** More Tines, More Breaks: Antler Failure Patterns in Western Montana Cervids

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Weapon failure can drastically reduce an individual's lifetime reproductive success as many species cannot repair or regenerate damaged traits. Yet among cervids (i.e. deer), antler failure may only reflect seasonal fitness because males are capable of seasonal regenerative. Antler failure could indicate nutritional or environmental stress but could also reflect species-level differences in weapon investment such as strong combat tools or flashy signals. In this study, we tested the predictability of male age, harvest location, antler point maximum and symmetry on antler failure presence in Rocky Mountain elk (*Cervus canadensis*), mule deer (*Odocoileus hemionus*) and white-tailed deer (*O. virginianus*) over two harvest seasons (2024-25) in western Montana. We found elk experience greater antler failure than either deer species, asymmetrical antlers failed more often, and males with more antler points were significantly more likely to experience breakage. We found failure rates differed among harvest locations with greater failures rates near districts experiencing a recent decline in mature bulls (over 6 antler points). Our results suggest weapon investment as durable tools differ among cervids, possibly reflecting greater investment in larger signals among bull elk. Given that harvest-induced demographic shifts may alter mating competition and structural investment in antlers, monitoring antler quality provides a novel approach for understanding cervid population health and behavior.