

Southwestern Association of Naturalists

Saguaro Spine Penetrated Bighorn Sheep Skull

Author(s): Brian D. Jansen, Paul R. Krausman, James R. Heffelfinger, James C. deVos and Jr.

Source: *The Southwestern Naturalist*, Vol. 50, No. 4 (Dec., 2005), pp. 513-515

Published by: Southwestern Association of Naturalists

Stable URL: <https://www.jstor.org/stable/3672309>

Accessed: 02-06-2020 23:23 UTC

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <https://about.jstor.org/terms>



JSTOR

Southwestern Association of Naturalists is collaborating with JSTOR to digitize, preserve and extend access to *The Southwestern Naturalist*

- Wildlife Management Congress, Wildlife Society, Bethesda, Maryland. Pages 224–227.
- KRAUSMAN, P. R., G. LONG, AND L. TARANGO. 1996. Desert bighorn sheep and fire, Santa Catalina Mountains, Arizona. In: P. F. Ffolliott, L. DeBano, M. B. Baker, Jr., G. J. Gottfried, G. Soils-Garza, C. B. Edminster, D. G. Neary, L. S. Allen, and R. H. Hamre, technical coordinators. Effects of fire on the Madrea Province ecosystems. United States Forest Service General Technical Report RM-289: 162–168.
- KRAUSMAN, P. R., W. W. SHAW, AND J. L. STAIR. 1979. Bighorn sheep in the Pusch Ridge Wilderness Area, Arizona. Desert Bighorn Council Transaction 23:40–46.
- LIGHT, J. T. 1971. An ecological view of bighorn habitat on Mt. San Antonio. In: E. Decker, editor. Transactions of the First North American Wild Sheep Conference. Colorado State University, Department of Fish and Wildlife Biology, Fort Collins. Pages 150–157.
- MCCARTY, C. W., AND J. A. BAILEY. 1994. Habitat requirements of desert bighorn sheep. Colorado Division of Wildlife, Terrestrial Wildlife Research, Special Report Number 69, Denver.
- MCKINNEY, T., S. R. BOE, AND J. C. DEVOS, JR. 2003. GIS-based evaluation of escape terrain and desert bighorn sheep populations in Arizona. Wildlife Society Bulletin 31:1229–1236.
- PAPOUCHIS, C. M., F. J. SINGER, AND W. B. SLOAN. 2001. Responses of desert bighorn sheep to increased human recreation. Journal of Wildlife Management 65:573–582.
- PASE, C. P., AND D. E. BROWN. 1994. Rocky Mountain subalpine conifer forests. In: D. E. Brown, editor. Biotic communities southwestern United States and northwestern Mexico. University of Utah Press, Salt Lake City. Pages 37–39.
- SMITH, T. S., J. T. FLINDERS, AND D. S. WINN. 1991. A habitat evaluation procedure for Rocky Mountain bighorn sheep in the Intermountain West. Great Basin Naturalist 51:205–225.
- TURNER, R. M., AND D. E. BROWN. 1994. Sonoran desertscrub. In: D. E. Brown, editor. Biotic communities southwestern United States and northwestern Mexico. University of Utah Press, Salt Lake City. Pages 181–222.
- WAKELING, B. F., AND W. H. MILLER. 1990. A modified habitat suitability index for desert bighorn sheep. In: P. R. Krausman and N. S. Smith, editors. Managing wildlife in the Southwest. Arizona Chapter of the Wildlife Society, Phoenix. Pages 58–66.
- WAKELYN, L. A. 1987. Changing habitat conditions on bighorn sheep ranges in Colorado. Journal of Wildlife Management 51:904–912.

Submitted 21 June 2004. Accepted 29 March 2005.
 Editor was Mark E. Eberle.

SAGUARO SPINE PENETRATED BIGHORN SHEEP SKULL

BRIAN D. JANSEN,* PAUL R. KRAUSMAN, JAMES R. HEFFELFINGER, AND JAMES C. DEVOS, JR.

*Wildlife and Fisheries Sciences Program, School of Natural Resources, University of Arizona,
 Tucson, AZ 85721 (BDJ, PRK)
 Arizona Game and Fish Department, 555 North Greasewood Road, Tucson, AZ 85745 (JRH)
 Arizona Game and Fish Department, 2221 West Greenway Road, Phoenix, AZ 85023 (JCD)
 Correspondent: bighorns101@yahoo.com

ABSTRACT—Animals that inhabit vegetative communities where thorns and spines are common should be capable of moving while avoiding injury from thorns and spines. On 21 December 2003, we found that a saguaro cactus (*Carnegiea gigantea*) spine had penetrated the lacrimal bone into the orbit of a desert bighorn sheep (*Ovis canadensis*) in south-central Arizona. The animal was observed with clinical infectious keratoconjunctivitis and was blind for 3 weeks prior to death. It is likely that the animal collided with a saguaro cactus after she became blinded by disease.

