

Bison mating observations fall short of predicting reproductive success

November 12 2014, by Jason Snell

Most mammal reproduction studies aim to not only discover who the fathers are but also to learn why some males sire more offspring than others. This is complicated since many male animals, including American bison, mate with multiple females, making it difficult to estimate which males will be the most successful at passing on their genes.

The current issue of the *Journal of Mammalogy* reports on a study of the bison herd at Fort Niobrara National Wildlife Refuge in north-central Nebraska. Over 8 years, the authors observed the behavior of breeding bison and tested the genes of [newborn calves](#) to determine whether their observations matched the proven paternity.

The contribution made by male and female mammals to the next generation's gene pool is often measured by counting the surviving [offspring](#). However, when males roam widely and mate with multiple females, offspring numbers only reflect the reproductive success of the females. Genetic testing proves paternity but can be difficult and expensive. Thus, many researchers observe behavior during the mating period and then estimate the males' success at siring offspring. More research is needed on whether these estimates accurately predict which genes are passed on.

The authors of the current study looked at the behavior of American bison during the breeding period over several years. They then collected tissue samples of calves born the next year and ran genetic tests. The

results were analyzed to see whether the genetic data matched the rutting bulls seen the previous year.

Overall, estimates of mating success proved to accurately predict the number of births in the herd the next year. However, individual success rates were less accurate; the actual number of offspring sired by individual males was far lower than what the authors expected based on their observations. Of the copulations they saw, 44% did not lead to a birth. In addition, 60% of the newborn calves proved to be fathered by bulls different from those believed to be responsible for the pregnancy. The probability of siring offspring was based on several factors, including total copulations per season, the dominance of the bull, and the age of the bull or cow. As expected, the more times a bull mated, the more likely he was to be successful in reproducing his genes.

The authors concluded that observing a mating couple was not enough to predict the paternity of the calf born to the cow the following year. Genetic data alone also did not give a complete picture of reproductive success in the herd. They argue that both [genetic testing](#) and observation of mating behavior are necessary to understand sexual selection and how it affects a species.

More information: Full text of the article "Behavioral versus genetic measures of fitness in bison bulls (*Bison bison*)," *Journal of Mammalogy*, Vol. 95, No. 5, 2014, is now available: www.asmjournals.org/doi/full/10.1644/13-MAMM-A-209

Provided by American Society of Mammalogists

Citation: Bison mating observations fall short of predicting reproductive success (2014, November 12) retrieved 24 April 2024 from <https://phys.org/news/2014-11-bison-fall-short->

[reproductive-success.html](#)

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.