Reproductive speed protects large animals from being hunted to extinction

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The slower their reproductive cycle, the higher the risk of extinction for large grazing animals such as deer and antelope that are hunted by humans.

The oft-cited causes of habitat loss and living in a limited geographic area also are significant risks for extinction of a species, but under hunting pressure it's reproductive speed that really matters, according to a new statistical analysis by evolutionary biologist Samantha Price, a postdoctoral fellow at the National Evolutionary Synthesis Center in Durham.

This key variable helps explain, for example, why the American bison was nearly wiped out in just a few years of intense hunting pressure with relatively slight habitat change while the white-tailed deer continues to grow in number despite hunting and suburban sprawl. The bison nurses its young for 283 days on average; the deer just 80, Price notes.

Price reported her findings online Wednesday, May 16, in the journal *Proceedings of the Royal Society B*. The work, supported by the National Science Foundation, is an offshoot of her Ph.D. dissertation at the University of Virginia.

Price did a complex statistical analysis of 144 species of hoofed mammals, including pigs, llamas, cattle, sheep, goats and antelopes, combining a global list of threatened species with data on hunting, land use and the animals' reproductive rates.

Where hunting isn't a factor, habitat loss is the biggest issue. But whether the threat comes from hunting or habitat destruction, extinctions such as this are "all human-caused at some level," Price said.

The worst-case scenario, she said, is where humans are expanding into an area and changing its habitat, and hunting the indigenous animals as they go. Three areas of the world -- West Africa, Indonesia and Malaysia, and South America -- are "hot spots" for hunting, and many species in these areas are threatened.

"The poorer the country, the greater the threat," Price said. Regional military conflicts also turn up the heat on species, as people in strife-torn areas will turn increasingly to "bush meat," including hoofed animals, to supplement their diets.

"Because these are large, plant-eating animals, they have a significant effect on the local ecology," Price said. These animals help disperse plant seeds through their manure and keep plant growth in check. "You can completely change the ecosystem without knowing it if you hunt these animals to extinction," she said.

Price isn't optimistic that much could be done to incorporate her findings into new game policies, but this new understanding of the importance of reproductive rates could help conservation managers zero in on which species are in the greatest peril.

Source: Duke University