RESUMEN—Los animales que habitan comunidades de vegetación donde las púas y espinas son comunes deben ser capaces de trasladarse y a la vez evitar lesiones producidas por púas y espinas. El 21 de diciembre del 2003 encontramos que una espina del cactus saguaro (*Carnegiea gigantea*) había penetrado el hueso lacrimal hasta la órbita de un borrego cimarrón (*Ovis canadensis*) en Arizona sur-central. El animal tuvo una infección keratoconjunctivitis y estuvo ciego durante tres

semanas antes de morir. Es posible que el animal chocara con un cactus saguaro después de haber sido cegada por una enfermedad.

On 21 December 2003, we recovered the remains of a 3-year-old female bighorn sheep (*Ovis canadensis*) that had died recently of malnutrition related to infectious keratoconjunctivitis in the Silver Bell Mountains, Pima County, Arizona (32°24.5'N, 111°29.5'W). This animal was radiocollared as part of ongoing research and was observed with clinical symptoms of the disease for approximately 3 weeks prior to death. Field necropsy suggested malnutrition as the proximate cause of death, and subsequent laboratory work did not refute malnutrition as the cause of death. Upon preparation of the skeletal anatomy for accession into the mammal collection at the University of Arizona (UA26967), we discovered that a spine from a saguaro cactus (*Carnegiea gigantea*) had penetrated the lacrimal bone into the left orbit (Fig. 1). The spine was 13.2 mm long

and 0.9 mm wide at its greatest diameter. The spine penetrated 5.2 mm of bone and was protruding 7.9 mm into the orbit.

Vegetation on the Silver Bell Mountains is common to the Arizona Upland subdivision of the Sonoran Desertscrub community (Turner and Brown, 1994). Cacti are an important group in the Sonoran Desertscrub, and many other woody plants have spines or thorns to discourage herbivory (Turner and Brown, 1994).

An epizootic of infectious keratoconjunctivitis occurred in bighorn sheep in the Silver Bell Mountains from 1 December 2003 to 31 March 2004. Bighorn sheep with clinical infectious keratoconjunctivitis are completely blind, at least temporarily, but can recover at least partial vision.

Bighorn sheep in the Silver Bell Mountains

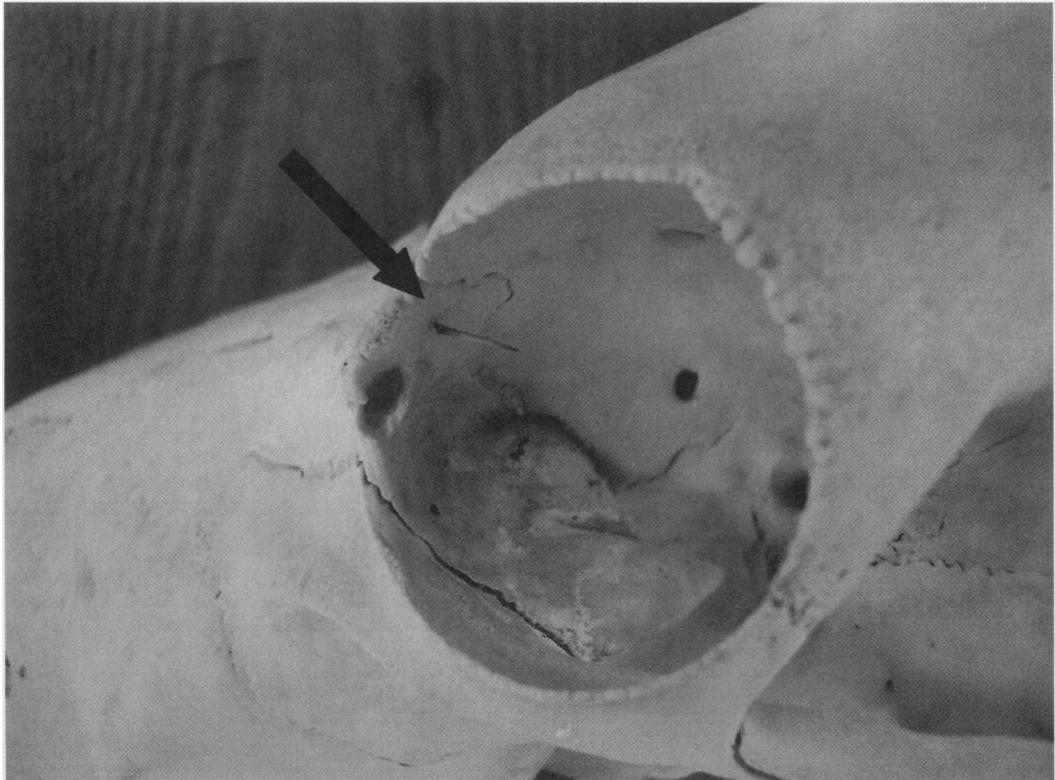


FIG. 1—Saguaro spine (*Carnegiea gigantea*) penetrating the lacrimal bone (at end of arrow) into the orbit of a female bighorn sheep (*Ovis canadensis*) from the Silver Bell Mountains, Pima County, Arizona.

