

Antelope Island Bison Studies

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The bison herd on Antelope Island was established in 1893 and managed as a private herd until 1981 when the island and the bison herd was purchased by the State of Utah. For six years, from 1981 until 1987, the herd was protected on the island with only three bulls removed. In 1987, Utah Parks and Recreation conducted a roundup on the island where 481 bison (98%) of the island herd was captured.

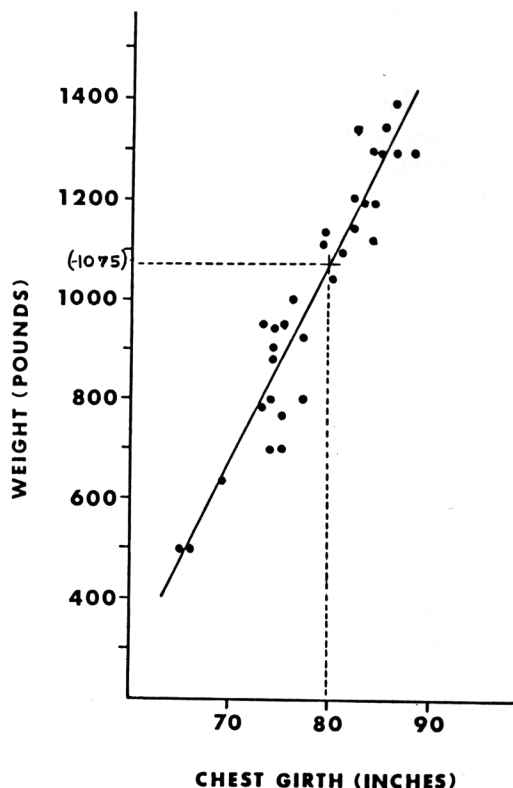
During the roundup, all animals were tagged and age and weight estimates were obtained. In addition, the horns on bulls were measured and lactation and pregnancy data were reported for all long yearling and older females. In a subsequent roundup in 1988, these data were again collected for comparison studies.

Age estimates were determined by tooth replacement schedules, however, the protracted calving season (April through October) resulted in a high degree of variation with tooth replacement. Age estimates for bison older than 4 years (when tooth replacement was complete) were determined by incisor wear measurements. In these measurements, the worn top of the central incisor is measured from the front to the back (lingual-labial surface) and the age estimate is based on an annual wear rate of 0.6 mm.

Weight estimates were obtained from a weighing chute scale and from girth measurements taken from all animals. The weight-girth relationship was consistent for both years and is used to estimate weights when there is no scale available.

The pregnancy rate for long yearling and older females in 1987 was 46%, and in 1988, it was 53%. Lactation status and pregnancy data were

The relationship between chest girth measurement (in inches) and live weight (in pounds) for Antelope Island Bison. Individual values "o" were obtained during the bison roundup held November 7-13, 1987.



To estimate the live weight of a bison first measure the chest girth (the distance around the bison's body just behind the front legs) in inches. Find this value on the bottom axis (i.e. 80 inches) and extend a perpendicular line up to the sloped line. From this point extend a horizontal line to the left axis and read the estimated live weight (1075) in pounds.

combined over the two years to indicate reproductive performance for adult cows. It was estimated 20% of the cows calved all three years, 34% calved two out of three years, 31% calved one out of three and 14% did not calve at all.

Horn measurements from 40 older bulls were compared with similar measurements presented in the 9th Edition of *Records of North American Big Game*, published in 1981. These

data indicate that bulls from the Antelope Island bison herd are large enough to provide trophy animals.

Age Determination for Bison on Antelope Island

Tooth replacement and wear on permanent teeth in the lower jaw of bison may be used to estimate age. The sequence of incisor and canine tooth (the eight front teeth in the lower jaw) replacement can be used to age bison from 1 to 4 years (see Table 1 and figures 1-5). After the 4th year all these front teeth are permanent and age is estimated by the wear on the first or central incisor.

Table 1: Tooth replacement of the front teeth in the lower jaw of bison. Incisors 1, 2, 3 and canine 1 are counted along one side of the jaw only, beginning at the center line.

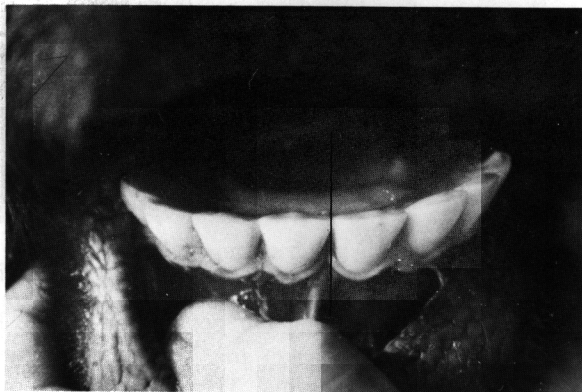
Age	Incisor 1	2	3	Canine 1	Notes:
Calf	D	D	D	D	D—Deciduous or milk teeth
Yearling	(D-P)	D	D	D	P—Permanent teeth
2-Year	P	P	D	D	()—Indicates replacement during this period
3-Year	P	P	P	D	
4-Year	P	P	P	P	

Table 2.

Tooth wear (central incisor wear from front to back in mm.) and approximate age for bison over 3 years of age. To estimate wear, measure the top (worn) surface of one of the central incisors from front to back in millimeters (Fig. 6) and refer to the width data below.

Surface Width (mm)	3.5	4.1	4.7	5.3	6.5	7.7	8.9	10.1
Estimated age	3	4	5	6	8	10	12	14

Figures 1 – 6 show tooth replacement of the front teeth in the lower jaw of bison during the fall period.



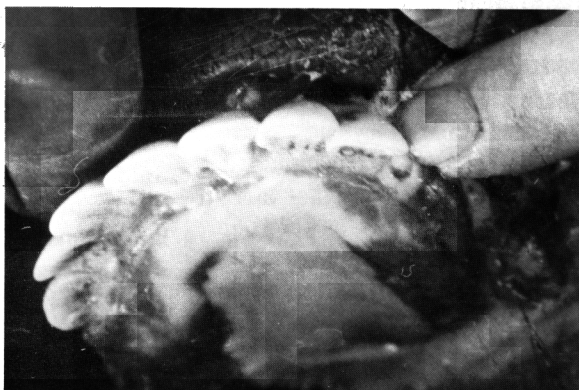
1. A full mouth and the position of incisors (I1, I2, I3) & canines (C1) relative to the center line of the jaw "I".



4. A 3-year old with I1, I2, & I3 replaced (I3 is emerging).



2. A yearling with I1 replaced.



5. A 4-year old with I1, I2, I3 & C1 replaced on the left side (C1 on the right side is still a milk tooth).



3. A 2-year old with I1 & I2 replaced.



6. The wear on front incisors of an older bison and the measurement used to estimate the age of older animals.