, like most others, just read the summary of the study and did not investigate at any depth.

More Research Necessary

Any study that scientifically examines the potential impact of lead-based hunting ammunition is certainly welcome. Hunters, the International Council of Game and Wildlife Conservation (CIC), national hunting associations, and the industry all support the development of hunting ammunition that has optimal effect and minimal lead content.

It must be clearly noted, however, that the study in question does not provide adequate proof of its claim. Correlation is

not causation, and even the correlation in this study isn't clear. Firstly, the study only examined vultures in Botswana. Drawing conclusions about all of Africa from a study in one country is an obvious stretch. The study also doesn't make any empirical observations about the mortality rates of vultures, or the causes of mortality. It merely detected elevated lead levels in the blood of live birds. It was not proven that lead ammunition was the cause of the lead levels. The source remains unknown. Again, there is neither correlation nor causation for this claim. The only basis is the lack of other explanations. The increase in lead exposure that took place after the hunting ban took effect indicates other, non-hunting, causes.

There are additional reasons why the lead hypothesis doesn't make sense. In Botswana comparatively little game was killed by hunters. In the years 1999 to 2001, the annual hunting quota was approximately 16,000 animals. This included porcupines, monkeys, and wild cats, which aren't hunted. In any case, the actual harvest is always significantly lower than the quota. In the Chobe district, for example, only thirty percent of the quota was actually filled. Beyond that, the actual number of animals harvested continued to decline due to the government's ever more restrictive hunting policies. In 2008, the proposed quota was just 2,488 animals. This declined even further, but the exact statistics are not available to me. The point is that hunters fired only a few thousand shots during the time period when the study was conducted.

There is another factor that makes the claims sensational. In Africa, game meat is much sought-after, as everyone knows who has lived or hunted there. It is therefore almost always completely consumed by people, including the intestines, and virtually no part of a hunted animal is left in the bush. In addition, a large portion of the ammunition used in Africa consists of solids, which either do not contain lead or, due to the construction, do not emit lead.

In light of these facts judgment is still out on whether these researchers used proper methodology to come to their assumptions. Other scientists may be the judge of that. For me, there doesn't appear to be a chain of indisputable facts. Their hypothesis could be correct, or not.

The disappearance of vultures in Africa and Asia is however a fact, and a serious environmental issue. Ammunition containing lead can kill birds under certain circumstances. However, there are more critical, and scientifically proven, primary causes for vulture die-offs. They are as follows:

1. The widespread treatment of cattle with medications containing Diclofenac is a leading cause of the death of vultures, because they feed on carcasses of dead bovinds. In India this has killed up to ninety percent of the vultures. The number of cattle in Botswana is estimated at two to three million. It is to be feared that the use of Diclofenac for veterinary purposes kills vultures there too.
2. In Southern Africa vultures are often purposely poisoned because their body parts are worth money, as they are used for rituals in traditional medicine and witchcraft.
3. Poachers poison elephants with cyanide. The tusks are removed, and the carcasses remain behind. Predators of all kinds meet their demise by such poisoning. In February 2018 in Mozambique, for example, ninety dead vultures were found on a single elephant that had been poisoned by poachers.
4. Vultures regularly die on power lines.

Where they are present vultures play an important role in ecosystems. Their decline is therefore very troubling. Instead of publishing spectacular false news about hunting, scientists, media, and conservation practitioners should come together to improve the protection and conservation of this species. This should, however, be based on facts and good science.

Journal Reference

Rebecca Garbett, Glyn Maude, Pete Hancock, David Kenny, Richard Reading & Arjun Amar. "Association between hunting and elevated blood lead levels in the critically endangered African white-backed vulture *Gyps africanus*". *Science of the Total Environment*, 2018.

Advertisement

Wolfgang Schenk

TAXIDERMY

Propr. Erik Schenk
Häusges Mühle
56412 Daubach · Germany
Tel. +49 2602 90456

www.schenk-taxidermy.com
Schenk-Taxidermy@t-online.de