are an indigenous population and are capable of moving among the spiny vegetation to avoid collisions that could result in injuries. Clinically affected bighorn sheep move erratically when alarmed and often collide with obstacles, whereas animals with normal vision do not. It is likely that this animal collided with a saguaro cactus driving the spine through the lacrimal bone into the orbit after it had become blinded by disease. We were unable to locate previously published literature documenting plant spines or thorns penetrating the bones of animals.

R. Felger identified the spine. This study was supported by the Arizona Game and Fish Department and the School of Natural Resources, University of Arizona, Tucson.

LITERATURE CITED

- TURNER, R. M., AND D. E. BROWN. 1994. Sonoran Desertscrub. In: D. E. Brown, editor. Biotic communities of the southwestern United States and northwestern Mexico. University of Utah Press, Salt Lake City. Pages 181–221.

Submitted 15 September 2004. Accepted 24 March 2005.
Associate Editor was Cheri A. Jones.

DIGESTIVE EFFICIENCY OF COLLARED PECCARIES AND WILD PIGS

JENNIFER J. ELSTON, EDWARD A. KLINKSIEK, AND DAVID G. HEWITT*

Caesar Kleberg Wildlife Research Institute, Texas A&M University—Kingsville, Kingsville, TX 78363
Present address of JJE: Disney's Animal Kingdom, 1200 North Savannah Circle, Bay Lake, FL 32830

*Correspondent: david.hewitt@tamuk.edu

ABSTRACT—Collared peccary (*Tayassu tajacu*) and wild pig (*Sus scrofa*) exist in sympatry in southern Texas. These species vary in the structure of the digestive system and in adult body size, which might influence digestive performance. Our objective was to assess differences in digestive system efficiency between these species, controlling for body size. Four peccaries and 4 young pigs of similar size were fed a standardized amount of a commercial feed (38% neutral detergent fiber, 12% crude protein) based on metabolic body weight ($\text{kg}^{0.75}$) for 8 days. Feed consumed and feces produced were measured during the last 5 days of the trial. No differences were found for digestive performance between the 2 species, although pigs excreted 95% of chromium-marked fiber sooner than peccaries. Although peccaries have a complex stomach in which fermentation occurs, they apparently do not gain a significant benefit in digestibility of dry matter, energy, or fiber relative to a hindgut fermenter of similar body size when eating similar amounts of food. Peccaries might, however, benefit from microbial products (e.g., vitamins and amino acids) that would not be readily available if fermentation occurred exclusively in the hindgut. Our results do not suggest that either species has a competitive advantage in dry matter digestion of plant material.

RESUMEN—El jabalí (*Tayassu tajacu*) y el cerdo (*Sus scrofa*) coexisten en el sur de Texas. Estas especies difieren en la estructura del sistema digestivo y en tamaño corporal adulto, lo cual puede influenciar su funcionamiento digestivo. Nuestro objetivo fue evaluar las diferencias en la eficacia del sistema digestivo entre estas especies, controlando por el tamaño corporal. Cuatro jabalíes y 4 cerdos jóvenes de tamaño similar fueron alimentados con una dieta estándar de alimento comercial (38% fibra detergente neutra, 12% proteína bruta) en base a su peso metabólico ($\text{kg}^{0.75}$) durante 8 días. Se midieron la comida consumida y las heces producidas durante los últimos cinco días de la prueba. No se encontraron diferencias en el funcionamiento digestivo entre las 2 especies, aun cuando los cerdos excretaron 95% de la fibra marcada con cromo mas rápido que los jabalíes. Aunque los jabalíes poseen un estómago complejo donde ocurre la fermentación, aparentemente no existe un beneficio significativo en la digestibilidad de la materia seca, energía, o fibra comparado con los fermentadores post-gástricos de tamaño similar cuando consumen cantidades iguales de alimento. Los jabalíes podrían tener algún beneficio de productos microbiales (i.e., vitaminas y aminoácidos), los cuales no estarían disponibles si la fermentación fuera